

# Establishment of Algeria's National Vision 2030

2013



MINISTRY OF STRATEGY  
AND FINANCE

**KDI** Korea Development Institute

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## Establishment of Algeria's National Vision 2030

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Knowledge Sharing Program

# Establishment of Algeria's National Vision 2030

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# Preface

In the 21st century, knowledge is one of the key determinants of a country's level of socio-economic development. Based on this recognition, Korea's Knowledge Sharing Program (KSP) was launched in 2004 by the Ministry of Strategy and Finance (MOSF) and the Korea Development Institute (KDI).

KSP aims to share Korea's development experience and knowledge accumulated over the past decades to assist socio-economic development of the partner countries. Former high-ranking government officials are directly involved in policy consultations to share their intimate knowledge of development challenges, and they complement the analytical work of policy experts and specialists who have extensive experience in their fields. The government officials and practitioners effectively pair up with their counterparts in development partner countries to work jointly on pressing policy challenges and share development knowledge in the process. The Program includes policy research, consultation and capacity-building activities, all in all to provide comprehensive, tailor-made assistance to the partner country in building a stable foundation and fostering capabilities to pursue self-sustainable growth.

The 2012 Knowledge Sharing Program with Algeria was carried out in the aim of supporting the establishment of the national vision 2030. Algeria's Ministry of Prospective and Statistics hoped to announce core findings of "Algeria National Vision 2030" in commemoration of the 50th anniversary of the Algerian independence in June 2012. The Algerian government indeed delivered the announcement so by actively participating in KSP and learning Korea's development experiences.

I would like to take this opportunity to express my sincere gratitude to Senior Advisor Dr. Cae One Kim, Project Manager Dr. Hong Tack Chun, as well as all the project consultants including Dr. Myungho Park, Dr. Wankeun Oh, Dr. Jae-eun Chae, Dr. Soonman Kwon, Dr. Hun Joo Park, Dr. Hyeon Joo Lee, Dr. Min-Ah Choi and Dr. Hyungtai Kim for their immense efforts in successfully completing the 2012 KSP with Algeria. I am also grateful to Former Executive Director Dr. MoonJoong Tcha, Program Director Dr. Jaehoon Kim and Program Officer Ms. Jean Lee, all of the

members of the Center for International Development, KDI, for their hard work and dedication to this program. Lastly, I extend my warmest thanks to the Secretary to Prime Minister in charge of Prospective and Statistics Algeria and other related Algerian government agencies, program coordinators and participants for showing active cooperation and great support.

In your hands is the publication of the results of the 2012 KSP with Algeria. I believe that KSP will serve as a valuable opportunity to further elevate mutual economic cooperation of Algeria and Korea to a new level. I sincerely hope the final research results including policy recommendations on the selected areas could be fully utilized to help Algeria in achieving economic development in priority areas in the near future.

Joon-Kyung Kim  
President  
Korea Development Institute

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## 2012 KSP with Algeria

*Jean Lee (Program Officer, KDI)*

The Ministry of Strategy and Finance (MOSF) of the Republic of Korea, in collaboration with the Korea Development Institute (KDI), has been implementing the Knowledge Sharing Program (KSP) with selected development partnership countries since 2004 with the overarching goal to assist in enhancing national competitiveness and the institutional restructuring efforts of partnership countries by sharing Korea's development experience.

KSP with Algeria was initiated in 2006, and has completed 5 KSP cycles including 2012 KSP with Algeria since then. 2006, 2008 and 2009 KSP with Algeria covered topics on financial reform in specific with Enhancing the Consumer Credit Market(2006), Electronic Payment System Reform and Enhancement(2008) and Development of National Investment Fund – Algeria Development Bank (Fonds National d'Investissement - Banque Algérienne de Développement, 2009).

In the eighth meeting of Korea-Algeria Task Force on Economic Partnership held in Algeria in May 2011, Abdelhamid Temmar, Minister of Prospective and Statistics (MPS) of Algeria, requested to launch a new KSP with Algeria under the subject of 'the Establishment of Mid- and Long-term Development Plan' as soon as possible. In response to the request, however, the Ministry of Strategy and Finance and KDI mentioned that development partner countries for 2011 KSP had been already selected and thus, a separate KSP with Algeria would be launched in cooperation of the African Development Bank (AfDB). With regard to this, the Ministry of Prospective and Statistics proposed cost-sharing scheme in order to carry forward the

project, without further cooperation with AfDB. After the meeting, the subject for 2011 KSP with Algeria was determined as ‘the Establishment of Mid- and Long-term Development Plan’ as requested. Considering that it had started later than 2011 KSP with other countries, 2011 KSP with Algeria has proceeded as a preparatory stage for 2012 program.

2012 KSP with Algeria was carried out with the goal of providing a in-depth research based on the 2011 KSP program outcome, and propose a blue print of the national vision 2030. In order to complete given tasks, Korean experts who are most appropriate and have rich knowledge and experience on requested tasks for 2012 KSP were carefully selected. The table below lists the Korean experts of 2012 KSP with Algeria.

〈Table 1〉 2012 KSP Topics and Korean Experts

Establishment of National Vision 2030	
Senior Advisor: Dr. Cae One KIM Project Manager Dr. Hong Tack CHUN	
Consultation Topics	Korean Researcher
Establishment of Algeria’s National Vision, 2030	Prof. Myungho Park Prof. Wankeun Oh
Transformation into a Knowledge-based Economy	Prof. Jongil Kim
The Education Development Plan for Algeria	Prof. Jae-eun Chae
Health Sector Development Plan 2030 in Algeria	Prof. Soon Man Kwon
Towards Strengthening Governance and Institutions for Algeria’s Inclusive Medium- and Long-term Development	Prof. Hun Joo Park
The Establishment and the Capacity Enhancement of the Medium- and Long-term Territorial Development Plans	Dr. Min-Ah Choi Dr. Hyeon Joo Lee Dr. Hyungtai Kim

In February 2012, the Korean expert team led by Cae On Kim (Senior Supervisor) and Hong Tack Chun (Research Project Manager) visited Algeria for Demand Survey & Pilot Study. Through a series of meetings with the Algerian government officials the experts were able to gather answers for the questionnaires they prepared in prior.

In April 2012, KDI invited 14 Algerian high-level government officials and implemented Demand Survey Seminar and Policy Demand Seminar. Both Korean and Algerian parties presented and held in-depth discussions on 2012 KSP topics and those in relevance. In addition, the delegation visited relevant Korean ministries and organizations. The both parties led focused and heated discussion sessions in Korea in order to exchange as much knowledge as possible. This was especially the case because the Algerian government had in mind that the core findings of 2012

KSP would be announced in July 2012 honoring the 50th anniversary of Algerian Independence. During the wrap-up session, Mohammed Benaouda Kefif, the Director General of Ministry of Prospective and Statistics, had requested on behalf of the Minister Temmar that the Korean expert team to visit Algeria and present the first draft of the final report for review and discussion. The revised report would then support Algeria in the establishment of the national vision 2030 to commemorate the 50th anniversary of Algerian Independence.

The Interim Reporting was carried out from June 16th to 22nd. On the first day, Minister Temmar and Senior Advisor Cae One Kim had a Senior Dialogue in order to share program progress and research outcomes. During the second and third day, a two-day Interim Reporting was held. Algerian government officials from various Ministries, International Organizations, NGOs, research institutions, private sectors, and media gathered to attend the Interim Reporting. The Minister Temmar and Vice Minister Bouchenak of MPS, Ambassador Chong Hoon Kim of the Republic of Korea and Cae One Kim opened the event, and the core research findings for Establishment of National Vision 2030 were presented. The reporting was successfully concluded amid enthusiastic interests and praise. The reporting was covered in the various local news channels. In addition, MPS passed their sincere appreciation for the thorough research results and promised for continued partnership.

The Final Reporting was implemented from December 1st to 7th in Korea in a smaller scale since the Interim Reporting was concluded in great success. In between the Interim Reporting and the Final Reporting, Algeria went through a government restructuring. As a result, MPS is now directly under the office of Prime Minister. Therefore, KDI invited the new Minister, Minister Bachir Messaitfa and led the Final Reporting. Ambassador Hocine Sahraoui of People's Democratic Republic of Algeria paid a visit to KDI for the closing of the reporting and spoke of the importance of KSP and KDI. Moreover, Ambassador Hocine emphasized strengthening the partnership between Algeria and Korea. After reviewing 2012 KSP progress and the result, Minister Messaitfa thanked the Korean expert team for their rigorous work, quality research, and sincere friendship. In addition, Minister Messaitfa promised to submit Demand Survey Form for 2013 KSP by January 2013.

The Demand Survey Form was indeed submitted by Secretary of State to the Prime Minister in charge of Prospect & Statistics in January 2013 requesting 1. Assistance of making a development plan inspired from 2012 KSP with Algeria, and 2. Assistance to the establishment of Algeria Development Institution (ADI).

## Executive Summary

*Hong Tack Chun (Korea Development Institute)*

Since the establishment of diplomatic relations with Algeria in 1990, Korea has continued to strengthen its political and economic ties with Algeria. The bilateral relationship was further enhanced with the signing of the Declaration on Strategic Partnership by President Roh Moo-hyun and President Abdelaziz Bouteflika when President Roh paid a state visit to Algeria in March 2006. President Bouteflika requested for the sharing of Korea's knowledge and experience in economic development as well as encouraging Korean firms to actively participate in Algeria's economic and industrial development. The two leaders agreed to make concerted efforts in expanding mutual economic cooperation between the two countries.

The purpose of the 2012 Knowledge Sharing Program (KSP) with Algeria was to support Algeria in the establishment of a mid- and long-term development plan. Algeria's Ministry of Prospective and Statistics, aiming to establish the "Algeria Vision 2030" in order to commemorate the 50th anniversary of Algerian independence in June 2012, was eager to learn from Korea's development experience. To this end, the Korean government decided to assist Algeria in its development efforts through the KSP.

After several discussions with the Algerian government in 2012, five sub-topics were determined for the project. These five sub-topics were considered to be essential in achieving Algeria's vision, including 1) Transformation into a Knowledge Based Economy, 2) Structural Reform of Governance, 3) Education Reform, 4) Public Health Reform, and 5) Territorial Development.

Over the past decade, Algeria has shown a remarkable macroeconomic achievement despite the unfavorable external environment. Algeria's growth rates marked similarly to that of the world average while its economy, highly dependent on oil and gas, was able to withstand the crisis triggered by the recent drop in oil prices, especially owing to its stable management of fiscal balance and external debt. In addition, Algeria maintained social stability through active policy interventions in the midst of the sweeping wave of the 'Arab Spring' that had been sparked in Tunisia and spread throughout North Africa.

As a result, Algeria's per capita GDP exceeds US\$7,000 with a sizable population of over 34 million people, and its internal as well as external debts are almost negligible with stable prices. Also, its education level is generally high with the elementary and secondary school enrollment rates approaching the OECD standards. Algeria's investment efficiency, however, was extremely low, registering -3.7% in the annual average increase rate of TFP (Total Factor Productivity) from 2000 to 2007. Furthermore, its economy is highly dependent on the oil and gas sector, especially with oil and gas accounting for 98% of Algeria's exports. Meanwhile, Algeria's youth unemployment rate is over 20%.

Therefore, improving Algeria's economic efficiency, specifically investment efficiency, is critical to sustained growth, along with the maintenance of social cohesion by enhancing the quality of life in Algeria. In addition, Algeria must continuously create productive jobs by developing manufacturing as well as knowledge-based service industries that will bring about a diversified economy. Thus, broad socio-economic reforms in Algeria are necessary; not only to improve economic efficiency but also to maintain social cohesion. In this light, Korea's development experience of sustained high growth along with widely shared growth benefits was regarded as useful for Algeria.

### (1) Algeria's Vision 2030

The objective of this study is to provide Algeria with visions on long-term socio-economic growth until the year 2030. This study selected five major policy tasks that were deemed the most appropriate in seeking inclusive growth. These five policy tasks include; 1) Restructuring of Algerian Industries through Industrial Diversification, 2) National Reform in the Governance Structure, 3) Improvement of Human Capital through Education Reform, 4) National Land Development for Growth and Equality, and 5) Enhanced Quality of Life for Algerians through Reform in the Public Health Sector.

An analysis on Algeria, using the customized Economic and Social Development Indicators (ESDI), showed that Algeria so far have achieved notable economic



growth, but also requires a sustainable growth-driver through industrial diversification and reform in the areas of 'Government Responsibility' and 'Equal Opportunity.' The 'Social Security Net' area would also benefit from the reinforcement of the current system.

A comparative analysis, using the ESDI, was conducted to assess the status of Algeria compared to other countries, such as the 'Big 4 (United States of America, Germany, Japan and Sweden),' Republic of Korea, 'Maghreb Nations' and 'Resource-abundant Nations (Norway, Chile and Malaysia).' The results showed that Algeria recorded a strong annual nominal growth rate of 9.4% from 1995 to 2011. In addition, Algeria's annual growth rate of per capita income marked 1.92% in the same period, thus exceeding the average OECD per capita income growth rate. The unemployment rate in Algeria was somewhat higher than those of other countries despite the substantial improvement.

The most striking feature of the Algerian economy is that it is resource-abundant, especially with its hydrocarbon exports accounting for 98.2% of the total exports and its hydrocarbon sector amounting to 43.1% of the gross domestic product in 2010. Globally, per capita natural resources and per capita income are positively correlated, while the proportion of natural resources in total national wealth is negatively correlated with the per capita income growth rate, business environment, HDI, government effectiveness and information-orientation. Similarly, the proportion of hydrocarbon exports in total exports is also negatively correlated with per capita income growth, business environment, HDI, government effectiveness and information-orientation. This suggests that Algeria needs to pay special attention to fully make use of its abundant natural resources.

A closer examination of the Algerian economy shows that its per capita income is still low, whereas the macroeconomic stability is outstanding in terms of inflation, current account balance, foreign exchange reserve, government debt and foreign debt. However, Algeria's economic growth rate did not match its high investment rate due to negative total factor productivity (TFP) growth. This seemed to be partly related to the low number of R&D personnel.

In this chapter, seven policy tasks are suggested for Algeria: 1) achieve 7% annual economic growth rate, which is required to accomplish the goal of catching up with the average OECD per capita income level by 2050 as well as in becoming the richest country in the MENA region in terms of per capita GDP; 2) introduce suitable policies that can sustain the current macroeconomic stability; 3) a steady job creation; 4) improve investment efficiency; 5) reduce hydrocarbon dependency; 6) dramatic improvement in the research and development sector; and 7) a wide range of nationwide politico-socio-economic reforms.

The visions and appropriate strategies are presented with regard to three perspectives. First, in order to devise visions and appropriate strategies for a broad ranging reform in Algeria, it is necessary to establish a market-friendly environment and a communication channel between the government and the people. Second, strategies for the achievement of economic reform in Algeria must be sought out, especially to promote industrial diversification. Third, reform programs in order to improve the Algerian living standards must be established. This includes visions and strategies for education, public health and national land development.

Finally, this chapter presents Algeria with a number of goals achievable through the reforms mentioned above. The goals are to 1) achieve average per capita income equal to the average OECD (World Bank 2008) income level and 2) become the richest nation in the MENA region in terms of per capita GDP. More specifically, a plan was suggested for tripling the income level with an annual economic growth rate of 7% and a per capita income growth rate per annum of 6% until 2030. The strategies for the accomplishment of the target growth rates are presented in multiple scenarios based on the results from growth-accounting analyses of TFP growth, investment rate, capital growth rate, labor growth rate, labor income distribution rate and capital income distribution rate. According to the results, if Algeria were to accomplish the five reform tasks – industrial diversification, reform in governance, education, public health and national land development for growth and equality – the possibility of Algeria transforming into a fast-growing nation in the 21st century would rise dramatically.

## (2) Transformation into a Knowledge-based Economy: Industrial Diversification of Algeria

The transformation into a knowledge-based economy is important for Algeria in order to achieve sustained, long-term economic growth and realize the vision of becoming a developed, high-income country by 2030. The transformation into a knowledge-based economy is none other than the achievement of industrial diversification by reducing its resource dependency.

This chapter attempts to draw a picture of the industrial structure of Algeria in 2030 in order to realize a GDP growth of 7% per annum over the next 20 years. First, the current industrial structure of Algeria is assessed based on a cross-country comparison, and as expected, it is found that Algeria's current structure is severely imbalanced with an excessive share of hydrocarbons in its total production. This kind of structure makes economic growth sensitive to the fluctuation of hydrocarbon prices and a long-term rapid growth cannot be maintained unless the price of hydrocarbons continues to rise.

Under the optimistic assumption that the Algerian economy converges to the stylized pattern of industrial structure implied by the cross-country regression, the Algerian industrial structure in 2030 is forecasted as follows, presuming a mild oil price increase of 2.8% per annum. The shares of agriculture, manufacturing, services and hydrocarbon sectors will become 15.3%, 16.2%, 50.0% and 18.5 % of GDP, respectively, in 2030. In 2010, the shares stood at 10.5%, 6.2%, 40.2% and 43.2% of GDP, respectively. To accomplish this successful structural transformation, the GDP growth rates of agriculture, manufacturing and services over the next 20 years should be 8.9%, 11.8% and 9.3% per annum, respectively. Achieving such high growth in these non-hydrocarbon sectors may appear like a daunting task, but the Korean experience of industrialization implies that it is indeed feasible since Korea's manufacturing sector had increased at about 15% for 20 years during the era of rapid industrialization.

To realize the optimistic forecast of industrial transformation by 2030, the Algerian government needs to carry out economic reform first before implementing an industrial policy for the promotion of strategic industries. Assessing the policy stance of the Algerian government, it is quite plausible that the future industrial promotion will not be much different from the state-led industrialization policy in the past. Although the Algerian government now stresses the role of export and the importance of SMEs in industrial development, the current economic structure with old firms, including government-subsidized SOEs, lower business density, and little competition, will tilt the promotion policy toward old and big SOEs, which, in fact, are currently troubled with unproductive management distorted by vested stakeholders.

Therefore, this study argues that the prerequisites for industrial diversification are the emergence of a sizeable number of private enterprises and the reform of the SOEs. The two prerequisites are not independent, but rather interrelated reforms that need to be pursued at the same time before venturing into industrial promotion. For private sector development, the first step should be to implement policies that give clear signals to private investors and that strengthen the credibility of policies by leveling the playing field for all investors hereby encouraging competition through the removal of formal and informal entry barriers and enlarging access to credits. It will improve the business environment and lead to the rise of new industries or to the entry of new firms in the existing industries. Subsequently, the government may create and allocate rent in a competitive way among firms based on their performance in pursuing the specific targets of industrial promotion. At this stage, it is crucial to set up an incentive-augmenting mechanism hand in hand with the enhancement in policy capacity.

The reform for private sector development should be accompanied by the

reform of the SOEs. The current dominance of the SOEs in Algeria is one of most important obstacles to private sector development for industrial diversification. In addition, since the SOEs account for such a large share in the Algerian economy, structural transformation cannot be accomplished without the restructuring of the SOEs. For this, the control of the SOEs should be transferred to an agency close to the top authority that will decide the allocation of financial resources and the range of business in consideration of the national reform strategy. In addition, the government agency in charge of budgeting should have hard budget constraints for the SOEs by conditioning subsidies that are based on clear performance criteria.

Finally, it is without saying that these two prerequisites for industrial development cannot be achieved without a strong political leadership and commitment.

### (3) The Education Development Plan for Algeria: Focusing on Vocational Education Training and Higher Education

Education reform is one of the key areas attracting the attention of the Algerian government. As a means for social and economic development, the public demand for education reform has been on the rise. Also, the demand for the expansion of education is increasing due to the fast growing student population. In this context, this chapter presents policy options that the Algerian government might consider to strengthen its vocational education and training initiatives as well as higher education initiatives (hereafter referred to as “VET” and “HE” respectively). Whereas Algeria has almost achieved universal basic education, there is still room for improvement in both VET and HE. This chapter first presents the Korean case which can be used as a reference for Algeria in reforming its VET and HE. Second, it provides an overview of the education system of Algeria and discusses key issues and problems of its VET and HE. Third, it suggests the 2030 educational vision and reform directions of Algeria. Lastly, a range of policy options are provided for the Algerian government to consider in designing education reform plans. The major findings of this study are as follows.

Algeria has achieved continuous improvement in education over the past decades, and thus is likely to meet its UN Millennium Development Goals by 2015. However, it still faces several challenges. The greatest challenge is to deal with the increasing demand for education that stems from a large proportion of young population in the total population. In 2012, people aged 25 and under represented 49% of the total population. Regarding VET, Algeria faces two major issues: 1) insufficient provision of VET; and 2) ineffective response to the needs of industries. With regard to HE, Algeria has to deal with the following issues: 1) increasing demand for higher education; 2) lack of diversity in HE institutions; 3) low level

of social appropriateness of university education; and 4) weak research capacity. Regarding policy coordination, it faces the following issues: 1) lack of coordination among educational policies; and 2) insufficient linkage between education and economic policies.

To overcome these problems, the Algerian government might consider the following recommendations. As the educational vision for 2030, the government must aim for Algeria to be ranked No. 1 when it comes to the quality of human resources in the Middle East and the North African region. To realize this vision, it needs to align its educational reform plan with the economic development plan by benchmarking the Korean case. It also needs to take an incremental approach in reforming education. Additionally, it needs to diversify the financial sources for the expansion of education. Lastly, the government needs to promote competition among educational institutions in order to improve the quality of education.

The policy options for improving vocational education and training are as follows. First, the Algerian government needs to increase access to VET by: 1) building new VET institutes that will train the human resources needed by leading industries; and 2) creating in-house vocational training courses within companies. Second, the government must enhance the quality of VET by: 1) enhancing the professional development programs of VET trainers; 2) supporting the industry-VET institute cooperation; 3) upgrading the national qualifications framework; and 4) developing the quality assurance system of VET.

The policy options for improving higher education are as follows. First, the government needs to diversify its higher education institutions (HEIs) by: 1) introducing a “junior college system” which offers associates’ degrees; 2) encouraging the establishment of private HEIs; and 3) providing foreign HEIs with incentives to establish branches in Algeria. Second, it should enhance the quality of higher education by: 1) establishing a National Center for Teaching & Learning which develops and disseminates best practices on teaching and learning; 2) initiating a university-industry cooperation program; and 3) developing projects such as the ‘National Science & Engineering Project.’ Third, the government needs to upgrade the quality of research by: 1) creating a University Research Support Project; 2) encouraging international cooperation in research; and 3) establishing a National Research Foundation which supports the research at HEIs. Fourth, the government must introduce a cost-sharing approach to finance HEIs by: 1) introducing a ‘tuition fee system’ which makes college students pay for their education; and 2) introducing a student aid (grants and loans) system which will help students pay the tuition. Finally, it needs to strengthen the accountability of HEIs by: 1) introducing a quality assurance system which ensures the quality of HEIs; 2) introducing a performance funding system for HEIs which ties the funding to outcomes; 3) introducing

performance-based rewards for faculties; and 4) setting up a university information disclosure system which reveals the key performance indicators of HEIs.

Lastly, the policy options for improving policy coordination in Algeria are as follows. First, the Algerian government must create a National Human Resources Development Council to ensure the systematic alignment of the policies formulated by the Ministries on education and economy. Second, it should make it a periodical activity to create a mid-term national development plan which connects the education policies with economic development. Finally, the government needs to create a monitoring process which ensures that key educational and economic policies are closely aligned with each other.

#### (4) Health Sector Development Plan 2030 in Algeria

Health indicators of the Algerian people have improved steadily, but the mortality rate of those younger than five year olds as well as the maternal mortality rate still fail to meet the MDG target. Along with a rapid decline in fertility, Algeria has experienced population aging and epidemiological transitions to non-communicable diseases (NCD).

Health expenditure as a percentage of GDP has been increasing, and the rapid increase in pharmaceutical expenditure is a particular concern. The public share of health expenditure has increased, leading to a decrease in out-of-pocket payments for health care with a minimum user fee, implying that there is little financial constraint to health care. In terms of the financing mix, the role of the state budget relative to social security contributions has increased. Health insurance is part of the social security system, which is mandatory for formal sector workers and their dependents. In health insurance, a big informal sector is a concern as many informal sector workers do not join the health insurance system, while not all of them are poor. There is little role of an active purchaser.

The number of health care personnel as well as the physical resources attributed to health care have steadily increased. However, the inequity in their geographic distribution is a major challenge. The majority of the hospitals in Algeria are public and their operating efficiency is low. The role of the private sector in health care delivery was limited, but it is growing fast. Although there are few barriers to health care access, the quality of the care is a concern.

A low level of out-of-pocket payment by patients and a low financial barrier to health care need to be maintained. However, Algeria needs to consider the optimal balance between government budget and social security contribution. If the Algerian government wants to increase the fiscal role of the social health insurance,

informal sector workers who can afford it should pay health insurance contributions, and the government should improve means-tests to identify the real poor that cannot pay insurance contributions and thus require government subsidies. To raise more resources in health care as well as improve the efficiency in health care utilization, the government should consider increasing the user fee in public facilities, while providing an exemption mechanism for the poor.

To empower the role of purchasing in health financing, the government can reduce direct budget allocations to public providers. The government instead should channel the funds to the insurance agency as a subsidy for the poor. The insurer can then exercise an increased purchasing power with respect to providers. The purchasing agency should have expertise not only in fund management, but more importantly in the management of how health care is provided and utilized. Algeria needs to consider introducing a health care purchaser (insurer), separate from its social security system. The new health care financing agency would play the role of an active purchaser: designing and implementing payment systems for health care providers, monitoring provider behavior, defining benefit packages, and reviewing the utilization of health care by patients.

The government needs to provide some degree of financial autonomy to public hospitals and implement performance-based budgeting to improve their efficiency. The health insurance agency as a purchaser should adopt capitation for primary care physicians and case-based payments such as DRG (Diagnosis Related Group)-based payments for hospitals.

The organization of health care delivery needs to be strengthened, and treatment of the right type of cases at the right level of health care providers, such as non-severe cases treated by primary care providers that serve as gatekeepers and severe cases treated by tertiary-care hospitals. This will contribute to health care cost containment. To improve the quality of health care, the government needs to keep its commitment to increase investment in public health facilities to strengthen their technical capacity.

Accreditation and quality of evaluation programs should be strengthened to guarantee quality of care in both public and private health care facilities, while information technology can be a useful tool for quality improvement. Algeria needs capacity building of human resources for health care, both in policy and management as well as in the clinical areas. To meet the increasing demand caused by population and epidemiological change, Algeria needs more primary care physicians who can handle the health needs of the elderly and provide gate-keeping for continuum of care for the elderly.

Increasing the use of (less expensive) generic medicines will contribute to both, pharmaceutical cost containment and the development of a domestic pharmaceutical industry. Price regulation of pharmaceuticals needs to be supported by other important elements of overall pharmaceutical policy and regulation such as registration, quality and safety monitoring, efficient and transparent procurement, financial incentives to physicians and pharmacists, financial incentives for consumers such as reference pricing, and an active role of the purchaser in deciding benefit packages, cost sharing and reimbursement systems.

#### (5) Towards Strengthening Governance and Institutions for Algeria's Inclusive Medium- and Long-term Development: Focusing on the Role of Government and Enhancing Its Implementation Capacity

In 2012, as Algeria celebrated its 50th year of independence, its government aimed to rise to the historic challenge of attaining inclusive and sustainable long-term development. Against such a backdrop, this chapter examines how to strengthen the role of the Algerian government in policymaking, implementation and coordination across ministries as well as in governing the market economy and the interactions between the public and private sectors. In particular, it devotes special attention to the issue of implementation as key to the success of any vision or policy, as no unimplemented or poorly implemented policy can turn out to be effective.

As Korea's development experience suggests, it is crucial to ensure that a new pilot ministry like Korea's Economic Planning Board (EPB), which would be the primary institution for driving the nation's long-term development, has sufficient power, authority, human and budgetary resources for successful implementation. A key structural-institutional source of the implementation problem in many underdeveloped economies frequently lies in the lack of close coordination among concerned government ministries. Therefore, it is critically important to ensure that the pilot ministry for development is capable of coordinating across ministries, and thereby actually resolving any bottlenecks or entangling any problems.

Perhaps the presence of the president at regular, if not necessarily monthly, pilot ministry-coordinated meetings covering economic trends or the state of the Algerian economy and reform, may empower the process as well as the pilot ministry, powerfully mobilizing both the public and private sectors for the cause of inclusive, long-term development.

Here the professional expertise and credibility that a national think tank like an Algerian Development Institute could bestow on the government's plans and policy proposals may indeed constitute a critical dimension to any successful efforts and



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engineering of government-led reform and change.

It is in this context that the creation of an Algerian Development Institute (ADI) as an effective interface between state and society can help win the hearts and minds of its citizens, as such a national think tank can become a chief supplier of credible expertise and social consensus-building policy ideas and proposals, which may prove more effective and influential than advocacy groups or individual scholars in universities as the Korean experience has shown. As a matter of fact, it can help the government prepare long-term development plans, analyze strategic and policy adjustment issues, monitor and evaluate the process of reform and its implementation, and develop and operate intellectually-grounded public awareness campaigns.

However, it is the people or the so-called developmental focus groups that make a difference by making things happen, and they would be pivotal to such institutional revamping and upgrading for long-term, structural development. Hence, no less important than the implementation mechanism itself is the problem of a shortage of highly competent and dedicated officials to staff the government bureaucracies. For this purpose, indeed, Algeria may want to adopt a more systematic two-track recruitment system to recruit elite cadre of officials who can staff the pilot ministry or take on other key developmental functions of the government - separately from the existing track and at an intermediate level. To be sure, the Korean leadership made sure that the EPB drafted the best and the brightest, including top-notch U.S. university-educated economists whose ethos of economic rationality greatly influenced the upstart ministry. EPB officials were thus viewed inside and outside government circles as the most "rational," objective or public-spirited among all bureaucrats.

The Algerian government's creation of a separate track of elite cadre of officials, imbuing and empowering them with a sense of mission and esprit de corps, and rewarding their dedicated performances with faster promotions would not only enhance the effectiveness of the government's implementation mechanism, but also provide great examples or role models to emulate to the next generation of young Algerian minds, which would have a powerful signaling effect on the Algerian economy and society as well.

It should be noted here that Algeria's restructuring and reform of the National School of Administration to establish France's ENA-like professional graduate program in November 2005 provides an innovative alternative. Upon careful evaluation, therefore, Algeria may consider expanding this elite track recruitment program as part of the solution.

## (6) The Establishment and the Capacity Enhancement of the Medium- and Long-term Territorial Development Plans in Algeria

The purpose of this study is to introduce Korea's policies regarding national land space that achieved economic development through a national land development strategy, share Korea's economic development experience with Algeria and search for methods to support the establishment of an efficient national land development strategy in Algeria.

The Algerian government, which promotes the establishment of new development strategies for the nation, is also experiencing a similar situation to other countries in the third world, thus showing significant interests in the Korean case of economic growth. Since political, economic, geographical and external situations are very different between Korea and Algeria, a direct application of the Korean case to Algeria is not only difficult but also undesirable. However, the Korean experience may likely give many implications to Algeria as Korea achieved successful national growth through the efficient use of its limited resources.

This chapter is composed of three parts. The first part examines the national land status in Algeria. The key sectors that impact national growth will be examined after introducing the whole national land status of Algeria. The actual conditions of cities, industry and SOC sectors will mainly be examined as well as the direction of development policies of the Algerian government. In doing so, the actual conditions of Algeria will be compared with Korea or other countries for a better understanding of Algeria's territorial development.

The second part analyzes the experiences of the national land development that supported the rapid economic development of Korea. In this part, Korea's growth process will be broken down into two stages. Stage one, the growth process, is a period of transforming an agriculture-based economy into an industry-based economy. The process of stage two is a period of transforming from a traditional industrial country to a knowledge-based economy. We intend to arrange the contents about the whole orientation of the national land development policies, SOC, industrial and urban sectors that the Korean government intensively developed. Based upon this, we attempt to derive implications applicable to Algeria.

Lastly, the direction of national land development policies for the Algerian government is suggested. The time horizon will be broken down from present to the year 2030 into two steps and the policy directions will be recommended in each step.



## Algeria's Vision 2030

1. Vision 2030 and Indicator Analysis
2. Algeria and the Global Economy
3. Current Issues Facing Algeria's Economy
4. Vision Scenarios
5. Conclusions

## Algeria's Vision 2030

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### Summary

The objective of this chapter is to provide the People's Democratic Republic of Algeria with a vision on long-term socio-economic growth. In a vision making process, the establishment of appropriate goals plays a pivotal role. To enhance the accuracy and reliability of the goals, a thorough analysis of the current situation is necessary and possible downsides and risks to Algeria should be examined. An indicator analysis, as pointed out by the OECD and the UN, is one of the most widely used analysis methods for evidence-based policy analysis. This chapter utilizes the Economic and Social Development Indicator (ESDI) to study the standing of Algeria among the international society. The ESDI simultaneously embarks on both cross-sectional and time series analysis, thus it is suitable when assessing the comparative performance between a single nation and the world. In addition, ESDI's incorporation of factors, such as society, environment and resources, results in a reliable method for the formulation of socio-economic development strategies.

For a precise evaluation of Algeria's standing in the world, appropriate countries must be selected for comparison. The selected countries include South Korea, the 'Big 4' (United States of America, Germany, Japan and Sweden), OECD, OPEC, Maghreb nations and resource rich countries (Norway, Chile and Malaysia). A comparison between South Korea and Algeria is relevant in this chapter in order to establish Algeria's long-term vision based on South Korea's growth experience. Furthermore, a comparative analysis between Algeria and highly developed

economies is included. The Big 4 represent their continents by sheer economic size: the United States of America (North America), Germany (Europe), Japan (Asia) and Sweden, a country with a strong social cohesion.

OECD is included as one of the long-term visions for Algeria to catch up to by 2050, especially in terms of the average OECD per capita income. OPEC countries are incorporated in the comparative analysis as Algeria is an oil-exporting country. Maghreb nations are also included. Finally, three archetypical countries that are resource rich – Norway, Chile and Malaysia – are also compared in the analysis. Norway is the most successful with its national management of oil export profits, Chile is the most effective in moving towards globalization among the resource rich countries, and Malaysia is a Muslim nation that has effectively accomplished industrial diversification.

The results from the indicator analysis show that Algeria has had positive performance in the previous decade. Despite its positive historical performance, the areas of growth engine from industrial diversification and government responsibility still require improvements. Likewise, equal opportunity and a social safety net also require improvements in Algeria. By analyzing the results derived from the indicator analysis, this chapter recommends an inclusive growth strategy, which refers to the development in the quality of life along with economic growth as part of Algeria's long-term growth strategy.

In 2010, the share of hydrocarbon exports in total exports for the Algerian economy amounted to 98.2%. In the same period, the hydrocarbon sector represented 43.1% of Algeria's GDP. Thus, this chapter treats the Algerian economy as a resource rich country. To understand the characteristics of resource rich countries, a correlation analysis between the following factors were conducted; share of natural resources in total national wealth, proportion of hydrocarbon exports in total exports, per capita income growth, business environments, human development indicator (HDI), government effectiveness and informatization. The results indicate a negative correlation between the reliance on natural resources and per capita income growth, business environment, HDI, government effectiveness and informatization. The result from the correlation analysis should serve as a warning that the risk of Algeria's ample hydrocarbons transforming into a resource curse exists.

For an in-depth analysis of the current economic situation in Algeria, the trends in major macroeconomic variables were analyzed. Aside from the low per capita income, Algeria has shown outstanding macroeconomic stability by having favorable inflation, trade balance, foreign exchange reserves, government debt and external debt. The IMF and World Bank also acknowledge Algeria's sound macroeconomic

stability. Unfortunately, low efficiency plagues the Algerian economy, which has a negative total factor productivity (TFP) trend. Thus, the contribution of a high investment rate on overall growth becomes limited by the low TFP growth. It is generally more common for less developed countries to show low TFP levels initially and develop over time; however, a negative TFP level remained constant in Algeria without any signs of improvement.

To improve the Algerian people's standards of living to that of the OECD average by 2050 while also becoming the most prominent nation among MENA by 2030, Algeria needs to implement three strategies. First, a national vision about reform programs should be established. Second, a suitable environment for sustainable growth needs to be constructed. This includes industrial diversification and governance structure reform. Third, reform programs aimed at improving the living standards of the Algerians must be implemented. This includes health, education and national land development as well as the search for subsequent strategies that may be required in the future. In other words, only when a blueprint for aggregate national reform and plans that improve living standards is prepared, a qualitative improvement of Algeria can be achieved. This chapter aims at providing Algeria with the blueprint for the national vision.

If Algeria is to reach an average OECD per capita income level by 2050, per capita income must increase threefold by 2030. This requires a GDP growth of 7% or per capita income growth of 6% per annum. This chapter employed a growth accounting method to run analysis on different scenarios by calibrating the TFP growth, investment rate, capital growth rate, labor growth rate and relative shares of capital and labor. The encapsulated results point to necessary reforms in the following five areas: industrial diversification, governance structure reform, educational reform, health reform and national land development. Only if Algeria enhances TFP and maintains the current growth rate for capital and labor, it would be possible for Algeria to become a rapid and high growth economy in the 21st century.

# 1. Vision 2030 and Indicator Analysis

In a semi-centennial commemoration of Algeria's independence, the Ministry of Prospective and Statistics (MPS) of Algeria requested that the KDI take a leading role in supporting the establishment of long-term development visions for Algeria. In response, the Korean researchers held lengthy discussions with the Algerian policymakers in order to create the optimal scenarios for both economic growth and social cohesion. In addition, the Korean researchers attempted to provide a precise diagnosis for Algeria through an empirical analysis that compared Algeria with the following groups of nations: 1) Maghreb Nations, 2) non-oil producing high-income OECD (Organization for Economic Cooperation and Development) countries, and 3) resource rich countries that have withstood the 'resource curse.' The results of the comparative empirical analysis allowed the Korean researchers to generate in-depth solutions for overcoming the challenges faced by Algeria.

Section 1 contains five sub-sections in the following order. The first sub-section deals with the significance of visions. The process of establishing visions for the future is a delicate task that involves the risks of becoming shrouded in vanity and spawning unrealistic and unachievable goals. To hedge against this risk, the Korean researchers have largely relied on empirical and quantitative methods when establishing visions. Such an act of reliance on empirics and metrics has been strongly recommended by international organizations including the OECD. It highly recommends an analysis of the socio-economic indicator. In this chapter, a socio-economic indicator that has been deemed the most appropriate for Algeria is used to diagnose the current state of Algeria.

The second sub-section examines the structures and methodology of the indicator system. The third sub-section consists of an analysis of the current states of Algeria through the application of the economic and social development indicator (ESDI).

The fourth and the fifth sub-sections deal with respectively the objectives of the economic and social sector for the next generation of Algerians based on the results obtained from the ESDI.

## 1.1. The Significance of Vision Making

High-income nations, including the Republic of Korea, have conducted research on establishing visions with the aim of providing an aggregate rough sketch of the structural and socio-economic development for their nations. The nations have critically assessed problems that have surfaced from situation analysis. Identifying the underlying problems in a nation is the most crucial factor in vision creation, especially as accurate identification leads to a precise diagnosis and, in the long run, provides

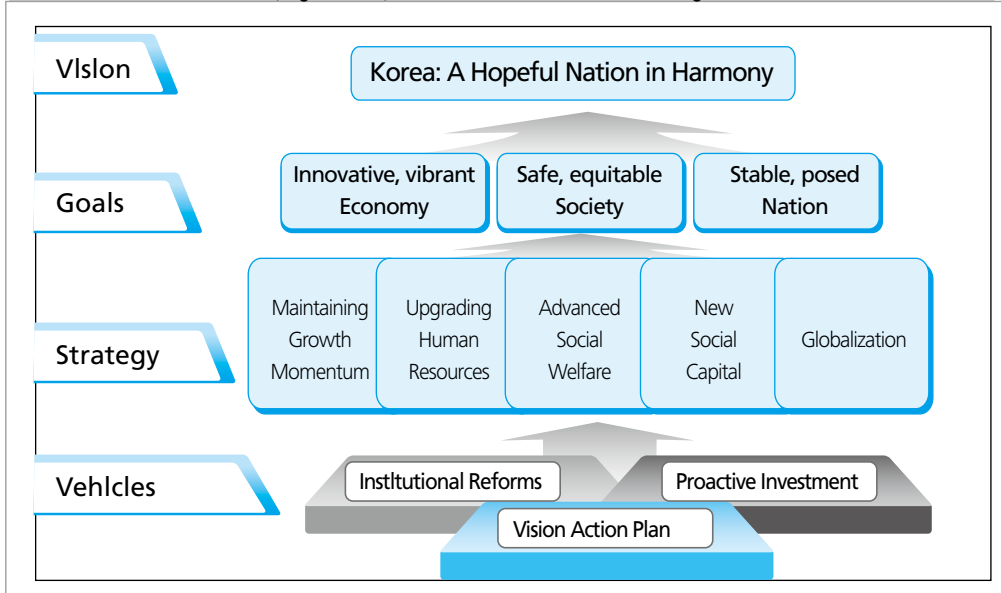


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appropriate solutions. The need to establish national visions rises after apperception of the fluctuations in both internal and external environments and the underlying challenges.

Korea went through long-term vision making in 2006. The government established visions for 2030 under the title, "A Hopeful Nation in Harmony." The rationale for "Vision 2030, A Hopeful Nation in Harmony" rose from the less favorable internal and external conditions that surrounded the nation. (Woo and Choi, 2006) Prosperous endeavors such as the rapid manufacturing based economic growth since the 1960s and the successful restructuring of key industries – including semi-conductors, automobiles and irons – following the Asian financial crisis made colossal contributions to the Korean economy. Korea is ranked in the top 12 in the world in terms of gross domestic product. Despite its rapid growth, Korea's internal and external factors remained disparaging. External factors included globalization, technological innovations and the rise of BRICs nations, all of which threatened the competitiveness of Korean businesses. Internal factors included the increase in social wealth disparities accompanied by low economic growth, an aging population and increased instability in its diplomatic relationship with North Korea. These factors indicated that a systematic diagnosis was needed to assess the sustainability of the growth strategies that had been employed. Furthermore, if previous growth models could no longer be sustained, alternative solutions had to be drawn out. As a result, relevant policymakers and experts worked in collaboration on the "Vision 2030, A Hopeful Nation in Harmony." The team created a broad-spectrum of the needs of the next generation and came up with apt measures that were required for execution to sustain those needs. Through this process, Korea listened to both professionals and civilians to search for a new paradigm that would promote sustainable growth.

〈Figure 1-1〉 Vision 2030: Goals and Strategies



Source: The Korean government (2006)

According to <Figure 1-1>, Vision 2030, which was established in 2006, was entitled, “A Hopeful Nation in Harmony.” To achieve this vision, economic, social and national objectives were set. The key strategies for achieving the objectives included an expansion in growth engines, advancement in human resources, the enhancement of the social security structure, active globalization and reform in national governance. Vision 2030 was never intended to be a blueprint for an ideal society. Instead, Vision 2030 was an action-oriented project in which professionals and civilians participated to create realistic visions and objectives for the future.

The Lee Myung-bak government of Korea, which was inaugurated in 2008, published a report aimed for the decade of 2040 to be an anticipated centennial commemoration of Korea’s national founding day in 2045. A change in the national development paradigm was necessary as a preemptive response to maximize the strengths of Korea in the future. Vision 2040 reflected the anticipated image of Korea by the public and was named, “Greater Korea.” The objectives of Vision 2040 were an advanced nation, an integrated nation and a globalized nation. In addition, seven strategies were selected to meet the global trend. The strategies included, but were not limited to: 1) a flexible and innovative market economy, 2) a growth-driving scientific technology, 3) creative and global human resources, 4) an active and sustainable social security, 5) national governance based on integration and balance, and 6) international leadership.

The research aimed to assess the sustainability of current paradigms on the next

generation can be drawn from both Vision 2030 and Vision 2040. These assessments provided an insight into the inadequacies that the current paradigm might convey for the future. Seeking the right solutions for these inadequacies should be the first step in the vision establishment process. Once the civilians and professionals have established new visions, key execution strategies must be formed, and finally, suitable policy actions be taken to create a general framework. Vision 2030, which had encompassed the process described thus far, unfortunately died out with the change of government. Even so, the lessons learned from Vision 2030 were applied in the creation of Vision 2040. Likewise, other nations could refer to these Korean experiences in the future. The process of establishing visions must be based on political stability and policy continuity. Thus, the process of creating visions should be orchestrated independently from politics, and instead be in the hands of civilians, experts and policy makers.

## 1.2. The Structure of Indicator System and Its Methodology

### 1.2.1. Structure of Indicator System

#### 1) Economic and Social Development Indicator (ESDI)

The OECD recommends the use of a structured indicator when analyzing development stages in a nation. This study employs the structured indicator which has been created by researchers from the National Research Council for Economics, Humanities and Social Sciences (NRCS) in 2009. The structured indicator is named the Economic and Social Development Indicator (ESDI). This report has adjusted the ESDI for a better integration with the assessment of Algeria. The NRCS in Korea is an institution that represents 23 policy-research societies in the fields of humanities and social sciences. The NRCS works in collaboration with the Korean government-sponsored research institutions on analyzing budgets, human resources, evaluation and inter-institution research. The ESDI presented in this literature is the fruition of the arduous efforts by the NRCS.

In 2009, the NRCS initiated research on sustainable growth models and indicator analysis with the aim of searching for a new paradigm that would be appropriate for the Korean society. In the research from 2009, the NRCS developed an indicator system that reflected the Korean socio-economic development level and conducted a comparative analysis with the OECD member states. The indicator conveyed a Korean point of view, and a comparative time series and cross-sectional analysis were conducted between Korea and OECD member states. The results provided a better insight into situational awareness and provided articulate means for objective selection. The comparative analysis on OECD member states used data from 1990 to

2007 for the time series and cross-sectional analysis. The analyzed data utilized panel data that included the time series and cross-sectional analysis.

The indicator analysis of 2010 broadened its research scope and included the Financial Development Indicator and Green Growth Indicator. The former was instigated for the post-financial crisis of 2007 and the latter was for sustainable and environmentally friendly development, which was a part of the government's policy action. As of 2010, four indicator analyses – ESDI, Financial Development Indicator, Social Cohesion Indicator and Green-Growth Indicator – were implemented. Furthermore, given the chairmanship of the G20 in 2010, the research included G20 nations in its analysis, resulting in 39 nations in total.

In October 2010, numerous workshops were held with OECD, France's National Institute of Statistics and Economic Studies (Institut National de la Statistique et des Études Économiques: INSEE) and the EU Policy Center on the indicator analysis conducted by the NRCS. These occasions provided a foreign take on the indicator analysis. The feedback was implemented in the 2011 research. Foreign experts emphasized the importance of methodology in indicator analysis. In response, the 2011 research conducted an exclusive analysis on methodology. Section 2 of the study aims to prove the methodological precision by comparing the methodology of the original indicator analysis and the methodology used in this report. In addition, correlation and factor analysis were used in Section 5 to further verify the meticulousness of indicator structure. Finally, this research included policy simulation as recommended by the OECD and INSEE. The policy simulation can be viewed in Section5 sub-section 3.

The indicator analysis conducted in 2011 by the NRCS amended various facets of its own analysis based on the achievements in the field over the previous two years. First, the ESDI underwent major revisions on basic data and methodology by accepting comments and suggestions by OECD and INSEE in October 2011, as well as a domestic seminar in November of the same year. The original data from the OECD and G20 countries led to a decreased coherency from 1990 to 1995. Thus, the starting year for the indicator analysis was shifted from 1990 to 1995. Furthermore, the implementation of comments and suggestions on methodology resulted in the creation of Section 2. Second, the rise in societal discord resulted in a request for an indicator analysis on Fair-Society. The Indicator analysis research team developed the Fair-Society Indicator and directed a comparative study on OECD member states. Third, major content revisions and data supplementation on the Green Growth Indicator were performed. Fourth, the first attempt on policy simulation was carried out to meet the policy demand. Fifth, various analyses were attempted to increase the applicability of the results of the indicator analysis. An analysis on the relationship between socio-economic development and different factors, including

origins of law, control over corruption, magnitude of the economy, democracy, political stability and government competency, was piloted. Sixth, since the creation of the ESDI put its basis in the history of Korea, ESDI may be utilized as a reliable tool for comparative studies among developing nations. This study examined the case study of the Philippines as an example case for the usage of ESDI on developing countries.

The structure of indicator is listed below.

〈Table 1-1〉 The System of ESDI				
Category	Class	Sub-class	Sub-subclass	Variable
Growth engine	Stable Growth	Income	Per capita GDP	Per capita GDP, PPP, \$, constant 2005
		Macroeconomic stability	Inflation	GDP deflator (annual %)
			Central government debt	Central government debt, total(% of GDP)
		Financial development	Financial size	Liquid Liabilities/GDP + Stock Market Capitalization/GDP
			Financial activity	Private Credit by Deposit Money Banks and other financial institutions/GDP + Stock Market Total Value Traded/GDP
		Economic openness	Trade	Trade (% of GDP)
			Foreign direct investment	Foreign direct investment, net inflows (% of GDP)
	Industrial competitiveness	Informatization	Internet	Internet users (per 100 people)
			Communication	Mobile cellular subscriptions (per 100 people)
			Computer	Personal computers (per 100 people)
		Technological innovation	R&D	Researchers in R&D (per million people, FTE)
			Patent	Number of Patents Granted (All Patent Types)
		Human capital	Quantity of labor	Employment to population ratio, 15+, male (%)
				Employment to population ratio, 15+, female (%)
			Quality of labor	GDP per person employed (constant 1990 PPP \$)
			Education level	Years of schooling
				Public spending on education, total(% of GDP)

〈Table 1-1〉 The System of ESDI

Category	Class	Sub-class	Sub-subclass	Variable
Social Cohesion	Individual freedom and life security	Freedom	Economic freedom	Index of Economic Freedom
			Socio political freedom	Freedom of the Press
		Security	Economic security	Unemployment, total (% of total labor force)
				Public and mandatory private Expenditures: Old age (percentage of GDP)
				Employment rates for age group 55-64
			Social security	Road fatalities per million inhabitants
				Health expenditure, total (% of GDP)
				Suicides, deaths per 100,000 population
				Crimes recorded in criminal statistics, Grand total (rates per 100,000 inhabitants)
		Empowerment	Economic empowerment	Labor participation rate, total (% of total population ages 15+)
			Social empowerment	Political democracy
		Welfare, distribution	Public social expenditure	Public social expenditure as a percentage of GDP
			Distribution	Gini Index
		Fertility/aging	Fertility	Fertility rate, total
			Aging	Population ages 65 and above (% of total)
	Social tolerance and government accountability	Social capital	Trust	trust in people
				Institutional confidence
			Civic engagement	Civic engagement
		Social tolerance	Protection of handicapped workers	Number of laws for the handicapped
			Degree of tolerance	Degree of tolerance
			Stocks of foreign population	Stocks of foreign population (%)
		Government accountability	Government effectiveness	Government effectiveness index
			Rule of law	Rule of law index
			Corruption	CPI (Corruption perception index)
			ODA	Net ODA ratio to GNI

〈Table 1-1〉 The System of ESDI

Category	Class	Sub-class	Sub-subclass	Variable
Environment	Environmental efficiency	Resource efficiency	Energy efficiency	Total primary energy consumption/GDP
			Water efficiency	Total gross water abstractions/GDP
		Environmental hazards	CO2	CO2 emissions/GDP
			Particulate matter	PM10, country level
			Waste	Waste/ GDP
	Response	Regenerative capability	Renewable energy	Total renewable electricity net generation
			Drinking water sources	Proportion of the population using improved drinking water sources
			Environment friendly firm	Number of ISO 14001 certifications
			Green ODA	Green ODA per GDP
		International contribution	International environmental treaties	Participation rate on international environmental treaties

## 2) Establishing an Appropriate Indicator Structure for Algeria's Vision 2030

Applying ESDI allows for the identification of a socio-economic development stage for Algeria and serves as a reliable tool for comparative analysis between Algeria and other nations. The vision scenario for Algeria, on a broader basis, is divided into two categories: economy and society. The former expands to growth engine and government/national governance, while the latter expands to national land development and public health.

The economic category is divided into two classes: growth engine and government responsibility. The growth engine class is separated into three sub-classes: macroeconomic stability, openness and industrial competitiveness. Macroeconomic stability is measured by per capita income and inflation. Openness is assessed through foreign trade and foreign direct investments. Industrial competitiveness consists of information-orientation, R&D and employment. On the other hand, the government responsibility class is composed of government competence and corruption. Government competence is measured by the government effectiveness index. Corruption is measured by the corruption index.

The society category is bifurcated into equal opportunity and social safety net. Equal opportunity contains education and national land development. Education is measured by public education spending, human development index and years

of schooling. National land development is assessed through LPI, infrastructure competitiveness and access to drinkable water. Social safety net is evaluation by unemployment and public health, which consists of public health expenditures and child mortality rate.

〈Table 1-2〉 Indicator Structure for Algeria

Category	Class	Sub-class and Variable
Economy	Growth engine	<ul style="list-style-type: none"> <li>- Macroeconomic stability: Per capita income, Inflation</li> <li>- Openness: Foreign trade, FDI</li> <li>- Industrial competitiveness: Information-orientation (Usage of internet, mobile phone users) R&amp;D (Patents, number of researchers), Employment</li> </ul>
	Government responsibility	Government competence: Government effectiveness index Law enforcement: Law enforcement standard Corruption: Corruption index
Society	Equal opportunity	Education: Public education spending, human development index, years of schooling National land development: LPI, infrastructure competitiveness and access to drinkable water.
	Social safety net	<ul style="list-style-type: none"> <li>- Unemployment</li> <li>- Public health: Public health expenditure, child mortality rate</li> </ul>

### 1.2.2. Methodology for Indicator Analysis

The Economic and Social Development Indicator of 2011 uses the normalization method from Osberg and Sharpe (2005) which adopts the normalization method from the Human Development Index (HDI). The maximum value is global Max + 10% and the minimum value is Min - 10%.

The standardization of Linear Scaling Method (LSM) is as follows.

LSM Standardization Indicator = (Value-Min) / (Max-Min)

Max = global Max + |global Max \* 10%|,

Min = global Min - |global Min \* 10%|

Each value is represented in a linear form, ranging from 0 to 1. This conversion enables both international and within domestic comparisons. It also helps to avoid the convergence in mean that other alternative methods have. Thus, the ESDI uses



the standardization of LSM.<sup>1)</sup>

### 1.3. Indicator Analysis

This research has established multiple conditions to analyze Algeria with the ESDI. The selected time period for the series analysis was 2000 and 2009. To compare it with other nations, the following categories were set: 1) Korea, 2) the most developed nations that represent their continents by sheer economic size (hereby known as the Big 4): the United States of America (North America), Germany (Europe), Japan (Asia) and, lastly, Sweden as a country with a well-structured social cohesion, 3) Norway, Malaysia and Chile as resource rich countries, and 4) Morocco and Tunisia as Maghreb nations.

〈Table 1-3〉 The Results of Indicator Analysis for Algeria in comparison with Other Nations: Year 2000

Category	Class	Sub-class	2000				
			Algeria	Korea	Big4	Resource rich countries	Maghreb
Economy			1.45	2.80	3.85	3.39	2.23
	Growth engine		1.89	2.73	3.27	2.90	2.04
		Macroeconomic stability	3.14	3.69	4.26	3.80	3.02
		Openness	1.53	1.82	2.37	2.85	1.86
		Industrial competitiveness	1.00	2.67	3.19	2.06	1.26
	Government responsibility		1.00	2.87	4.42	3.88	2.41
		Government competence	1.00	3.28	4.62	4.05	2.61
		Law enforcement	1.00	3.51	4.59	3.96	2.52
		Corruption	1.00	1.82	4.06	3.65	2.12
	Society			1.50	3.66	4.26	3.77
Equal opportunity			1.87	3.35	4.25	3.60	2.20
		Education	2.07	3.10	3.72	3.28	2.38
		National land development	1.67	3.61	4.77	3.91	2.03
Social safety net			1.14	3.96	4.28	3.94	2.53
		Unemployment	1.00	4.79	4.62	4.67	3.26
		Public health	1.28	3.14	3.94	3.22	1.79

1) For readability, we transform LSM into  $LSM \times 4 + 1$ .

The analysis of the economic and social performance of Algeria in 2000 is shown in <Table 1-3>. Algeria scored 1.45 in the Economy category, while Korea scored 2.8 and 3.8 for the Big 4. Algeria's economic performance was much weaker than the resource rich countries (Norway, Malaysia and Chile) at 3.39 and the Maghreb region (Morocco and Tunisia) at 2.23. Further observation of the results indicated that Algeria had weaker scores in its growth engine, industrial competitiveness and government responsibility.

<Table 1-4> The Results of Indicator Analysis for Algeria in comparison with Other Nations: Year 2009

Category	Class	Sub-class	2009				
			Algeria	Korea	Big4	Resource rich countries	Maghreb
Economy			1.79	3.26	3.83	3.51	2.31
	Growth engine		2.25	3.12	3.26	3.22	2.45
		Macroeconomic stability	2.79	3.93	4.34	3.96	3.07
		Openness	1.89	1.77	1.55	2.58	2.10
		Industrial competitiveness	2.08	3.66	3.91	3.11	2.18
	Government responsibility		1.33	3.40	4.40	3.81	2.18
		Government competence	1.41	3.72	4.40	3.99	2.37
		Law enforcement	1.47	3.77	4.57	4.07	2.48
		Corruption	1.12	2.71	4.24	3.35	1.68
Society	Equal opportunity		2.43	4.06	4.24	3.93	2.78
			1.94	3.95	4.22	3.78	2.51
		Education	2.48	3.70	3.72	3.64	2.73
		National land development	1.40	4.20	4.72	3.92	2.30
	Social safety net		2.91	4.17	4.27	4.08	3.05
		Unemployment	3.76	4.91	4.32	4.62	3.64
		Public health	2.07	3.42	4.21	3.54	2.45

Meanwhile, <Table 1-4> illustrates the economic and social performance of Algeria in the year 2009. Since 2000, Algeria has shown significant improvement,

with an economic score of 1.79 (1.45 in 2000), a gain of 0.34. Although the number was less than the 0.46 achieved by Korea, it is still outstanding relative to other countries. Performance in the society category grew from 1.0 in 2000 to 1.61 in 2009, a remarkable gain compared to other nations. The primary cause behind this rise was the gradual reduction in the unemployment rate.

<Table 1-5> summarizes the results of the review of each class of the ESDI, aimed towards scrupulous creation of new reforms. First, Algeria successfully grew its growth engines more than the countries listed above. Unfortunately, the amount of growth was disappointing for Algeria, hindering the country from becoming a leading nation in the MENA region and from catching up with the income level of OECD countries. The level of government responsibility has increased during the past decade. This figure fell behind other nations. Equal opportunity has had the weakest growth compared to other nations during the past decade. Education gained marginally and national land development fell by absolute standards. Therefore, in order for Algeria to have a balanced socio-economic growth, reforms in Education and National land development are advised. The social safety net improved with lower unemployment rates. Lastly, Algeria's public health conditions have improved, thus contributing to the overall growth of Algeria.

<Table 1-5> Level of Economic and Social Development of Algeria: Comprehensive

Category	Class	Year	Index				
			Algeria	Korea	Big 4	Resource rich countries	Maghreb
Economy	Growth engine	2000	1.89	2.73	3.27	2.90	2.04
		2009	2.25	3.12	3.26	3.22	2.45
		+	0.36	0.39	-0.01	0.36	0.41
	Government responsibility	2000	1.00	2.87	4.42	3.88	2.41
		2009	1.33	3.40	4.40	3.81	2.18
		+	0.33	0.53	-0.02	-0.07	-0.23
Society	Equal opportunity	2000	1.87	3.35	4.25	3.60	2.20
		2009	1.94	3.95	4.22	3.78	2.51
		+	0.07	0.60	0.03	0.18	0.31
	Social safety net	2000	1.14	3.96	4.28	3.94	2.53
		2009	2.91	4.17	4.27	4.08	3.05
		+	1.77	0.21	-0.01	0.14	0.52

<Table 1-6> summarizes the advisable trajectory for Algeria based on its performance in the previous decade. As has been stated, growth engines, government responsibility and equal opportunity require structural reform. In order for growth engines to generate consistent growth, industrial diversification needs to be successful. To enhance government responsibility, reforms in the governance structure must be initiated. In addition, government effectiveness should be improved to increase the level of transparency. To amend equal opportunity, reforms in education and national land development are required. Finally, to augment the social safety net, the continuous creation of jobs and reforms in public health services are recommended in order to increase the standard of living for all Algerians.

<Table 1-6> Reform Assignment for Algeria

Category	Class	Diagnosis	Vision 2030
Economy	Growth engine	Structural reform	Industrial structural reform for rapid and sustainable growth
	Government responsibility	Structural reform	Improved government effectiveness Improved transparency
Society	Equal opportunity	Structural reform	Reform in education Reform in national land development
	Social safety net	Supplementation of the status quo	Enhancement of social safety net Reform in public health

The indicator analysis can help diagnose the current state of Algeria in the world and set the reform agenda for the future. In the following sub-section, the economic and social goals of reform agenda will be examined.

## 1.4. Objective of Economic Sector

Given Algeria's previous accomplishments and the potential for growth in the future, it is advisable for Algeria to set its per capita income goal by 2050 to that of the OECD's average income per capita. The goal of reaching an average OECD per capita income by 2050 had been mentioned by the Commission on Growth and Development of the World Bank. (Commission on Growth and Development, 2008, p. 113) This report focused on the mid-term goal of Algeria in becoming the most prosperous nation in the MENA region.

This report estimated the domestic investment rate and economic growth rate required for the Algerian per capita income to reach the OECD average by 2050.

This method has been commonly used in nations that have undergone rapid development, such as Japan and Korea. For example, in 1960, Japan initiated an income-doubling plan, which aimed at achieving 7.2% growth per annum and doubled the national income within 10 years. Similarly, this study recommends that Algeria establish a plan to triple its national income by 2030. If Algeria can triple its income by 2030, the likelihood of achieving the same level of average income with the OECD countries in 2050 seems more than possible. In order for this rapid growth to occur, Algeria must grow at an annual rate of 6%.

<Table 1-7> examines performances of long-term growth of most economically successful countries. Since 1950, there had been 14 nations that grew by more than 6% for twenty years or more. Greece rapidly grew from 1951 to 1973, while Myanmar and Equatorial Guinea have been the most recent nations to experience swift growth. South Korea holds the record of the longest per capita income growth with 44 years. Next is Singapore with 38 years, and both Japan and China have sustained high growth rates for 33 years.

Countries with fast growth performances can be divided into two categories: 1) Resource rich countries and 2) Successfully industrialized countries. The former includes Oman, Saudi Arabia, Equatorial Guinea, Libya and Botswana. The latter includes South Korea, Japan, China, Singapore, Taiwan and Thailand.

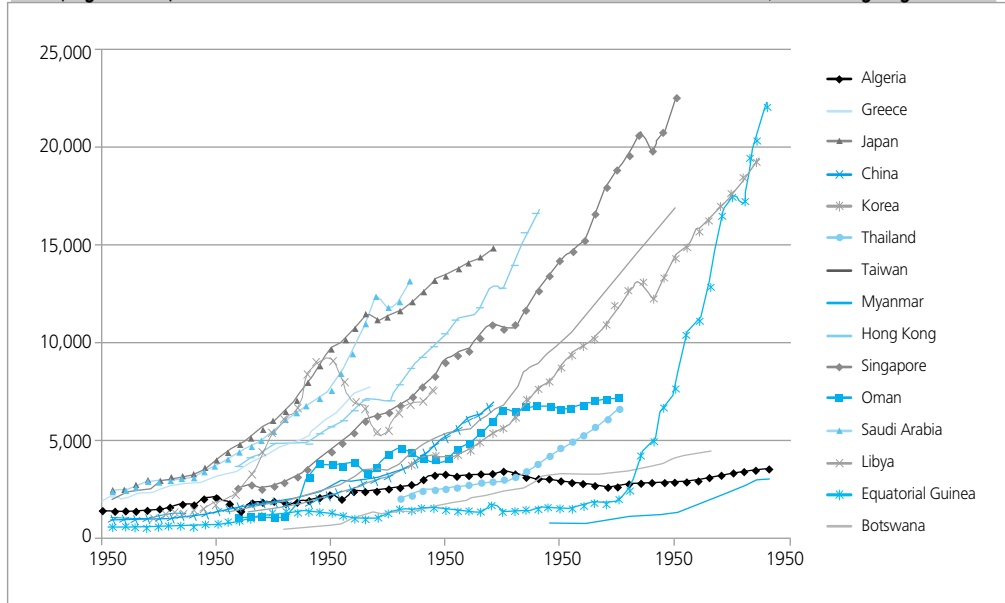
With the exception of Equatorial Guinea, most of the resource rich countries suffered from subdued growth. Following the period of rapid growth from 1951 to 1977, the Saudi Arabian per capita income stood at \$13,064. In 2008, the figure had dropped to \$8,435. The drop was more substantial for Libya. As for Oman and Botswana, the trend for economic growth seems to have ceased. On the contrary, nations that have generated growth through industrialization have continued to grow at a continuous pace.

〈Table 1-7〉 Countries with Over 6% Growth for Two Continuous Decades

Country	Period	Growth Rate	GDP per Capita		
			Starting Year	Finishing Year	2008
Greece	1951-1973	6.02%	2,062	7,655	16,362
Japan	1951-1984	6.00%	1,921	14,773	22,816
China	1975-2008	6.14%	871	6,725	6,725
Korea	1963-2007	6.08%	1,316	19,243	19,614
Thailand	1976-1995	6.06%	2,091	6,577	8,750
Taiwan	1961-2000	6.31%	1,398	16,872	20,926
Myanmar	1989-2008	7.05%	774	3,104	3,104
Hong Kong	1962-1988	6.07%	3,652	16,716	31,704
Singapore	1962-2000	6.06%	2,520	22,518	28,107
Oman	1962-1995	6.02%	1,084	7,159	8,332
Saudi Arabia	1951-1977	6.27%	2,374	13,064	8,435
Libya	1951-1979	6.10%	857	7,565	2,994
Equatorial Guinea	1951-2008	6.40%	540	22,049	22,049
Botswana	1966-2003	7.51%	473	4,429	4,769

More information on growth can be inferred from <Table 1-7>. Nations that have successfully industrialized show a persistent trend of growth, while the majority of resource rich countries suffer from subdued growth. Algeria's economic performance shows a similar trend to the latter group.

<Figure 1-2> Nations with Over 6% Growth for Two Continuous Decades, Including Algeria



Source: Maddison, Angus, Historical Statistics of the World Economy, 2011

<Figure 1-2> illustrates the reliance on natural resources for national income and exports among rapidly developed economies. For industrialized countries, the proportion of natural resources in exports was less than 20%. However, over 98% of Algeria's exports are in natural resources.

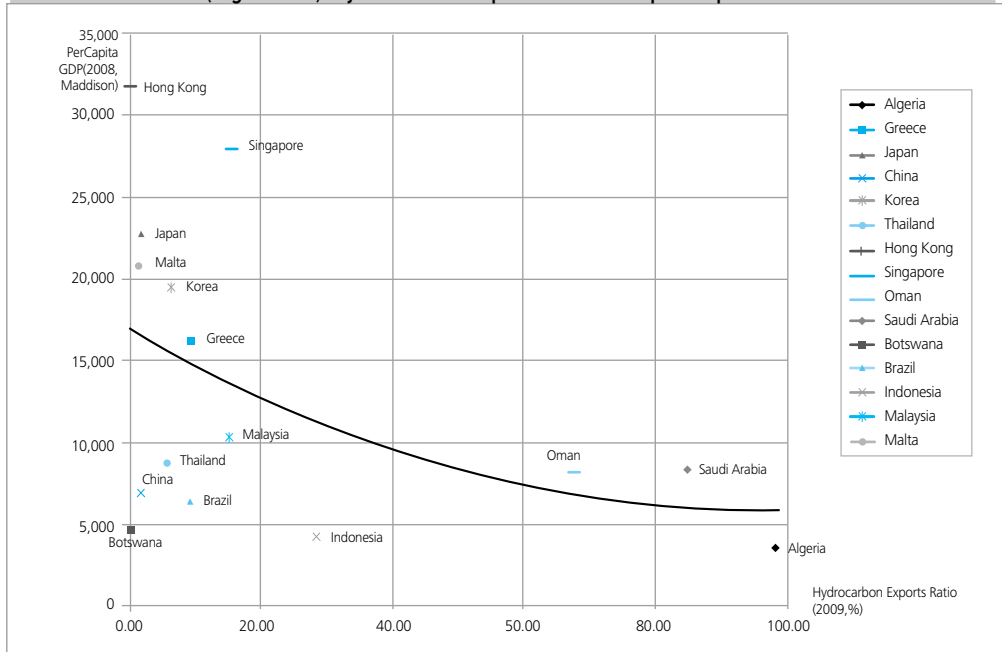
To summarize, nations with rapid economic growth can be classified into the following groups. The first group consists of nations that have grown rapidly and have joined the ranks of developed economies. These include Japan, Korea, Singapore, Hong Kong and Taiwan. High growth rates had persisted in these nations for more than a generation.

The second group includes the resource-rich countries. Oil exporters such as Equatorial Guinea, Oman, Saudi Arabia and a natural resource exporter, Botswana, fall under this second group.

The third group is composed of nations that achieve growth but still lie within the ranks of a less developed nation in terms of per capita income. China and Thailand are a part of this group.

Lastly, Myanmar grew from \$774 per capita income in 1989 to \$3,100 in 2008; however, it is still classified as an underdeveloped country.

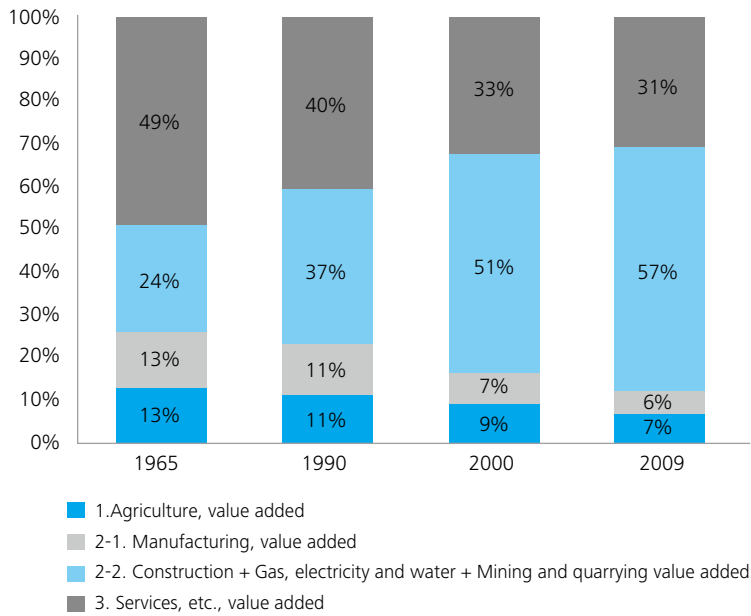
〈Figure 1-3〉 Hydrocarbon Exports Ratio and per Capita GDP



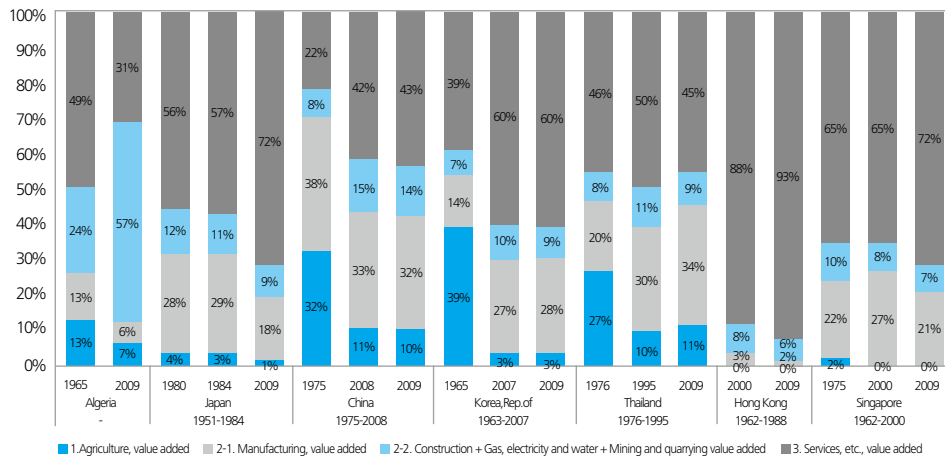
This report has examined the industrial structure of the starting and finishing year of rapid growth and the 2009 industrial structure of Algeria as well as a few other economies for comparison. In 1965, the Algerian economy was composed of the following sectors: 13% of manufacturing and 49% of service industries. However, in 2009 the figures were: 6% of manufacturing and 31% of service industries. Growth in the weight of the petroleum sector was to be blamed for the reduction in manufacturing and service industries. On the other hand, nations that have succeeded in industrialization, such as Korea, China, Singapore and Thailand, had manufacturing sectors that took up more than 20% of the economy. Japan recently had a boost in its service sector, and as a result, its manufacturing sector shrank to 18%. Korea's manufacturing sector doubled from 14% in 1965 to 28% in 2009. The service sector also increased from 39% to 60% during the same period, indicating a modernization of the industrial structure. Nations that have based rapid growth on industrialization experienced an increase in shares of manufacturing within an economy. Growth in the manufacturing sector has led to higher per capita income. This has given rise to the service sector.



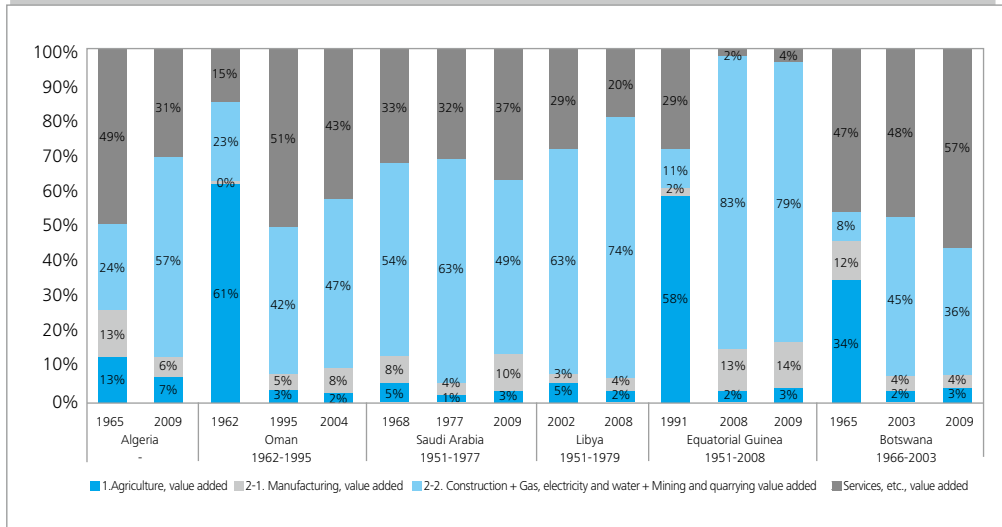
〈Figure 1-4〉 The Industrial Structure of Algeria



〈Figure 1-5〉 The Transformation of Industrial Structure in Rapid-growth Economies: Nations that have Industrialized Successfully



(Figure 1-6) The Transformation of Industrial Structure in Rapid-growth Economies: Resource-rich Countries.



In conclusion, sustainable growth requires economic growth that is based on industrialization. Industrialization plays a crucial role in absorbing a less productive labor force in agriculture into a more productive manufacturing sector. This transition of the labor force, or labor mobility, results in higher incomes and a higher standard of living. A continuous growth in manufacturing also encourages the development of the service sector, as demonstrated by Korea and Japan. Given the close link between the living standards and the size of the service sector, improvement in this sector will prove to be a great challenge to overcome after industrialization gets underway.

## 1.5. Objective of Social Sector

Unlike economic objectives, a quantitative analysis is more difficult and also rather unrealistic to execute when implementing social objectives. The ideal method would be to establish both quantitative and qualitative objectives through the creation of social statistics. However, in this stage, only qualitative objectives can be established.

After inspecting Algeria's development stage with the ESDI, the need for a social reform program has emerged, similar to the economic sector. More information on social visions will be discussed in the policy section. In this sub-section, the report advises Algeria to become an example of sound social reform amongst MENA nations. Both economic and social reforms must take place in order for Algeria to triple its income by 2030.

Directing economic and social reform simultaneously is defined as incursive growth. An inclusive growth focuses on the development in the quality of life along with economic growth. Thus, the scenario created in this report emphasizes the importance of both economic and societal development based on incursive growth. Five policy challenges have been presented for incursive growth: 1) The restructuring of Algerian industries through diversification. 2) Governance reform. 3) Development of human capital through education. 4) National land development plan based on growth and equality. 5) Improvement in public health through reform.

## 2. Algeria and the Global Economy

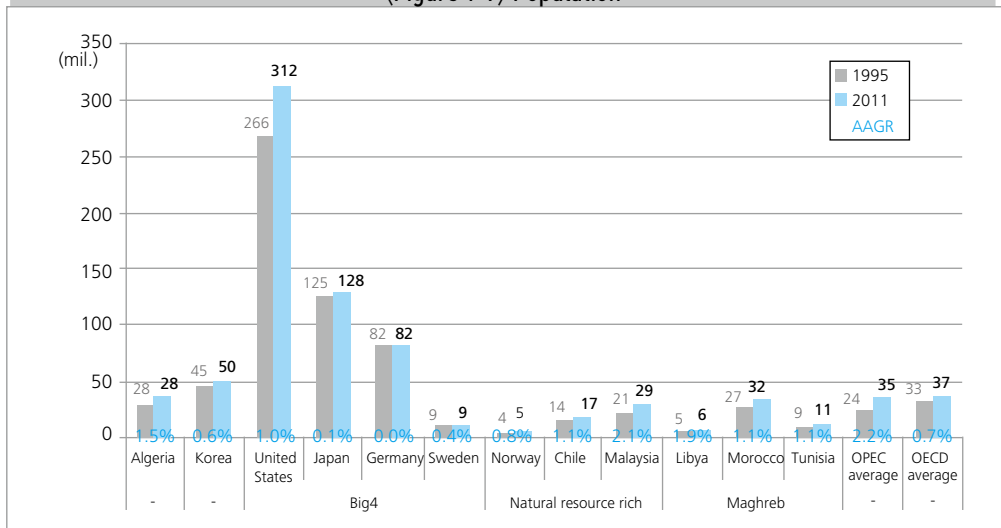
### 2.1. Economic Trends of Algeria and Major Regions

In order to assess the current status of Algeria in the global economy, a comparative analysis has been conducted with Korea, the Big 4 countries (the United States, Japan, Sweden and Germany), resource rich countries (Norway, Malaysia and Chile), 12 OPEC (Organization of Petroleum Exporting Countries) membership countries<sup>2)</sup> and the Maghreb countries. The status of Algeria in the global economy and economic trends of Algeria have been examined through factors such as population, GDP, GDP per capita, unemployment rate, weight of the private sector, FDI, trade, efficiency of government and global competitiveness.

First of all, when comparing Algeria with other countries in respect to the size of its economy in 2011, it could be noted that the population of Algeria is 36 million, which is a little less than that of Korea but equal to the average population of OPEC countries. Among the comparable resource rich countries, the population of Malaysia is 29 million, thus being slightly less than that of Algeria. Among the Maghreb countries, the population of Morocco is about 32 million, thus being similar to that of Algeria. During the period of 1995 to 2011, the average annual population growth rate of Algeria was 1.5%, being relatively higher than that of the OECD average, including Korea and the Big 4 countries, but comparatively lower than that of the OPEC countries at 2.2%. Among the Maghreb countries, the average annual rate of population growth of Libya is the highest at 1.9%.

2) 12 OPEC member countries include Algeria, Angola, Ecuador, Iraq, Iran, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela.

〈Figure 1-7〉 Population



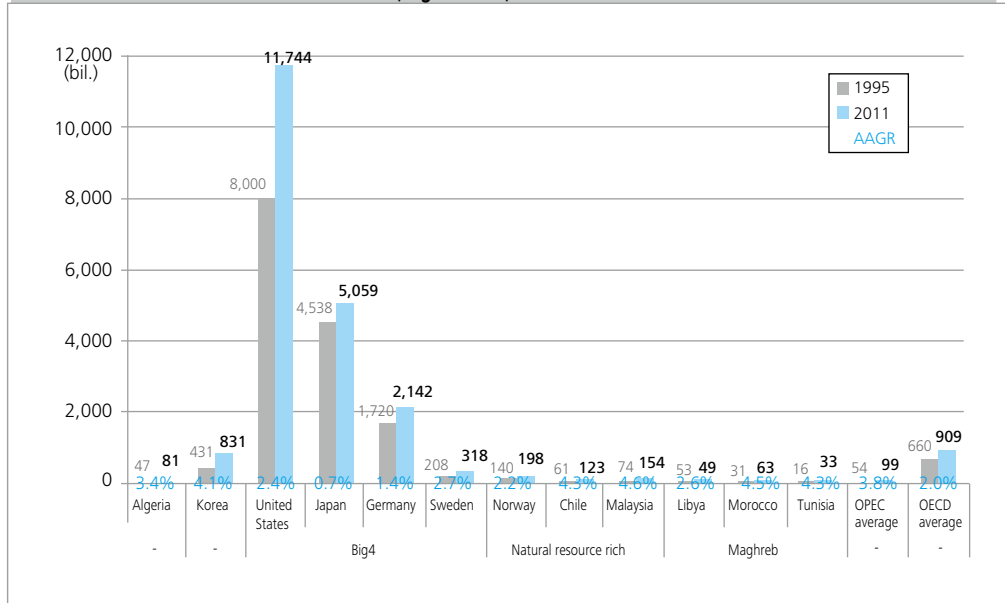
Source: Data from World Bank, WDI, Population, total

Note: 1) Setting 1995 and 2011 as standards, data are from the nearest year.

2) Numbers in bold are AAGR (Average Annual Growth Rate) from 1995 to 2011.

The GDP of Algeria accounted for \$189 billion in 2011, which is 1/6 of that of Korea (\$1.16 trillion). Among the resource rich countries with a similar population size to Algeria, Malaysia has a relatively large economy with a GDP of \$279 billion. Among the Maghreb countries, Algeria is the biggest in terms of its economy. The GDP of Morocco, which has a similar population to Algeria, accounts for \$100 billion, slightly less than that of Algeria. In terms of population size, Algeria is at the average level of the OPEC countries, but is somewhat below the average of the OPEC countries from a GDP perspective. According to WDI data from the World Bank, the average annual rate of real GDP growth of Algeria was 3.4% during the period from 1995 to 2011. Nonetheless, the Maghreb countries recorded 2.6% to 4.5% annual rate of real GDP growth while resource rich countries recorded 2.2% to 4.6% during the same period. The OPEC countries, including Algeria, recorded 3.8%; the OECD countries recorded 2.0%.

〈Figure 1-8〉 Real GDP



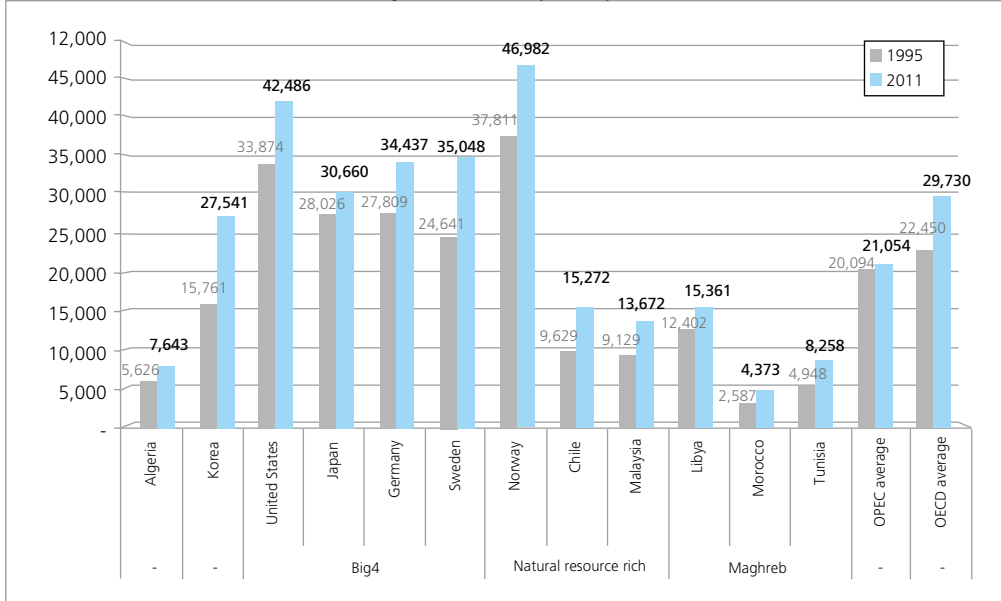
Source: Data from the World Bank, WDI, GDP (constant 2000 US\$)

Note: 1) Setting 1995 and 2011 as standards, data are from the nearest year.

2) Numbers in bold are AAGR (Average Annual Growth Rate) from 1995 to 2011.

When comparing the GDP per capita, Algeria recorded \$5,626 in 1995 and \$7,643 in 2011, thus showing an average annual growth rate of 1.92%. During the same period, the average annual growth rate of the OPEC countries was 0.29%, while that of the OECD was 1.76%. This shows that Algeria recorded a relatively higher average annual growth rate than the OECD and OPEC countries. However, the GDP per capita of Algeria was still very low compared to Korea or the Big 4 countries, and relatively low compared to other resource rich countries, such as Norway, Chile and Malaysia. Among the neighboring Maghreb countries, the GDP per capita of Libya accounted for \$15,361 in 2011 and \$8,258 in Tunisia, a similar level to that of Algeria while Morocco's \$4,373 is far below that level.

〈Figure 1-9〉 GDP per Capita

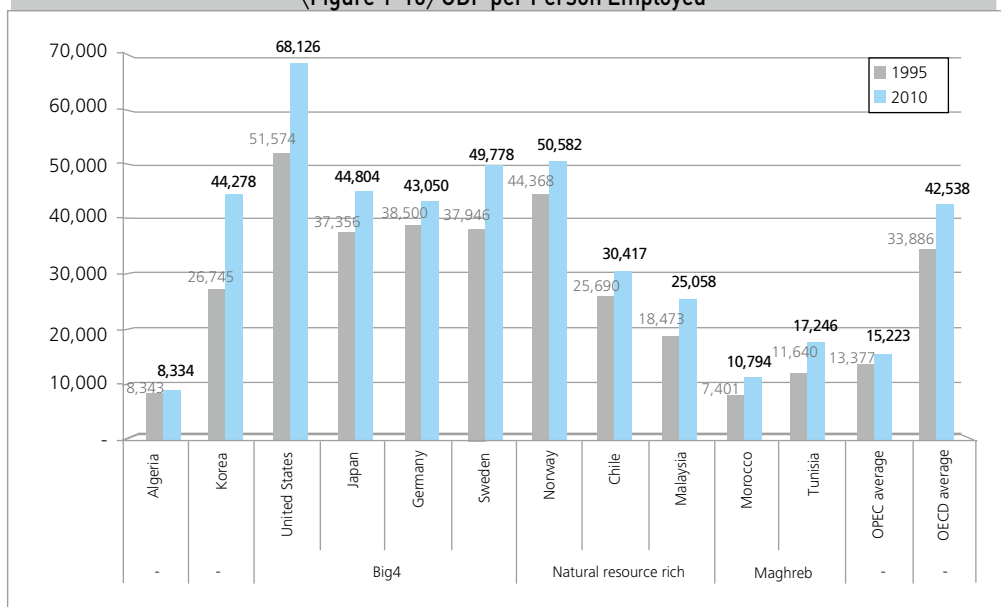


Source: Data from the World Bank, WDI, GDP per capita, PPP (constant 2005 international \$)

Note: Setting 1995 and 2011 as standards, data are from the nearest year.

With regards to GDP per person employed, used to estimate labor productivity, Algeria has a relatively lower level than the GDP per capita figure. The GDP per person employed in Algeria was \$8,334 in 2011, thus lower than that of Morocco at \$10,794, despite it being the only neighboring country with a lower GDP per capita than Algeria. Also, the GDP per person employed in Algeria in 2011 has slightly declined from \$8,343 relative to that of 1995. This type of low labor productivity is widespread among major petroleum exporting countries; the average labor productivity of OPEC countries is 0.3 times as much as the OECD countries, while the average GDP of the OPEC countries is 0.7 times as much as the OECD. However, among the resource rich countries, the GDP per capita of Chile and Malaysia are only half as much as the average GDP per capita of the OECD, but the labor productivity of the two countries is 0.7 times as much as the average labor productivity of the OECD.

〈Figure 1-10〉 GDP per Person Employed

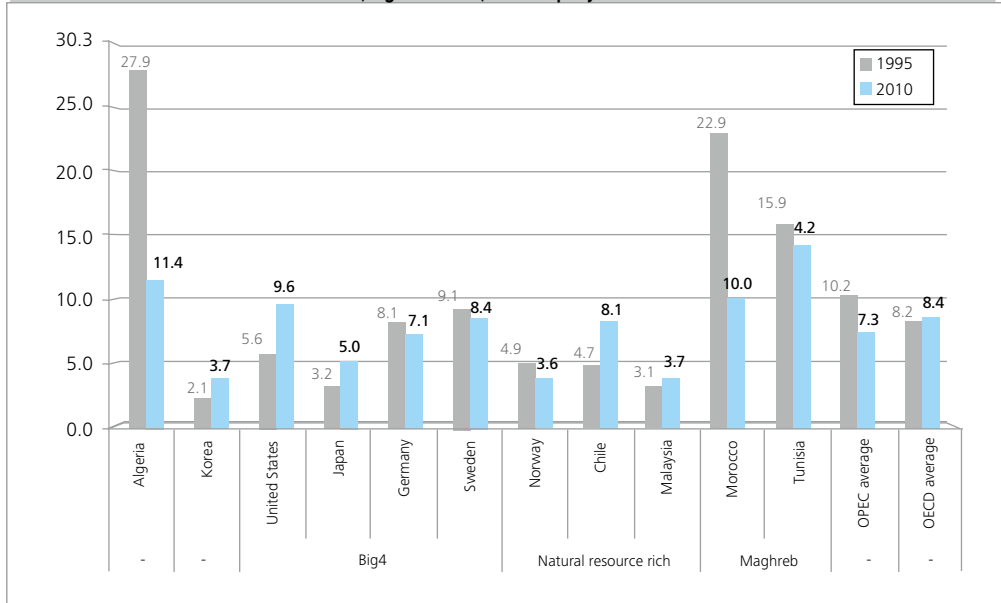


Source: Data from the World Bank, WDI, GDP per person employed (constant 1990 PPP \$)

Note: Setting 1995 and 2010 as standards, data are from the nearest year.

In 1995, Algeria recorded an extremely high unemployment rate of 27.9%. However, it improved drastically in the 2000s and the unemployment rate declined to 11.4% in 2011. Yet, compared to other comparable countries, Algeria's unemployment rate is still relatively high. Among comparable countries, Korea has the lowest unemployment rate of 3.7%. Among the resource rich countries, Malaysia has the lowest unemployment rate of 3.7%. The Maghreb countries, like Algeria, record fairly high unemployment rates; Morocco shows an unemployment rate of 10.0%, which is still a big improvement from 1995; Tunisia has an unemployment rate of 14.2%, thus being higher than that of Algeria. Meanwhile, the average unemployment rate of the OPEC countries is 7.3%; the average unemployment rate of the OECD countries is 8.4%.

〈Figure 1-11〉 Unemployment



Source: Data from the World Bank, WDI, Unemployment, total (% of total labor force)

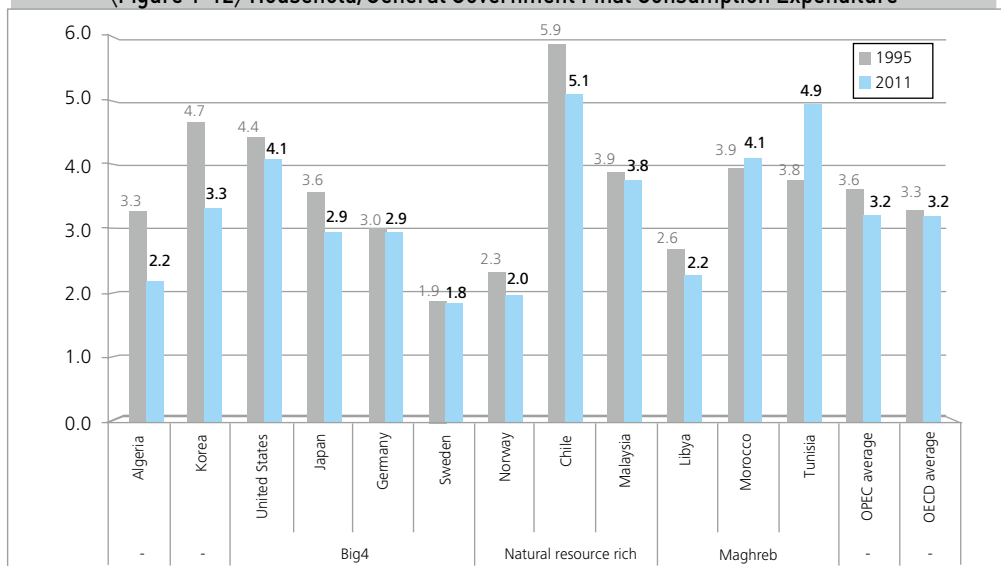
Note: Setting 1995 and 2010 as standards, data are from the nearest year.

In order to examine the share of economic activities for the private sector, the ratio of household expenditure to government expenditure of each country is analyzed. The ratio of household expenditure to government expenditure in Algeria has declined from 3.3 in 1995 to 2.2 in 2011. Among the comparable countries, Sweden, Norway and Libya show ratios less than or similar to that of Algeria. With a recent expansion in government expenditure, the ratio of Korea has declined from 4.7 in 1995 to 3.3 in 2011, which is at a level of the average OECD country. Among the OPEC countries, the average ratio of household expenditure to government expenditure indicates 3.2. In the case of the Maghreb countries, except Libya, the weight of household expenditure is high; Morocco records 4.1 and Tunisia 4.9. Also, among the resource rich countries, Chile and Malaysia have a relatively high ratio of household expenditure to government expenditure with 5.1 and 3.8, respectively.

When economic openness is examined through FDI net inflow ratio to GDP, the FDI net inflow ratio to GDP of Algeria in 2011 was 1.4%, which is three times higher than that of Korea with 0.4%, and is at a similar level to the United States with 1.5%. Among the Big 4 countries, Sweden scored the highest with 2.28%. The resource rich countries range from 2.8% to 7%, which are considered to be relatively high. Also, the other Maghreb countries range from 2.2% to 3.2%, thus recording higher than that of Algeria. The average FDI net inflow ratios of the OPEC countries and OECD are 1.33% and 3.3%, respectively.



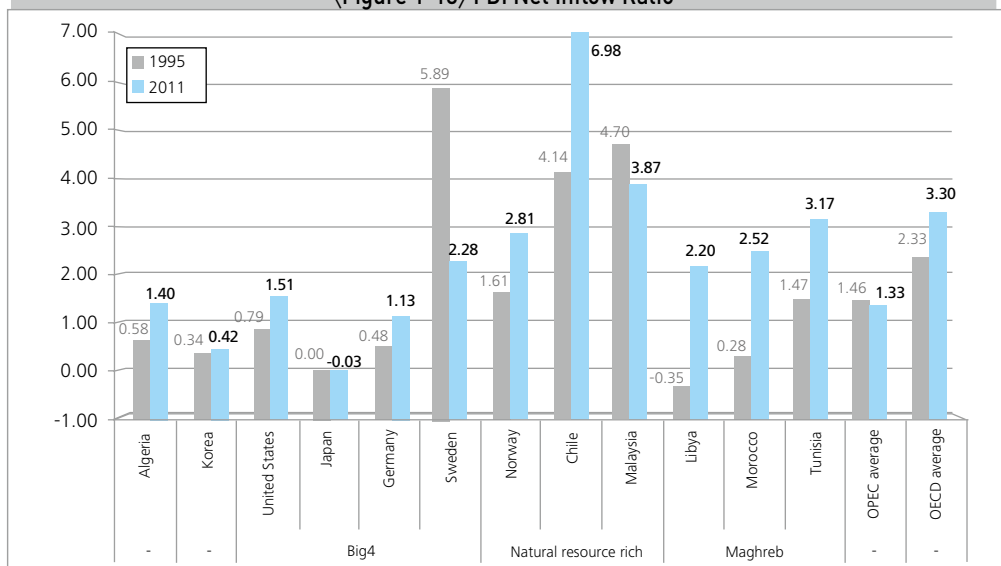
〈Figure 1-12〉 Household/General Government Final Consumption Expenditure



Source: Data from the World Bank, WDI, Household final consumption expenditure (current US\$), General government final consumption expenditure (current US\$)

Note: Setting 1995 and 2011 as standards, data are from the nearest year.

〈Figure 1-13〉 FDI Net Inflow Ratio

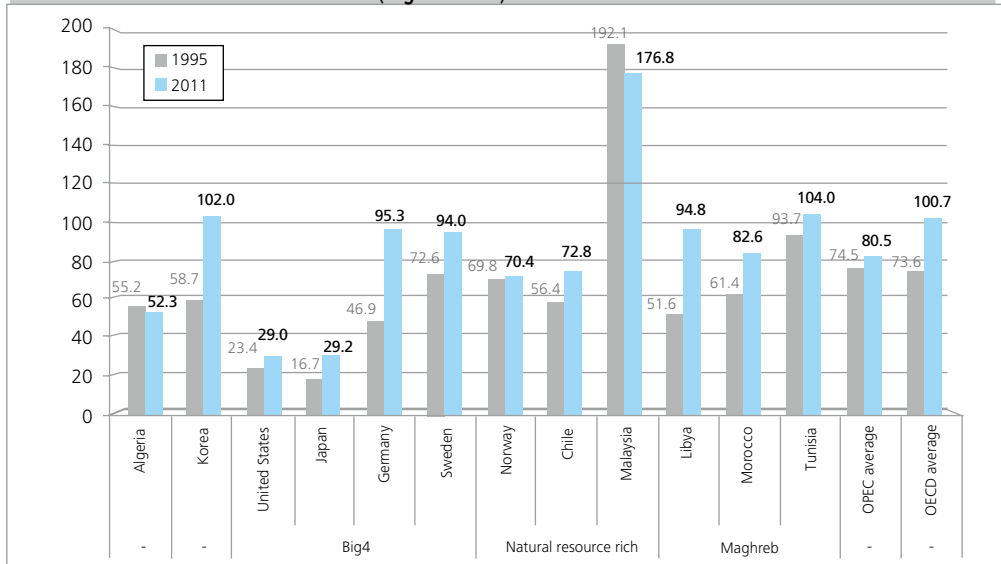


Source: The World Bank, WDI, Foreign direct investment, net inflows (% of GDP).

Note: 1) Setting 1995 and 2011 as standards, data are from the nearest year.

2) The average ratio of OECD excludes data from Luxembourg because the ratio of FDI net inflow to GDP in 2011 is 543%, which is too high and could act as an outlier.

〈Figure 1-14〉 Trade Ratio



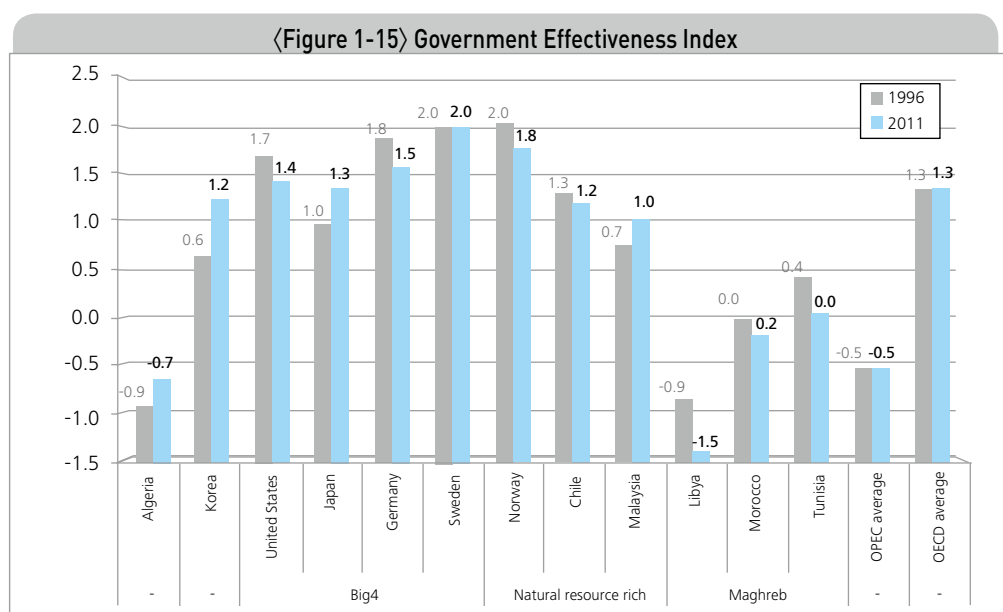
Source: Data from the World Bank, WDI, Trade (% of GDP)

Note: Setting 1995 and 2011 as standards, data are from the nearest year.

Trade ratio can be examined as another indicator to understand economic openness. Algeria's trade ratio to GDP in 2011 was 52.3%, declining slightly from 55.2% in 1995. During the same period, Korea's trade ratio to GDP increased from 58.7% to 102.0%, thus becoming twice as much as Algeria's. Among the Big 4 countries, the trade ratios to GDP of both Japan and the United States are approximately 29%, and Germany's and Sweden's are approximately 95%. Among the resource rich countries, Malaysia's trade ratio to GDP is exceptionally high with 176.8%, while both Chile's and Norway's are approximately 71%. The Maghreb countries, except for Algeria, have a range of trade ratios to GDP, from 82% to 104%. Lastly, the average trade ratio to GDP of the OPEC countries is 80.5%, while that of the OECD countries is 100.7%.

Next, government effectiveness is compared based on the Government Effectiveness Index (GEI) reported by the World Bank. The GEI is a score that ranges from -2.5 to 2.5 inclusive, scaled with a comprehensive assessment of quality of public service, independence from political pressure, establishment and execution of policies and trust in government policies. Algeria's GEI recorded -0.9 in 1996, improving to -0.7 in 2011. However, it is still much lower than 1.3, the average GEI of the OECD countries, and slightly lower than -0.5, the average GEI of the OPEC countries. The Big 4 countries, the resource rich countries and Korea have higher than or similar scores to the average GEI of OECD. Among the Maghreb countries, Morocco and Tunisia scored -0.2 and 0.0 respectively, which falls short of the average GEI of the OECD countries, but is still higher than Algeria's GEI. Libya's GEI radically

declined from -0.9 in 1995 to -1.5 in 2011, making Libya the country with the worst government effectiveness among the comparable countries as well as Algeria.

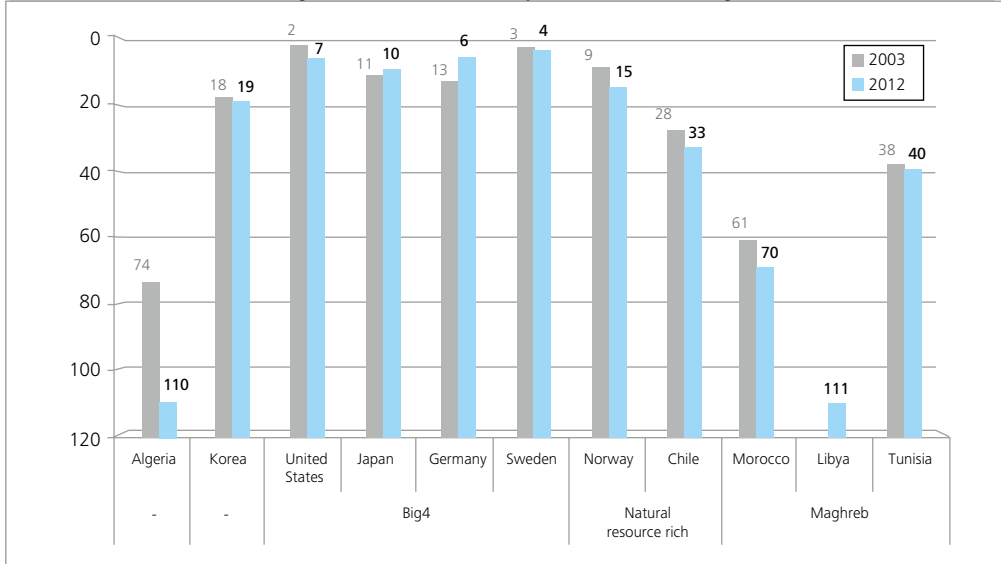


Source: Data from the World Bank Group, WGI, Government Effectiveness

Note: Data from the years 1996 and 2011.

Finally, national competitiveness is examined based on the Global Competitiveness Ranking released annually by the World Economic Forum (WEF). Algeria has been included in the comparable countries since the year 2003 and was ranked 74th in 2003. However, its ranking has radically fallen to 110th in 2012. Korea was ranked 19th in 2012, and all of the Big 4 countries are ranked among the top 15 without any apparent changes in the ranking. Among the resource rich countries, Norway is ranked 15th and Chile is ranked 33rd. Compared to the year 2003, both countries declined in their ranking. Among the Maghreb countries, Morocco is ranked 70th and Tunisia is ranked 40th. Both countries also slightly declined in each ranking compared to the year 2003. For the first time, Libya was ranked in 2012, thus ranking 111th, placed right behind Algeria.

<Figure 1-16> Global Competitiveness Ranking



Source: Data from WEF, the Global Competitiveness Index

Note: Rankings are from 2003, the year when Algeria was first ranked, and 2012, the most recent year. As Tunisia was not ranked in 2012, the ranking for Tunisia is from the year 2011.

## 2.2. Algeria as a Resource Rich Country

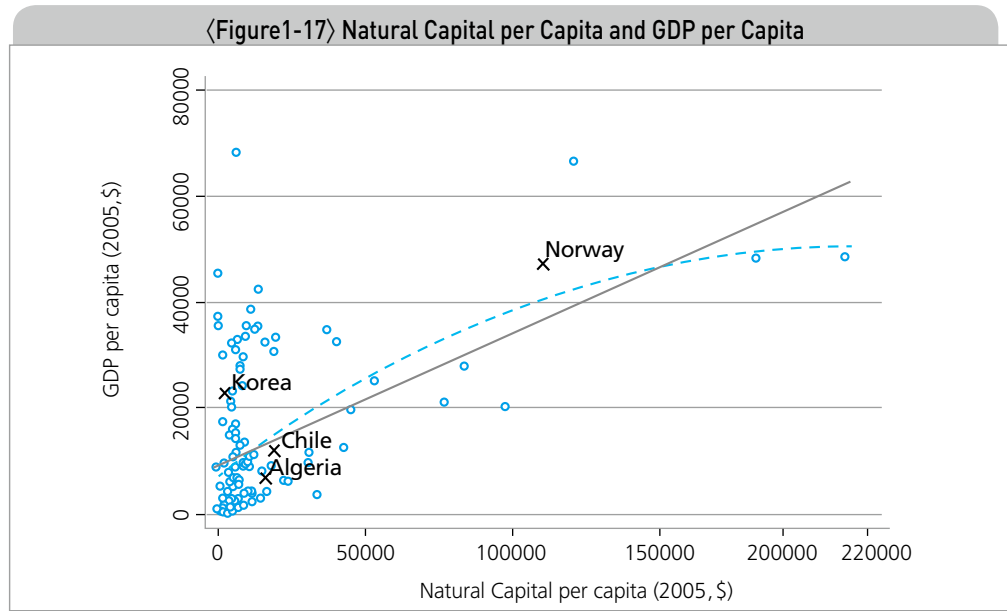
The main characteristic of Algeria is that Algeria is a resource rich country. As previously examined, this is clearly shown through the fact that the share of hydrocarbon exports in overall exports was 98.2%<sup>3)</sup> in 2011 and the share of hydrocarbon industries in GDP was 43.1%<sup>4)</sup> in 2010. In this section, it has been measured in two aspects with regard to what relationships exist between an abundance of natural resources and GDP per capita growth rate, HDI, Doing Business Index, Government Effectiveness, E-readiness Index, etc., in order to examine the characteristics of the resource rich countries. One is the proportion of natural resources in total national wealth, and the other is the ratio of hydrocarbon exports in overall exports. In addition to Algeria and Korea, Norway, Malaysia and Chile, which successfully survived the resource curse, are also examined in this section.

First of all, as illustrated below in <Figure 1-17>, the relationship between natural capital per capita and GDP per capita is a positive correlation. For instance, it demonstrates that Norway simultaneously has a very high natural capital per capita and GDP per capita. However, like Korea, a considerable number of countries still have a high GDP per capita despite the lack of natural capital. Algeria has a relatively

3) Data were taken from the UN COMTRADE.

4) Data were given by the Algerian government.

high natural capital per capita, but has a relatively low GDP per capita when compared to other countries like Chile, which has a similar level of natural capital per capita.



Source: Natural capital per capita data is from the World Bank (2011), The Changing Wealth of Nations. GDP per capita is the World Bank's GDP per capita, PPP (constant 2005 international \$).

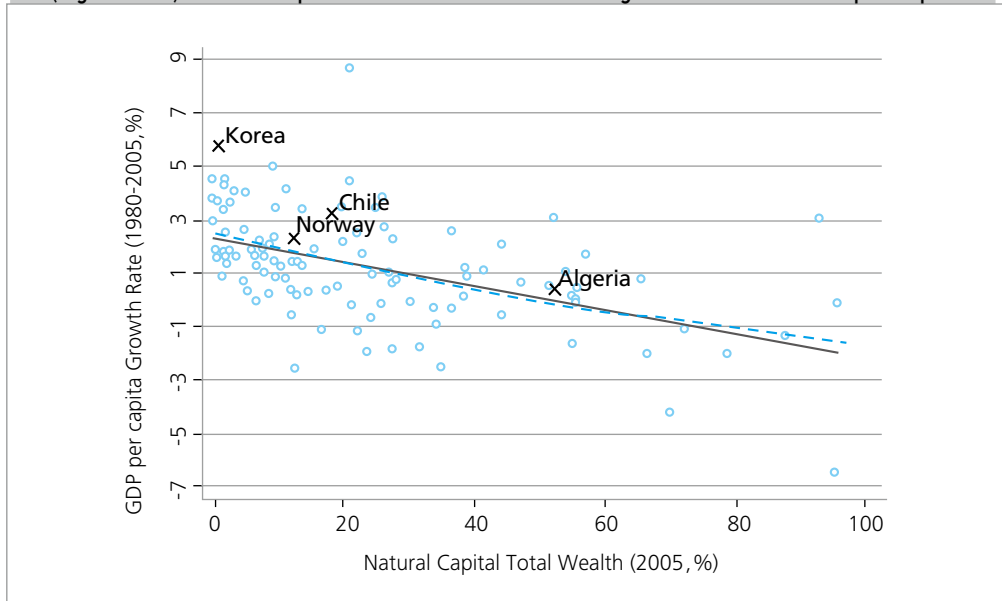
Note: The solid line is linearly fitted values and the dashed line is quadratic fitted values.

Next, the natural capital ratio and the relationship of natural capital and other major variables are examined.<sup>5)</sup> As seen in <Figure 1-18>, there is a negative correlation between the GDP per capita growth rate and natural capital ratio. This proves that the resource curse, which means that the existence of natural resources could hurt economic growth in the long term, is valid. Also, as illustrated from <Figure 1-19> to <Figure 1-23>, there is largely a negative correlation to a greater or lesser degree between the natural capital ratio and business environment, HDI, government effectiveness and informatization.

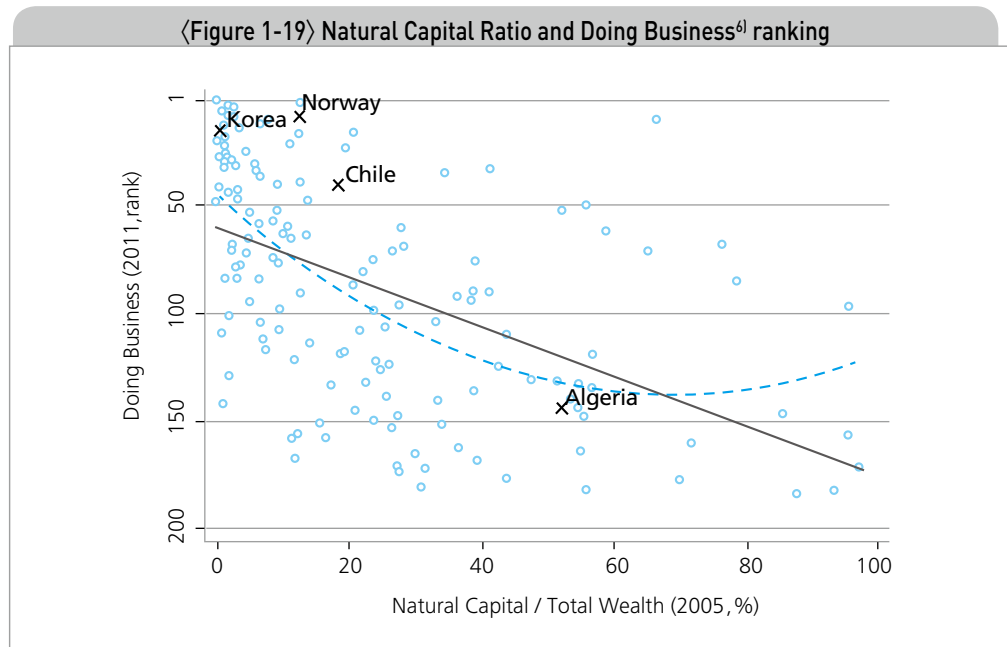
5) Both national wealth and natural capital data are from the World Bank (2006, 2011). This part of the report is based on Chun, et al., (2012).

More specifically, as shown in <Figure 1-18>, the natural capital ratio of Algeria is 50%, which is in the top tier among the comparable countries, while the average annual GDP per capita growth rate from 1980 to 2005 is less than 1%. On the other hand, despite about 20% of the natural capital ratio, Chile and Norway still achieved the average annual GDP per capita of 2 to 4% growth rate during the same period, being fairly high. In the case of Korea, the natural capital ratio is only 1%, which is comparatively low, while the average annual GDP per capita growth rate is 5.4%, being very high.

<Figure 1-18> Natural Capital Ratio and the Annual Average Growth Rate of GDP per Capita



The natural capital ratio and Doing Business ranking are compared in <Figure 1-19>. Korea and Norway are in the top 20 group and Chile is also ranked fairly high at 41. Algeria is ranked 143rd, which means that Algeria is not providing a business-friendly environment. It can be seen that many countries with a high natural capital ratio are ranked in the bottom tier.



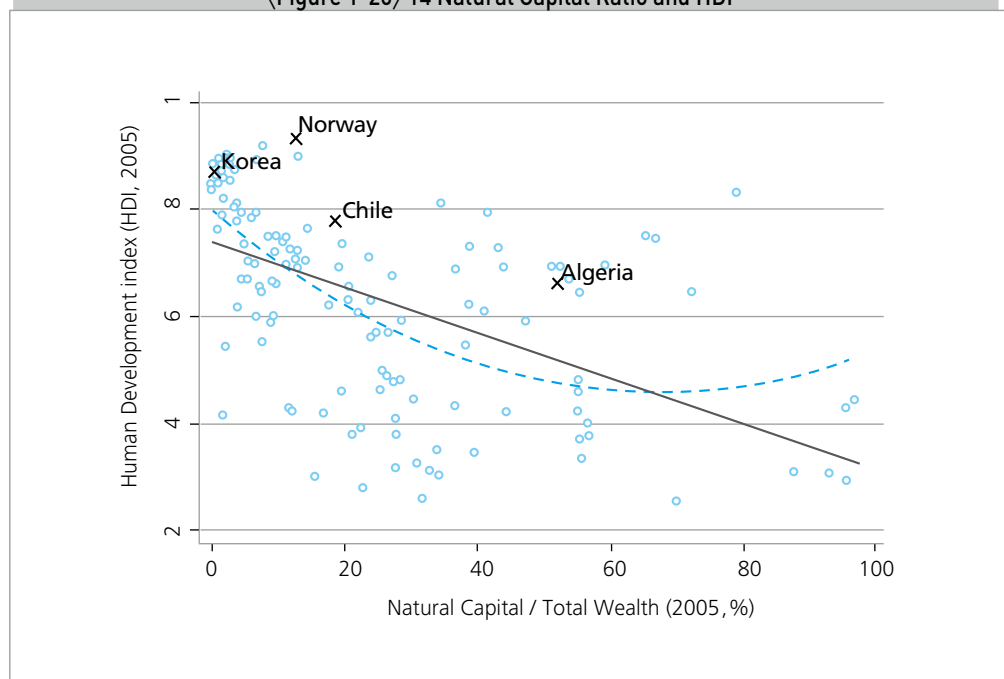
Source: Natural capital ratios data are from the World Bank (2011), The Changing Wealth of Nations. Doing Business ranking data is from The World Bank Group, Doing Business

Note: The solid line is linearly fitted values and the dashed line is quadratic fitted values.

6) <http://www.doingbusiness.org/>

In <Figure 1-20>, the natural capital ratio and HDI index are compared. Korea and Norway still have a high HDI index. In particular, Norway's HDI index is 0.94, which is in the very top tier. Chile's HDI is 0.80, fairly high, and Algeria's HDI is 0.69, which can be classified in the mid-tier. It can be observed that among the countries with similar or higher natural capital ratio than Algeria, there are a few other countries that have a lower HDI index than Algeria.

<Figure 1-20> 14 Natural Capital Ratio and HDI<sup>7)</sup>



Source: Natural capital ratios data are from the World Bank (2011), The Changing Wealth of Nations. HDI data are from UNDP International Human Development Indicators

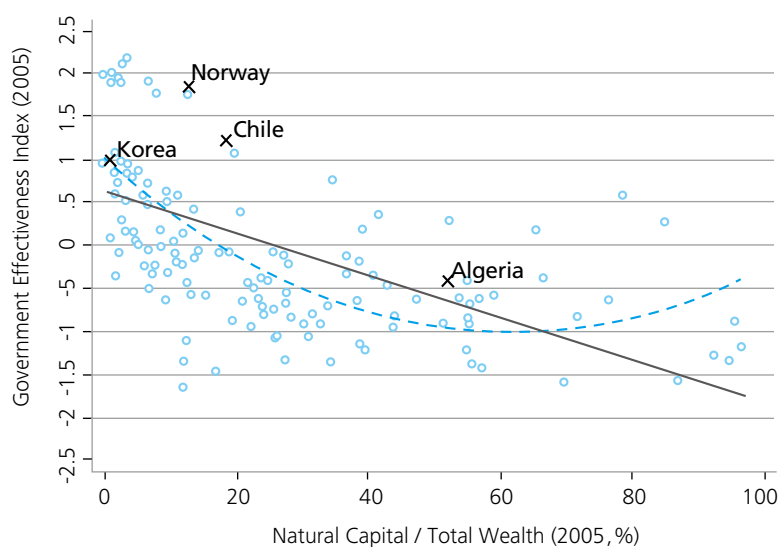
Note: The solid line is linearly fitted values and the dashed line is quadratic fitted values.

7) <http://hdrstats.undp.org/en/indicators/>



As illustrated in <Figure 1-21>, where natural capital ratio and government effectiveness index are compared, a similar trend to the previous comparison with the HDI index appears. However, the ranking of Korea is relatively low while that of Chile is relatively high. Algeria's government effectiveness is also ranked in the mid-tier, but compared to other countries with a similar natural capital ratio, Algeria's government effectiveness is relatively high.

<Figure 1-21> Natural Capital Ratio and Government Effectiveness

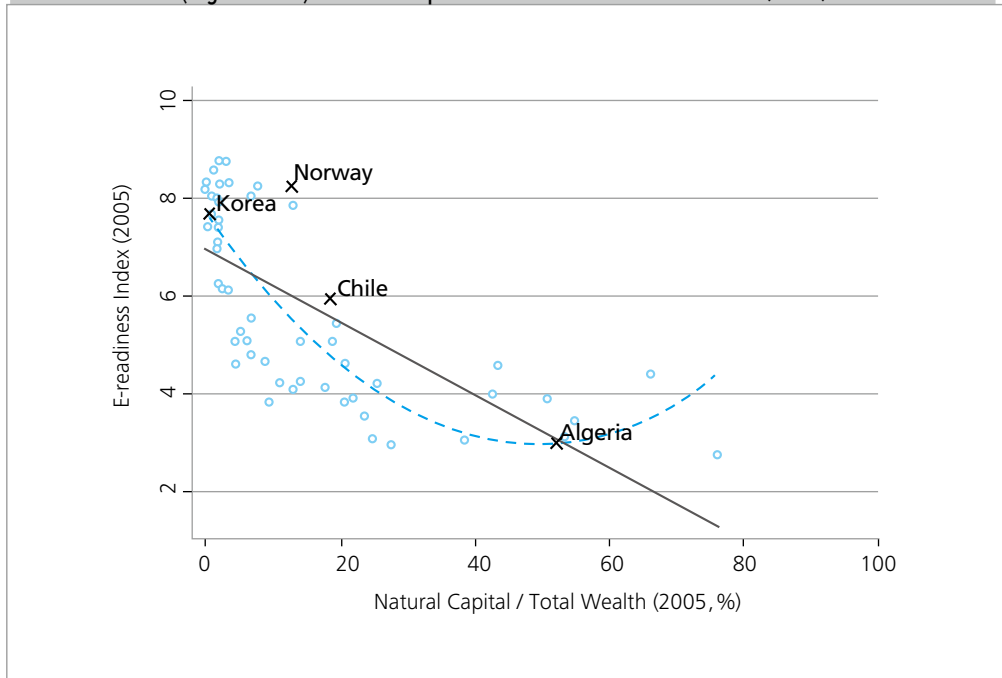


Source: Natural capital ratios data are from the World Bank (2011), The Changing Wealth of Nations. Government Effectiveness data are from the World Bank, Worldwide Governance Indicators

Note: The solid line is linearly fitted values and the dashed line is quadratic fitted values.

In order to compare the degree of informatization, the E-readiness index released by the Economist Intelligence Unit is examined in <Figure 1-22>. As the result of this analysis, Norway and Korea are in the top tier and Chile is in the mid-tier, while Algeria is in the bottom tier. This implies that the degree of informatization in Algeria is very low. Compared to other countries with a similar natural capital ratio, the degree of informatization in Algeria is still relatively low.

<Figure 1-22> Natural Capital Ratio and E-readiness Index (2005)

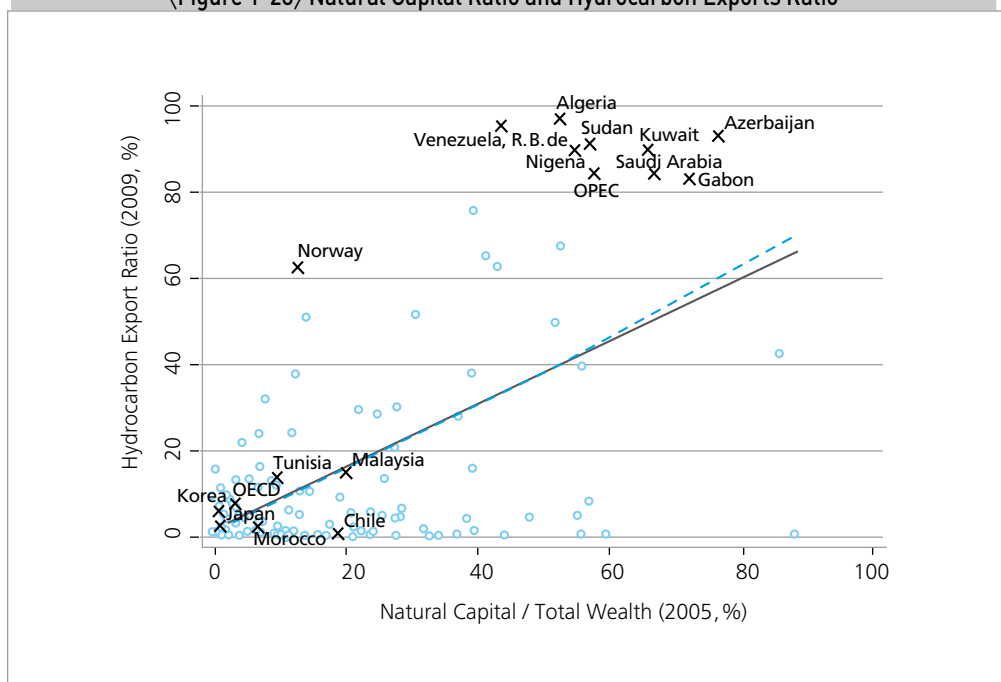


Source: Natural capital ratios data are from the World Bank (2011), The Changing Wealth of Nations. E-readiness data are from Economist Intelligence Unit (2005), the 2005 e-readiness rankings.

Note: The solid line is linearly fitted values and the dashed line is quadratic fitted values.

The ratio of hydrocarbon exports to total exports is compared to other major variables in <Figure 1-23>. First of all, there is a strong positive correlation between the hydrocarbon export ratio and natural capital in <Figure 1-23>. It is obvious that when a country possesses abundant natural resources, the ratio of hydrocarbon exports - which make up a considerable portion of the natural resources - to total exports is considerably high. Also, it can be observed that the group located in the upper right corner of the graph where all OPEC countries, including Algeria, are positioned and the group located in the lower left corner of the graph where all OECD countries, including Korea, are positioned are divided into two major groups, with only few countries remaining in the middle. Therefore, they can be classified as two groups - one with high economic dependency on natural resources and the other with low economic dependency on natural resources.

<Figure 1-23> Natural Capital Ratio and Hydrocarbon Exports Ratio



Source: Data from the World Bank (2011), The Changing Wealth of Nations, Natural capital per capita and UN COMTRADE DB, Hydrocarbon exports ratio

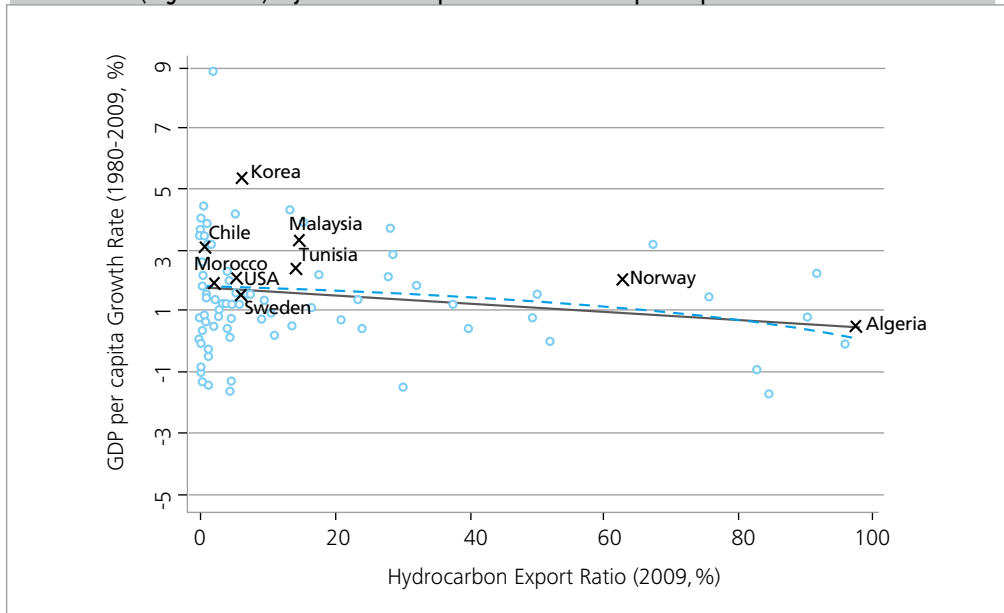
Results from an examination of the relationships between the hydrocarbon exports ratio and GDP per capita growth rate, business environments, HDI, government effectiveness and the degree of informatization can be seen from <Figure 1-24> to <Figure 1-28>. Negative correlations still exist between the hydrocarbon exports ratio and comparable variables; however, they are relatively weaker than the correlations between the natural capital ratio and comparable

variables that have been previously mentioned. In particular, the relationship between the hydrocarbon exports ratio and HDI demonstrates very little to no correlation. Regarded as a country with weak negative correlation, Algeria demonstrated a very high hydrocarbon exports ratio of 98% in 2010. Nonetheless, it appears that Algeria has a comparatively low level of business environment, GDP per capita growth rate, HDI, government effectiveness and informatization.

When each indicator is compared in detail between Algeria and other countries with a hydrocarbon exports ratio that is over 60%, <Figure 1-24> illustrates that Algeria had a relatively low GDP per capita growth rate from 1980 to 2009 among the countries with a high hydrocarbon exports ratio. As can be seen in <Figure 1-25> and <Figure 1-26>, Algeria also has a relatively low government effectiveness or degree of informatization, not even reaching the average level of the OPEC countries among the countries with a high hydrocarbon exports ratio. However, in spite of the high hydrocarbon exports ratio, Norway appears to have a very high degree of informatization and government effectiveness. According to <Figure 1-27> and <Figure 1-28>, Algeria has a relatively low HDI index and Doing Business ranking among countries with a high hydrocarbon export ratio. In particular, Algeria is ranked significantly behind the average of the OPEC countries with regards to the Doing Business ranking; however, Algeria has a relatively high HDI index, above the average of OPEC countries. Norway, on the other hand, appears to be ranked highest with regards to the Doing Business ranking and HDI.

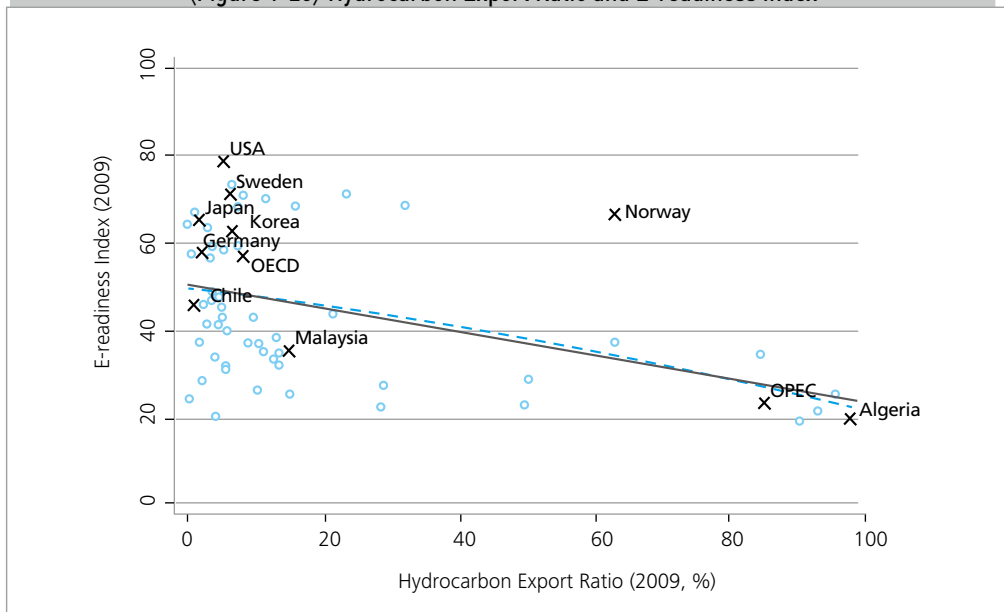
As has been examined, exports and industrial structures centered on hydrocarbons can hamper long-term economic growth. Therefore, Algeria must make a greater effort to ensure that its abundant natural resources will be a blessing rather than a curse.

〈Figure 1-24〉 Hydrocarbon Export Ratio and GDP per Capita Growth Rate



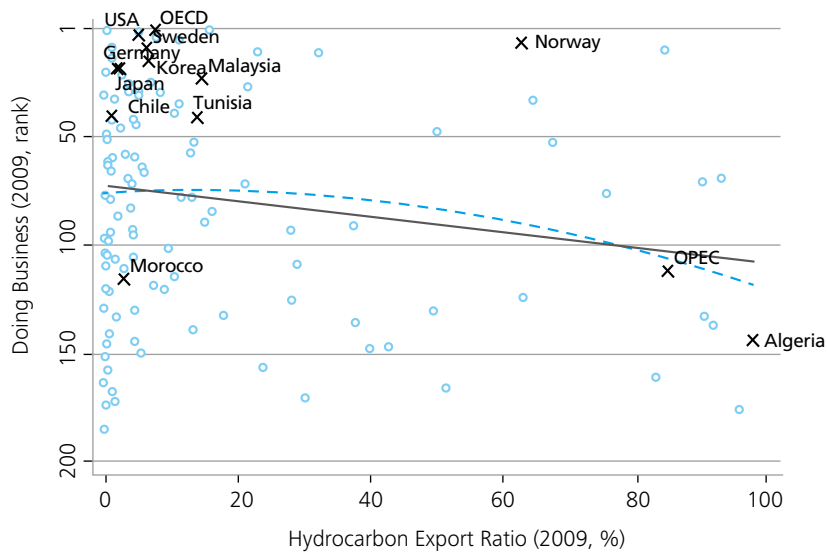
Source: Data from the World Bank, WDI, GDP per capita, (constant 2005 international \$) and UN COMTRADE DB, Hydrocarbon export ratio

〈Figure 1-26〉 Hydrocarbon Export Ratio and E-readiness Index



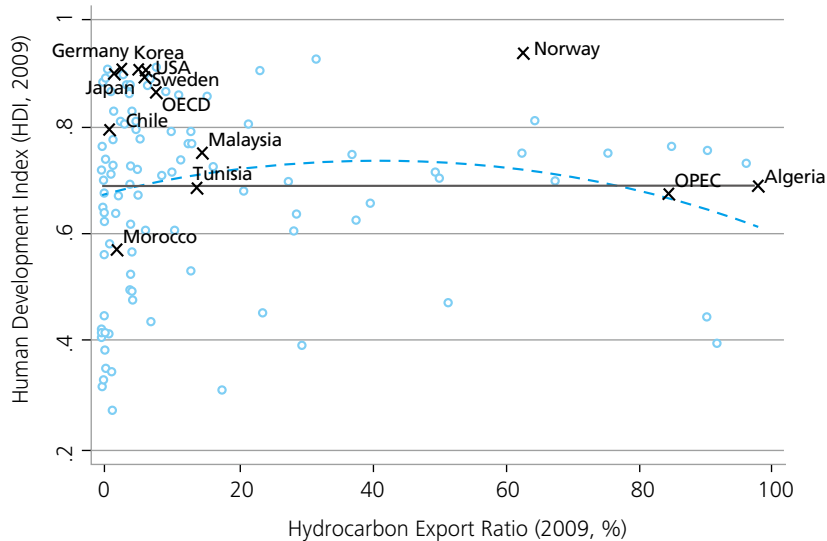
Source: Data from the Economist Intelligence Unit (2009), The 2009 e-readiness rankings and UN COMTRADE DB, Hydrocarbon export ratio

〈Figure 1-27〉 Hydrocarbon Export Ratio and Doing Business Ranking



Source: Data from the World Bank, Doing Business and UN COMTRADE DB, Hydrocarbon export ratio

〈Figure 1-28〉 Hydrocarbon Export Ratio and HDI



Source: Data from UNDP, International Human Development Indicators and UN COMTRADE DB, Hydrocarbon export ratio

### 3. Current Issues Facing Algeria's Economy

In order to identify the current issues of Algeria's economy, the overall performance of Algeria's economy was examined. Economic growth, macroeconomic stability, international relations and growth accounting analysis were diagnosed and Algeria's immediate problems were deduced based on the diagnosis. Since Algeria's economic state was already analyzed in the 2011 KSP with Algeria, the 2012 KSP with Algeria has been rewritten based on the 2011 report. Growth accounting analysis, which was not included in the 2011 report, has been supplemented.

#### 3.1. The Current State of Algeria's Economy

In order to assess the current state of Algeria's economy, a comparative analysis has been conducted with Korea, 34 OECD member countries<sup>8)</sup>, 12 OPEC member countries and 5 UMA (Arab Maghreb Union; Union du Maghreb Arabe) countries.<sup>9)</sup>

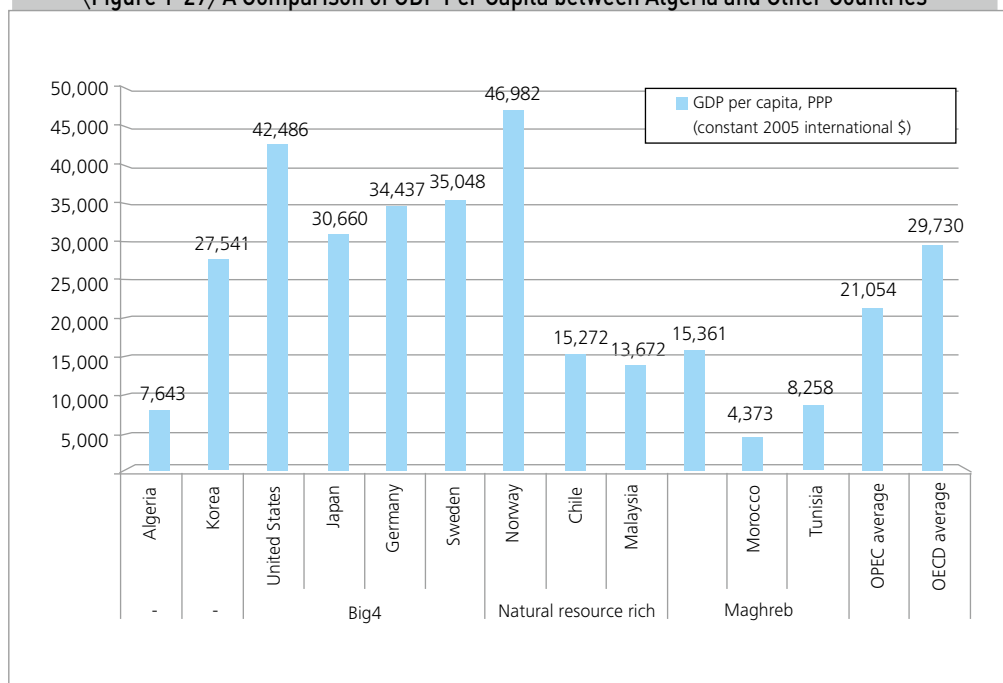
##### 3.1.1 Gross Domestic Product (GDP)

The GDP per capita of Algeria in 2011 was \$7,643, corresponding to nearly a third of the average GDP per capita of Korea and OECD countries. Among the resource rich countries, the GDP per capita of Chile and Malaysia are almost twice as high as that of Algeria. Also, among the neighboring Maghreb countries, Morocco's GDP per capita is \$4,373, thus being less than Algeria's; Tunisia's is \$8,258, similar to Algeria's; Libya's is \$15,361, twice as high as Algeria's. In addition, the average GDP per capita of the OPEC countries, where Algeria is included in, is \$21,054, much higher than Algeria's.

8) 34 member countries of OECD include Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

9) The member countries of UMA are Algeria, Libya, Mauritania, Morocco and Tunisia

〈Figure 1-29〉 A Comparison of GDP Per Capita between Algeria and Other Countries



Source: The World Bank, the calculation based on the WDI Data.

Note: The data is either from the year 2011 or the most recent available data. For reference, the data for most of the countries, including Algeria, is from the year 2011; Libya is from the year 2009.

An examination of GDP and GDP per capita from 1960 to 2008, based on the data from A. Maddison (2010), shows that Algeria's GDP has continued to increase since 1995, except for some periods of time in the 1960s and from the late 1980s to the early 1990s when negative growth rates were recorded. For 48 years from 1960 to 2008, Algeria's real GDP increased at an average annual rate of 3.5%, which is significantly below the global average annual growth rate of 3.8%. For reference, Korea's average annual GDP growth rate increased to 7.4% during the same period. In the 1960s, Algeria's average annual GDP growth rate was 3.2%, which is relatively lower than that of other countries, including Korea. In the 1970s, Algeria's annual GDP growth rate had recorded 6.6%, recovering a growth trend. However, the growth rate declined to 1.7% in the 1990s, then recovering to 4.0% in the 2000s.

Meanwhile, Algeria has recorded an average population growth rate of 2.4% since 1960, which is higher than the global average growth rate of 1.7%. Algeria's population growth rate is lower than the average population growth rate of the OPEC countries at 2.7%, and higher than the average growth rate of UMA at 2.3%. Algeria's population growth rate seems to be fairly common among the neighboring Arab countries as well as oil-producing countries. For reference, Korea's population growth rate was 1.4% during the same period.



Algeria's average annual GDP per capita growth rate was 1.1% from 1960 to 2008. As can be seen in <Table 1-8>, this growth rate is lower than the global annual average growth rate of 2.1% and is the lowest among the comparable countries. Korea's growth rate was recorded at 5.9% during the same period.

<Table 1-8> Average Annual GDP per Capita Growth Rate (1960-2008)

Period	Algeria	Korea	OECD	OPEC	UMA	World
1960-1970	0.7	5.9	3.9	4.1	3.4	3.0
1970-1980	3.4	6.6	2.5	1.8	2.8	1.9
1980-1990	-0.7	7.8	2.2	-2.5	-0.5	1.3
1990-2000	-0.3	5.1	1.9	0.4	0.3	1.6
2000-2008	2.6	4.0	1.5	3.0	3.1	2.9
1960-2008	1.1	5.9	2.4	1.2	1.8	2.1

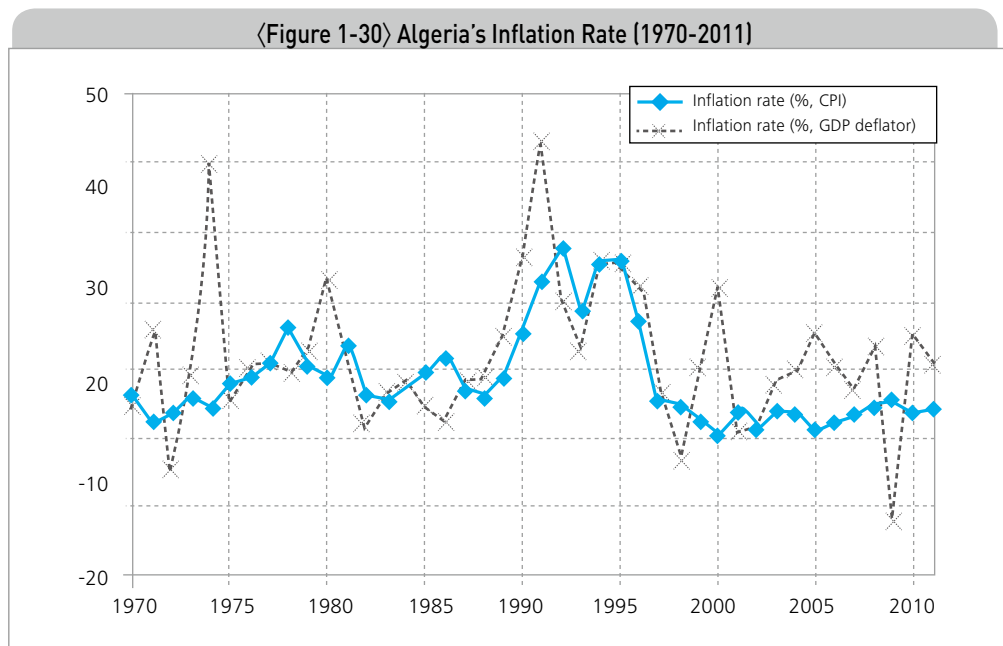
Source: The calculation is based on Angus Maddison (2010)

The global GDP per capita growth rate was at its highest with 3.0% during the 1960s. More specifically, OECD countries were the primary leaders of this high global GDP per capita growth rate during that period. However, the GDP per capita growth rate of the OECD countries continuously declined afterwards. The global GDP per capita growth rate also declined until 1990. Then, along with the economic growth in China and India, the global GDP per capita growth rate increased to 1.6% and 2.9% in the 1990s and 2000s, respectively. A similar trend occurred among the OPEC countries and Maghreb countries. In the case of Korea, the GDP per capita growth rate recorded comparatively high numbers with 5.9%, 6.6% and 7.8% in the 1960s, 1970s and 1980s, respectively. However, it gradually declined to 5.1% and 4.0% in the 1990s and 2000s, respectively, which is still seen to be relatively high.

Algeria's GDP per capita growth rate was very low at 0.7% in the 1960s, but increased to 3.4% in the 1970s, recording the highest during the period of examination. In the 1970s, Algeria's GDP per capita growth rate was the highest among the other comparable countries except Korea. However, Algeria's GDP declined with the negative growth rates of -0.7% and -0.3% in the 1980s and 1990s, respectively. In the 2000s, Algeria's GDP growth rate recovered to 2.6%. However it was a little below the global GDP growth rate or those of the OPEC and Maghreb countries. In order to become the leading country of MENA and to join the ranks of the developed countries, Algeria should, most of all, continue to increase its GDP per capita. To do so, the Algerian government should set up a primary objective of reform for maintaining the sustainability of a high economic growth rate.

### 3.1.2 Macroeconomic Stability

Since 2000, Algeria has been assessed as a country that successfully stabilizes the macro-economy.<sup>10)</sup> Among its accomplishments, the stable inflation rate stands out remarkably. In the 1990s, the inflation rate increased to 30%; however, it remained stable at under 5% after the late 1990s through a macroeconomic stability policy. This results from executing the macroeconomic stability policy effectively despite the increasing revenue caused by high oil prices.



Source: The World Bank, the calculation based on the WDI Data.

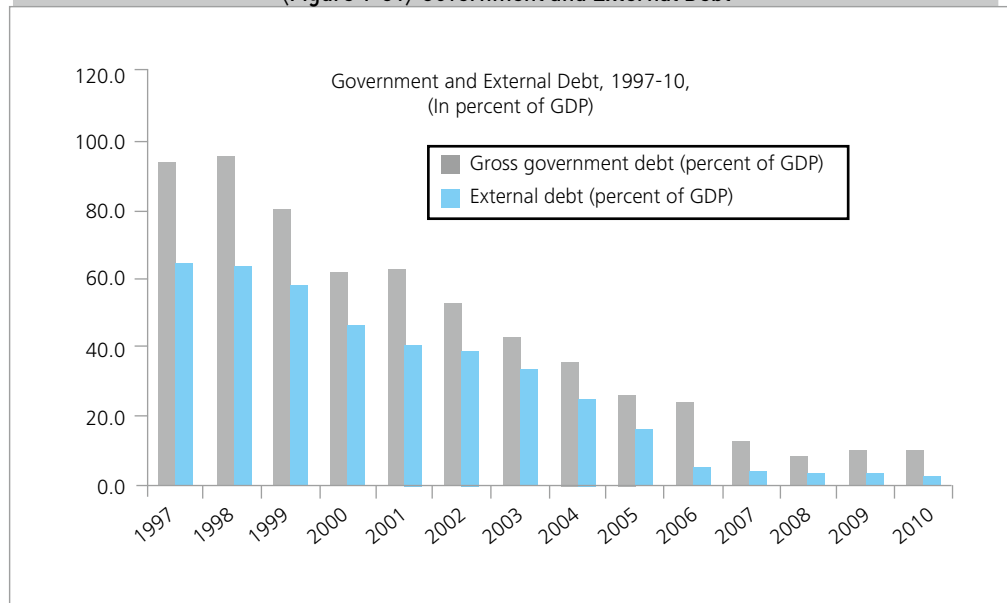
a result of the execution of a very conservative policy in the current account, foreign exchange reserve, government debt and foreign loans since 2000, Algeria has shown excellent performance with respect to macro-economic stability. The current account has remained at the level of 20% to GDP since 2005. As a result of the global financial crisis, the current account declined to 1% in 2009, but recovered to 7% in 2010. The trade balance has also recorded a surplus with the foreign currency reserve reaching \$160 billion in 2010, thus proving that the management of its foreign currency reserve has been successful. Until the late 1990s, the foreign debt level had been high. However, it continuously declined due to high oil prices in the early 2000s to a point where it has remained stable within 5% since 2006. The government debt after 2007 declined below the level of 20% to GDP, which

10) IMF (2010, pp. 8~9)

demonstrates that domestic and foreign debt has been well managed.

On the other hand, Algeria's macroeconomic stability fully depends on oil dollars. If oil price rises, macroeconomic stability increases; however if oil price drops, macroeconomic stability collapses. In this respect, Algeria's macroeconomic stability possesses inherent vulnerability. Therefore, the establishment of a solid foundation for economic stability is required in order not to harm economic stability even if the price of oil drops. (IMF, 2010, p. 10)

〈Figure 1-31〉 Government and External Debt



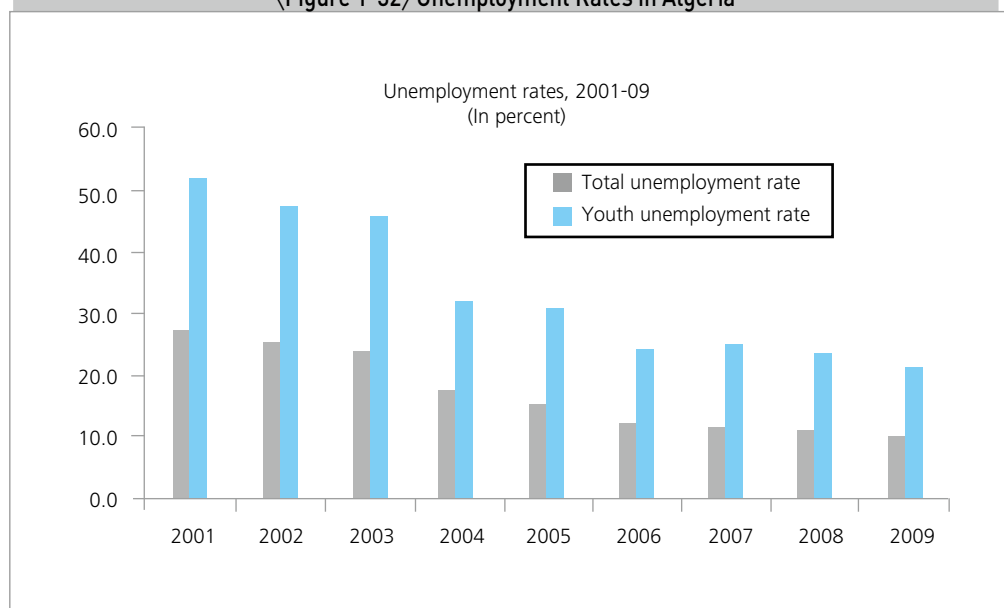
Source: IMF (December 23, 2010), ALGERIA Staff Report for the 2010 Article IV Consultation

### 3.1.3 Unemployment

After 2000, Algeria has been somewhat successful in reducing the unemployment rate due to a gradual increase in an economically active population as well as a relatively high growth rate. Algeria's unemployment rate declined from 30% in 2000 to 20% in 2010. In the 2000s, most of the jobs created in Algeria were in the public sector. However, job creation in the public sector alone cannot provide sufficient jobs to youth who have newly entered the job market. Therefore, youth unemployment remains one of the most serious problems in Algeria. Moreover, the youth unemployment problem is not only Algeria's problem but also a universal trend in the world as well. However, even though Algeria's unemployment rate has dramatically declined over the past 10 years, the unemployment rate for those less than 30 years old is still 21.1%, which is twice as high as the overall unemployment

rate. In particular, since it is hard to create high quality jobs, the high unemployment rate of highly educated youth is a more serious problem. The unemployment problem of highly educated females is even more serious as the unemployment rate of female college graduates is 33%, which is three times higher than that of the male college graduates at 11%.<sup>11)</sup>

〈Figure 1-32〉 Unemployment Rates in Algeria



Source: IMF (December 23, 2010), ALGERIA Staff Report for the 2010 Article IV Consultation

### 3.1.4 Investment

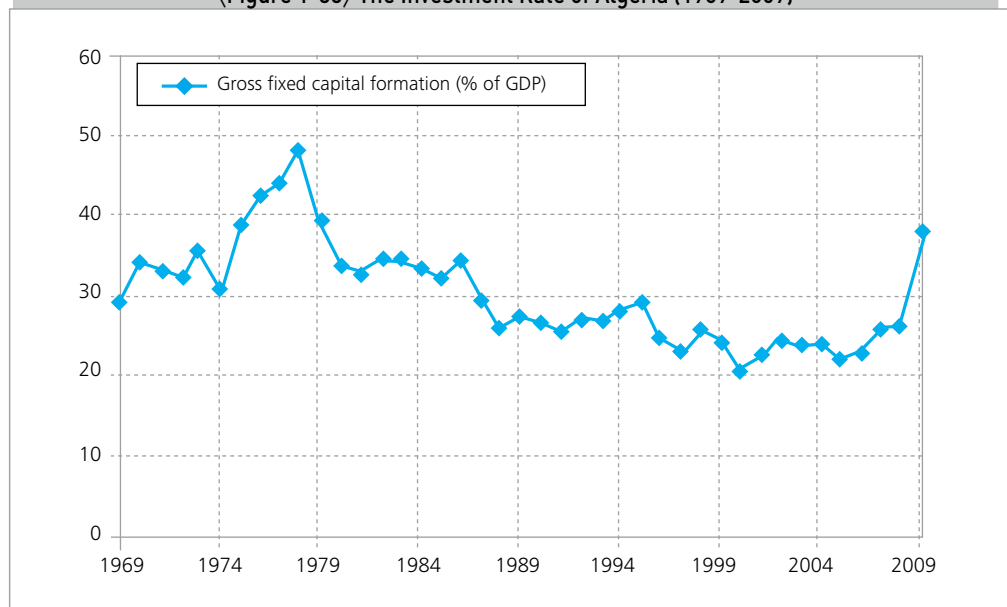
Investment is one of the most important factors for economic growth in the way that it makes up current demand and decides future production capacity at the same time. A high investment rate is one of the most important factors that most of the countries that have achieved continuous growth in the long term have in common. In other words, there is no rapid growth without a high investment rate, thus a high investment rate is a prerequisite for growth. In the process of rapid growth, Korea has always set up a target growth rate, and has tirelessly attempted to achieve an investment rate corresponding to the target growth rate. As a result, Korea has achieved its continuous rapid growth rate. Therefore, Algeria also must set an investment rate that corresponds to a target growth rate, and try hard to achieve that investment rate. When examining the trend in Algeria's investment rate, the rate rose to nearly 50% in the late 1970s and continuously declined to almost 20%

11) IMF (2010, p. 3)

until the late 1990s. Then, the rate recovered since 2000, remaining at 30% in the mid-2000s and skyrocketing to 40% in 2009.

As will be discussed in detail through the growth accounting analysis later on, Algeria was not able to achieve economic growth despite its high investment rate. Under the government's lead, the high level of investment is achieved in a quantitative respect, while Algeria fails to create added value in the market since the efficiency and effectiveness of the investment is too low. Therefore, an innovative effort to improve the efficiency of investments is required.

〈Figure 1-33〉 The Investment Rate of Algeria (1969-2009)



Source: The World Bank, WDI

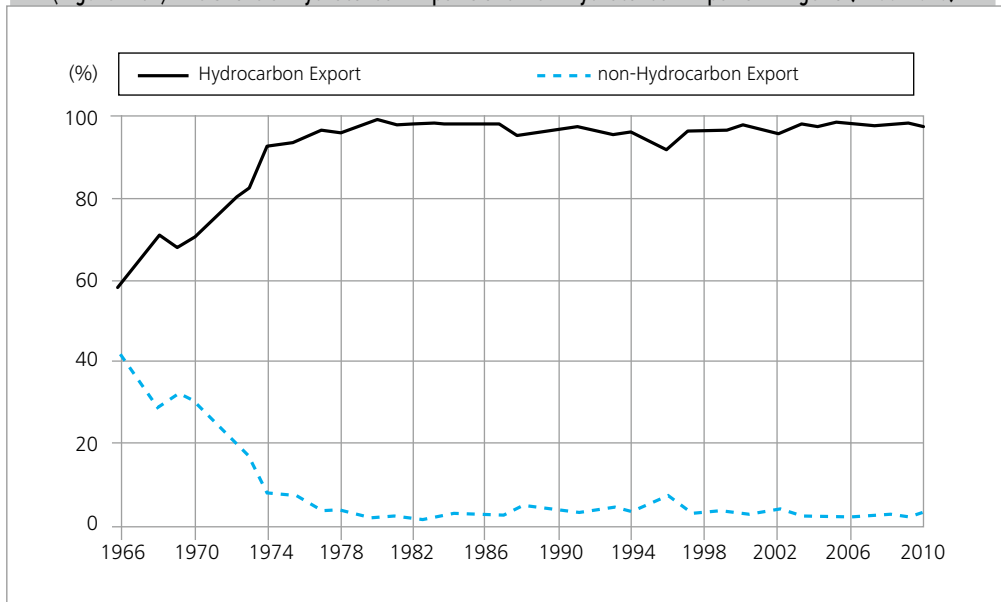
### 3.1.5 International relations

The most distinctive characteristic of Algeria's international relations is the dependency on hydrocarbon exports. The share of hydrocarbon exports in total exports simply proves this. Since 1970, Algeria's imports and exports tended to increase together and exports exceeded imports in the 2000s, resulting in Algeria recording a huge trade surplus. The surplus was caused by the high international price of oil and gas, which are Algeria's two leading export products.

As can be observed in <Figure 1-34>, the degree of concentration can be examined based on a comparison between hydrocarbon and non-hydrocarbon industrial exports. In 2010, the share of hydrocarbon exports out of total exports

accounted for more than 97%. On the other hand, the share of non-hydrocarbon exports out of total exports declined from around 40.7% in 1966 to 2.7% in 2010. This dependency on hydrocarbon exports has not yet changed since 1980. The only possible way to decrease dependency on hydrocarbon exports is through the diversification of industries. Algeria has pursued the strategy of diversifying industries several times; however, it has never been successful. In order to join the ranks of developed countries by achieving long-term rapid growth, Algeria must reduce its dependency on oil and gas with regard to not only exports but also domestic consumption, while simultaneously enhancing competitiveness of non-hydrocarbon industries.

〈Figure 1-34〉 The Share of Hydrocarbon Exports and Non-Hydrocarbon Exports in Algeria (1966-2010)



Source: UN COMTRADE DB

Note: Hydrocarbon Exports is defined by 3.Mineral fuels, lubricants and related materials industry exports from SITC Rev.1.

Recently, Algeria's foreign trade has quickly grown as a result of an increase in crude oil prices. In 2009, Algeria's trade volume to GDP ratio, which indicates the foreign dependency of a country, accounted for 76.5%, thus being relatively high. The foreign dependency of Algeria is lower than that of Korea (95.8%), but higher than that of OECD (48.3%) and OPEC countries (66.1%) as well as the Maghreb countries (62.8%).

Meanwhile, upon examining the characteristics of each industry related to trade, the share of imports in the manufacturing industry increased from 20.4% in 1995 to 24.0% in 2010. For the long-term development of Algeria's economy, high

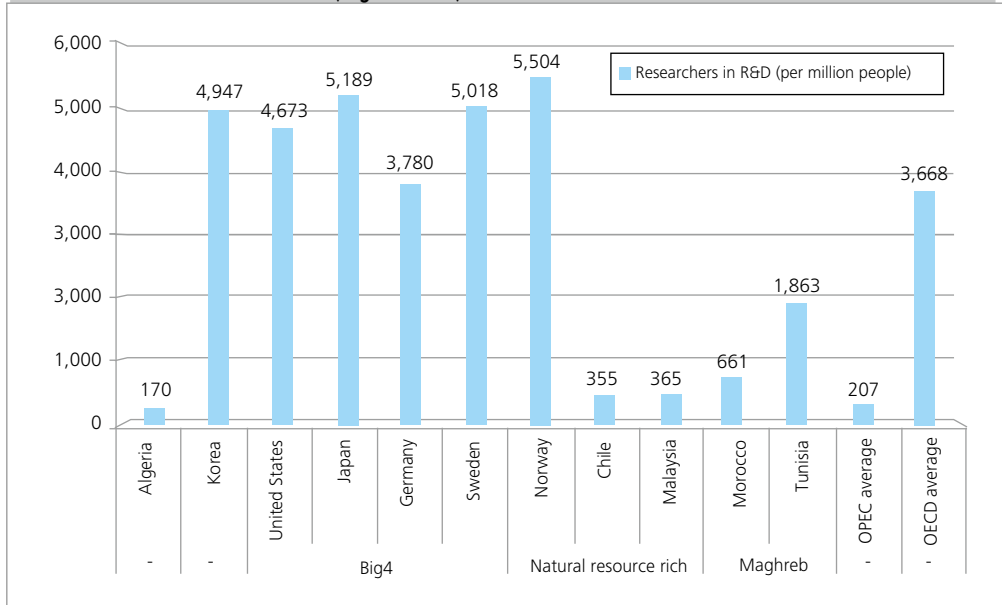
export dependency on oil and gas and a high import ratio in the manufacturing industry are not desirable. The expansion of imports in the manufacturing industry will eventually lead to a weaker foundation for the domestic manufacturing industry, ultimately harming the balanced development of the economy. Therefore, consolidating the foundation of the manufacturing industry is a crucial assignment for Algeria's economy.

### 3.1.6 Research and Development

To assess the current status of R&D in Algeria, data related to researchers in R&D, R&D expenditures and the scale of public and private R&D are compared. However, Algeria's R&D area does not provide sufficient data that can be compared to that of other countries. At this stage, the only data that can be used for comparison is the data on researchers in R&D per million provided by UNESCO. There are 170 researchers in R&D per million people in Algeria, occupying only 3.4% of that in Korea (4,947). Also, when compared to the neighboring Maghreb countries with 661 in Morocco and 1,863 in Tunisia, Algeria's number is still very low. The number does not even reach the average number of OPEC countries.

Having a low number of R&D researchers means that the overall social level of supply and demand of R&D researchers is low. On the demand side, public research institutes and some colleges do not need any R&D researchers. In most of the OECD countries, including Korea, the demand for R&D researchers from the private sector also counts along with government and public research institutes. However, since the private sector in Algeria is not yet capable of utilizing excellent R&D researchers, the demand from the private sector is inevitably low. On the supply side, colleges that supply personnel are disengaged from the current industry environment, thus there being certain limitations to educating excellent R&D researchers. Only simultaneous reform in the education and industry sectors can improve the R&D sector.

〈Figure 1-35〉 Researchers in R&D



Source: UNESCO.

Note: The data is either from 2009 or the most recent year. The data for Algeria is from the year 2005.

## 3.2. Growth Accounting Analysis

In order to investigate Algeria's economic growth in detail, a growth accounting analysis has been attempted. The estimation of Algeria's GDP is adjusted according to the WDI data from the World Bank. With regards to capital stock data, the data was provided by the Algerian government. Labor is also adjusted according to the WDI data from the World Bank. The share of labor income is estimated by using the wage payment/GDP data provided by the Algerian government.

The fundamental equation for growth accounting analysis is as follows. First of all, the Cobb-Douglass production function using the economic growth model under the neutral progress of technology is brought in.  $Y$ ,  $K$ ,  $L$ ,  $A$  correspond to real GDP, real capital, labor and level of technology, respectively.  $\beta$  is the labor income share;  $1 - \beta$  is the capital income share.

$$Y = AK^{1-\beta}L^{\beta} \quad (3-1)$$

When equation (3-1) is log-differentiated, the following growth accounting equation can be derived.

$$\Delta Y/Y = \Delta A/A + (1 - \beta) \Delta K/K + \beta \Delta L/L \quad (3-2)$$



Where  $\Delta A/A$  is the total factor productivity (TFP) growth.

Meanwhile, the capital accumulation equation can be written as follows.

$$K_t = (1 - \delta)K_{t-1} + I_t \quad (3-3)$$

Where  $K$  is capital stock,  $I$  is investment, and  $\delta$  is the rate of depreciation.

The result of an attempt to analyze growth accounting based on the above equations is listed in the following table.

〈Table 1-9〉 The Analysis of Growth Accounting							
Year	Growth Rate (%)					$\beta$	$\delta$
	Y	K	I	L	TFP		
2000	2.2	7.6	2.4	-2.3	-3.3	0.215	0.042
2001	2.6	7.1	2.5	6.2	-4.4	0.230	0.041
2002	4.6	7.6	7.3	4.5	-2.3	0.232	0.036
2003	6.7	8.1	5.0	5.2	-0.8	0.217	0.028
2004	5.1	8.4	7.8	7.1	-3.1	0.208	0.024
2005	5.0	9.0	7.6	8.2	-3.8	0.180	0.017
2006	2.0	9.3	7.0	5.7	-6.7	0.176	0.011
2007	3.0	9.8	9.3	0.6	-5.1	0.184	0.006
2008	2.4		9.3	5.2		0.192	
2009	2.4		26.0	2.1		0.236	
2010	3.2			3.0		0.241	
2000-2007	4.1	8.5	6.6	5.4	-3.7	0.205	0.026

The result of a growth accounting analysis of Algeria's economy is as follows. First of all, the important contribution of capital stock can be indicated. Since 2000, capital stock has increased at an average annual rate of 8.5%, which is relatively high. In particular, Algeria's economy has a very low labor income share of 0.205, while it has a very high capital income share of 0.795. Both the capital stock growth rate and capital income share growth rate are high, which means that the level of contribution of capital to economic growth is very large. More specifically, when the capital growth rate was 6.75%, the economic growth rate from 2000 to 2007 was 4.1%, thus implying that the capital growth rate exceeded more than 50% of the

economic growth rate. The fact that the capital growth rate surpasses the income growth rate by more than 50% illustrates that the effectiveness of an investment in Algeria's economy is very low.

The low effectiveness of an investment in Algeria's economy can be confirmed by TFP, which shows the comprehensive efficiency of the economy. Algeria's TFP during the period of 2000 to 2007 was recorded at an unbelievable rate of -3.7%. In a quantitative respect, Algeria's economy achieved economic growth through enormous capital injection; however, the efficiency of Algeria's economy has deteriorated every year. Therefore, in order to improve the efficiency in overall national management, a comprehensive reform program is required.

### 3.3. Reform Tasks and Strategies of Algeria

#### 3.3.1 Reform Tasks in Algeria

Algeria's economy has experienced both highs and lows over the past 10 years. First, let us take a look at the positive side. Within an unstable international environment, Algeria has operated its economy in a stable manner. Algeria has been successful in the management of prices, public finance and current accounts, and has established the foundation for stabilization of the economy from appropriately utilizing high oil prices in the international market. Specifically, it is a truly positive accomplishment that Algeria has maintained soundness in inflation, foreign currency and public finance since 2007, even though the uncertainty of the international economy has been widespread. In addition, jobs have continuously been created in and around the public sector, which has led to a drastic decline in Algeria's unemployment rate. This has contributed to the stabilization of the Algerian society. However, it is not possible to have macroeconomic stability in Algeria's economy, nor job creation, without financial support from oil exports. Therefore, Algeria's macroeconomic stability has a structural problem with regards to its dependency on oil price. On the other hand, the low efficiency of Algeria's economy must be noted as a problem. In the 2000s, the efficiency and effectiveness of the public intervention process was ascertained to be very low, even though Algeria had achieved economic and social stability through job creation and the supply of daily necessities from an active government intervention. TFP has always shown to be a negative value, evidencing the low efficiency and effectiveness of its process. Therefore, the Algerian economy requires an innovative reform in the near future. A comprehensive reform program aimed at improving efficiency is required in both the economy and society levels. Reform tasks for Algeria are listed below.

First and foremost, in order to improve the standard of living and create more jobs, Algeria requires a much higher economic growth rate. By setting a target to

reach the average level of the OECD countries by 2050, the economic growth rate should be maintained at 7%. In order to achieve this, TFP, which is currently at a negative value, must be increased to become a positive value. Algeria's first reform task is to accomplish continuous growth through an improvement in economic efficiency. However, improving efficiency of the overall economy cannot be attained by merely undergoing reform in a certain area. It requires comprehensive reform in both the society and the economy as a whole. It is quite feasible that Algeria could achieve a growth rate of over 7% if the TFP becomes a positive value, under the assumption that Algeria will maintain the current level of labor and investment.

Second, from a macroeconomic perspective, a policy that can continuously maintain the current, stable macroeconomic conditions is required. One of the most important backgrounds in the establishment of the Algerian long term vision project is Algeria's competence on having achieved a stable economy so far. Based on the stability in its management of public finance and foreign currency reserves, Algeria can create new growth engines. Since 2007, the global economy has been in turmoil, and uncertainty in the global economy has drastically increased as a result of the subprime mortgage crisis in the United States and the European financial crisis. Despite the worldwide financial crisis, Algeria has been free from the aftermath of the global financial market's shock thanks to its conservative management of foreign currency reserves. As long as the uncertainty of the global financial market is not expected to decline soon, it is advisable for Algeria to continue in maintaining its current foreign currency reserves management.

Third, Algeria needs to create jobs. Since 2000, Algeria's unemployment rate has rapidly declined due to an active intervention by the Algerian government. The problem, however, is that this type of job creation did not contribute significantly enough to create added value in Algeria's economy. Regarding jobs, the biggest problem in Algeria is the absence of jobs for highly educated people. This is because Algeria has failed to provide high quality jobs. The provision of high quality jobs has failed due to Algeria's economy, which is mostly dependent on resources and has failed to diversify industries. Therefore, Algeria must achieve both a diversification in its industries and education reform, which could result in a market with a highly skilled labor force.

Fourth, the efficiency of investments needs to improve. As can be observed in the negative TFP referred to as Algeria's chronic problem, Algeria must improve the efficiency of its investments. Recently, Algeria has carried a large amount of investments in the SOC sector. Algeria hopes today's massive investment in the SOC sector can be linked to tomorrow's value-added. However, SOC projects, which aim for a balanced regional development, mostly emphasize fairness rather than efficiency. In this case, despite massive investments, the contribution of investments

to growth can only be minimal. Therefore, an effort to improve efficiency of these investments, including national land areas, must be innovatively reinforced.

Fifth, Algeria is required to overcome its dependency on hydrocarbon. After the 1950s, most of the resource-rich countries that had achieved rapid growth throughout one generation failed to experience continuous growth. Some countries with rich resources were able to achieve rapid growth due to price increases of resources in one generation. However, all of these countries failed to industrialize. Algeria needs to overcome the resource curse. To overcome the Dutch disease, not only does Algeria need to achieve diversification of its industries, but it also needs to train skilled workers through education reform programs. Benchmarking those resource-rich countries which succeeded in the diversification of industries is also needed. There are some cases that could help Algeria overcome its dependency on natural resources: Norway's experience of utilizing petroleum resources by raising a petroleum fund, Chile's efforts toward the diversification of its industries through globalization, and Malaysia's experience of industrialization through an economic development plan.

Sixth, a groundbreaking improvement in the R&D area is required. In order to achieve reform in the R&D area, a demand for R&D must be created first. As Algeria has had a problem with creating demand for R&D researchers in the private sector, it first needs to continuously create demand for R&D in the public sector. At the same time, competent researchers must be continuously provided as a result of reform in education. To summarize, in order to improve competitiveness in the R&D area, education reform is the most important assignment for Algeria.

Lastly, Algeria requires an overall and comprehensive reform. Algeria requires national reform, which can improve the quality of life of the public as well as the efficiency of the whole nation, rather than a partial reform in which education, diversification and national land development are separated and each pursue their own goals. Therefore, a long-term vision equipped with well-defined goals and strategies is very important.

〈Table 1-10〉 Reform Tasks for Algeria

	Strength	Weakness	Strategies
Income growth		Low growth rate	Establishment of a development plan, Improvement of the governance structure
Inflation	Stable		
Unemployment		Unemployment among the youth	Diversification of industries, Education reform
Investment	High	Inefficiency	Diversification of industries, Education reform, Territorial reform
Hydrocarbon		High dependency	Diversification of industries
International relations	Stable	High dependency on petroleum gas	Diversification of industries
R&D		Low	Education reform
Growth accounting		Negative TFP	Development plan Diversification of industries

### 3.3.2. Reform Strategies for Algeria

Algeria's visions and reform strategies should be ideally achieved through the following three aspects. First, the establishment of comprehensive visions and reform strategies is required for Algeria's overall reform. Visions here do not mean policy tasks that could be achieved in the short term, but rather long-term visions for the improvement of Algeria's overall efficiency. In order to establish Algeria's long-term visions, a new incentive system should be introduced so that the public could respond to an incentive system in the market. On the other hand, Algeria has to reinforce its efforts to provide information that allows the Algerian people to more objectively understand Algeria's current situation. Second, Algeria must seek reform strategies for Algeria's economy. These strategies include the diversification of industries and the improvement of governance, which must be solved for the future of Algeria's economy. Third, Algeria must consider reform programs to improve the quality of life. These programs include the establishment of visions on education, public health and national land management, as well as strategies corresponding to each vision.

#### 1) Strategies for the Establishment of a Vision

For the past 10 years, even within an unstable international environment, Algeria has enjoyed macroeconomic stability. In these previous 10 years, Algeria has achieved an economic growth rate of 4.0%, which is a considerable improvement compared to the past. However, when compared to the global average growth rate

of 4.2%, Algeria's rate is still low. Algeria's economic growth rate is particularly more disappointing when the high investment rate is taken into account. As previously noted, this was because TFP, an indicator of efficiency of a country, was a negative value and there was no sign of change in the TFP trend. However, assuming that the current level of labor and investment is maintained, Algeria could achieve rapid growth if TFP is converted into a positive value. Therefore, comprehensive reform programs are required for Algeria's economy to make a leap forward.

There are two prerequisites for the comprehensive reform of Algeria's economy. On the one hand, a market-friendly environment must be established for the Algerian people. This is because efficiency can increase when an incentive system works in the market. For too long, the Algerian government has impressed upon the minds of the Algerian people that the government will always offer an allowance. Now, the Algerian government must allow the people to realize that the government could not offer allowances in the future. Of course, this type of change in a government's role cannot happen in a short time; however, the Algerian government must establish an elaborate incentive system to provide rewards for the efforts made by the public. The new incentive system should be gradually introduced through reforms of the existing practices and systems. When the incentive system works, vitalization in the private sector can also be expected, of which Algeria currently aspires. Since vitalization in the private sector is achieved through the expansion of market experiences, the establishment of a systematic framework, which can lead the Algerian people to be more market-friendly, is now a pressing assignment for Algeria. This assignment includes the reorganization of an incentive system at the national level, the establishment of a national governance system and the introduction of reform programs in education, medical care and national land development.

On the other hand, Algeria must establish specific strategies in order to set a vision objective that the public desires. A communication channel between the government and the public should be made in order to achieve that vision objective. Reform is not a purpose in of itself; it is only a means to achieve visions for the future. Therefore, the establishment of a vision must precede reform. The responsible participation of both the government and experts is very important in the process of establishing a vision; however, it also needs to be supported by the public. In this sense, the participation of the people is critical. Therefore, it is first necessary to understand what visions for the future the Algerian people desire. The desired visions of the Algerian people are only feasible when the public clearly understands Algeria's current situation. Ultimately, the government and the people must share their views on Algeria's reality, especially as the participation of the people is critical.

## 2) Strategies for Securing Competitiveness: Diversification of Industries, Improvement of Governance

Algeria is a country with very high dependency on hydrocarbons such as oil and gas. 98% of exports, 40~45% of the GDP and 60% of the government budget come from hydrocarbons. Also, the Algerian government plays a huge role in economic activities since the government manages the sales revenue of oil and gas. Oil and gas companies are publicly owned, including 90% of the banking sector. The role of the Algerian government is not limited to the oil industry. Algeria's government also operates 2/3 of the other industries, excluding the oil and gas industry. Therefore, both the structural reform of industry and growth in the private sector must be achieved for Algeria's economy to gain industrial competitiveness. In this respect, the structural reform of industry should be based on the diversification of industries. It would be desirable for the diversification of industries to be achieved through the growth of high value-added industries. Then, the laborers that work in industries with low productivity could be transferred to industries with high craftsmanship, thus contributing to economic growth.

The diversification of industries can contribute to an increase in productivity and income through an improvement in human capital. The diversification of industries is a long-term policy agenda rather than short-term in the same way that the formation of human capital takes a long time. Also, since the diversification of industries can make a producer in one area open up new possibilities for a producer in another area, the production externality can be maximized. A country that can make a specific home appliance can easily switch to producing other home appliances. Therefore, an investment in industries with a huge effect on production relations can create bigger external effects than the production of products with one specific or rare technology.

Meanwhile, the industrial cluster is also closely related to the diversification of industries. Apple, which has the highest market value in the United States, hires 43,000 employees in the nation. The size of labor force at Apple is only 1/10 of that of GM in the better years of the past. Apple created 700,000 indirect jobs; however, these jobs were created in other regions of the world and not in the United States. One of the reasons why those jobs were not created in the United States is because industrial clusters could not be established in the United States. However, Germany, Korea and China can achieve growth based on the manufacturing industry as they have established industrial clusters. Therefore, entrepreneurs with exceptional abilities are important for economic growth, but the creation of synergy through the formation of industrial clusters is much more important. Algeria can only expand employment and experience economic growth if the diversification of industries is successful through the formation of clusters.

Moreover, to reinforce Algeria's competitiveness, Algeria needs to improve its governance structure at the national level since it seems hard to expect improvement of efficiency at the national level under Algeria's existing governance structure. Learning from the case of Korea, Algeria can approach the improvement of its governance structure at the national level based on the following three aspects. First, powerful political leadership is important because comprehensive reform at the national level is impossible without it. Second, Algeria must establish a new government organization in order to support powerful leadership. Like Korea's Economic Planning Board, one government organization that is in charge of the establishment, budgeting and statistics of development plans should be considered. Lastly, it is recommended that Algeria establish economic and social development plans. Like the Five year economic development plan of Korea, Algeria can prepare alternatives for structural problems in Algeria's economy through the establishment of development plans.

### 3) Strategies for the Improvement of Quality of Life: Tasks for Education, Health and National Land Reform

It is important that the revenue created from natural resources is spent well at the national level. Government expenditures must be considered in terms of the equality between classes, generations and regions. If not, public resistance could occur along with the social chaos caused by public resistance. Algeria is not free from the social unrest of North Africa, which recently began in Tunisia. Therefore, one of the most important tasks for Algeria at this point is social stability. In order to maintain stability in Algeria's society, macroeconomic environments such as inflation should continue to be managed so that they remain stable. Also, Algeria needs to be careful that living conditions for the low-income bracket of the population do not worsen. However, support for the low-income bracket in the current generation should not damage equality between generations or growth potential. Tasks for social stability can be summarized as follows.

First of all, equity between classes matters. Based on lessons learned from Tunisia's experience, the Algerian government has actively intervened to improve the living conditions of the poor. Consequently, social stability has quickly recovered its normal state. The Algerian government has acknowledged that not only can macroeconomic harm economic stability, but inequality in income distribution can do so as well. However, whether social stability as a result of government intervention is a sustainable solution or not is still controversial. In the short term, the government's active intervention is required for social stability. However, in the long term, this may not be a sustainable solution. Therefore, policy alternatives should be prepared in order to sustainably improve the living conditions of the poor without damaging the economic stability caused by excessive government expenditures. Ultimately, Algeria



must improve equity between the social classes with a policy for supporting the independence of the low-income bracket of the population, rather than a unilateral dispensation policy.

One of the biggest problems facing resource rich countries is the distribution of revenue from natural resources among different generations. There is no model solution for this issue. As each country has its own history, system and environment, one model case cannot be applied to the other resource-rich country. However, some model cases exist among natural resource-rich countries. Norway currently operates a petroleum fund that provides an allowance that creates equality among different generations. This is a good example for Algeria. Controversy about equity between generations can considerably differ depending on political environments and the movement of the population within a country. Since a high percentage of Algeria's population is youth, it is expected that demand for equity between generations is bigger in Algeria than in other countries. By taking this into consideration, Algeria should seek a policy that would improve equity between generations.

Finally, improving equity between regions is also important. Algeria is currently experiencing ongoing urbanization; the population keeps flowing into urban areas. Compared to other industrialized countries, Algeria is not that serious with regards to urbanization. Considering the relationship between economic growth and urbanization, there is no economic reason to limit urbanization, especially as the effect of urbanization on growth is not always negative. The real question is whether Algeria's urbanization has a link to economic growth or not as urbanization should naturally be connected to economic growth. Therefore, Algeria must have national land development strategies that can achieve urbanization that is linked with economic growth.

## 4. Vision Scenarios

### 4.1. Goals and Methodology

#### 4.1.1. Goals

The long-term vision of Algeria is to achieve an average OECD per capita income by 2050, taking into consideration Algeria's current performance and growth potential. This goal has also been proposed in the report of the Commission on Growth and Development from the World Bank (The Growth Report, 2008, p.113). As the period between now and 2050 is somewhat long, an intermediate goal exists which is for Algeria to be the leading country in the MENA region by 2030, as has been established in this report.

To achieve the goal of Algeria's GDP per capita reaching OECD's average per capita GDP by 2050, the economic growth and investment rate that Algeria should achieve by then can be estimated. This approach to goal setting has often been applied in other countries that have grown rapidly in the past, such as Japan and Korea. Specifically, the income-doubling plan established by Japan in 1960 had a significant effect on Korea which had established national goals at that time as well. Japan's income-doubling plan was not only to achieve an annual economic growth of 7.2%, but also to double the GDP per capita over the 10 years from 1960 and 1970.<sup>12)</sup> Similar to this plan, this report proposes that Algeria launch an income-tripling plan to make its GDP per capita triple by 2030. To triple its GDP per capita by 2030, Algeria should continue to attain an annual GDP growth rate of 7% as well as a GDP per capita of over 6% every year. Once Algeria achieves these goals, it will turn itself into a rapidly growing developing country of the 21st century.

#### 4.1.2. Methodology

There are several methods for economic forecasts, including trend extraction (applied time series analysis method), production function approach, simultaneous equations system, and so on. First, trend extraction estimates the GDP by using the univariate volatility intended only for the time series data on GDP. Based on the univariate time series analysis, methods for estimating GDP can basically include the linear tendency method, the Hodrick-Prescott (1997) filter, the unobserved components model by Watson (1996), and so on. Second, the production function approach is a method for estimating GDP by using the technical relationship between factors of production (labor, capital and level of technology) and output in the way that the long-run supply capacity of an economy depends on production function. Despite several limitations, this is currently the most widely used method in accordance with the economic theory. Third, the simultaneous equations system is a method for forecasting the economy by composing simultaneous equations that reflect various relationships amongst economic factors, including the production function. As an extension of this method, the use of dynamic simultaneous equations has been discussed. Additionally, the dynamic and stochastic general equilibrium (DSGE) model has approached forecasting GDP by setting up a model based on New Keynesian Theory, which combines the short-term Keynesian analysis and the long-term classical school analysis.

As a methodology to achieve Algeria's vision, the production approach method is used in this study. In fact, it is the most popular method used in OECD, EU, etc. Through the same methodology, growth accounting is used in this report. More

<sup>12)</sup> The rule of 72 is a method for estimating an income's doubling time. The rule number (72) is divided by the growth rate per period to obtain the approximate number of years required for doubling.

details about the process of getting an increase in TFP are specified as follows. Constant returns to scale is assumed.

Real Value Added	$V_j = g_j(K_j, L_j, T)$
Nominal Value Added	$P^{Vj}V_j = P^{Kj}K_j + P^{Lj}L_j$
TFP Growth	$\Delta \ln TFPV^{jt} = \Delta \ln V_{jt} - w^{Rjt} \Delta \ln K_{jt} - w^{Ljt} \Delta \ln L_{jt}$

where, V, K, L, TFP and w are, respectively, real value added, capital stock, labor<sup>13)</sup>, total factor productivity and average of nominal value added between the current and previous terms. As the Törnqvist index, w is also referred as a weighted value, based on an average of adjacent terms.

$$\text{Share of factor income} \quad w^{Ljt} = (P^{Vjt}V_{jt})^{-1}P^{Ljt}L_{jt}, \quad w^{Kjt} = (P^{Vjt}V_{jt})^{-1}P^{Kjt}K_{jt}$$

As a production function, the Cobb-Douglass production function is used and capital stock is made by using both the perpetual inventory method and the capital accumulation equation.

$$K_0 = I_0 / (1+g) / (g+\delta)$$

$$K_t = (1-\delta) K_{t-1} + I_t$$

where, K stands for capital stock, I for investment, g for past growth rate of investment, and  $\delta$  for the depreciation rate of capital stock. The source of data for real income and labor is the World Bank, and capital stock is from the Algerian government.

Given a TFP growth, a capital growth rate, a labor growth rate, labor income share as well as a capital income share, a real income growth rate can be determined from taking advantage of the aforementioned TFP growth formula. Therefore, a real income growth rate can be estimated from applying the respective forecasts of those variables. Likewise, a variety of scenarios can be developed in accordance with the forecasts of these variables.

13) Labor relevant variables include three kinds, such as the number of employees, total working hours, and labor service. Among these, the number of employees is used in this study.

## 4.2. Vision Scenarios

### 4.2.1. Algeria's Growth Accounting Analysis

Algeria's vision scenarios are developed in accordance with the forecasts of various variables that determine the economic growth rate, such as the TFP growth (current level ~ High), capital stock (High, BAU, Low), labor, shares of labor income and capital income. Before the scenarios were developed, Algeria's growth accounting analysis had been conducted by making use of the available data (1991-2007).<sup>14)</sup> A range of problems, however, existed in the 1990s, resulting in difficulties that made the economy work abnormally in the same period. Thus, only the latest data (2000-2007) has been analyzed and used for Algeria's growth scenarios in this report.

To begin with the data, with regards to GDP and investment, the real value for the base year 1980 provided by the WDI of the World Bank has been converted into that for 2000. Regarding capital stock, the real value for 2007 provided by the Algerian government has been converted into that for 2010. Concerning labor, the number of employed people has been estimated by using the "employment to population ratio, 15+" as well as the "population ratio, 15+." The data on salary/GDP provided by the Algerian government has been used for the labor income share,<sup>15)</sup> whilst the capital income share has been calculated as (1-labor income share). Also, the depreciation rate has been obtained from the capital accumulation equation observed above.

<Table 1-11> and <Figure 1-36> illustrate the results of Algeria's growth accounting analysis. First, <Figure 1-36> illustrates that Algeria's economic growth throughout the 1990s and 2000s was mainly caused by capital growth, while most of the TFP growth posted negative. For different periods, the economic growth did not exceed 5% in the 1990s due to the comparatively low labor growth rate even though the capital growth rate was high with 4-8%. In addition, it is shown that compared to the 1990s, the economic growth in the 2000s was much higher as a result of the high capital growth rate and the high labor growth rate of 4-8%, except that of 2007. In detail, <Table 1-11> shows that Algeria's annual economic growth was 2.0% in the 1990s, and the capital growth rate 6.6%, the labor growth rate 2.3% and the TFP growth -3.7% in the same period. In the 2000s, it was reported that the annual growth rates of GDP, capital, labor and TFP were 4.1%, 8.5%, 5.4% and -3.7%, respectively. Compared to the figures in the 1990s, the GDP

14) Employment ratio taken from the World Bank's World Development Indicators starts from 1991 to 2011. Capital stock data were given by the Algerian government from 1974 through 2007.

15) As the wage/GDO data given by the Algerian government start from 2000, the value of labor income share before 2000 is assumed to be the same as in 2000.

growth rate has increased by 2.1%p in the 2000s as the labor and capital growth rates are comparatively much higher than before, despite the same TFP growth. The most conspicuous fact is that Algeria's TFP growth was -3.7% on average during the period 2000-2007. Namely, the GDP increased by 4.1%, the capital sharply by 8.5% and the labor by 5.4% during the same period, thereby the growth rates of both capital and labor exceeding the GDP growth rate. Nonetheless, the TFP growth was negative, which offset the effects of capital and labor growth.

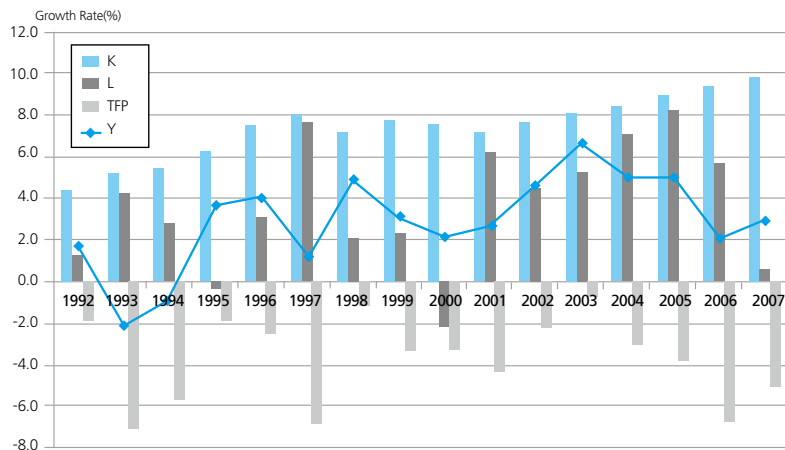
This analysis is full of suggestions for Algeria's income level and income growth rate. That is to say, from the point of view that factor accumulation is more important than productivity when explaining differentials of income levels among countries, Algeria's high labor growth rate and capital stock growth rate have contributed to an improvement in the income level. However, unlike the case of the income level, productivity growth is the most important factor with regards to differentials of growth rates among countries.<sup>16)</sup> Thus, Algeria's comparatively low income growth rate is caused by the low TFP growth. This also demonstrates the fact that Algeria's economic growth has not become qualitative growth though productivity improvement, but quantitative expansion though the increase of input factors. According to Krugman (1994), quantitative economic growth is achieved by an increase in input factors, whereas qualitative economic growth is achieved by an increase in productivity. However, when a country grows without an increase in productivity, its economic growth will not be sustained in the long run.

16) Weil's study (2009) demonstrated that the differences in the economic growth rates between countries are composed of two factors: those of productivity growth and factor growth. The former interestingly takes 65% and the latter 35% only.

〈Table 1-11〉 Growth Accounting of Algeria (1991-2007)

Year	Growth Rates					Labor Income Share	Depreciation Rate	K/ GDP	I/ GDP (%)
	GDP	K	I	L	TFP				
1992	1.8	4.3	2.1	1.3	-1.9	0.215	0.134	1.3	21.4
1993	-2.1	5.2	-3.3	4.3	-7.1	0.215	0.112	1.3	21.2
1994	-0.9	5.4	0.5	2.8	-5.8	0.215	0.102	1.4	21.4
1995	3.7	6.2	3.0	-0.3	-1.1	0.215	0.090	1.5	21.3
1996	4.0	7.5	3.4	3.1	-2.5	0.215	0.072	1.5	21.2
1997	1.1	8.0	0.8	7.7	-6.8	0.215	0.057	1.6	21.1
1998	5.0	7.2	3.2	2.1	-1.1	0.215	0.059	1.7	20.7
1999	3.1	7.7	2.7	2.3	-3.4	0.215	0.047	1.7	20.6
2000	2.2	7.6	2.4	-2.3	-3.3	0.215	0.042	1.8	20.7
2001	2.6	7.1	2.5	6.2	-4.4	0.230	0.041	1.9	20.7
2002	4.6	7.6	7.3	4.5	-2.3	0.232	0.036	2.0	21.2
2003	6.7	8.1	5.0	5.2	-0.8	0.217	0.028	2.0	20.9
2004	5.1	8.4	7.8	7.1	-3.1	0.208	0.024	2.1	21.4
2005	5.0	9.0	7.6	8.2	-3.8	0.180	0.017	2.2	22.0
2006	2.0	9.3	7.0	5.7	-6.7	0.176	0.011	2.3	23.1
2007	3.0	9.8	9.3	0.6	-5.1	0.184	0.006	2.5	24.7
1991-2000	2.0	6.6	1.6	2.3	-3.7	0.215	0.079	1.5	21.1
2000-2007	4.1	8.5	6.6	5.4	-3.7	0.205	0.026	2.1	21.8

〈Figure 1-36〉 Rates of GDP, Capital, Labor and TFP of Algeria (1991-2007)



<Table 1-12> and <Figure 1-37> illustrate the results of the contribution to growth per factor<sup>17)</sup> based on the results of Algeria's growth accounting analysis. Resulting from an analysis of the contribution to growth, the contribution of capital stood at 5.2% in the 1990s and 6.7% in the 2000s, and the contribution of labor stood at 0.5% in the 1990s and 1.1% in the 2000s. Compared to that in the early 1990s, the capital contribution to growth reached its highest with 8.0% in 2007. In terms of the level of contribution to growth for labor, most of the figures in the 1990s were less than 1%, thus being comparatively very low, and the figures somewhat improved in the 2000s; specifically, the highest was 1.5% in 2004 and 2005.

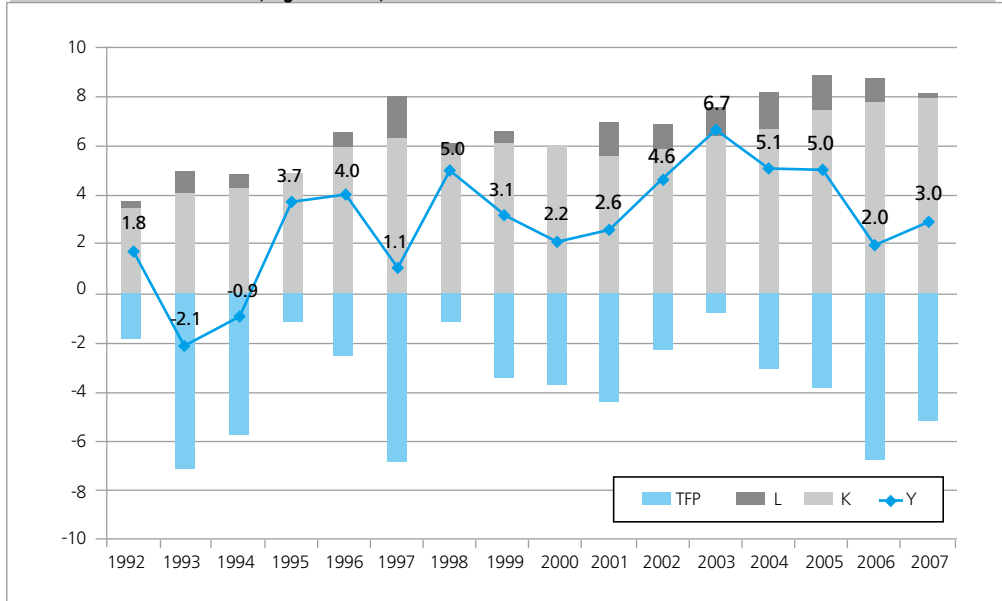
TFP is the key factor that hindered rapid growth at an average of -3.7% throughout the entire period, which improved slightly in the early 2000s and then deteriorated again by -6.7% and -5.1% in 2006 and 2007, respectively. Therefore, it is important to maintain the labor and capital supply at their present levels while trying to improve the TFP for future rapid growth.

<Table 1-12> Contribution to Growth

Year	GDP Growth	Contribution		
		K	L	TFP
1992	1.8	3.4	0.3	-1.9
1993	-2.1	4.1	0.9	-7.1
1994	-0.9	4.3	0.6	-5.8
1995	3.7	4.9	-0.1	-1.1
1996	4.0	5.9	0.7	-2.5
1997	1.1	6.3	1.6	-6.8
1998	5.0	5.7	0.4	-1.1
1999	3.1	6.1	0.5	-3.4
2000	2.2	5.9	-0.5	-3.3
2001	2.6	5.5	1.4	-4.4
2002	4.6	5.8	1.0	-2.3
2003	6.7	6.3	1.1	-0.8
2004	5.1	6.6	1.5	-3.1
2005	5.0	7.3	1.5	-3.8
2006	2.0	7.7	1.0	-6.7
2007	3.0	8.0	0.1	-5.1
1991-2000	2.0	5.2	0.5	-3.7
2000-2007	4.1	6.7	1.1	-3.7

17) Factor contribution to growth = factor growth rate × factor share, where the factor share of TFP is one. The sum of factor contributions is equal to the GDP growth rate.

<Figure 1-37> The Level of Contribution to Growth



#### 4.2.2. Making a Vision

It can be said that investment is the most important factor for economic growth in the way that it not only affects the current demand, but it also stands for future growth potential at the same time. When an investment rate ( $I/GDP$ ) is given, the capital stock growth rate can be calculated. The scenarios of capital consist of three cases. First, in the case of "High," in which the investment rate is an average of 26.0% between 2005 and 2009, the capital stock growth rate becomes 9.3%. Second, in the case of "BAU," in which the investment rate is an average of 23.5% between 2000 and 2009, the capital stock growth rate becomes 8.2%. Lastly, in the case of "Low" in which the investment rate is the average of 21.8% between 2000 and 2007, the capital stock growth rate becomes 7.5%. The depreciation rate of capital, which is the average of 2.6% between 2000 and 2007, is commonly applied to all of the scenarios.

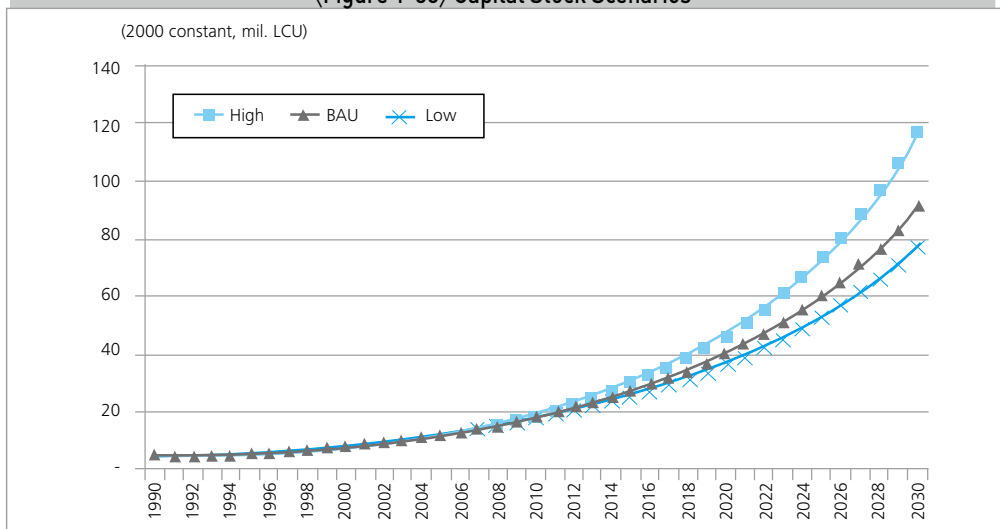
The following <Table 1-13>, <Figure 1-38> and <Figure 1-39> indicate the results.



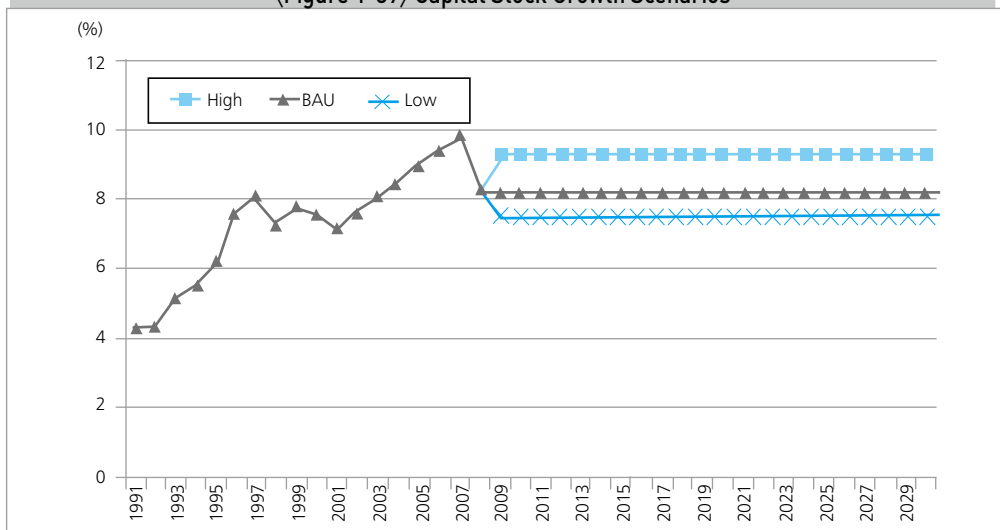
〈Table 1-13〉 Capital Stock Scenarios

Scenarios	I/GDP (%)	Capital Stock Growth Rate(%)	I/GDP Assumption
High	26.0	9.3	2005~2009 average, recent
BAU	23.5	8.2	2000~2009 average, long run
Low	21.8	7.5	2000~2007 average, past

〈Figure 1-38〉 Capital Stock Scenarios



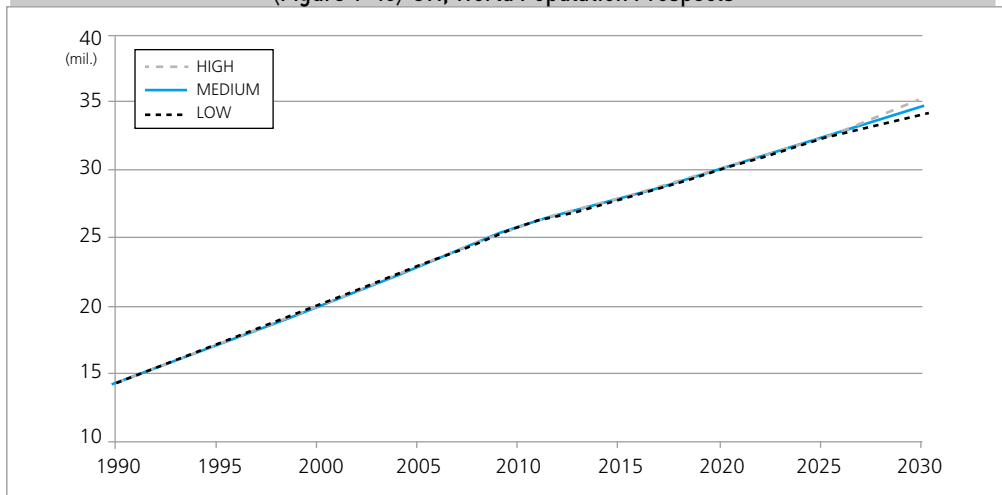
〈Figure 1-39〉 Capital Stock Growth Scenarios



The labor supply scenario is written based on Algeria's goal employment rate as well as the UN World Population Prospects illustrated in <Figure 1-40>. As the UN World Population Prospects proposes three classified categories, such as the Medium Variant, High Variant and Low Variant, Medium Variant is used in this report. According to the UN World Population Prospects, Algeria's annual growth rate of the population aged over 15 is 1.5% between 2010 and 2030.

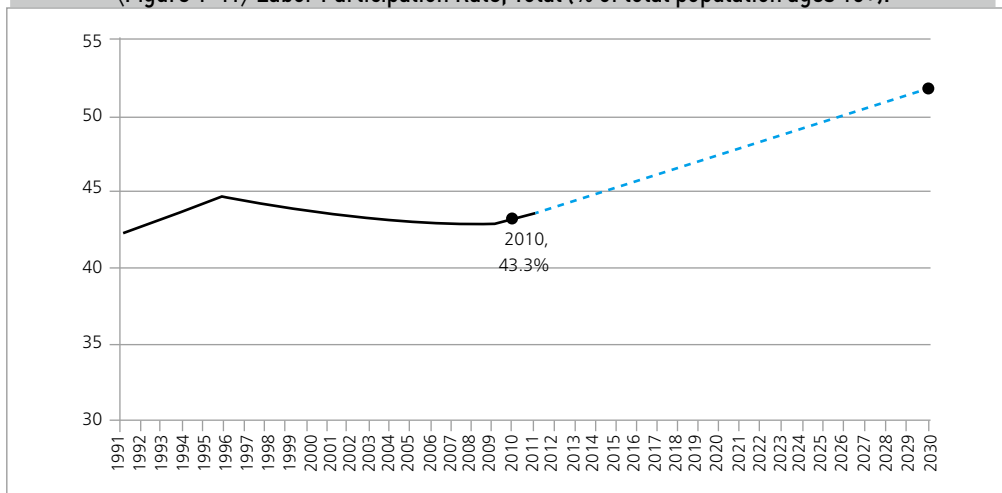
Meanwhile, <Figure 1-41> illustrates the labor participation rate.

<Figure 1-40> UN, World Population Prospects



Source: UN, World Population Prospects, the 2010 Revision, "Population, total, by age"

<Figure 1-41> Labor Participation Rate, Total (% of total population ages 15+).



Note: The solid line is actual and the dotted line is projected.

Source: Actual is taken from WB, WDI Labor participation rate, total (% of total population ages 15+).

Algeria's labor participation rate prospects imply a positive outlook for Algeria's economic growth.

$$\text{Per capita GDP} = \text{GDP} / \text{Total Population}$$

$$\text{Employee per capita GDP} = \text{GDP} / \text{Number of Employees}$$

If the above two equations are combined, we get

$$\text{Per capita GDP} = \text{Employee per capita GDP} \times (\text{Number of Employees} / \text{Total Population})$$

Suppose the labor participation rate increases at the same level as the working age population rate. If the log above equation is taken and differentiated with respect to time,  $t$ , then the following equation is drawn.

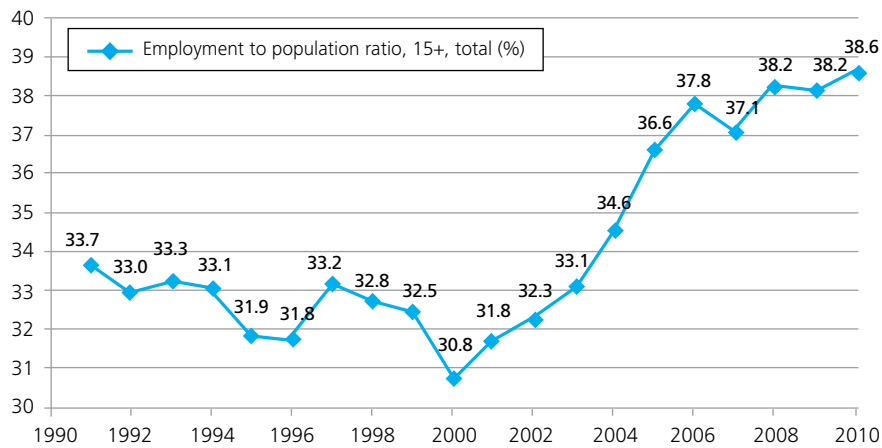
$$\begin{aligned} \text{Per capita GDP growth rate} = & \text{Employee per capita GDP growth rate} \\ & + \text{growth rate for population ratio of working age} \\ & \text{out of total population} \\ & (\text{Number of Employees} / \text{Total Population}) \end{aligned}$$

The ratio of employees to the total population is strongly affected by the population ratio of working age out of the total population, which is affected by the change in population ratio for the age group (15 – 65) in a country. Suppose the working age is the age group (15 – 65), and the rate of (15 – 65)/total population during the period 2010-2030 is expected to increase from 43.3% in 2010 to 51.8% in 2030. Then, Algeria's average annual growth rate of the population of working age would become 0.9%.<sup>18)</sup> Thus, it can easily be ascertained that Algeria's average annual growth rate of per capita GDP by demographic change is 0.9%.

Furthermore, in order to calculate the labor supply, the data on Algeria's employment to population ratio is needed. According to the WDI data from the World Bank, Algeria's employment to population ratio is 38.6%. <Figure 1-42> demonstrates Algeria's employment to population ratio, which tended to decrease somewhat at the beginning of 30% in the 1990s, dropping to its lowest level in 2000, then gradually increasing after that.

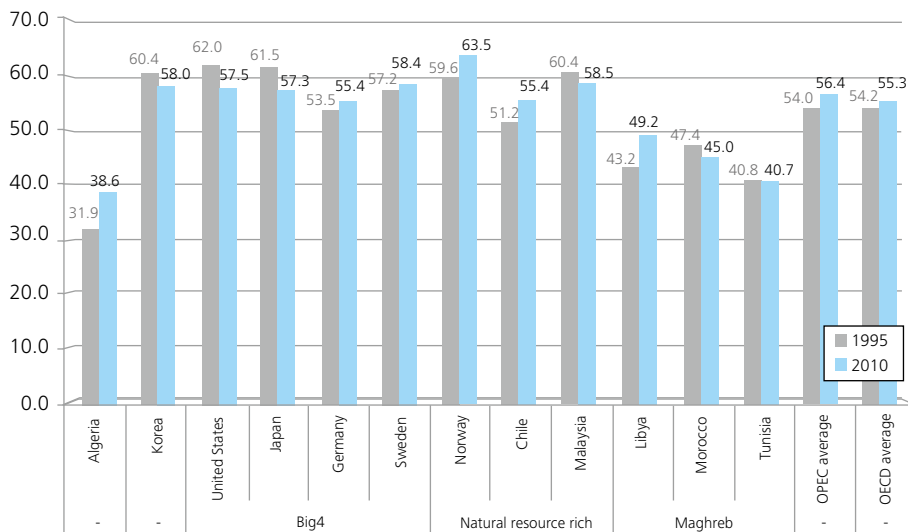
18)  $\ln(51.8/43.3)/20=0.00896$ .

<Figure 1-42> Employment to Population Ratio



Source: The World Bank, Employment to population ratio, 15+, total (%)

<Figure 1-43> Employment to Population Ratio

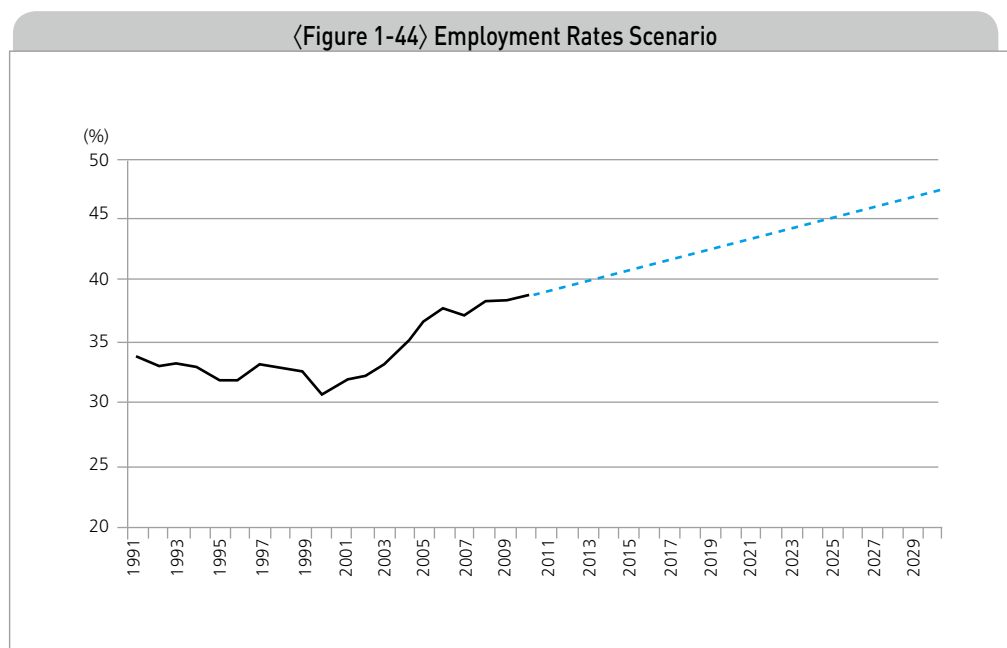


Source: The World Bank, Employment to population ratio, 15+, total (%)

However, as can be observed in <Figure 1-43>, Algeria's employment to population ratio is quite low compared to that of the other countries. For example, Korea's employment to population ratio was 58% in 2010, and all of the ratios of the

Big 4 countries, resource rich countries and OECD countries were over 50%, which is much higher than Algeria's 38.6%. Moreover, the ratios of other Maghreb countries, such as Tunisia (40.7%) and Libya (49.2%), are low compared to those of the developed countries, but are higher than Algeria's employment to population ratio.

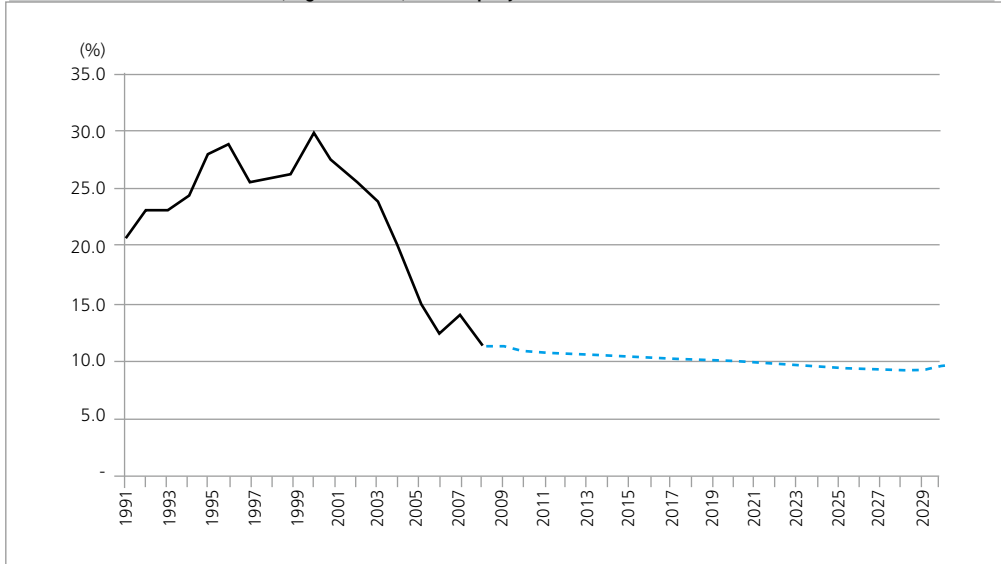
Therefore, in this report, Algeria's employment to population ratio should be enhanced at the average level of the present OECD in 2050. By doing so, Algeria's employment to population ratio will be 46.9% in 2030, supposing that Algeria's employment to population ratio in 2050 would be 55.3%, which was the OECD's employment to population ratio illustrated in <Figure 1-44>.



Note: The solid line is actual and the dotted line is projected.

Assuming that Algeria's employment to population ratio is 46.9% in 2030, unemployment rates scenarios are illustrated as follows. To begin with, Algeria's labor participation rate is 43.3% based on the data from the WDI of the World Bank. Assuming that the average labor participation rate of the OECD with 60.4% in 2010 was the same as Algeria's labor participation rate in 2050, Algeria's labor participation rate in 2030 will become 51.8%. Applying the equation of unemployment rate = 1-(employment to population ratio/labor participation rate), Algeria's unemployment rate would decline from 10.9% in 2010 to 9.5% in 2030 (Referring to <Figure 1-45>).

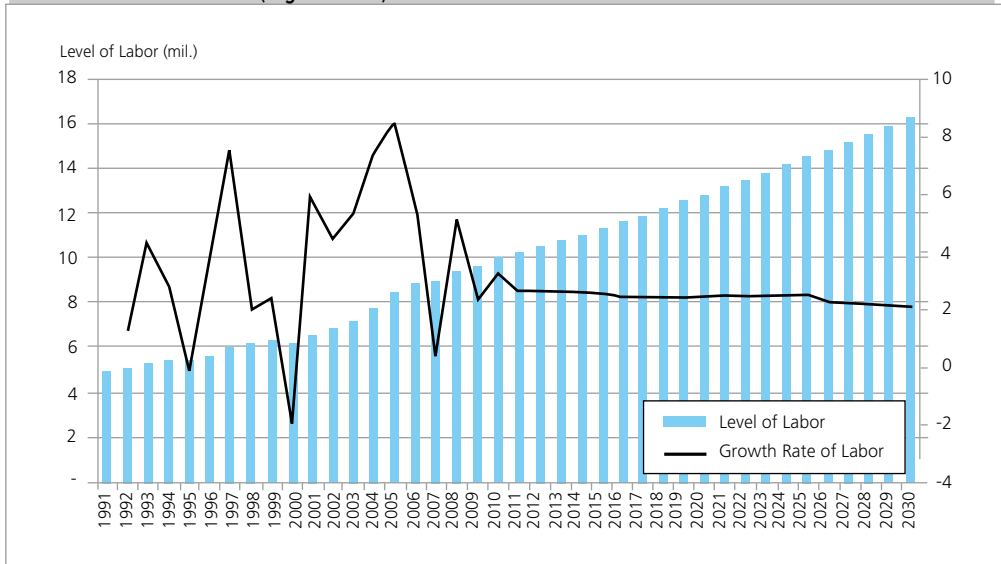
〈Figure 1-45〉 Unemployment Rates Scenario



Note: The solid line is actual and the dotted line is projected.

Meanwhile, in order to achieve the numerical target of the employment rate of 46.9% by 2030, the labor supply should consistently increase. As a result of assumptions based on the UN World Population Prospects (15+), Algeria's labor supply growth rate represents an average annual rate of 2.4% during the period 2010-2030. 〈Figure 1-46〉 illustrates Algeria's labor supply scenario.

〈Figure 1-46〉 The Growth Rate of Labor Scenario



Note: The solid line is actual and the dotted line is projected.

On the one hand, the share of labor income is followed. Algeria's share of labor income was 24.1% in 2010, whilst the OECD's average share of labor income was 61.8%. Note that Algeria's employment rate of 46.9% in 2030 is similar to Turkey's employment rate of 43.6% in 2010, and Turkey's distribution rate of labor income was 38.4% in 2006. If we suppose Algeria's share of labor income in 2030 becomes about 40% of Turkey's level in 2010, calculating this, the average share of labor income during the period 2010-2030 will reach 32.0%. Also, the share of capital income is calculated from the equation of  $(1 - \text{share of labor income})$ .

Finally, the TFP growth scenarios are necessary. Differing from researcher to researcher, Korea's TFP growth has become around 2% since 1990. As previously observed, Algeria's TFP growth was -3.7% during the period of 2000-2007. Thus, Algeria's TFP growth scenarios are presumed to range between -3.7% and 2%.

〈Table 1-14〉 TFP Growth (Korea)

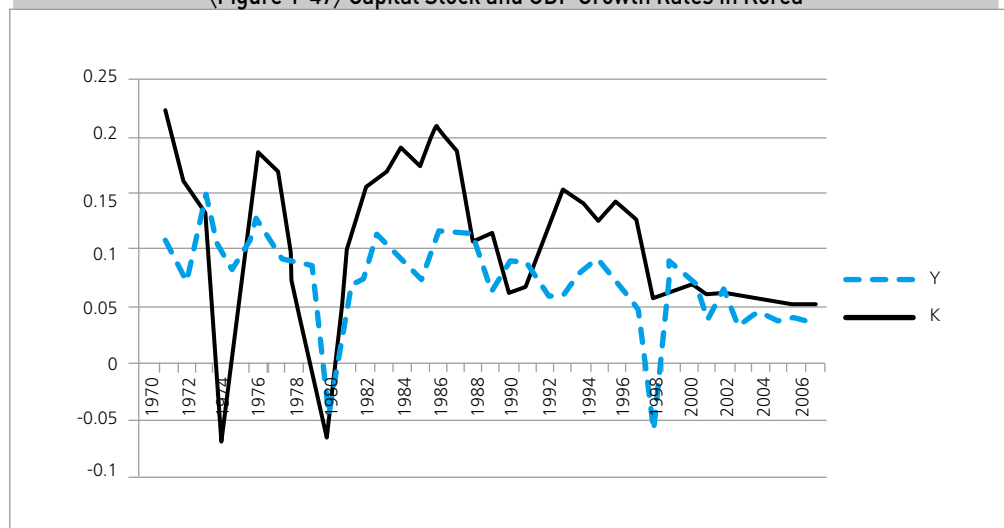
Shin, et al. (2012)		OECD (2011)		Oh (2009)	
1981~1985	3.6	1985~1990	5.8	1981~1985	5.2
1986~1990	3.3	1990~1995	3.6	1986~1990	4.0
1991~1995	1.7	1995~2000	3.7	1991~1995	2.4
1996~2000	2.0	2000~2005	3.0	1996~2000	2.2
2001~2005	1.4	2005~2010	2.6	2001~2005	1.3
2006~2010	1.5	1985~2010	3.8		
2011~2100	1.4				

In order to achieve an average annual GDP growth rate of 7% as well as per capita GDP growth rate of 6%, Algeria has to locate its corresponding TFP growth and investment rate to those figures. Investment rate is precisely relevant to capital stock. Comparing Korea's capital stock growth rate to its GDP growth rate, the capital stock growth rate has been higher than the GDP growth rate in general. For instance, the GDP was 7.2% whilst the capital stock was 9.9% in accordance with the average annual growth rates during the period 1971-2007. As can be observed from Korea's previous experience illustrated above, a rapid capital stock growth rate is of importance for rapid economic growth.

As mentioned in Section 3, a high investment rate is one of the most essential factors to achieve continuous growth in the long run. That is, a high investment rate is a necessary condition for high economic growth. In the process of rapid growth, Korea has set up a target economic growth rate and has attempted to achieve an investment rate corresponding to the target rate. As a result, Korea has successfully

achieved rapid and high economic growth.

〈Figure 1-47〉 Capital Stock and GDP Growth Rates in Korea



〈Table 1-15〉 Average Annual Growth Rates of GDP and Capital Stock by Period in Korea

Period	Y	K	Difference (K-Y)
1971-1980	0.083	0.072	-0.011
1980-1990	0.094	0.147	0.053
1990-2000	0.061	0.104	0.043
2000-2007	0.041	0.057	0.016
1971-2007	0.072	0.099	0.027
1980-2007	0.068	0.107	0.039
1990-2007	0.053	0.084	0.031

The table below illustrates the investment rate and TFP growth scenarios in order to achieve Algeria's average annual GDP growth rate of 7% and per capita GDP growth rate of 6%. The range of TFP growth is determined between Algeria's current level of -3.7% and Korea's current level of 2%p. Regarding the investment growth rate, three levels of High, BAU and Low are presented as follows; the highest investment rate of 26% during the period (2005-2009), the medium investment rate of 23.5% during the period (2000-2009) and the lowest investment rate of 21.8% during the period (2000-2007).

As shown in <Table 1-16>, Algeria's per capita GDP will be 6.1% during the period 2010-2030, assuming that the TFP growth is 0.0% and the investment rate remains at



26.0%, the average between 2005 and 2009, a high level. However, if the investment rate declines somewhat to 23.5% at the average level of 2005-2009 under the same TFP growth, an average annual per capital GDP growth rate will be 5.3%. Also, supposing that the investment rate is 21.8% with the lowest level, an average annual per capital GDP growth rate will become 4.9%.

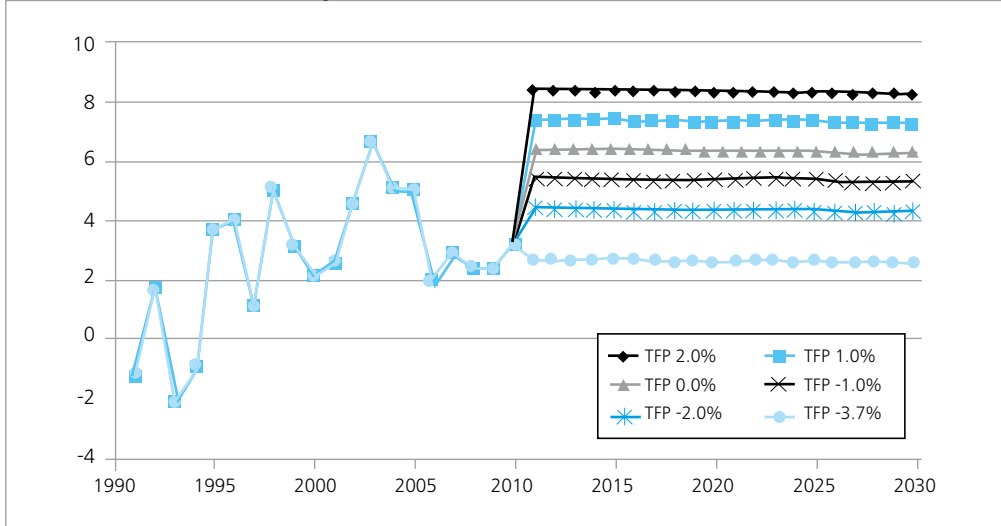
On the other hand, if the TFP growth were very high with 2.0%, and the investment rate remained at 26.0%, it would be possible to allow an average annual per capital GDP growth rate to become 8.1%. However, unless Algeria achieves an improved TFP growth and its TFP growth still remains at -3.7%, the average annual per capita GDP growth rates will become 2.3%, 1.6% and 1.1%, respectively, based on the investment rates of High, BAU and Low. Therefore, it is impossible for Algeria to achieve its vision and goals with the current TFP level.

〈Table 1-16〉 GDP and per Capita GDP Scenarios

	I/GDP	TFP Growth Scenarios (%)					
		2.0	1.0	0.0	-1.0	-2.0	-3.7
GDP Growth (%)	High	9.1	8.1	7.1	6.1	5.1	3.3
	BAU	8.4	7.4	6.4	5.4	4.4	2.6
	Low	7.9	6.9	5.9	4.9	3.9	2.1
GDP per Capita Growth (%)	High	8.1	7.1	6.1	5.1	4.1	2.3
	BAU	7.3	6.3	5.3	4.3	3.3	1.6
	Low	6.9	5.9	4.9	3.9	2.9	1.1

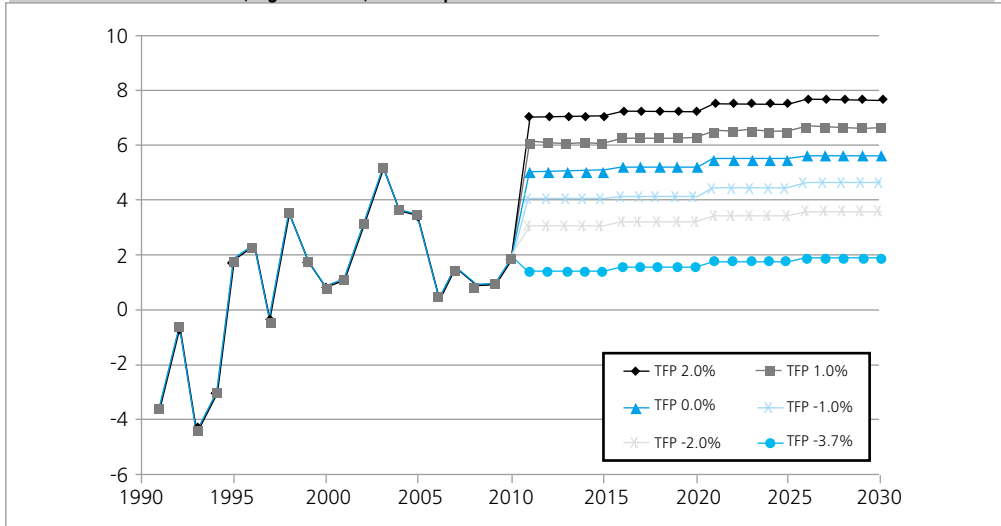
Note: I/GDP: High=26.0%, BAU=23.5%, Low=21.8%

<Figure 1-48> GDP Growth Rate Scenarios



Note: Actual data by 2010, projected after 2010.

<Figure 1-49> Per capita GDP Growth Rate Scenarios



Note: Actual data by 2010, projected after 2010.

<Table 1-17> illustrates investment scenarios required to achieve an average annual GDP growth rate of 7% during the period 2010-2030. <Figure 1-50> also illustrates the previous investment rates to the present time, indicating that the investment rate should be high enough to offset a low TFP growth. If the TFP growth of the period 2010-2030 remains at -3.7% - the level during the period of 2000-2007 - the investment rate required to achieve an average annual GDP growth rate of 7% is 38.5%, which is very high compared to the investment rate in 2009 as

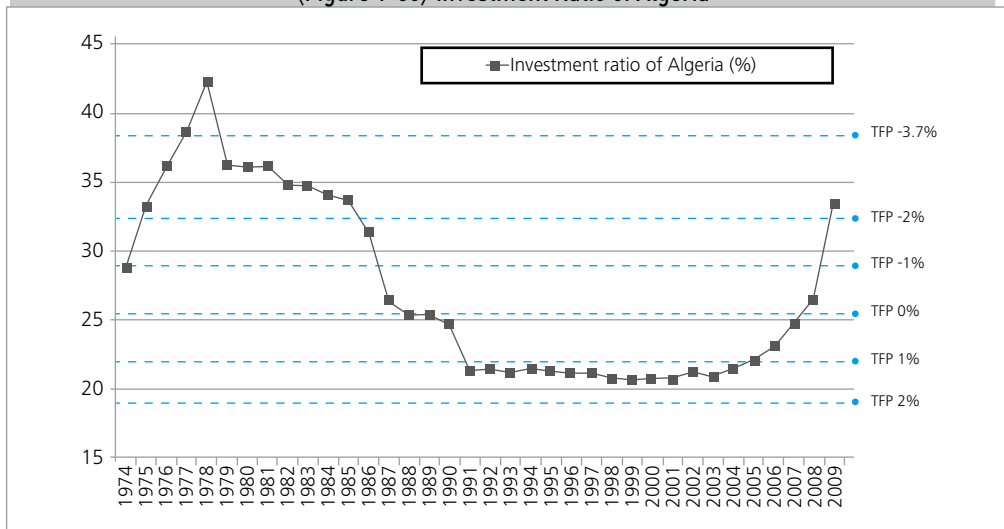
shown in the prior capital stock scenarios. Moreover, if the investment rate remains at 32.5%, similar to Algeria's investment rate in 2009 with -2.0% of TFP growth, Algeria will be able to achieve an average annual GDP growth rate of 7%. However, if the recent high investment rate does not remain, then drops below 25% at the level of the investment rate in the late 2000s, 0% of the TFP growth is required for an average annual GDP growth rate of 7% during the period 2010-2030.

On the other hand, in the case of Korea, where the TFP growth is around 2%, the investment rate required to achieve an average annual GDP growth rate of 7% is 19%, which is quite lower than Algeria's previous investment rates. Namely, if the current level of investment rate remains at about 2%, and a high level of TFP growth is achieved, it could be possible to achieve rapid growth of over the average annual rate of 7%.

〈Table 1-17〉 Investment Ratio Scenarios

	TFP Growth Scenarios					
	2.0	1.0	0.0	-1.0	-2.0	-3.7
I/GDP	19.0	22.0	25.5	29.0	32.5	38.5

〈Figure 1-50〉 Investment Ratio of Algeria



Source: The World Bank, WDI

In conclusion, Algeria should consistently develop with an average annual GDP growth rate of 7% as well as per capita GDP growth rate of 6% every year so that Algeria could achieve the OECD's average per capita GDP by 2050 and triple its GDP by 2030 as an intermediate phase. In order to achieve these objectives, maintaining

a quantitative expansion of labor and capital and achieving quality growth through improvement in productivity should be required. As a result, this will allow Algeria to turn itself into a new, rapid growth country in the 21st century.

## 5. Conclusions

This report is written in semi-centennial commemoration of the independence of the People's Democratic Republic of Algeria. The objective of this study is to provide Algeria with a vision on long-term socio-economic growth until the year 2030. This report recommends an inclusive growth strategy, which refers to the development in the quality of life along with economic growth. It has also selected five major policy assignments that have been deemed to be the most appropriate. The five major policy assignments are: 1) restructuring of Algerian industries through industrial diversification, 2) national reform in governance structure, 3) amelioration of human capital through education reform, 4) national land development plan based on growth and equality, and 5) enhanced quality of life for Algerians through reform in the public health sector.

An analysis of Algeria through the use of a customized Economic and Social Development Indicator (ESDI) has concluded that Algeria has shown favorable accomplishments in the 'growth engine' class, but requires a sustainable growth-driver in industrial diversification as well as reform in the 'government responsibility' and 'equal opportunity' classes. The 'social security net' class would benefit from strengthening the status quo.

A comparative analysis was conducted to identify the standing of Algeria among the following regions: the 'Big 4 (United States of America, Germany, Japan and Sweden),' Republic of Korea, 'Maghreb nations,' and 'resource rich countries (Norway, Chile and Malaysia).' The results indicate that Algeria had an annual growth rate of 3.4% from 1995 to 2011 compared to OECD's 2%. The population of Algeria is the average level of OECD countries. In addition, 1.92% growth in per capita income exceeded that of the average OECD's per capita income growth rate. The unemployment rate also fared better than the other nations that it was compared to.

Given that in 2010 the proportion of hydrocarbon exports out of total exports was 98.2% and amounted to 43.1% of the GDP, Algeria can be classified as a resource rich country. Globally, per capita natural resources and per capita income are positively correlated, while the proportion of natural resources in total national wealth and per capita income growth rate, business environment, HDI, government effectiveness and informatization are negatively correlated. The proportion of

hydrocarbon exports in total exports and per capita income growth, business environment, HDI, government effectiveness and information-orientation are also negatively correlated. This demonstrates the need for Algeria to take careful action in order to optimize the use of its natural resources.

A closer look into the Algerian economy reveals a low per capita income, but an outstanding macroeconomic stability, especially when taking inflation, current account balance, foreign exchange reserve, government debt and foreign debt into account. A negative TFP growth, given the high investment rate, limited the potential for growth. This setback is connected to a low amount of R&D personnel.

Based on the country's current situation, seven reform assignments for Algeria are suggested in this report. 1) An annual economic growth of 7% is required to achieve an increase in the standard of living and a provision of consistent employment opportunities for Algerian civilians, reaching an average OECD per capita income by 2050 as well as coming in first place in the MENA region, 2) appropriate policies that accommodate - and sustain - current macroeconomic stability are essential, 3) a steady job creation, 4) enhancement of investment efficiency, 5) a reduction in hydrocarbon reliance, 6) dramatic improvement in the research and development sector, and 7) aggregate national reform.

The visions and appropriate strategies present three facets. First, in order to establish visions and appropriate strategies for aggregate reform, market-friendly environments and a communication channel between the government and the people need to be established. Second, strategies for achieving economic reform must be sought out, especially for industrial diversification. Third, reform programs to increase the standard of living must be created. This includes visions and strategies for education, public health and national land developments.

Finally, this report presents Algeria with a number of goals achievable through the reforms mentioned above. The goals are: 1) achieve an average per capita income equal to the average OECD (World Bank, 2008) and 2) become the most outstanding nation in the MENA region. More specifically, a plan to triple the income through 7% aggregate economic growth and 6% per capita income growth per annum until 2030 has been presented. The strategies to accomplish the growth rates are presented in multiple scenarios based on a result from growth accounting analyses of TFP growth, investment rate, capital growth rate, labor growth rate, labor income share and capital income share. According to the results, if Algeria were to complete the five reform assignments – industrial diversification, reform in governance, education, public health and national land development – the probability of Algeria transforming into a fast-growing nation in the 21st century would rise dramatically.

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UNESCO Institute for Statistics

(<http://stats.uis.unesco.org>)

UN COMTRADE DB

(<http://comtrade.un.org>)

UNDP International Human Development Indicators

(<http://hdrstats.undp.org/en/indicators>)

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# Transformation into a Knowledge-based Economy: Industrial Diversification in Algeria

1. Introduction
2. Current Economic Structure of Algeria
3. Assessment and Projection of Industrial Structure of Algeria from a Comparative Perspective
4. Opportunities and Challenges
5. Policies for Industrial Diversification

## Transformation into a Knowledge-based Economy: Industrial Diversification in Algeria

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### Summary

The transformation into a knowledge-based economy is important for Algeria in order to achieve sustainable long-term economic growth and realize its vision that Algeria will become a developed country by 2030. The transformation into a knowledge-based economy could be achieved by industrial diversification that reduces its resource-dependence.

This report tries to draw a picture of Algeria's industrial structure until 2030 that will have enabled it to realize GDP growth of 7% per annum over the next 20 years. First, we assess the current industrial structure of Algeria based on a cross-country comparison and find that Algeria's current structure is severely imbalanced with an excessive share of hydrocarbon in its total production. This kind of structure makes economic growth very sensitive to hydrocarbon price fluctuations and cannot support rapid, sustainable growth unless the price of hydrocarbons keeps rising.

If we assume that the Algerian economy converges to the stylized pattern of industrial structure implied by the cross-country regression, we can forecast the Algerian industrial structure in 2030 as follows: The shares of agriculture, manufacturing, services, and hydrocarbon sector will become 15.3%, 16.2%, 50.0%, and 18.5 % respectively in 2030. In 2010, the respective shares were 10.5%, 6.2%, 40.2%, and 43.2%. To accomplish this successful structural transformation,

agriculture, manufacturing, and services should grow 8.9%, 11.8% and 9.3% per annum, over the next 20 years. Even though achieving such high growth in non-hydrocarbon sectors look like a daunting task, the Korean experience of industrialization implies that it is possible given that Korea's manufacturing sector increased about 15% during the era of rapid industrialization.

To realize the optimistic forecast of industrial transformation within the next 20 years, it is desirable that the Algerian government carries out reforms prior to implementing industrial policy for the promotion of strategic industries. If we assess the current policy stance of the Algerian government, it does not seem to be much different from state-led industrialization pursued thirty years ago. Although the Algerian government now places greater emphasis on the role of export and the importance of SMEs in industrial development, current economic structure with older firms including government-subsidized SOEs, lower business density, and little competition will tilt the promotion policy toward old big ones which currently suffer from unproductive management distorted by vested stakeholders.

Therefore, this report asserts that the prerequisites for industrial diversification are the emergence of a sizeable number of private enterprises and the reform of the SOEs. The two prerequisites are not independent, but rather interrelated reforms that need to be pursued at the same time before venturing into industrial promotion. For private sector development, the first step should be to implement policies that give clear signals to private investors and that strengthen the credibility of policies as they work to level the playing field for all investors hereby encouraging competition through the removal of formal and informal entry barriers and enlarging the access to credits. It will improve the business environment and observe the emerging industries or firms. Afterwards, the government may create and allocate rent in a competitive way among firms based on their performance in pursuing specific targets of industrial promotion. At this stage, it is crucial to set up the incentive-augmenting mechanism hand in hand with the enhancement in policy capacity.

The reform for private sector development should be accompanied by a reform of the SOEs. The current dominance of the SOEs is one of the most important obstacles to private sector development and therefore for industrial diversification. In addition, since the SOEs are taking such a large share in the economy, structural transformation cannot be accomplished without restructuring the SOEs. For this, the control of the SOEs should be transferred to agencies close to the top authority, which will then decide the allocation of financial resources and the range of business by considering the national reform strategy. In addition the budgeting agency in the government should try to establish hard budget constraints for the SOEs by subsidizing with conditionality and clear performance criteria.

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Finally, it goes without saying that these two prerequisites for industrial development cannot be achieved without the commitment of political leadership.

## 1. Introduction

Algeria celebrates its 50th anniversary of independence this year and communicated its vision to become a better place to live through higher incomes and better income distribution. To realize this vision, Algeria needs to reduce its excessive dependence on hydrocarbons by transforming itself from a natural resource-based economy to a knowledge-based economy. This report tries to identify what the economic structure of Algeria should look like to realize the GDP forecast derived from the aggregate macroeconomic projections described in the previous chapter. This report also suggests some key priorities Algeria should focus on to transform the economy to the shape consistent with sustained high economic growth in the next two decades.

In this section, as an introduction, we will briefly discuss the role of resources in economic development and will claim that the existence of rich resource is not a curse a priori, but may have different influence depending on how resources are used. Next, we will clarify what the knowledge-based economy is and resolve the misunderstanding on the meaning of knowledge-based economy. It will allow us to obtain a clearer picture of what the transformation into a knowledge-based economy should look like for the future growth of Algeria.

### 1.1. Resource Abundance and Economic Growth

Natural resources are good for a country. However, the experience of resource-rich developing countries somewhat contradicts with this apparently commonsensical statement. Economists have named this negative effect of natural resource-abundance on economic growth as the resource curse. The story of the resource curse goes back to the hypothesis of Prebisch and Singer who emphasized a worsening terms of trade of primary goods that put the resource-abundant countries at a disadvantage relative to manufacturing-based ones. Recently empirical evidence has found support for the resource curse hypothesis. Sachs and Warner(2001) ran a cross-country regression and found statistically significant evidence of a negative effect of resources on economic growth. Gylfason(2001) found some stylized facts of resource-rich developing countries. Nations with abundant natural assets tend to trade less and receive less foreign investment. In addition, they tend to have bigger government, more corruption, less education, and less domestic investment. These are all bad for economic growth.

Some reasons for the resource curse have been suggested. First of all, a well-known story is called the Dutch Disease from the experience of the Netherlands after the discovery of a large natural gas field in 1959. The revenue from gas exports brought about a sharp appreciation of the Dutch florin which weakened the competitiveness of manufacturing exports from the Netherlands. It resulted in the deindustrialization of the Netherlands with a fall in the manufacturing sectors and a rise in the services sectors. The hollowing out of the manufacturing sector which has higher productivity growth made a negative impact on long-run growth. Second, if the revenue from natural resources cannot be sustained, a bust follows a boom since the pre-boom ability to earn income may be eroded. Third, even without a terms of trade problem, the long-term growth of resource-dependent economies would be sensitive to the price fluctuation of resources. The boom-bust cycle means macroeconomic instability, which again is bad for growth.

In addition to the above three reasons that are all related to macroeconomic instability, it is quite difficult for resource-dependent countries to nurture skills and knowledge of the citizens. This is because the extraction of natural resources is not labor or skill-intensive and most developing countries rely on foreign companies for technology and capital for the extraction of these resources. If we accept that long-term growth is ultimately determined by technical progress and human knowledge accumulation, the long-term prospects of resource-dependent countries are doomed unless the natural resources are limitless or renewable. As is well known, the industrial revolution accelerated economic growth since it provided room for innovation and spillover effects. In particular, the manufacturing sector has been a major engine through active learning-by-doing and a thickening of industrial linkages from fine specialization. It is a stylized fact that most developed countries did not skip the stage of industrialization in their path to high-income countries.

Many resource-rich countries including Algeria attempted industrial promotion, but to some extent pursued misguided policies. It is also related to resource-abundance. While resource-poor countries like Korea had no choice but to export goods to earn foreign exchange needed for economic growth, the resource-rich countries relied on seemingly ever-lasting resource revenues and pursued self-sufficiency by restricting trade based on strong import-substitution policies. This resulted in rent-seeking behaviors and distortions in resource allocation, which brought about the worst results with regards to long-term economic growth.

The existence of huge rents in the hands of governments incentivizes the formation of special-interest groups. It corrupts decision-makers and distorts the distribution to their interest against society. Due to head-to-head competition in the zero-sum game of rent-taking, social conflicts increase and in the extreme civil war breaks out. On the other hand, a strong government could spend the rent to meet

political ends in bureaucratic and discretionary ways. Tornell and Lane(1999) coined a term, 'Voracity Effect', that a windfall coming from natural resource can perversely generate more-than-proportionate increase in fiscal redistribution by powerful political groups and end up inefficiently exhausting the public good.

Finally, it should be pointed out that the easy money obtained from the exploitation of natural resource and well structured political governance of rents make an economy resistant to structural reform until it is too late.

However, the resource curse is just one-side of the story on the effect of natural resources on economic growth. There are many evidences of resource-blessings or at least the non-existence of a resource-curse. First of all, the United States, a resource-rich country, has a history of unprecedented successful economic growth. Canada, Australia, and Scandinavian countries such as Norway belong to the same group as the U.S. in terms of resource-richness. There are also successful experiences of several resource-rich developing countries such as Chile and Malaysia. Therefore, what is detrimental to growth is not the richness on natural resources per se, but the wrong management of interrelated side effects from them.

Thus, the essence of turning a resource curse into a blessing lies with structural reform to lessen resource dependence by strengthening and diversifying the industrial base to areas other than natural resources. It ultimately depends on the adequate management of revenue to direct rent-seeking behaviors into productive and innovative activities. This report will draw the projection of industrial structure when Algeria successfully utilizes the revenue from hydrocarbon production for its industrial transformation into knowledge-based economy.

## 1.2. Knowledge-Based Economy and Industrial Diversification

Knowledge including know-how, expertise, and information is a critical tool for economic growth as a factor of production. Unlike tangible factors such as machines and facilities, knowledge is replicable and limitless since it can be shared for production. Knowledge makes production efficient and productive and has become more and more important with the progress of information and communication technology.

What is a knowledge-based economy? According to the OECD(1999), a knowledge-based economy is an economy, which is directly based on the production, distribution and use of knowledge and information. This reflects the trend in developed economies towards growth through high-technology investments and associated productivity gains.

The concept of the knowledge-based economy has attracted the attention of policymakers in developing countries as well. The World Bank introduced a 'Knowledge Assessment Methodology' which compares a basic knowledge scorecard across countries.<sup>19)</sup> The World Bank suggested four core requirements that a country must meet in order to qualify as a knowledge economy. They are a sound institutional and economic regime, adequate education and skills, information and communication infrastructure, and an innovation system.

Although the terminology of the knowledge-based economy itself is relatively new, knowledge has long been an important factor in economic growth. Among the above four core requirements of knowledge-based economy proposed by the World Bank, the first two elements such as institution and education have long been mentioned as the most crucial factors for economic development. The other two elements are relatively new as economists are now exploring ways to incorporate knowledge and technology more directly in their theories and models. It seems that the adoption of information and communication technology and innovation system, relatively new but less crucial, attracted more attention than the first two critical elements such as institution and education.

Therefore, even though the concept of knowledge-based economy engraved the role of knowledge-related technology in driving productivity and economic growth, it is misunderstood that the adoption of ICT is automatically conducive to the knowledge-based economy. As the Paradox of Computer mentioned by Solow whereby worker's productivity decreases while computers are everywhere, the productivity of computer is realized only when the people and organizations are ready to use them properly.

Actually, knowledge has always been important throughout human history. The production system has accelerated to move towards greater knowledge-intensiveness over the last two hundred years as the economy shifted from agriculture to industry and further to the services-based economy. Along with structural change, the factor-intensity moved from labor to capital, technology, and human capital. In this context, we may say that the transformation into a knowledge-based economy for Algeria is none other than industrial diversification as the history of economic development shows.

In addition, this industrial diversification towards greater knowledge-intensiveness in production and management has been realized as the development of private enterprises. Hayek(1945), a pioneer of knowledge economics, argued emphatically that the use of knowledge in society is most efficient in market economies. It means that private enterprises create and utilize knowledge most

19) World Bank has a website, [www.worldbank.org/KAM](http://www.worldbank.org/KAM), for this.



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efficiently. Therefore, for Algeria, which depends heavily on natural resources, the transformation into a knowledge-based economy is none other than industrial diversification through private sector development. This report focuses on the industrial transformation of the Algerian economy as a way towards a more knowledge-based economy.

In section 2, we introduce the industrial structure of Algeria. In section 3, we assess the current industrial structure through an international comparison and project the industrial structure of Algeria over the next 20 years. In section 4, we explore the opportunities and challenges Algeria is facing for the successful industrial diversification. Finally, in section 5, we suggest critical requirements to turn the optimistic projection into reality.

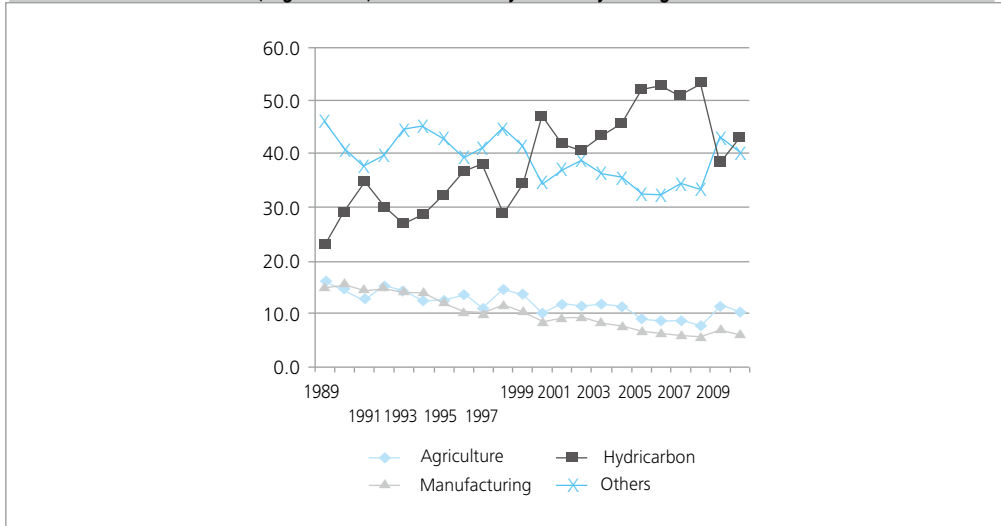
## 2. Current Economic Structure of Algeria

### 2.1. Industrial Structure of Algeria

The last 20 years of structural transformation in Algeria show the opposite direction to the stylized pattern of structural change usually observed in income-growing developing countries. The GDP share of the manufacturing sector, which usually rises with economic growth in most developing countries has declined to 6.2% in 2010 from 15.0% in 1989. <Figure 2-1> Considering the income level (per capita GDP) of Algeria at US\$ 4,500 in 2010, the manufacturing sector is underdeveloped in Algeria. The countries with income comparable to that of Algeria have much higher shares of manufacturing than Algeria. For instance, the share of manufacturing of China's GDP is 32.6%, 35.8% in Thailand, and 20.2% in Jordan. Although some oil-producing countries like Azerbaijan have small manufacturing shares of 5.0% and are therefore as low as Algeria, resource-abundant developed countries like Australia (10.5%) and Norway (9.2%) have larger shares of manufacturing in GDP.<sup>20)</sup>

20) The figures are for the year 2008 from World Bank's Major Economic Indicators.

〈Figure 2-1〉 GDP Share by Industry of Algeria (%)

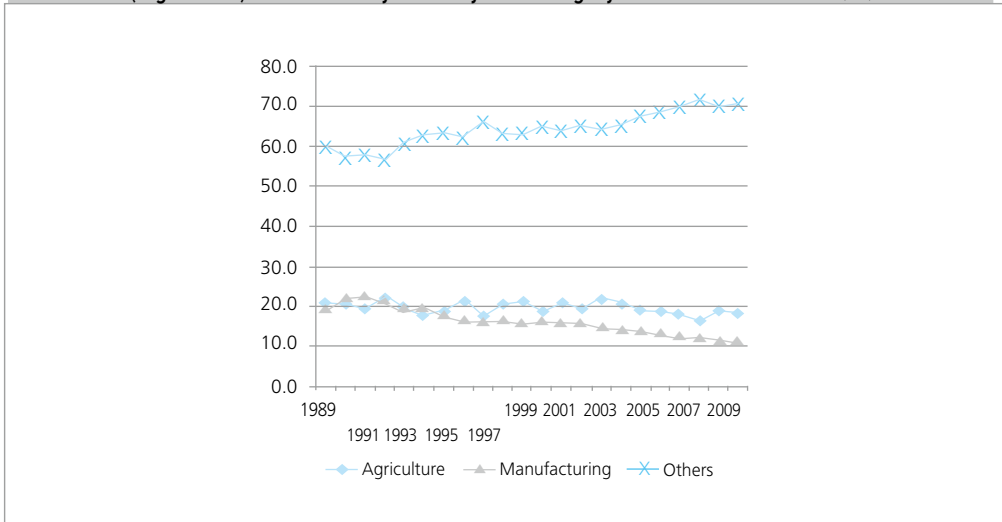


Source: National Accounts of Algeria

If we net out the contribution of the hydrocarbon sector from the current GDP of Algeria, Algeria's income level is far less and only around US\$ 2,500. Even if we exclude the contribution of hydrocarbons, Algeria's share of manufacturing as part of GDP is 10.0%, still lower than comparable countries such as Indonesia(27.8%), India(15.5%), Vietnam(20.3%), Ukraine(20.0%), and Bolivia(14.4%).

In sum, the industrial transformation of Algeria over the past 20 years has been stagnant. Except for the increase of value-added in hydrocarbon production due to the rise of oil prices, there have been no significant structural changes. As a result, the resource dependence of Algeria has become much more severe. <Figure 2-2>

〈Figure 2-2〉 GDP Share by Industry Excluding Hydrocarbon Production (%)



Source: National Accounts of Algeria

Note: The share of each sector in GDP net of contribution of hydrocarbon sector

## 2.2. Trade and Investment in Algeria

The international comparison of major economic indicators in <Table 2-1> and <Table 2-2> explicitly shows the excessive resource-dependence of Algeria. Algeria ranks number one in export dependence on resources. Due to hydrocarbon production, Algeria belongs to upper middle income countries with a per capita GDP higher than its neighbors. Since Algeria has a relatively large population compared to its neighbors, the size of Algeria's economy is much larger than those of adjacent economies. Taking into account the size of economy and population, it is quite abnormal that Algeria's manufacturing sector is so little in its contribution to GDP. The manufacturing share in GDP for middle income countries is 17.7% for lower middle ones and 22.1% for upper middle ones.

〈Table 2-1〉 International Comparison of Selected Indicators (1)

	Population (1000)	rank	GDP per capita (current US\$)	rank	Natural resource exports (Ores, metals, Fuels) (% of exports)	rank	Ores and metals (%)	Fuel (%)
Algeria	34.4	35	4,967	95	98.2	1	0.6	97.6
Tunisia	10.3	78	4,345	102	19.0	65	1.7	17.3
Morocco	31.3	39	2,793	125	17.6	67	15.5	2.2
Libya	6.1	102	15,150	55	n.a	148	n.a	n.a
Norway	4.8	116	93,367	5	74.6	17	5.7	68.9
Australia	21.5	52	48,348	19	61.0	26	26.7	34.3
Canada	33.3	36	45,110	22	38.1	40	8.4	29.7
Indonesia	235.0	4	2,172	132	37.1	43	8.0	29.1
Malaysia	27.5	44	8,099	74	20.2	58	1.8	18.4
Korea	48.6	25	19,162	48	11.2	85	2.2	9.0
Low income	764.0		477		n.a		n.a	n.a
Lower middle	2,391.5		1,465		31.4		5.3	26.1
Upper middle	2,418.7		5,500		27.2		5.5	21.7
High income	1,112.6		39,662		15.1		3.8	11.3
World	6,686.8		9,168		17.7		4.2	13.6

Source: World Bank, Major Economic Indicators

Note: The figures are for the year 2008.

Algeria's saving rate is much higher than its investment rate, which implies that Algeria runs huge external surplus. Usually, middle income countries which undergo active industrial transformation face savings and foreign exchange shortages as summarized in the two-gap model of economic development. The current situation of Algeria does not have the same constraints that other countries have.

Current gross fixed investment is not so low compared to other middle income countries, but a larger share of fixed investment is taken by the public sector. According to the national accounts, the ratio of private gross fixed capital formation to GDP is just 10.2%, which implies that the remaining 16.1%-point of gross fixed capital formation is accounted for by the public investment. Thus, the public sector accounts for more than 60% of gross fixed capital formation.

Algeria is more closed than other countries in the region. FDI net inflows amount

to just 1.5% of GDP, lower than Tunisia (5.9%) and Morocco (2.8%) and the middle income average (3.7%). The ratio of trade to GDP of Algeria is about 70%, lower than Tunisia (114.3%) and Morocco (88.3%).

In sum, Algeria has resources available from hydrocarbon exports and has room to expand trade which usually accelerates economic growth if well managed. In addition, the reduction of the public sector investment by promoting the development of private investments will result in more efficient allocation of funds.

〈Table 2-2〉 International Comparison of Selected Indicators [2]

	Employment share		Value-added share			% of GDP			
	Agriculture	Industry	Agriculture	Industry	Manufacturing	Gross domestic savings	Gross fixed capital formation	FDI, net inflows	Trade
Algeria	n.a	n.a	6.9	62.1	4.6	56.7	26.3	1.5	69.2
Tunisia	n.a	n.a	8.5	33.1	18.7	22.9	23.5	5.9	114.3
Morocco	40.9	21.7	14.6	30.3	14	24.7	33	2.8	88.3
Libya	n.a	n.a	1.9	78.2	4.5	67.8	27.9	4.4	94.8
Norway	2.6	20.5	1.2	45.5	9.2	41	21.8	1.7	78.1
Australia	3.3	21.6	2.5	29.1	10.5	25.7	27.1	4.5	41.4
Canada	2.4	21.5	2.1	31.3	16.2	24.8	22.9	3.9	68.7
Indonesia	40.3	18.8	14.5	48.1	27.8	28.9	27.7	1.8	58.6
Malaysia	14	28.7	10.2	47.9	26.2	42.5	19.6	3.3	183.2
Korea	7.2	25	2.7	36.5	27.9	30	29.3	0.4	107.2
Low income			26.8	24.9	13.4	8.7	21.4	3.2	56.3
Lower middle			16.4	32.5	17.7	23.4	27.3	3.7	66.8
Upper middle	31.4	26.3	7.5	38.1	22.1	32.8	27.1	3.7	61.8
High income	3.4	24	1.4	25.3	16	19.7	20.2	2.9	58.8
World			2.9	27.2	16.8	21.5	21.4	3.1	59.4

Source: World Bank, Major Economic Indicators

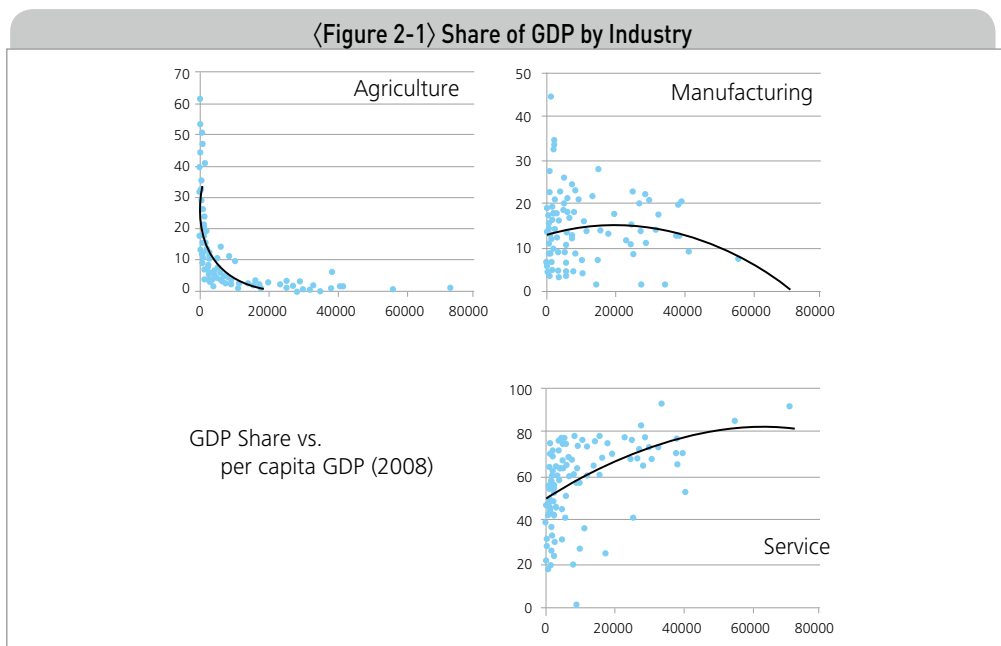
Note: The figures are for the year 2008.

### 3. Assessment and Projection of Industrial Structure of Algeria from a Comparative Perspective

#### 3.1. How Does Algeria Deviate from the Stylized Structural Pattern?

It is well known that economic development is impossible without the successful transformation of the industrial structure from numerous studies such as Clark(1940), Kuznetz(1957), and Chenery et al.(1989). The central feature of structural transformation is thought to be the shift of productive resources from agriculture to industry. The share of manufacturing in terms of output and employment rises as per capita income increases due to the economy undergoing the industrialization. After per capita income reaches a certain level, the manufacturing share declines , as the share of services rises when the economy enters the deindustrialization phase.

According to this stylized pattern, as a country's income increases, the share of agriculture in production and employment sharply decreases. In addition, the share of services gradually increases with income growth. The share of manufacturing increases to a certain level of income, but declines afterwards. However, the patterns of manufacturing and services are not so clear as that of agriculture. (Figure 2-1)



Source: WDI DB

Note: Data on employment share of many developing countries including Algeria are not available.

The reason that the share of manufacturing is not as regular as in the case of agriculture is because the size and characteristics of the manufacturing sector differs greatly across countries. For instance, countries like Algeria, which have a large mining industry tend to have a smaller share of manufacturing in GDP even though the share of industry is large. Those countries with limited market size due to a small total population tend to have a small share of manufacturing since the economies of scale in manufacturing cannot be realized. To induce a trend line of manufacturing share evolution along with income growth, we run regressions based on the hypothesis that the share of manufacturing tends to have a positive relationship with population size, but a negative one with resource-abundance.

<Table 2-3> Determinants of Manufacturing Share in GDP

	model (1)	model (2)	model (3)	model (4)
Constant	-25.2	-70.26	-74.45	-62.88
	(-1.46)	(-4.11)	(-4.78)	(-4.06)
Log (income)	9.47	14.25	15.63	15.30
	(2.18)	(3.64)	(4.38)	(4.44)
Log (income squared)	-0.56	-0.82	-0.92	-0.85
	(-2.06)	(-3.44)	(-4.22)	(-4.04)
Log (Population)		1.56	1.69	1.55
		(5.90)	(6.99)	(6.51)
Resource dependence			-0.10	-0.14
			(-5.08)	(-6.05)
Services share				-0.17
				(-3.09)
Adj R squared	0.03	0.25	0.38	0.42
Nob	123	123	123	123

Source: Data are from World Bank, Major Economic Indicators for the year 2008.

Note: Dependent variable is GDP share of manufacturing sector in percentage. Figures in parentheses are t-statistics.

<Table 2-3> provides results from cross-country regressions, which fit the trend of manufacturing share in GDP on determinants such as income, income squared, population, resource dependence measured by the share of natural resources in total export, and the share of services in GDP. The model (1) fits the nonlinear relationship between manufacturing share and income level to the data on 123 countries for the year 2008. As expected, there is an inverted U relationship between the manufacturing share and the income. Then, we add population, resource

dependence and services share one by one from model (2) to (4). The signs of coefficient estimates confirm the hypothesis we made with statistical significance. The estimates of model (4) imply that a 1% point increase of population tends to increase the manufacturing share by 1.55% point while 1% point increase in resource dependence decreases it by 0.14% point.

<Table 2-4> assesses the degree of industrialization of selected countries by measuring the difference between the actual and the fitted share of manufacturing in GDP based on these regressions. According to the first column which shows a discrepancy between actual and predicted share of manufacturing based on the model (1), Algeria's manufacturing share is lower than the share predicted given its income level by 10.7%-point. When we take the population size of Algeria into consideration in model (2), its manufacturing share is much lower than the predicted level. The inclusion of resource-dependence lessens the gap but the manufacturing share of Algeria is still low, about 6.6% point less than the predicted share. It is interesting to compare Algeria with Australia and Norway that also have large resource-based sectors. Australia and Norway's manufacturing shares are lower than the predicted based on their income level. However, when we consider other determinants such as resource-abundance, their shares of manufacturing in GDP are close to the predicted level.

As we know, East Asian countries are more industrialized than the models suggest. Even Indonesia and Malaysia which have rich natural resources have a large share of manufacturing. In contrast, the North African region is overall not as industrialized. Tunisia, the most industrialized country in the region, seems not very industrialized relative to countries in other regions.



〈Table 2-4〉 Degree of Industrialization

	model (1)	model (2)	model (3)	model (4)
Algeria	-10.7	-13.2	-6.6	-7.5
Morocco	-1.0	-3.3	-4.4	-4.6
Tunisia	3.1	2.3	1.5	1.4
Australia	-4.2	-5.7	-1.7	0.0
Norway	-4.6	-3.3	2.6	1.6
Indonesia	13.6	8.5	9.0	7.3
Malaysia	10.3	7.9	7.2	4.1
Korea	12.5	9.4	8.3	7.2
Germany	8.1	4.5	3.1	2.7
Japan	6.7	2.8	1.6	1.0
United States	-0.8	-6.1	-7.0	-5.9

Note: The figures are the difference between the actual and the fitted share of manufacturing in GDP (%) from the regression of each model in <Table II-3-1>. It shows the deviation from the suggested trend line.

## 3.2. Projection of Industrial Structure of Algeria

It is difficult to forecast long-run economic growth at an aggregate level. It is even more difficult to forecast the industrial structure in the long run. Therefore we have to rely on the stylized pattern of industrial transformation along with the income growth discussed before. Since the regression results in Table II-3-1 show that all the determinants we propose are significant, we use the fitted share of manufacturing from model (4) as a benchmark to project the share of manufacturing in GDP. Since model (4) has a services share, which also changes along with income growth, we separately specified the services share based on income growth and use the model (4) and the services share regression to forecast the industrial structure of Algeria.<sup>21)</sup>

### 3.2.1 Counterfactual Industrial Structure of Algeria

As in the case of aggregate growth projection in the previous chapter, it is almost impossible to forecast the industrial structure without taking the price of oil and gas into consideration. With the current industrial structure of Algeria, it is without doubt that the economic growth of Algeria would fluctuate greatly with oil price movements. It will also affect many of the sectoral shares in GDP. In 2010, the share

21) The services share which includes all other sectors than manufacturing and agriculture are regressed on the log of income and the agricultural share are determined as the residual.

of the hydrocarbon sector in GDP is 43.1% and in 2011, the share of hydrocarbon export in total export is 97.1%.

Therefore, we separate the evolution of the industrial structure from the effects of the hydrocarbon sector and forecast structural change of non-hydrocarbon sectors based on the stylized pattern of structural change based on model (4). Then we will introduce the forecast of long-term price changes in the hydrocarbon sector by borrowing the oil price forecast from the U.S. Energy Information Administration. This methodology has limitations as it separates the sectors that cannot be separated in reality, but it may be better than guess work without any reference.

Now, we start with a counterfactual guess by asking a question as follows. If we exclude valued-added from hydrocarbon production, where would Algeria stand? First, GDP of Algeria without hydrocarbon sector would shrink by 43.2% point in 2010. Thus, per capita GDP is reduced to US\$ 2,553 from US\$ 4,496. The shares of agriculture, manufacturing, and services become 18.4%, 10.9%, and 70.7% respectively. Even without the hydrocarbon sector, the exercise in <Table 2-3> shows the GDP share of manufacturing is still 5.1% point lower than the fitted value based on model (4). The GDP share of agriculture is not so different from the fitted value. It is just 0.16% point higher whereas it is lower by 5.8% point when hydrocarbon sector is included. However, services share in GDP is 16.2%-point higher than the fitted value while it is lower by 25.7% point when we include the hydrocarbon sector.

〈Table 2-5〉 Comparison of Actual and Counterfactual Industrial Structure

	Actual (2010)		Counterfactual (2010)
	Value added	Share of VA	Share of VA
Agriculture	169.5	10.5	18.4
Manufacturing	99.8	6.2	10.9
Services	650.4	40.2	70.7
Non-hydrocarbon total	918.8	56.8	100.0
Hydrocarbon	698.8	43.2	0.0
GDP (bn US\$)	1,617.6	100.0	100.0
Population	3,597.8		3,597.8
per capita GDP	4,496.2		2,553.8

Note: Counterfactual structure is the industrial structure when we exclude the hydrocarbon production.

This simple counterfactual exercise based on cross-country regressions shows that Algeria has a relatively underdeveloped manufacturing sector, but also a relatively

large services sector, which is usually observed in those countries with abundant natural resources. As the Dutch Disease case shows, the rising revenue from resource export without strong industrial base leads to the increasing imports which exercises downward pressures on the manufacturing sector, but boosts the services sector which rises due to domestic demand.

### 3.2.2 Projection of Industrial Structure in 2030

To forecast the industrial structure by using the previous analysis based on stylized pattern, we need the income level, population size, resource dependence, and services share. First, we compute the per capita GDP of Algeria by adopting the aggregate projection from the previous chapter. It projects annual GDP growth rates of 7.0% up to 2030 under the assumption that hydrocarbon prices rise at 2.8% per annum as forecasted by the U.S. Energy Information Administration. The population forecast is obtained from the UN according to which the annual population growth from 2010 to 2030 is 1.08%. Then, per capita GDP becomes US\$14,692 in 2010 constant price.

Now, we assume that the quantity of hydrocarbon production stays at the same level as in 2010. For the price of hydrocarbon production, we adopt three scenarios of low, middle, and high oil prices based on the forecast of the U.S. Energy Information Administration. For the high price scenario, the price of hydrocarbon is assumed to rise 4.7% every year and for the middle price one, it is assumed to rise by 2.8% every year. For the low price scenario, the price of hydrocarbon is assumed to stay unchanged at the level of 2010. Since the current oil price is quite high when seen from a historical perspective, these assumptions on the oil price change are drawing quite an optimistic picture for Algeria.

Based on the assumed projection of hydrocarbon production and aggregate growth projection, we can compute how much contribution is needed by the non-hydrocarbon sectors. In the high oil price scenario, non-hydrocarbon sector should grow at 8.3% annually to achieve 7% growth in GDP. In the middle oil price scenario, it should achieve a growth rate of 8.8%, while in the low price scenario 9.3% growth in the non-hydrocarbon sectors is required. It implies that unless the price of hydrocarbon rises at quite a high rate, the non-hydrocarbon sectors would have to grow at more than 8% per year to achieve GDP growth of 7% per year as suggested by the aggregate growth projection. Although 7% GDP growth may seem too high, it is not so high considering the periods of high growth in East Asian countries.

Now, we will project the industrial structure in 2030 based on two assumptions. First, the projection is made based on the assumption that the structure of the Algerian non-hydrocarbon sectors stays the same. (Table 2-6) The shares of

agriculture, manufacturing, services, and hydrocarbon sector in GDP become 15.0%, 8.8%, 57.6%, and 18.5 % respectively. The GDP growth rates of agriculture, manufacturing, and services should be all 8.8% per annum in the case of the middle oil price scenarios in 2030. Next, we assume that the structure of the Algerian non-hydrocarbon sectors converges toward a stylized structural pattern based on model (4) of the cross-country analysis.<Table 2-7> In this case, the shares of the agriculture, manufacturing, services, and hydrocarbon sectors become 15.3%, 16.2%, 50.0%, and 18.5%, respectively. The GDP growth rates of the agriculture, manufacturing, and services sectors should be 8.9%, 11.8% and 8.1% per annum, respectively, in case of the middle oil price scenario in 2030.

〈Table 2-6〉 Scenario (1): Projection without Structure Change

	2030 with high oil price (4.7% )		2030 with middle oil price (2.8%)		2030 with low oil price (0.0%)	
	Value-Added	Share of VA	Value-Added	Share of VA	Value-Added	Share of VA
Agriculture	886.1	13.5	985.1	15.0	1080.0	16.5
Manufacturing	521.9	8.0	580.2	8.8	636.1	9.7
Services	3400.7	51.8	3780.5	57.6	4144.8	63.2
Non-hydrocarbon	4808.7	73.3	5345.7	81.5	5860.9	89.3
Hydrocarbon	1,751.0	26.7	1,214.0	18.5	698.8	10.7
GDP (bn US\$)	6,559.7	100.0	6,559.7	100.0	6,559.7	100.0
population	4,464.5		4,464.5		4,464.5	
per capita GDP	14,692.9		14,692.9		14,692.9	

〈Table 2-7〉 Scenario (2): Projection with Convergence to Stylized Structural Pattern

	2030 with high oil price(4.7%)		2030 with middle oil price (2.8%)		2030 with low oil price (0.0%)	
	Value-Added	Share of VA	Value-Added	Share of VA	Value-Added	Share of VA
Agriculture	930.3	14.2	1005.7	15.3	1075.6	16.4
Manufacturing	953.8	14.5	1060.2	16.2	1162.3	17.7
Services	2924.6	44.6	3279.7	50.0	3623.0	55.2
Non-hydrocarbon	4808.7	73.3	5345.7	81.5	5860.9	89.3
Hydrocarbon	1,751.0	26.7	1,214.0	18.5	698.8	10.7
GDP (bn US\$)	6,559.7	100.0	6,559.7	100.0	6,559.7	100.0
population	4,464.5		4,464.5		4,464.5	
per capita GDP	14,692.9		14,692.9		14,692.9	

〈Table 2-8〉 Projected Sectoral Growth Rates

	Without Structural Change			With Structural Change		
	2030 with high oil price (4.7%)	2030 with middle oil price (2.8%)	2030 with low oil price (0.0%)	2030 with high oil price (4.7%)	2030 with middle oil price (2.8%)	2030 with low oil price (0.0%)
Agriculture	8.3	8.8	9.3	8.5	8.9	9.2
Manufacturing	8.3	8.8	9.3	11.3	11.8	12.3
Services	8.3	8.8	9.3	7.5	8.1	8.6
Non Hydrocarbon	8.3	8.8	9.3	8.3	8.8	9.3
Hydrocarbon	4.6	2.8	0.0	4.6	2.8	0.0
GDP (bn US\$)	7.0	7.0	7.0	7.0	7.0	7.0
Population	1.1	1.1	1.1	1.1	1.1	1.1
per capita GDP	5.9	5.9	5.9	5.9	5.9	5.9

### 3.2.3 What Does This Projection Imply?

Among the two scenarios on structural change, which scenario is more plausible to realize the high growth rate of GDP projected by the aggregate forecast? As discussed previously, regardless of oil price changes within a reasonable range, the non-hydrocarbon sectors should grow more than 8% per annum over the next 20 years to realize GDP growth of 7% per year. To realize this high growth in the non-hydrocarbon sectors over the next 20 years, the structural change scenario is more plausible if we consider the experience of high-performing countries in the past.

〈Table 2-9〉 compares the growth performance among regions between 1960 and 1990. The only region which achieved growth as high as 7% per annum is East Asia. It is well known that the East Asian countries underwent active industrialization during this high growth period. As a result, the most rapidly growing East Asian countries have a relatively large share of manufacturing.〈Table 2-4〉 Even resource-abundant Malaysia and Indonesia achieved a growth rate of 6.86% and 5.92% by following the path of industrialization. Although not so apparent as in the case of East Asia, the high growth period of many developed countries coincides with the period of industrialization.

〈Table 2-9〉 Comparative Growth Rates (%) for 1960-1990

Regions	GDP	GDP per Worker	Countries	GDP	GDP per Worker
East Asia	7.46	4.71	Malaysia	6.86	3.71
Latin America	3.27	0.85	Indonesia	5.92	3.74
Middle East	5.14	2.71	Singapore	8.17	5.27
South Asia	4.1	2.02	Korea	8.49	5.93
Sub-Saharan Africa	3.42	0.81	Taiwan	8.31	5.66
Developed Countries	3.56	2.38	Thailand	6.97	4.26

Source: Hahn and Kim(2003)

Note: Regional averages are weighted by each country's average GDP between 1960 and 1990.

Korea sustained surprisingly high growth rates of about 8% per annum during 1960-90. <Table 2-10> shows how drastically the industrial structure of Korea changed over this period of high growth. In the 1960s, Korea's economy was based on agriculture and services with only a small share of manufacturing. However, the manufacturing doubled its share of GDP from 13.7% in 1960 to 26.9% in 1990. It was possible due to the superb growth of the manufacturing sector with annual growth rates as high as 15% per year in the 1960s and 1970s. Since the manufacturing production is intensive in industrial linkage and skill-learning, it can realize high growth with rapid increase of productivity. In the early period of industrialization, the labor-intensive manufacturing sector absorbed the underutilized labor from the agriculture and services sectors and accelerated the growth of manufacturing sector. However, the services sector is behind manufacturing in terms of its growth potential. Thus, the growth of manufacturing GDP at 11 to 12% per year in the early period of industrialization is not so unrealistic if we consider the case of Korea where the manufacturing sector grew much faster in the early years of industrialization.

〈Table 2-10〉 GDP Share by Industry of Korea

	1960	1970	1980	1990	2000
Agriculture	36.5	26.8	14.0	7.9	4.4
Mining	2.1	1.5	1.5	0.7	0.3
Manufacturing	13.7	20.8	26.5	26.9	29.1
Others	47.7	51.0	58.0	64.4	66.2

Source: National Accounts of Korea

〈Table 2-11〉 Sectoral Growth Rates of Korea

	1960	1970	1980	1990
Agriculture	4.27	1.30	3.33	2.22
Mining	7.90	5.89	0.22	-1.35
Manufacturing	15.54	14.47	10.66	7.94
Others	9.00	6.04	7.58	5.14

Source: National Accounts of Korea

〈Table 2-12〉 Industrial Structure of Algeria 2010 and 2030

	2010		2030	
	Value-Added	Share of VA	Value-Added	Share of VA
Agriculture	169.5	10.5	1005.7	15.3
Manufacturing	99.8	6.2	1060.2	16.2
Services	650.4	40.2	3279.7	50.0
Non-hydrocarbon	918.8	56.8	5345.7	81.5
Hydrocarbon	698.8	43.2	1,214.0	18.5
GDP (bn US\$)	1,617.6	100.0	6,559.7	100.0
Population	3,597.8		4,464.5	
per capita GDP	4,496.2		14,692.9	

Note: Value-added are in US\$ (2010 constant price) and the figures for 2030 are based on the projection under middle oil price scenario.

Considering the growth experience of East Asia and comparing its growth performance across those regions that followed different paths over time, the projection of industrial structure with structural change by achieving high growth of manufacturing sectors is a more plausible scenario in order for Algeria to accomplish 7% GDP growth over the next 20 years. Thus, we finalize our projection of industrial structure of Algeria in 2030 as <Table 2-12>.

If Algeria successfully transforms its industrial structure through the rapid expansion of the non-hydrocarbon sector, it will reduce its oil-dependence by shedding the share of hydrocarbon from 43% of GDP in 2010 to 18.5% in 2030. Regardless of oil price changes, as long as it stays within a reasonable range, the non-hydrocarbon sector should grow at more than 8% per annum over the next 20 years to realize the 7% GDP growth target which would allow per capita GDP in 2030 to reach US\$ 15,000 in 2010 constant prices.

To realize this, high growth in the non-hydrocarbon sector over the next 20 years,

the structural change scenario is more plausible if we consider the experience of high-performing countries. Industrialization is the imperative for Algeria. Algeria should promote industrial diversification by enlarging manufacturing production in various ways. Algeria should not only take opportunities for diversification through exports, but also find opportunities to expand the range of local production to replace imports.

In the following section, we will evaluate the current situation of Algeria to see whether Algeria can follow the path of Korea to boost economic growth through industrialization and explore the possible strategic sectors to push for industrial promotion.

## 4. Opportunities and Challenges

### 4.1. Current Conditions for Algeria's Industrialization

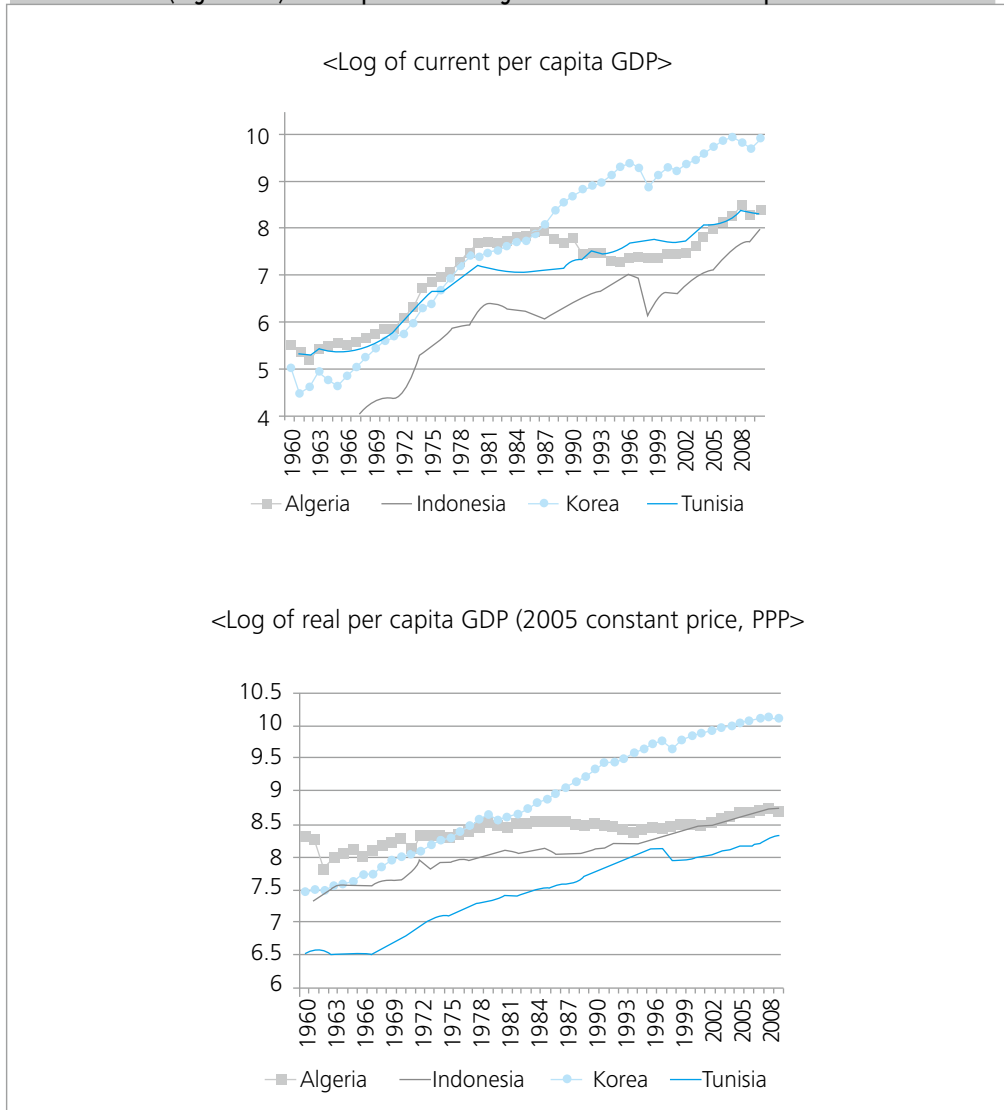
#### 4.1.1 Advantage and Disadvantages

In terms of per capita GDP, the income level of Algeria is comparable to that of Korea in the early 1980s when using per capita GDP in current US dollar terms as a reference. If we use the per capita GDP at US\$ 2005 constant prices on purchasing power parity, the current income level of Algeria is comparable to the income level of Korea in the mid 1980s. <Figure 2-4> The overall size of Algeria's economy in terms of total GDP is a little smaller than that of Korea in the mid 1980s due to its smaller population size. Algeria's current total population is about 5 million less than the population of Korea in the mid 1980s.

To compare Algeria to Korea, it is better to assess the condition of Algeria by excluding the contribution of the hydrocarbon sector because it makes Algeria's income level overstate its actual level of development. If we exclude the hydrocarbon sector, the current income level of Algeria is comparable to that of Korea around the year 1970.



〈Figure 2-4〉 Per Capita GDP of Algeria in International Comparison



Source: World Bank, World Development Indicators  
Penn World Table, version 7.0

Korea's economic development took off thanks to labor-intensive export promotion in the 1960s. From the early 1960s to the middle of the 1970s, food and textiles accounted for more than half of manufacturing production. Korea changed its policy stance from labor-intensive export-promotion to capital-intensive import-substitution in the 1970s. Due to the aggressive promotion of selected industries, Korea's manufacturing shows a rapid transformation from labor-intensive to capital and technology-intensive industries since the 1970s. After confronting the economic crisis that arose due to macroeconomic instability and heavy external debt in the late

1970s and early 1980s the Korean economy was able to recover thanks to a favorable international economic environment in the late 1980s and the heavy and chemical industries such as chemicals, basic metals and machinery (including electronics) gaining an increasing share in production and exports ultimately becoming the leading industries in the 1990s.

Due to the fortunate recovery of the international economic environment and the ability of Korea's export industries to take advantage of the favorable change, the risky policy of selective industrial promotion through distortive financial measures paid back in the long run. However, the controversy on the adequacy of chemical and heavy industrial promotion (the HCI Drive) is still unresolved. Since history cannot be altered and used as an experiment we cannot answer the question whether Korea would have followed a more stable and better path of industrial development with less economic concentration and sound financial market if the government had restrained itself from using drastic selective industrial promotion.

One of the criticisms on the HCI Drive is that the overall industrial situation of Korea at the time was not ready for such a big jump of industrial upgrading. It is true that most private enterprises were hesitant to invest in capital-intensive industries when the government announced its intention for heavy and chemical industrial promotion. This resulted in more interventionist and preferential measures that went against the market to redirect these hesitant industrial capitalists. It is also doubtful that the Korean government was sure about the timeliness of the policy since it is told that one of major motives for the HCI Drive was the sense of national crisis due to the communization of Indo-China and the Nixon doctrine. That is, Korea needed the heavy industries to strengthen its defense capabilities by itself.

Although Korea ventured into industrial upgrading under the strong guidance of the state in the 1970s, the Korean case does not imply that Algeria, with its current income level comparable to that of Korea in the early 1970s, should follow the path of Korea. Before going on to the discussion of the policy strategies for Algerian industrial diversification, here, we assess the current condition of Algeria by mentioning about the advantages and disadvantages of Algeria.

Algeria has the following advantages. First, Algeria's current macroeconomic situation is stable with low inflation and a sound external balance. Notwithstanding high level of public spending and substantial oil revenues, Algeria's central bank has been successful in keeping core inflation low. The Korean economy had suffered from high inflation and high interest rates throughout the 1970s. Second, Algeria has financial resource that can be mobilized for industrial promotion projects. The current account balance has been positive for many years thanks to favorable environment in hydrocarbon exports. Unless the price of hydrocarbons drops, which

seems not plausible in the near future, the continuous earning of foreign currency reserves is expected. Korea ran a current account deficit and faced a debt crisis in the late 1970s. Third, the world is more open with active cross-border movement of capital, people and especially in commodities. Therefore, if Algeria establishes the right business environment, it can induce FDI, which will bring both money and technology into the country. Fourth, Algeria has a relatively large economy in the region with a sizeable population, which implies business potential for the domestic market. Fifth, although the European economy is currently stagnating, it is one of the biggest markets in the world. Therefore, there is room for Algeria to diversify its industrial production if it reforms the domestic system for a favorable business environment and pushes regional economic cooperation.

However, there are disadvantages which may hamper the industrialization of Algeria. First, due to hydrocarbon production, the income level is too high to take advantage of price competitiveness in labor-intensive sectors. For most countries, including Korea, in the early stages of industrialization labor-intensive industrialization has been a natural resolve. Low wages and abundant labor provide a natural entry into the world market and give a foothold on which to enhance skills and technology through knowledge transfers. However, Algeria's wage level is too high to be competitive in labor-intensive industries, even though the current unemployment rate is high at about 10%. In addition, the education level of Algeria is relatively high with a considerable share of workers having received a form of higher education. Thus, Algeria needs a more advanced industrial structure to provide job opportunities to the highly educated. Third, unlike the period when Korea expanded its exports, the current world export market is dominated by China, an unprecedentedly large player in the world market. Up to now, China has dominated the world market in light non-durable consumer goods, but now the country is rapidly climbing up the quality ladder of exports. Fourth, Korean industrial development was helped by regional production cooperation with Japan in the 1970s and currently with China. In this respect, Algeria has a disadvantage compared to Korea given that regional networks in Northern Africa are not as strong. However, if one expands the regional network encompassing Algeria to the European continent, it holds potential as well. Finally, the fact that industrial production heavily depends on the public sector in Algeria is a critical obstacle. This problem will be discussed next.

#### 4.1.2 Industries in Algeria

As mentioned in the previous section, Algeria has experienced deindustrialization ever since the economic crisis of the late 1980s and political turmoil in the mid 1990s. Now hydrocarbons account for about 98% of total exports. Therefore, most manufacturing industries in Algeria are now oriented to serve the domestic market.

There are some big players in selected industries such as steel, cement, textile, electronics, pharmaceutical and food processing.<sup>22)</sup> However, most big players are state-owned enterprises (SOEs) although some SOEs have been privatized. Some private companies such as Cevital are entering the industrial area by diversifying into manufacturing from services.

In the steel industry, Entreprise Nationale de Sidérurgie, a SOE, is the biggest company and is also the biggest non-hydrocarbon company. Societe Algerienne de Fabrication Siderurgique which was sold to the LNM group from India is considered a success of privatization policy. Ferphosin, another SOE active in the steel industry, is under the process of privatization. The automobile industry has Société Nationale des Véhicules Industrielles (SNVI) as the biggest company. It produces buses and trucks for the government and is also a SOE. It faces a problem of underutilization - with a capacity utilization rate as low as 40%.

Relatively booming industry is cement production, because of the rapid growth of the construction industry. In the cement industry, there are 12 SOEs but most SOEs are inefficient with outdated facilities. The Algerian Cement Company (ACC) which was established conjointly with a foreign investor, Orascom Construction Industries from Egypt, started production in 2004.

The textile industry which underwent restructuring since the 1980s is still faced with a lack of competitiveness. The production of textiles is done mostly by SOEs which currently suffer from low capacity utilization of around 35%. Textile Manufacturing Cotton Group (TEXMACO), the biggest SOE in the industry and runs 57 subsidiaries producing cotton, wool, silk, industrial and synthetic fabrics. However, the supply of yarn and fabrics mostly depends on imports.

In electronics, there are both SOEs and private firms. Entreprise Nationale des Industries Electroniques (ENIE), a SOE, produces television sets but depends on government subsidies to survive its bleak financial situation. Alfatron created through the joint investment of ENIE and Plestinian Flambord group produces personal computers. SITEL which fabricates telecommunication materials was established by the joint investment of the Algerian government and Ericsson. Some private firms such as Condor, Christor, and Sentrax are producing household appliances such as refrigerator, air conditioner, and washing machines.

In the pharmaceutical industry, although 80% of drugs are supplied by imports, SAIDAL which is also a SOE accounts for 85% of domestic production. It has 3 subsidiaries: PHARMAL, BIOTIC, and NTIBIOTICAL.

22) Following information on Algerian industries are obtained from KOTRA(2011). The information on the electronics industry is obtained from KOICA and KIET(2010).

One promising industry for Algeria is food processing, unlike others, it is an industry populated by many private companies. In the cereals industry, many small firms produce pasta, couscous, and semolina. Big private companies such as LIANA and SIM (Semoulerie Industrielle de la Métidja) are strong players that cover a large share of domestic supply along with ERIAD Algerie, another SOE. In the production of dairy products such as butter, margarine, and cooking oil, ENCG, also a SOE, has been the dominant player, but private companies such as Cevital have successfully entered the market after deregulation. The SOEs active in the sugar industry such as ENASUCRE are also faced with rising competition from the entry of Cevital into the market. In the manufacturing of the beverages, a private company, Hamoud Boualem, is dominating the domestic market by fending off foreign competitors such as COCA COLA and PEPSI. Also in the packaging industry, a private company, Tonic Emballage, covers about 60% of market share.

#### 4.1.3. The SOEs in Algeria

As the rough survey of current industries of Algeria shows, the industries of Algeria are inward-oriented and dominated by state-owned enterprises. As implied by the contribution of public companies to manufacturing is as high as 60% of value-added, it is not surprising that the public sector dominates the industry.(Figure II-4-2) Considering the history of state-led industrialization in the 1970s, we may expect the existence of SOEs in the heavy and chemical industries. However, it is surprising that SOEs even operate in consumer goods-manufacturing. It was proved long time ago that the system of SOEs in consumer goods-industries is not desirable in order to meet consumer tastes. It is also an unseen phenomenon in other market economies.

In addition, many SOEs suffer from low productivity, underutilization and outdated facilities. Due to the government's efforts to privatize SOEs, some SOEs have had joint ventures with foreign multinationals (MNCs). Those MNCs that aim to enter the Algerian market exploit the SOEs to circumvent various red tapes. However, the Complementary Finance Law for 2009 which limits foreign ownership to 49% in any foreign investment will deter foreign investors from venturing into Algeria. Thus, unless private enterprises are allowed to compete with SOEs and have some incentives to enter the market, the dominance of the SOEs in industries will last for the time being.

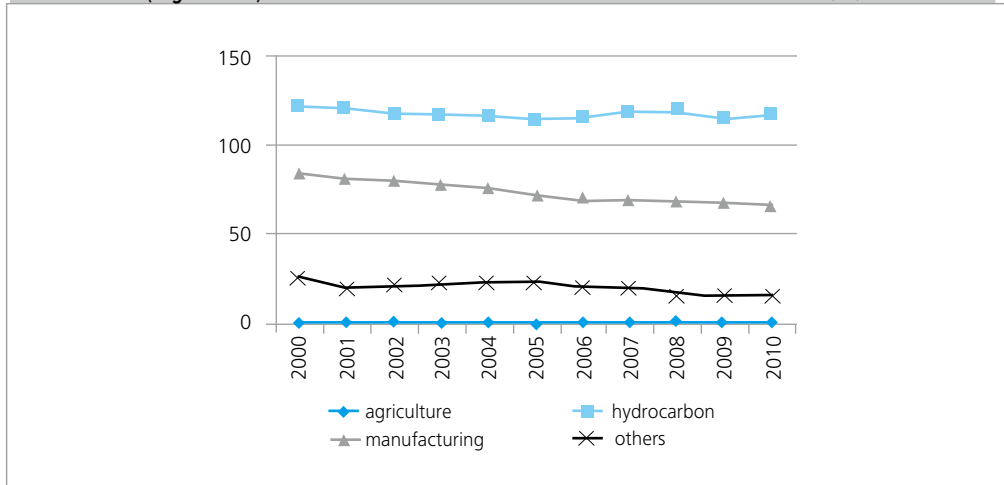
Private enterprises are active mostly in services such as real estate, trade, telecommunications and agribusiness. SMEs are growing in small trade and services such as retail and restaurant businesses. According to the World Bank (2009), there has been progress in nurturing the business-friendly environment in the MENA region including Algeria according to the Doing Business indicators of the World Bank. Thus, new business associations have emerged—some representing new,

young entrepreneurs in Algeria. Private family conglomerates such as Cevital are increasing the range of their activities from agribusiness to retail trade, automobiles, media, desalination plants, energy production, glass, and petrochemicals. Even the incumbent leadership of large business associations are increasingly challenged by younger, more growth-oriented entrepreneurs. However, the role of private businesses is limited in organized production such as manufacturing.

Although there has been continuous reform and liberalization, it is not easy to enter a particular market segment in Algeria. The most prominent of these are either government controlled or dominated by large, old firms that favor the status quo or become active only in selective policy interventions and protection that work in their favor. There are many reasons for the weakness of the private sector in Algeria according to the Doing Business Indicators of the World Bank. For instance, the banking sector in Algeria remains largely dominated by public banks which account for 90 percent of lending with a minor role played by foreign private banks. In addition, Algeria shows a retrograde in openness. Beginning in 2009, legislation has been passed that reduces the incentives for foreign investors to invest in Algeria. These rules deter investors who do not have an Algerian partner, who would be the majority owner of the venture, and restrict land ownership and the repatriation of profits.

The deep cause for the weak private sector may lie in the political economy of the country. Joffe (2002) points out the problem of economic patronage of the state in trade, particularly in the process of imports. This part of the economy was encouraged by the state to reward those who had taken an active part in the war for independence and the creation of a single-party state in its wake. As a result, many liberation war veterans were able to obtain licenses for various forms of private sector activity. It distorts the economy in terms of trade and competition policy which results in anti-competitive measures such as high entry barriers and tariffs. The existence of highly profitable business under the patronage based on political relationship diverts the social efforts toward nonproductive rent-seeking activities and reduces private incentives to excel in the market through price and quality competition.

(Figure 2-5) Contribution of Public Sector to Sectoral Valued-Added (%)



Source: National Accounts of Algeria

As shown in <Figure 2-5>, the contribution of the public sector to production varies among sectors. It is not surprising that the contribution of the public sector to the production of hydrocarbons is close to 100 percent. However, the contribution of the public sector in manufacturing seems too high, as it accounts for about 60 percent of total manufacturing production. Although it shows a declining trend due to previous efforts made for privatization and liberalization, the slope is somewhat flat considering the announced intention of reform in this area. For instance, in India which is also famous for the dominance of the state in industry, the contribution of the public sector in GDP was just 12.9% in 2008.

Likewise, the share of the public sector in gross fixed capital formation in Algeria was as high as 40% in 2010 . In most developed countries, the public sector's share is less than 5% in gross fixed capital formation.<sup>23)</sup> As the relatively high share of public investment shows, the existence of SOEs, which exercise a monopoly power and absorb public resources may be one of major barriers to entry for private companies. Weaknesses in the business environment are also related, in part, to the extent of discretionary allocation of rents to the private sector. This situation calls for reforms that alter the relationships between policy makers and the beneficiaries of these privileges.

## 4.2. Strategic Sectors for Industrial Promotion

Before discussing the government action needed for industrial diversification,

23) The figures are obtained from Economic Development Indicators of the World Bank.

we will explore the sectors that are promising for industrial promotion as strategic sectors are always attracting attention. It is no doubt that to promote the manufacturing industries, Algeria should pursue both, export-promotion and import-substitution. It is a misunderstanding that these two pursuits can be separated and pursued independently. The Korean government, which is well known for its export-promotion strategy, continued to support domestic capability to substitute for imports.

However, considering the current situation of Algeria, the first step should be more focused on export-promotion to encourage private activity in manufacturing. First of all, major imports are automobiles, trucks and buses, communication equipment and construction equipment, which are not easy for Algeria to replace by domestic suppliers given the current level of local industrial capability. Instead, Algeria should invite foreign companies to start businesses which produce parts and components to be sold on the domestic market and provide opportunities for the expansion of the local supply chain. Second, there are also large imports of consumer non-durables goods from China. In this sector, local producers could emerge as wages are rising in China. However, as long as the import and distribution of goods in the domestic market are dominated by a network based on the patronage of political connection, it will work as a large barrier to entry for new competitive private enterprises.

Thus, import-substitution as a first step towards industrial diversification does not seem like a good choice to start with. The advantage of export-orientation was mentioned many times. Many authors have argued that there is a strong positive relationship between export diversification and growth. Lederman and Maloney (2003) found a negative correlation between export concentration and GDP growth. Klinger and Lederman (2004) provided empirical evidence that a country's export basket becomes more diversified as its income rises. The relationship between export diversification and growth exists because export diversification leads to higher productivity through knowledge spillovers. Moreover, a more diversified export structure stimulates new industries and expands existing industries elsewhere in the economy.

Therefore, adding exports to the existing export basket is critical for industrial diversification. To promote industrial diversification through industrial policy, it is better to discover promising export industries which are likely to have competitiveness thanks to the given conditions of Algeria. Particularly, competitive advantages may lie with sectors that have backward or forward linkages with the abundant natural resources of Algeria. In addition, Algeria needs to uncover and utilize its hidden potential to drive industrial diversification and realize the projections made in the previous section.



〈Table 2-13〉 Revealed Comparative Advantage of Algeria, Tunisia and Morocco

		1990	1995	2000	2005	2009
Algeria	0 - Food and live animals	0.03	0.15	0.02	0.02	0.03
	1 - Beverages and tobacco	0.17	0.10	0.05	0.02	0.06
	2 - Crude materials, inedible, except fuels	0.04	0.11	0.07	0.13	0.11
	3 - Mineral fuels, lubricants and related materials	11.58	16.65	10.00	7.89	7.48
	4 - Animal and vegetable oils, fats and waxes	0.00		0.05	0.04	0.02
	5 - Chemicals and related products, n.e.s.	0.07	0.13	0.08	0.06	0.05
	6 - Manufactured goods classified chiefly by material	0.08	0.09	0.04	0.02	0.02
	7 - Machinery and transport equipment	0.02	0.01	0.00	0.00	0.00
	8 - Miscellaneous manufactured articles	0.01	0.01	0.01	0.00	0.00
	9 - Commodities and transactions not classified elsewhere in the SITC		0.00		0.00	0.01
Morocco	0 - Food and live animals	3.31	4.27	3.93	3.78	3.44
	1 - Beverages and tobacco	0.12	0.26	0.16	0.37	0.18
	2 - Crude materials, inedible, except fuels	3.52	3.34	3.02	2.80	2.54
	3 - Mineral fuels, lubricants and related materials	0.43	0.39	0.37	0.41	0.25
	4 - Animal and vegetable oils, fats and waxes	2.53	0.89	0.16	3.26	0.94
	5 - Chemicals and related products, n.e.s.	2.15	2.17	1.29	1.22	1.21
	6 - Manufactured goods classified chiefly by material	0.57	0.56	0.49	0.50	0.55
	7 - Machinery and transport equipment	0.13	0.08	0.26	0.41	0.55
	8 - Miscellaneous manufactured articles	1.60	1.57	2.87	2.54	2.26
	9 - Commodities and transactions not classified elsewhere in the SITC	0.00	0.01	0.02	0.05	0.06
Tunisia	0 - Food and live animals	0.89	0.63	0.79	0.99	0.84
	1 - Beverages and tobacco	0.67	0.90	0.85	1.39	0.61
	2 - Crude materials, inedible, except fuels	0.51	0.53	0.67	0.51	0.40
	3 - Mineral fuels, lubricants and related materials	2.07	1.48	1.23	1.04	1.04
	4 - Animal and vegetable oils, fats and waxes	8.50	7.69	11.67	10.92	6.54
	5 - Chemicals and related products, n.e.s.	1.60	1.24	1.12	0.87	0.90
	6 - Manufactured goods classified chiefly by material	0.70	0.74	0.69	0.75	0.90
	7 - Machinery and transport equipment	0.21	0.24	0.31	0.49	0.73
	8 - Miscellaneous manufactured articles	2.84	3.67	3.54	3.21	2.52
	9 - Commodities and transactions not classified elsewhere in the SITC	0.01	0.00	0.00	0.01	0.00

Source: UN, COMTRADE

Note: The revealed comparative advantage (RCA) of a product is computed by dividing the share of the product in total exports of a country by its share in total world exports.

<Table 2-13> shows the revealed comparative advantage (RCA) of Algeria and countries adjacent to it. If the RCA of a product is greater than average, it implies that the country has a comparative advantage in that product given that it exports the product relatively more than other countries in terms of share in total exports. Since the exports of hydrocarbons account for more than 95% of total exports, the RCA for all commodity groups other than SITC 3, which includes mineral fuels, is less than average in Algeria. In contrast, Tunisia which is not an oil-producing country has comparative advantages in SITC 4 (Animal and vegetable oils, fats and waxes), and 8 (Miscellaneous manufactured articles) and observes an ascending RCA in technology-intensive SITC 7 (machinery and transport equipment). Morocco has comparative advantages in SITC 0 (Food and live animals), 5 (Chemicals and related products), and 8 (Miscellaneous manufactured articles).

〈Table 2-14〉 Top 10 Exports of Algeria (2009)

	Commodity Code	Commodity Description	Share in Total
Algeria	S2-3330	Crude petroleum and oils obtained from bituminous materials	47.10
	S2-3413	Petroleum gases and other gaseous hydrocarbons, nes, liquefied	21.77
	S2-3414	Petroleum gases, nes, in gaseous state	17.74
	S2-9310	Special transactions, commodity not classified according to class	11.01
	S2-3352	Mineral tars and products	0.69
	S2-5225	Inorganic bases and metallic oxides, hydroxides and peroxides	0.33
	S2-2820	Waste and scrap metal of iron or steel	0.18
	S2-2713	Natural calcium phosphates, natural aluminium, etc	0.17
	S2-5221	Chemical elements	0.10
	S2-6861	Zinc and zinc alloys, unwrought	0.08
Morocco	S2-7731	Insulated electric wire, cable, bars, etc	8.72
	S2-5222	Inorganic acids and oxygen compounds of non-metals	7.22
	S2-2713	Natural calcium phosphates, natural aluminium, etc	4.61
	S2-0371	Fish, prepared or preserved, nes	4.32
	S2-5629	Fertilizers, nes	4.11
	S2-0360	Crustaceans and molluscs, fresh, chilled, frozen, salted, etc	3.88
	S2-8439	Womens, girls, infants outerwear, textile, not knitted or crocheted; other out	3.80
	S2-7763	Diodes, transistors, photocells, etc	3.48
	S2-8423	Men's and boys' outerwear, textile fabrics not knitted or crocheted; trousers,	2.47
	S2-9310	Special transactions, commodity not classified according to class	2.03
Tunisia	S2-3330	Crude petroleum and oils obtained from bituminous materials	10.75
	S2-7731	Insulated electric wire, cable, bars, etc	6.89
	S2-7721	Switches, relays, fuses, etc; switchboards and control panels, nes	4.71
	S2-8429	Men's and boys' outerwear, textile fabrics not knitted or crocheted; other out	4.69
	S2-9310	Special transactions, commodity not classified according to class	4.39
	S2-8423	Men's and boys' outerwear, textile fabrics not knitted or crocheted; trousers,	4.25
	S2-8439	Womens, girls, infants outerwear, textile, not knitted or crocheted; other out	3.38
	S2-4235	Olive oil	2.89
	S2-5629	Fertilizers, nes	2.58
	S2-8510	Footwear	2.43

Source: UN, COMTRADE

Unlike East Asian countries, Algeria and its neighbors are underdeveloped in capital and technology-intensive exports (SITC 6 and 7). However, both Tunisia and Morocco show a rising trend in RCA of SITC 7 over the last 20 years. According to the top 10 exports in <Table 2-14>, SITC 7731 (insulated electric wire, cable, and bars) is the number one export of Morocco. Tunisia also earns a relatively large amount of foreign exchange from SITC 7731 (insulated electric wire, cable, and bars) and 7721 (Switches, relays, fuses, etc; switchboards and control panels).

The comparative advantages of Morocco and Tunisia, two countries adjacent to Algeria with similar geographical and cultural backgrounds could reveal the counterfactual export structure, if Algeria did not have rich natural resources. Therefore, Algeria has opportunities to diversify into exports of manufactured goods such as consumer nondurables (SITC 8) in addition to agricultural products (SITC 0) and chemicals (SITC 5). That is, Algeria could find export markets in the areas of clothing and footwear as well as electrical and electronic components. Also, it is possible to expand export diversity into agricultural products and agriculture-related manufactured goods such as fertilizer.

However, benchmarking Morocco and Tunisia even though they provide a reference point for the current competitive edge of the export industry is not sufficient for Algeria to become a high-income country. When one picks industries for strategic promotion, current or static competitive advantages are not the right target. What matters is the dynamic comparative advantage which reflects the changing competitive edge over time. That is, to realize successful structural transformation and ensure sustained economic growth, venturing into potential areas is needed. However, with limited information, nobody can be sure about where the potential lies. Korea was lucky to have a neighbor that achieved successful industrialization a decade ahead of Korea. Korean policymakers utilized the Japanese experience as a benchmark in selecting which strategic industries to promote. However, Algeria does not have such an adequate benchmark to imitate. Even though Tunisia may give a reference for the first step towards reindustrialization, it does not give a full picture for Algeria's structural transformation up to the year 2030.

Two previous studies are worth quoting here to see the potential sectors for promotion. Hausmann et al.(2010) applied the product space analysis to find out the promising and reachable export industries for Algeria. They assert that to resolve the structural problem of Algeria, as evidenced by high resource dependence and low manufacturing activity, exports are vital to accelerate technological progress, market expansion and industrial linkages. However, hydrocarbons are poorly connected to the rest of the product space which makes it quite difficult for Algeria to diversify. According to their own terminology, Algeria's export structure is a very small open

forest and thus it should move towards a more dense and open area. The easy part for the movement is to diversify into foods, agricultural products and fertilizers which use minerals intensively. However, some very nearby products to the current exports are rather unsophisticated. This is not surprising as Algeria is concentrated in a peripheral part of the product space that is dominated by unsophisticated products. Products with a higher level of sophistication and greater growth-generating potential would require longer jumps.

After analyzing the probability of exporting two different products by one and the same country, which shows the ease of diversifying from one product to another and the sophistication of the product implied by the average per capita income level of countries that export the product, strategically promising export product groups for Algeria can be suggested. The sectors, in order of priority, most attractive and nearby export markets are, (1) meat milk and fishing products, (2) other agro-industrial products and chemicals, (3) steel and aluminum, metal products and shipbuilding. The first two are not different from what we expect from the findings of the static comparative advantages analysis based on simple export shares. The third are more sophisticated products which may have a dynamic comparative advantage.

Another study on strategic industries, not particularly on export industries, but on industries for promotion based on the assessment of industrial environment of Algeria was done by the Algerian government (2007). It considered the internal conditions such as the user cost of labor and the availability of important resources in addition to external conditions such as the trend in the global export markets. Three groups of sectors were selected as strategically important. The first group includes the sectors in which value is added to natural resources such as petrochemicals, fertilizers, synthetic fibers, aluminum, steel, and metalworking. The second group consists of high value-added consumer goods-producing sectors such as pharmaceuticals, specialty electronics, and agro-industry. The third group is new to Algeria, but worth promoting. They are automobiles, shipbuilding, and repair industries.

If we summarize the two studies, the strategic sectors that may be proximate given current conditions may be basic metals and metalworking, agro-industry and shipbuilding. Synthetic fibers, specialty electronics, and automobiles that the Algerian government selected are desirable, but require enhanced capabilities in terms of technology and human capital. However, considering the large domestic demand, automobiles and synthetic fibers along with textile supply chain may be sensible choices.

However, these priority industries identified under SITC 4 digit level encompass

a wide spectrum of products with different technological contents and business characteristics. Therefore, even though Algeria selects one of the above industries as a strategic industry to be promoted, the most complicated and difficult tasks, which require insurmountable requirement of information and series of policy measures to implement, need to be addressed.

What should be the right direction in policymaking for industrial diversification? In the next section, we will first evaluate the current policy position of Algeria and then suggest factors critical to policymaking for industrial diversification.

## 5. Policies for Industrial Diversification

### 5.1 Evaluation of Current Industrial Policy Stance

The Ministry of Investment Promotion published a White Paper on the Strategy for Industrial Development (Document de la Stratégie Industrielle) in 2007. This White Paper reviews the current global economic environment and explores the strategic industries to be targeted for industrial promotion. Then it discusses a broad range of issues related to industrial policy such as industrial upgrading, innovation support system, information management and the use of ICT, human resource development, and political support for the policy.

The White Paper sheds light on the policy stance of the Algerian government with respect to industrial promotion. First, it shows the country's recognition of the urgency for industrial transformation in order to keep the economy growing. For industrial transformation, it is said, Algeria should reverse the trend of deindustrialization that has existed since the mid 1980s when the planned industrialization of the 1970s failed due to the downturn of the oil market and the country was faced with a crisis due to the accumulation of external debt. The White Paper emphasizes the role of SOEs and SMEs in diversifying the industrial base and creating the job opportunities.

Second, under increasing cross-border movements of products and factors, more emphasis is put on export than before. After pointing out the lack of competitiveness as an important factor for the failure of previous planned industrialization, the White Paper considers competitiveness prospects as one of the criteria for selecting a strategic industry.

Although the White Paper does not explicitly mention competition, the emphasis on exports implies the government's recognition that competition in export markets may enhance the competitiveness of its industries. However, third, the White Paper

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criticizes the Washington Consensus and argues that the state should play an important role in industrial transformation. Thus, it is argued, selective industrial promotion is needed and the government should establish a program that promotes industrial clusters just like the East Asian economies did. Although the White Paper emphasizes the role of exports, overall it advocates a development strategy that pushes companies to first target domestic markets and become competitive enough to go to the international market later.

As mentioned in the previous section, the White Paper suggests sectors to be promoted based on their importance in industrial linkage, technological advance, comparative advantage from current endowments and international market dynamics. The selected industries are food, chemical, pharmaceutical, steel, electrical and electronics, textile, cement, and automobiles. It is concluded that Algeria is not very competitive in labor-intensive sectors given its current wage level, but may become competitive in energy-intensive manufacturing. The selected industries are mostly capital and technology-intensive industries which require not only the supply of appropriate high skilled workers, but also large investments. Therefore, the White Paper asserts that the state should support export diversification and reinvent the role of SOEs through financial support.

Under the guidance of the state, according to the White Paper, the major agents of sectoral development should not only be SOEs but also SMEs and MNCs. First, the SOEs should refocus on high-technology activities and capacity building for restoring the nation's global competitiveness. SMEs are encouraged to enter domestic and international markets through new business areas. MNCs are also invited, including investments from medium-sized MNCs. It is an advance towards greater liberalization compared with the previously planned industrialization that solely depended on SOEs.

In term of policy implementation, the White Paper has a more flexible position and argues that industrial promotion this time should be different from the previous efforts by promoting an efficient and flexible framework rather than mass industrial investment and a rush of technology import. The state will seek widespread innovation, technical progress, and development of human resources experts. It should try to mobilize foreign direct investment and medium-sized transnational corporations. Industrial upgrading and innovation are emphasized with ICT adoption and human resource development.

To evaluate, the overall position of Algeria's industrial policy is eclectic in between state-led import-substitution and market-oriented export-promotion. As before, it emphasizes the continuous role of public enterprises for industrial promotion and selective intervention of the state. Public enterprises are important in most

countries for economic development, but Algeria is unique in that they dominate industrial production in a wide range of industries including consumer goods. The difference from the previous policy stance is that now it recognizes the importance of competitiveness and emphasizes the role of exports for industrial diversification. This eclectic stance is revealed in its position towards FDI. In a globalized world FDI could play a role in introducing new business to Algeria. However, it argues that the dominance of foreign invested enterprises should be fought and thus should be regulated in MNC ownership and operation.

The White Paper called this eclectic stance ‘liberal interventionism’, which benchmarks the case of China. The eclectic approach has its merit in that it draws upon the strength of various policy paradigms, but it is subject to the lack of consistency in policymaking. When the government makes policy efforts for various programs, that are different in terms of simplicity, visibility, and directedness in effect with conflicting and inconsistent targets, it is not easy to maintain an unbiased stance and remain balanced. For instance, the promotion of SOEs tends to crowd out the financial resources needed for the SMEs. The promotion of SOEs may also require the protection of SOEs from competitive pressures, which hinders private investments and FDIs from entering the country.

The success of Chinese industrialization is due to the rapid growth of newly founded enterprises, which compete with each other to invite foreign investments and to enter the world market. Unless such a competition mechanism exists in Algeria, the current eclectic approach may tilt towards state-led selective industrial promotion with a focus on SOEs.

## 5.2 Prerequisites for Industrial Promotion

As mentioned in the first section of this report, where the definition of knowledge-based economy was discussed, history has proven that in a market economy private enterprises are most efficient in utilizing and organizing knowledge to find out profitable products or businesses. Those economies that induced activities of private enterprises grew fast and have a well-diversified economic structure.

Therefore, before embarking on industrial promotion, it is critical for Algeria to create a business-friendly economic environment and induce the scaling-up of private enterprises. This will act as an engine for industrial development. In addition, continuing reform of SOEs by giving them more autonomy, enhancing transparency, and demanding accountability should be made. The reform of SOEs is critical to foster the private sectors since subsidized and protected SOEs reduce the room for private business to maneuver, both in the input and output side of production.



### 5.2.1. Private Sector Development

Thus, the first priority of industrial policy is to induce the potential of private sectors into reality. To achieve successful long-term growth, an economy should continuously adapt itself to the changing environment through learning and innovation. Although the government may pick the winners, it has intrinsically a limitation in analyzing market forces and discovering business opportunities. The success of its industrial policy depends on how well it can guide private entrepreneurship to socially productive activities.

Skepticism about the ability of the private sector to be a growth engine can be found anywhere in Algeria and the current financial crisis has reinforced this skepticism. Also the history of private sector development in Algeria may give evidence that the private sector could be more rent-seeking and corrupt. However, the Korean experience shows that private enterprises can be an effective tool for industrial promotion if guided well with adequate incentives and competitive discipline. As the HCI Drive in the 1970s shows, Korea pursued selective industrial promotion similar to other countries, but was different in relying on private enterprises instead of SOEs in doing business. The HCI Drive was an exemplary import-substitution policy in terms of policy intent and policy measures. However, the Korean government knew the size limit of the domestic market for scale-intensive HCIs and targeted export markets from the beginning of the promotion. Thus, the continuous exposure to market competition and pressure from performance-based policy incentives made it possible for Korean firms to become competitive.

It is not possible to foster private enterprises in new industrial activities maintaining a status quo structure of older firms including government-subsidized SOEs, lower business density, and little competition that hinders private sector development. Therefore, the first step should be to implement policies that give clear signals to investors and strengthen their credibility as they work to level the playing field for all investors. It should increase openness to competition by removing formal and informal entry barriers while enlarging the access to credit.

In this respect, policymakers should pay special attention to export promotion. The current trade structure of Algeria shows all activities to export in manufacturing can be considered as new in Algeria. As the Korean experience indicates, the policy for export-promotion allows policymakers to easily detect how well firms perform. The entry into export markets and the performance afterwards are indicators for the competitiveness of firms. As more firms enter into the exporting business, the government can have the command over selective promotion. In this stage, the policy may target socially productive activities, which could be defined as activities

with active learning and adaptation potential.

To do that, it is crucial that the rent should be allocated in a competitive way among firms based on their performance. For this, it is crucial to set up an incentive-augmenting mechanism that goes hand in hand with the enhancement in policy capacity. Without adequate institutions and able civil servants, incentive-augmenting through discretionary policy measures may bring about corruptive rent-seeking behaviors and distort the market against more productive activities.

Therefore, the reform of institutions to put in place a continuous process of regulatory and procedural reform should be done at the initial stage of industrial promotion so that discretionary behavior by civil servants may be avoided. It will make the policy procedure more formal and transparent and also reduce the complexity of administrative steps in the interaction between businesses and government. Along with increasing the transparency and accountability for administrative procedures, policymakers should also become more autonomous, in other words, they should be separated from the political influence in decision making. It goes without saying that the policy process should be monitored through systematic, independent and regular evaluation.

### 5.2.2. Reform of the State-Owned Enterprises

As already mentioned, the current dominance of the SOEs is one of the important obstacles to private sector development for industrial diversification. In addition, since SOEs are taking such a large share in the economy, structural transformation cannot be accomplished without restructuring SOEs.

The usually recommended procedure for SOE reform may be as follows.<sup>24)</sup> First, the governance of the SOEs should be detached from current stakeholders, the line ministries of the government or military clans. The control over SOEs should then be transferred to an agency close to the top authority by establishing a special committee including various stakeholders. The top agency on SOE reform will decide the allocation of financial resources and the range of business activities by considering a national reform strategy. In doing this, the agency should classify SOEs by the characteristics of industries and apply customized reform program without inference from interest groups or political powers. For instance, it is helpful to classify the groups based on their principles of operation whether they are commercial-oriented or social, political interest-oriented. The SOEs in industries such as textiles, electronics and food should become more commercialized in principle and should be approached from the perspective of privatization in the long run.

24) For detailed guidelines, see OECD (2005).

Those SOEs active in infrastructure and public utility such as electricity, telecom, and oil-extraction should see their internal corporate governance restructured according to the principles of accountability and transparency.

Finally, the budgeting agency in the government should try to establish hard budget constraints for SOEs by subsidizing with conditionality and clear performance criteria. It is helpful to pronounce a timeline for the reform and long-term fiscal reform plans to the various SOEs' stakeholders. It should include the gradual market entry of private sector.

### 5.3. Political Leadership

So far, this report has emphasized that Algeria should first set up the prerequisites for successful industrial promotion before implementing the policy for the promotion of strategic industries. One of the two prerequisites is fostering a business-friendly economic environment so that a sizeable number of private enterprises emerge as exporters in the world market or suppliers to the domestic market. The promotion of private businesses through incentives is the next in priority. With such low business density in Algeria today, industrial promotion will be similar to the planned industrialization in the 1970s that failed. Another prerequisite is the reform of SOEs, which take away fiscal and financial resources due to their unproductive production and management practices. Since the share of SOEs is so large, full-blown privatization will not be helpful. Instead, a systematic and customized reform of the governance system should accompany public investment to upgrade the companies.

For this, the government should be more effective in delivering the policy. Policy should be more concrete and focused with action plans. The allocation of public resource should be aligned with decisions made and carried out through accountable and transparent criteria. It requires continuous communication among ministries in charge, SOEs, local private enterprises, and FIEs. In this sense, industrial transformation covers more issues than the development of individual sectors.

All these are not possible without political leadership. The reform of the SOEs is rather a political issue since SOEs are at the center of rent-distribution.<sup>25)</sup> Therefore, the commitment of political leadership is indispensable. Without it, the correct allocation of national budget for industrial diversification is unthinkable. In order to commit the political leadership to the reform policy, it is important to attract the public attention to the necessity and benefits of the reform in achieving industrial

<sup>25)</sup> According to Werenfehls(2002), the obstacles to privatization of SOEs in Algeria are related with the political economy of a distributive conflict such as intra-elite struggle, rent-holding of military clans and their clientelist social networks, and nationalistic collectivist ideology.

diversification and high income growth.

Once the fundamentals are put on the right track, it is worth trying the industrial promotion of strategic industries. With increasing national budget on industrial upgrading, the political leadership should urge the policy framework to be accountable and transparent. Finally, good implementation requires capable technocrats that are separated from interest groups. Political leadership is critical in mobilizing the private sector towards long-term industrial development by providing credibility to the policy movement of the government.

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# The Education Development Plan for Algeria (With a Focus on Vocational Education and Training and Higher Education)

1. Education and Economic Growth
2. The Korean Case
3. Overview of the Education System in Algeria
4. Key Issues for Education in Algeria
5. Policy Recommendations for Education Reform in Algeria
6. Conclusion



## **The Education Development Plan for Algeria (With a Focus on Vocational Education and Training and Higher Education)**

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### **Summary**

Educational reform is one of the key areas attracting the attention of the Algerian government. As a means for social and economic development, public demand for educational reform has been on the rise. Also, the demand for the expansion of education is increasing due to the fast growing student population. In this context, this chapter presents policy options that the Algerian government might consider in strengthening its vocational education and training initiatives as well as higher education initiatives (hereafter referred to as “VET” and “HE” respectively). Even though Algeria has almost achieved the universalization of basic education, there is still room for improvement in both the VET and HE. This chapter first presents the Korean case, which can serve as a reference model for Algeria to reform its VET and HE. Second, it provides an overview of the Algerian education system and discusses key issues and problems of its VET and HE. Third, it suggests an educational vision and reform directions of Algeria until 2030. Lastly, it suggests a range of policy options for the Algerian government to consider in designing education reform plans. The major findings of this study are as follows.

Algeria has made continuous improvements in education over the past decades, and thus, is likely to meet its UN Millennium Development Goals by 2015. However, it still faces several challenges in terms of education. The greatest challenge is to deal with the increasing demand for education that stems from Algeria’s relatively large proportion of young population. People aged 25 and under represented 49%

of the total population in 2012. Regarding VET, Algeria faces two major issues: 1) insufficient provision; and 2) an ineffective response to industry needs. With regard to higher education, Algeria has to deal with the following issues: 1) an increasing demand for higher education; 2) the lack of diversity in higher education institutions (HEIs); 3) a low level of social appropriateness of university education; and 4) a weak research capacity. Regarding policy coordination, it faces the following issues: 1) a lack of coordination among educational policies; and 2) an insufficient linkage between education and economic policies.

To overcome these issues, the Algerian government should consider the following recommendations. For the educational vision for 2030, the government needs to aspire to be ranked as the No. 1 country in terms of the quality of its human resources in the Middle East and the North Africa region. To realize this vision, it needs to align educational reform with the economic development plan by benchmarking the Korean Case. It also needs to take an incremental approach in reforming education. Additionally, it needs to diversify the financial sources for expanding education. Lastly, the government needs to create competition among educational institutions in order to improve the quality of education.

The policy options for improving vocational education and training are as follows. First, the Algerian government needs to increase access to VET by: 1) building new VET institutes that will train the human resources needed by leading industries; and 2) creating vocational training courses within companies. Second, the government needs to enhance the quality of VET by: 1) enhancing the professional development programs of VET trainers; 2) supporting the cooperation of industry-VET institutes; 3) upgrading the national qualifications framework; and 4) developing the quality assurance system of VET.

The policy options for improving higher education are as follows. First, the government needs to diversify its higher education institutions (HEIs) by: 1) introducing a “junior college system” which offers associates’ degrees; 2) encouraging the establishment of private HEIs; and 3) providing foreign HEIs with incentives to establish branches in Algeria. Second, it needs to enhance the quality of higher education by: 1) establishing the National Center for Teaching & Learning, which develops and disseminates best practices on teaching and learning; 2) initiating a university-industry cooperation program; and 3) developing a project such as the ‘National Science & Engineering Project.’ Third, the government needs to upgrade the quality of research by: 1) creating the University Research Support Project; 2) encouraging international cooperation in research; and 3) establishing the National Research Foundation which supports the research at HEIs. Fourth, the government needs to introduce a cost-sharing approach to finance HEIs by: 1) introducing a ‘tuition fee system’ which has college students pay for their

education; and 2) introducing a student aid (grants and loans) system which would help students pay the tuition. Finally, it needs to strengthen the accountability of HEIs by: 1) introducing the quality assurance system which ensures the quality of HEIs; 2) introducing the performance funding system for HEIs which ties funding to outcomes; 3) introducing the performance-based rewards for faculties; and 4) setting up the university information disclosure system which reveals the key performance indicators of HEIs.

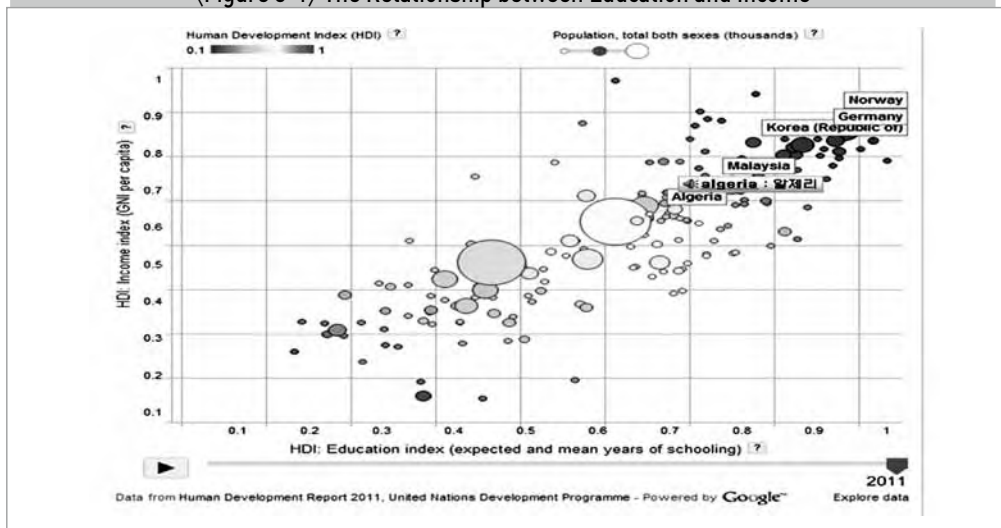
Lastly, the policy options for improving policy coordination are as follows. First, the government needs to create a National Human Resources Development Council to ensure the systematic alignment of the policies formulated by the Ministries on education and economy. Second, it needs to make it a periodical activity to create a mid-term national development plan, which establishes the connection between education policies and economic development. Finally, the government needs to create a monitoring process, which ensures that key educational and economic policies are closely aligned with each other.

## 1. Education and Economic Growth

Education is not only fundamental to human development, but is also critical to economic growth. The acquisition of skills through education is central to building human capital, increasing labor productivity, and utilizing new technologies and innovations (USAID, 2011). Such a role of education is especially important in a developing country lacking natural resources (World Bank, 1993; 2002). This has been most evident in the fast-growing Asian economies such as Korea, Singapore, Hong Kong and Taiwan (Chemingui & Ayadi, 20003). These countries have, with scarce natural resources, achieved remarkable economic growth over the last decades thanks to high quality education. In particular, the Korean case sheds light on the salient role of education on economic growth. Korea was a desperately poor country with GDP per capita of less than US \$100 in 1960 that received official assistance from developed countries. However, it became a developed economy and joined the OECD Development Assistance Committee in 2010, greatly owing to education.

The positive role of education on economic growth is shown in <Figure 3-1>. <Figure 3-1> depicts the relationship between the education level and GNI per capita of some countries, and the data are derived from the 2011 Human Development Report by the UNDP. As seen in the figure, the higher the value is for education index of a country, the greater its value for income index is. Whereas the value for education index of Korea is 0.93 and its value for income index is 0.81 respectively, the value for education index of Algeria is only 0.65 and its value for income index is 0.62 respectively.

〈Figure 3-1〉 The Relationship between Education and Income



Sources: UNDP (2011). Human Development Report.

The relationship between education and economic growth can be explained by two types of theories. The first is the 'modernization theory' which attempts to explain the differences among societies in social and technological advancement. This theory originated in the early 1960's mainly from the work of McClelland (1961), which explains why some societies are more advanced than others. According to the theory, education is the most important agent in transforming a society into a modern one. Social and economic development could not take place unless a large proportion of the population adopted modern values, attitudes and beliefs about work, quality of life and other related values (Inkeles & Smith, 1974). Inkeles and Smith (1974), leading scholars of the modernization theory, assert that societies can create modern values through certain social institutions such as family, school, and factory. They also argue that there is a direct causal link between five sets of variables in the process of modernization, namely, modernizing institutions, modern values, modern behaviour, modern society and economic development (Fagerlind and Saha, 1989). A school, as the key modernizing institution that teaches modern values and behaviours to children, can play a pivotal role on the development of a country and in turn can be crucial for economic growth.

The second is the 'human capital theory,' which stresses that education improves the productivity of workers by imparting useful knowledge and skills, hence raising workers' future income by increasing their lifetime earnings (Schultz, 1961; Becker, 1964). Human capital, which is in contrast to physical capital, is a stock of knowledge or characteristics of a worker that contributes to his or her productivity. According to the human capital theory, education contributes directly to the growth of the

national income of societies by enhancing the productive capabilities of employees. Thus, the provision of formal education is seen as a productive investment in human capital, which can be considered more worthwhile than physical capital (Agbo, 2003). Accordingly, education is one of the core elements that contribute to the growth of national income. In this way, the human capital theory provides a justification for large public expenditures on education both in developing and developed nations (Olaniyan & Okemakinde, 2008).

These two theories can effectively explain the Korean case in which the key to rapid economic growth lies in the choice of educational policy relevant to the country's stage of industrialization (Kim, 2000; Lee, 2008). The Korean government linked the expansion of education with economic growth. This link is apparent in the strategic 'Five-Year Economic Development Plans,' which the Korean government had implemented periodically between the 1960s and 1980s. This experience provides significant implications for the Algerian government in designing education reform plans. Currently, Algeria is facing a critical moment in terms of education reform. Concurrent with social and economic development, the public demand for education reform has been on the rise. Also, the demand for the expansion of education is increasing due to the fast growing population of children and youth. Thus, it is crucial for the government to expand its education sector in a way that supports economic and social development.

This chapter presents policy options that the Algerian government may consider in creating its vocational education and training and higher education (hereafter referred to as "VET" and "HE" respectively). Both VET and HE were chosen as the topics of this chapter since not only are they crucial for the development of the Algerian economy, but also the demand for them has been rapidly growing due to the increase in the number of youth. Even though Algeria has almost achieved the educational goals included in both the Millennium Development Goals established by the United Nations and the Education for All by UNESCO, there is still room for improvement in both VET and HE of Algeria. Neither of them have been able to provide the industries with the required high-quality human resources. In this context, this chapter first describes the Korean case which can be used as a reference for Algeria to reform its VET and HE. Second, it provides an overview of the education system in Algeria, while also discussing key issues and problems of Algeria's VET and HE. Third, it suggests the 2030 educational vision and reform directions of Algeria with the focus on VET and HE. Lastly, it suggests a range of policy options for the Algerian government to consider in designing its education reform plans.

## 2. The Korean Case

### 2.1. The Linkage between Development and Education: Four Phases on a Path of Progress

Korea has achieved rapid economic growth in 60 years since the Korean War in 1950, with little reliance on natural resources. Korea's GDP per capita in 1960 was less than US\$100, but it increased to over US\$20,000 by 2007 (Korea National Statistical Office, 2007). The key to such a remarkable achievement is education. As mentioned earlier, one of the most important aspects of the relationship between education and economic growth of Korea lies in the consistency between education policy goals and the nation's development goals over time. The process of Korean economic development can be divided into four different periods in accordance with the economic policy adopted by the government (Lee, 2008; Choi, 2010): Phase I (1945-1960): Liberation, Reconstruction, and the Establishment of a Postwar Korea; Phase II (1960s-1970s): Export-Oriented Industrialization and Rapid Development; Phase III (1980s-early 1990s): Economic Reconstruction and Stable Growth; and Phase IV (mid 1990s-Present): Reconstruction Period for a Knowledge-based Society. <Table 3-1> describes the major features for each economic and educational development phase.

During Phase I (1945~1960), Korea was among the poorest countries in the world, having to go through major changes such as the liberation from the Japanese Occupation, Korean War, and postwar reconstruction (Lee, 2008). Despite the shortage of financial resources, the government wanted to establish a universal primary school education system as soon as possible. The government, thus, launched the 6-Year Compulsory Education Completion Plan (1954-1959). To implement the plan, the share of education budget out of the total government budget increased from 4.2% in 1954 to 14.9% in 1959. As a result, the enrolment rate for primary school increased to 96.4% in 1959, and the goal of the universal primary education was completed by the early 1960s (Kim & Lee, 2006).

〈Table 3-1〉 Korea's Economic and Educational Development Phases

	Phase I (1945~1960)	Phase II (1960s~1970s)	Phase III (1980s~early 1990s)	Phase IV (mid1990s- Present)
Major Economic Development	Liberation, reconstruction, and the establishment of a postwar Korea	Export-oriented industrialization and rapid development	Economic reconstruction and stable growth	Reconstruction of industries to satisfy a knowledge- based society
Major Educational Development	Development of basic educational systems and the universalization of primary education	Expansion of secondary education and vocational education and training	Growth of higher education and the pursuit of education substantiality	Education reform and the improvement of competitiveness in education
Key Education Policies	-Establishment of basic education systems such as educational philosophy and school curriculum -Universalization of primary education -Strengthening of the illiteracy eradication movement	-Expansion of secondary education -Development of vocational education and training -Securing of stable revenue sources for primary and secondary education -Creation of a teacher training system	-July 30 Education reform -Expansion of higher education -Qualitative development of primary and secondary education -Enhancement of local educational autonomy system	-May 31 Reform of the educational system -Introduction of the 7th school curriculum -College research support and cooperation of industry and academia -Enhancement of ICT education -National Human Resource Development

Source: Lee (2008). National Development Strategy and Education Policy (modified for this paper).

During Phase II (1960s-1970s), the Korean government launched a series of five-year economic development plans from 1962 to 1986 (Kim, 2000). In the process of implementing them, the government also formulated education reform policies in order to provide a high quality workforce. During the 1960s, the primary goal of education policies was to provide a semi-skilled workforce for the light and labor-intensive industries. In the 1970s, the government implemented export-driven economic growth policies that focused on the development of heavy and chemical industries. Thus, primary education was universalized and secondary education was expanded rapidly. The rapid growth of the student population, however, resulted in over-crowded classrooms, a shortage of fully qualified teachers and educational facilities, and intense competition in the college entrance system. To

address these problems, the government initiated several educational reforms which included teacher education reform, improvement of the local university system and the establishment of junior college system, establishment of broadcast and correspondence colleges and high schools, and so forth (MEST, n.d.). During this period, the government also adopted various policies to foster VET, which in turn provided the middle-level engineers needed by the Heavy and Chemical Industries (HCI) Drive. The VET policies included the expansion of vocational high schools, the specialization of industrial high schools, the designing of industry-education cooperation systems, and the establishment of scholarships for vocational students (Lee, 2008). Furthermore, laws such as the Industrial Education Promotion Act of 1963 and the Vocational Training Act of 1967 were enacted in order to promote the quality of VET.

During Phase III (mid 1980s-early 1990s), the Korean economy shifted its focus from capital-intensive heavy and chemical industrialization to technology, knowledge, and information-intensive industrialization (Lee, 2008). In line with these changes, the Economic Development Plan sought to balance the economic and societal development, thus changing the name to the Five-Year Economic and Social Development Plan. The Fifth Plan (1982-1986) stressed economic stability, openness, active market competition and regional development (Lee, 2008). Reflecting these changes, the government initiated “The 1980 July 30th Education Reform Plan,” which focused on higher education. As a result of the reform, the college student quota was greatly expanded and the government allowed more private universities to be established. Although it is still controversial whether the sudden increase in the number of college students was beneficial for the nation’s efficient allocation of the workforce, it is obvious that college graduates were the crucial manpower leading the evolution of industrial development (KDI, 2011). Besides, the Education Reform Plan on July 30th, 1980, included the actualization of broadcasts exclusively for education (1981), and the expansion of the Korea National Open University and systemization of the education tax were accomplished. Also, the ‘Social Education Act’ that specified the nation’s responsibility to encourage life-long education was established, and self-governing local education systems were fully operational by 1991.

During Phase IV (mid-1990s-present), Korea advanced into a knowledge based society, thus trying to engage itself in the movement of globalization. However, with the outbreak of the Asian financial crisis in 1997, Korea experienced financial difficulties, and thus, undertook a radical restructuring process across all economic fields. As a result, traditional manufacturing industries shifted to offshore production, while service and HCI industries, such as electronics, semiconductors, automobiles, and IT industries, became the centerpieces of the nation’s competitiveness (KEDI, 2011). To support these changes, the government



initiated “the Reform of the Educational System” in 1995. The vision of the reform was to establish “Edutopia,” a utopia of education, meaning an Education Welfare State – a society of open and lifelong education to allow each and every individual equal and easy access to education at any time and place (PCER, 1997). To realize the vision, the government highlighted, “learner oriented education, diversification of educational programs, autonomy and accountability of school operations, and a new information system” (PCER, 1997). The major policies suggested by the 1995 Reform included: 1) the introduction and operation of the student oriented 7th curriculum; 2) diversity, specialization and autonomy of school systems; 3) strengthening the college research support and the cooperation of industry and academia; 4) the advancement of educational content; 5) the maintenance of a lifelong education system; and 6) the induction of a national human resource development network (NHRD) policy. The last reform area, NHRD, featured a comprehensive and strategic approach that coordinated various policies of education, research and development, labor market, industry, welfare and culture (Lee, 2008).

## 2.2. Key Policies on Vocational Education & Training

VET played a pivotal role in developing a skilled labor force during Korea’s rapid industrialization process. The expansion of VET corresponded with the stages of industrial development. It focused on agricultural education until the early 1960s, commercial education, mechanics and manufacturing skills training in 1960s-1970s, and high-tech skills education and training such as the production of automobiles and semi-conductors in the 1980s-1990s. With the emergence of a knowledge-based economy, VET focused on teaching the skills for knowledge-based industries such as finance, IT and tourism after the mid-1990’s (KDI, 2011).

Currently, the VET of Korea can be classified into two types. The first type is the vocational education belonging to the formal educational system that is supervised by the Ministry of Education, Science and Technology. The VET institutions include vocational high school and junior colleges. The vocational high school is the representative VET institutions at the secondary school level. The VET programs offered by these vocational high schools are: agriculture, technical areas, commerce, fishery and marine, vocational home economics, and comprehensive studies (Chae & Chung, 2009). Meanwhile, the junior college aims to develop middle-standing workers needed in various industrial areas. As of 2011, there were 689 vocational high schools and 147 junior colleges across the nation (KEDI, 2011).

The second type of VET is the vocational training conducted in the VET institutions, such as polytechnic colleges and human resource development institutes. Polytechnic colleges offer two-year degree courses in both national basic industries and new industries that are not provided by the private sector to help prepare

students in becoming middle-level technicians and master technicians. Polytechnics consist of I–VII colleges with four specialized ones, which are in total 11 colleges and 24 campuses all around the country (Korea Polytechnics, n.d). Also, the Human Resource Development Institutes of the Korea Chamber of Commerce and Industry (KCCI) runs eight centers nationwide to supply workforce to small- and medium-sized enterprises (Chae & Chung, 2009). The regular course offered by the Human Resource Development Institutes is a two-year program, and all the training courses are free.

Despite the increasing importance of higher education, the status of VET in Korea is declining. Nonetheless, the role of VET on economic growth in Korea could suggest policy implications for Algeria. In this context, the following section illustrates some major VET policies that the Korean government has taken to support its economic growth.

### 2.2.1. A College-Level System for VET: Junior College System

The junior college system was established in 1979 not only to upgrade the quality of middle-level technicians, but also to diversify HEIs. The purpose of a junior college is to produce middle-level technicians equipped with a solid base of theoretical knowledge as well as practical skills to meet the increasing demand for technical manpower. Specialized programs are grouped into technical, agricultural, nursing, fisheries, health, commercial and business, home economics and so on. In 2011, there were 147 junior colleges with an enrolment of 776,738 students, thus occupying about 22.8% of the total higher education enrolment (KEDI, 2011). The junior college education system is very flexible, allowing students to take weekday or night courses. Junior colleges also provide customized courses to industries through a contract-based training (Lee, 2009). The industries in turn provide junior colleges with funding for scholarships, facilities, or equipment.

### 2.2.2. Increased Opportunities for VET: Internal Training Program

The internal training system was introduced with an aim of expanding opportunities for VET when the Korean economy experienced rapid growth in the early 1970s. According to the ‘Special Measures Regarding Vocational Training,’ employers with more than 200 workers were required to train at least 15% of their full-time workers in 1974, and fines were levied if the requirements were not met (Lee, 2009). The internal training system was effective at increasing the rates of participation in VET. Between 1967 and 1971, the number of enterprises providing internal trainings increased from 15 to 81, and the number of trainees increased from 3,000 to 14,300 (Ra & Shim, 2009). Due to the positive result, the government-led internal training lasted until the early 1990s, with some changes in

the responsibilities of industries. With the transformation of the Korean economy into a knowledge-based economy, however, there has been a shift from a mandatory internal training system to a demand-oriented autonomous training system. Reflecting social and economic changes, the government created a skill development program according to the Employment Insurance Law in 1995, making vocational training a part of the skill development program for employment insurance<sup>26)</sup> (Lee, 2009). Under this new system, the VET policy changed its focus from the training of technical personnel to the development of lifelong skills of employed workers.

### 2.2.3. Upgrade of Vocational High Schools: Meister High Schools

The Meister high school system was introduced in 2008 not only to meet the demands of the industrial sector, but also to encourage high school graduates to enter the labor market right after graduation and then pursue higher education later. By providing high quality vocational education at the secondary school level, the government aims to upgrade the reputation of vocational education and produce highly competent workforces for industries. Furthermore, it aims to reduce high-level unemployment rates of college graduates, a problem that is currently of great concern to the Korean society. To achieve these goals, Meister high schools are helping students get a job after graduation by offering an industry-tailored curriculum. The key features of Meister high schools are: 1) practical classes jointly developed by school and industry; 2) hands-on experiences acquired at partner companies; and 3) opportunities for students to work while studying, by enabling incumbent workers to enrol in the college through a special admission system (Lee et al., 2011). As of 2011, there were 21 Meister high schools nation-wide. Each Meister high school develops its own curriculum in cooperation with industry experts and each selects its own vocational education specialty (Lee et al., 2011).

## 2.3. Key Policies on Higher Education

Like the remarkable economic growth, the expansion of higher education in Korea is also exceptional. Korea's participation rate in higher education has increased from under 6% to 70.4% between 1960 and 2009 (KEDI, 2009), which is a phenomenon that is unparalleled in the history of higher education (Rhee, 2007). Interestingly, such an expansion was made possible by increasing the role of the private sector in higher education (Jang, 2009). Government expenditure on HEIs

26) The objective of the Employment Insurance System in the Republic of Korea (EIS) is to prevent joblessness, promote employment and vocational competency, and to provide financial support and employment assistance to the unemployed. To achieve its objectives, the Employment Insurance Act promotes the implementation of the Employment Stabilization Program, the Vocational Competency Development Program, and the Unemployment Benefit Program. The coverage of the Korean EIS has expanded and now includes all businesses with one or more employees (ADB Institute, n.d.)

as a percentage of GDP in 2007 was only 0.6, which is considerably lower than the 1.0 average of the OECD member countries (OECD, 2010), while the proportion of students enrolled in private HEIs grew to 74.7% by 2009 (KEDI 2009). Instead of increasing the public expenditure on HEIs, the Korean government has allowed private education foundations to establish private HEIs, regulating them heavily for quality control (Chae & Hong, 2009). Although 'privatization' of higher education with minimal government support has been predominant in Korea, the government has begun to increase its investment in higher education with the emergency of a knowledge-based economy, thus initiating several higher education projects. Among them, the projects that could have implications for the Algerian government in reforming its higher education are described in the following section.

### 2.3.1. Promoting the Specialization of HEIs: University Specialization Project

The University Specialization Project aims to promote the specialization of university programs in line with geographical, sociocultural and economic conditions, by providing certain types of aid and encouragement (Park & Weidman, 2000). Designed to promote excellence and efficiency in higher education in 1974, it started with 51 departments in various vocational education fields with an emphasis on engineering. It further developed into specialized colleges, such as colleges of engineering concentrating on such fields as electronics and chemical engineering (Park & Weidman, 2000).

### 2.3.2. Enhancing Research Capacity: Brain Korea 21 Project

The Brain Korea 21 (BK 21) project is a major higher education reform project that aims to cultivate creative and high quality human resources for the knowledge-based society (MEST, 2009). The Government sets target specialty areas that have a high growth potential, and through open competition selects excellent graduate schools in these areas to provide substantial financial support for master's, doctoral and post-doctoral research. The first-phase BK21 project provided a total budget of US\$1.34 billion for 564 teams with 89,366 students during a seven-year period of 1999 to 2005. At the end of Phase I of this initiative, Korea's ranking, based on the number of research papers in the Science Citation Index (SCI), rose from 18th with 9,444 publications in 1998 to 12th with 23,515 publications in 2005 (MEST, 2009). The second-phase BK21 project, which started in 2006 and is scheduled to last until 2012, is being implemented under a budget of US\$2.3 billion. The project focuses on developing three major areas — fostering a stabilized national system of research-oriented universities, nurturing top-class personnel in key areas that will lead national development including fundamental/new growth-generating technologies, and expanding financial support for highly qualified next-generation

scientists at the graduate level. As of 2009, 565 project teams at 71 universities are currently benefiting from a budget of KRW265.9 billion. The current subsidy covers over 20,000 graduate students, accounting for 17% of all graduate students, as well as 3,000 new research personnel (MEST, 2009).

### 2.3.3. Regional Development and Higher Education: The New University for Regional Innovation Project

The New University for Regional Innovation (NURI) program aims to strengthen the capabilities of the regional HEIs located outside the Seoul metropolitan area. By linking regional HEIs with local institutions, such as local governments, industries and research centers, the project, which is aligned with the major national policy, the Balanced Development of the Nation, focuses on (1) reinforcing the capabilities of regional HEIs, and (2) linking the capacity-building of regional HEIs to promoting the development of regional economies (Duke et al., 2005). In particular, the project aims to develop college curricula in terms of specialised areas which are closely aligned to features of the regional economy, thereby enhancing the competitiveness of HEIs (Duke et al., 2005). Furthermore, the NURI project seeks to build a collaboration system, called the Regional Innovation System, in which HEIs, local governments, research institutes, and corporations build partnerships for mutual development (Lee, 2005). The program continued from 2004 to 2008 by channelling US\$260 million dollars per year to 109 regional universities (Kim, 2008).

### 2.3.4. Enhancing the Capacity of HEIs: Formula Grants Scheme for an Enhanced Higher Education Capacity

Launched in 2008, this financing scheme introduces the element of competition, in a bid to increase the administrative autonomy of HEIs and enhance their financial efficiency (MEST, n.d). To achieve the goals of this scheme, the government assesses and awards the best performing HEIs based on an evaluation formula. Pre-determined quantitative indices are used to evaluate each HEI's educational achievement level and environmental status. Criteria include the graduate employment rate, ratio of student enrollment as of total quota, full-time faculty rate, ratio of foreign faculty, ratio of foreign students, educational expenses per student and scholarship provision rates. For selected HEIs, the government provides them with block grants, which ensures that they invest diversely and creatively in upgrading their quality of education (MEST, n.d). In 2012, 182 HEIs were awarded with a gross subsidy of US \$414 million.

### 2.3.5. Industry-University Cooperation: Leadership in the Industry-University Cooperation Initiative

Leadership in the Industry-University Cooperation (LINC) Initiative aims to reform the university education system, promote the growth of regional industries, and link graduation and employment through industry-university cooperation. The LINC initiative includes hands-on experiments, on-site training, internships, and industry-university contract majors. It also seeks to reinforce and promote the collaboration between universities and corporations. Starting in 2012, a total of 50 universities are being selected as participating schools in the LINC Initiative (Lee et al., 2012). LINC universities annually receive approximately KRW3.3 billion from the government over the next five years. The funding aims to enable universities to be industry-friendly by incorporating industrial practices and experience into the college curriculum. The universities involved in the LINC aim to meet the demands of regional industries by cultivating skilled manpower and thereby reducing the unemployment of young people (MEST, n.d.). As a part of the initiative, an industry-university cooperation family membership is formed when a university enters into an agreement with a company to engage in mutually collaborative relations. Under the family membership, a variety of cooperative schemes can be implemented, such as an on-site training offered by companies, equipment and technology support provided by universities, as well as internship and employment programs (Lee et al., 2012).

Overall, the Korean case highlights that education is the key to economic development. The Korean government strategically allocated its national investments in education in a way that has fostered economic growth. When industries needed semi-skilled labor between 1960s and early 1970s, the government placed its priority on the universalization of basic education. When the Heavy and Chemical Industries emerged as the key drivers of economic growth in the mid-1970s, vocational education and training was one of the key educational priorities. With the transformation of the Korean economy into a knowledge-based economy, higher education has become the key policy area that has attracted the attention of policy makers. Such a strategy has enabled Korea to complete the industrialization in one generation despite its scarce natural resources.

## 2.4. Implications for the Education Reform of Algeria

The Korean case provides several policy implications for the Algerian government in designing the education development plan. First of all, the Algerian government needs to align its education reform policies with economic development plans. Education should be a core element in the Algerian government's designing of an economic development plan. As the first step, the government needs to develop an

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effective policy coordination mechanism among the ministries related to education and economy, which will enable those ministries to discuss key educational and economic policies together in the pursuit of national development. With such a mechanism, the government can formulate a long-term or mid-term social and economic development plan which links the expansion of education with industrial development.

Second, the Algerian government needs to take a step-by step approach in reforming education. As mentioned earlier, the Korean government focused its initial investment in basic education and invested less in higher education until the late 1980s. The logic of such an approach was that the social returns to basic education would be greater than those to higher education during the early stage of industrialization (Lee, 2009). Basic education not only produces semi-skilled workforce needed by industries, but also helps modernize citizens. Meanwhile, the private return to higher education is greater than the social return, given the considerable income gap between college graduates and high school graduates. With this kind of logic, the investment in higher education was not given priority by the Korean policymakers until the late 1980s. However, from that point forward, this position could no longer be sustained due to the emergence of a knowledge-based economy. Consequently, the role of higher education has rapidly become important in the production of knowledge and information (World Bank, 2002). To respond to the social change, the Korean government has increased its investment in higher education since the early 1990s (Rhu, 2005). This experience needs to be taken into consideration, especially in designing the education development plan of Algeria. Instead of expanding higher education hastily, the Algerian government needs to take an incremental approach that reflects the needs of industries. Therefore, it needs to focus on the overall improvement of compulsory education, and then strategically support a set of higher education programs that will play a key role in the development of leading industries.

Third, the Algerian government needs to set a balance between the quantitative growth and qualitative development of education. When the number of students rapidly increased after the Korean War, the expansion of education was top priority to the Korean government. Thus, the government created various policies to accommodate the increasing demand for education, even by harming the quality of education. Consequently, there were a lot of overcrowded schools as well as teachers lacking the adequate qualifications in the years leading up to the 1970s. Although a high-volume expansion in education was effective in improving access to education within a short period of time, it ultimately damaged the quality of education. In fact, the subsequent reforms were aimed at solving the problems that had stemmed from the rapid expansion of education. It seems that Algeria faces a similar dilemma. As the number of students enrolling in compulsory education is on the rise, the Algerian

government has been under pressure to increase access to education, thus placing a great deal of emphasis on building schools and VET institutes. Although it is not easy to achieve quantitative expansion and qualitative development of education simultaneously, it is important for the government to set a balance between them.

Lastly, the Algerian government needs to play a proactive leadership role in improving education. As described earlier, the Korean government has made continuous efforts to reform its educational system in alignment with social and economic changes. Moreover, education reform has been the top priority of Korean Presidents. To ensure consistent progress in education amidst various changes in political regimes, the Korean government maintains a national-level education reform committee that consists of experts and interest groups from various sectors, including education and industry as well as civil groups. The committee discusses key education issues and comes up with policy recommendations. Such a collective intellectual activity not only improves the quality of education policies, but also ensures that education remains the focus of national policies. Drawing from the lessons of the Korean experience, the Algerian government should place a high priority on education and take a proactive role in reforming education. Without continuous and systematic efforts, it would be difficult to improve the quality of education.

### 3. Overview of the Education System in Algeria

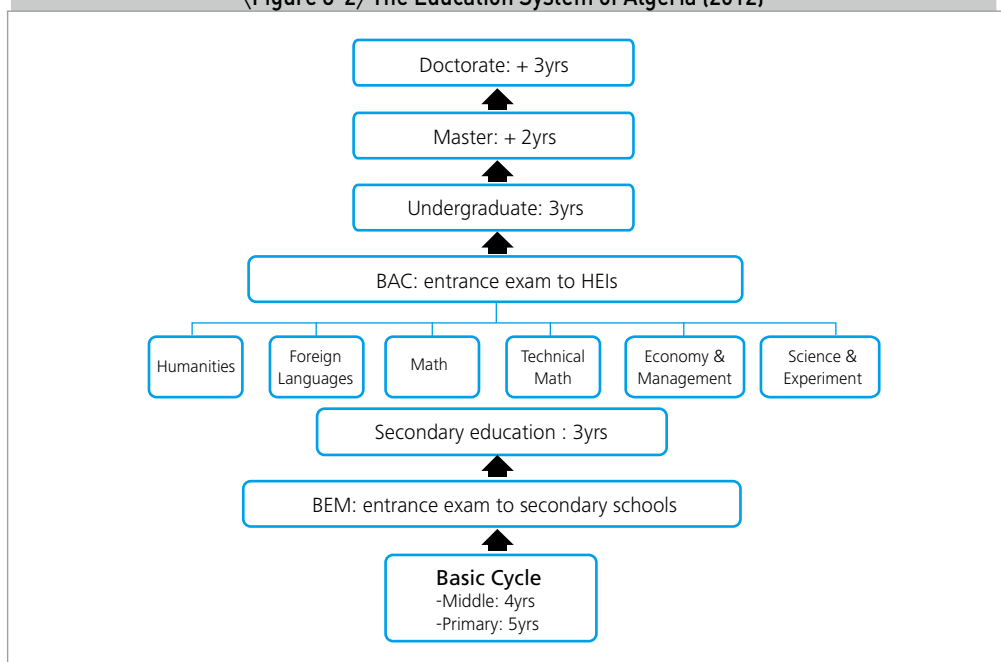
#### 3.1. Education System

The education system of Algeria was established in 1962 against the benchmark of French education. This genesis was one legacy of French colonization. At that time, the Algerian system consisted of primary education (6 years), intermediate education (4 years), secondary education (3 years) and tertiary education (Grandguillaume, 2004). Primary education was divided into two years of preparatory education, two years of primary education and two years of middle school education. However, this system was reformed in 1976. The nine-year compulsory basic education for all children between the ages of 6 and 16 was introduced. Secondary education (3 year) was organized into three core curricula in the first grade and was divided into three branches of education from the second grade onward: general, specialized and technical/vocational education. General secondary education and specialized education led to the baccalaureate of secondary education. Technical/vocational secondary education led to the technical baccalaureate.



The current education system is organized into four levels: preschool education, compulsory nine-year basic education (5 year primary education and 4 year lower secondary education), upper secondary education, and higher education. The primary medium of instruction is Arabic, but Berber-language instruction has also been introduced since 2003, not only to ease reliance on foreign teachers, but also to respond to complaints about Arabization (OBG, 2011). Private education, which is currently marginal in its scope, is on the rise. About 20,000 students are enrolled at 136 private schools. Most of these schools are located in urban areas (OBG, 2011). All types of formal and public education (from primary education up to higher levels) are free in Algeria. After completing the compulsory education, students can choose either a high school or a vocational training institute. High school education consists of various programs: humanities, foreign languages, mathematics, technical mathematics, economy and management, and science and experiment. VET is mostly connected to sectors such as agriculture, industry and tourism. Studies at VET institutes take between one and four years depending on the type of training. The management of VET institutes is decentralized to regional government bodies located in the 38 wilayas (provinces), whose tasks are to develop and implement VET promotional measures, and to run, co-ordinate and periodically evaluate VET institutes (AfDB/OECD, 2008).

〈Figure 3-2〉 The Education System of Algeria (2012)



Source: Ministry of Prospective and Statistics (2012). The Education System of Algeria.

As of 2012, there are about 743 VET institutes nationwide. The VET of Algeria is delivered in three ways: 1) full time training: training is delivered within VET institutes and completed by practical training in a professional environment; 2) internship training is delivered through a combination of theoretical courses in VET institutes and practical training within the workplace; and 3) distance learning: training is delivered by correspondence or online (British Council Learning, n.d.). There are five levels of VET which offer various certificates or diplomas: Level 1 (Specialized Vocational Training Certificate), Level 2 (Professional Skills Certificate), Level 3 (Professional Mastery Certificate), Level 4 (Technician Diploma), and Level 5 (High Level Technician). The VET sector possesses a vast network of facilities and training institutes offering courses that lead to qualifications and diplomas covering a wide range of specialized fields.

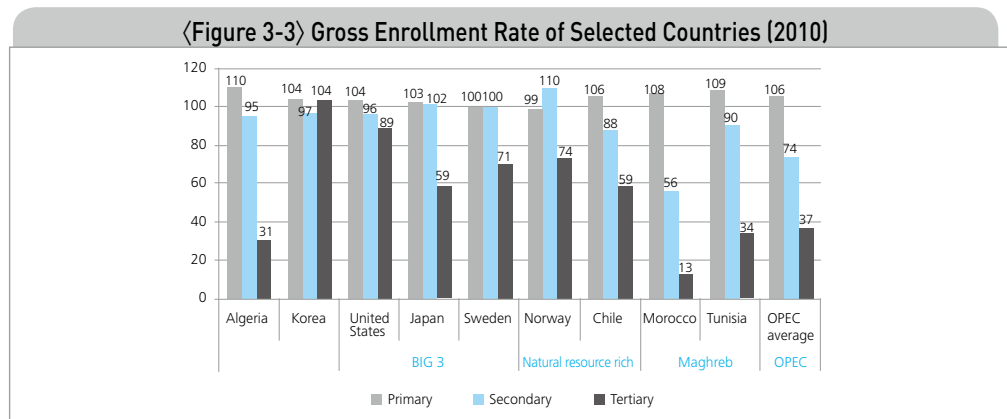
The higher education system comprises 'universities' and 'Grandes Ecoles' in which the admission requirement is a secondary diploma. As of 2012, there are 36 universities, 15 university centers, 21 Grandes Ecoles and 10 Ecoles preparatoires that prepare students for the entrance exam for Grandes Ecoles (OBG, 2011). All of these institutions are public, although a law was passed in 2008 which authorized the establishment of private HEIs. Reforms of higher education are underway to align with the European HE framework that resulted from the Bologna process. The Bologna process is a European higher education reform process aimed at establishing a European Higher Education Area by 2010 (Council of Europe, n.d.). According to the Bologna Process, the Algerian HEIs currently confer a three-year bachelor's, a two-year master's, and a three-year doctoral degree.

Three ministries are in charge of education in Algeria. They include the Ministry of National Education, the Ministry of Higher Education and Scientific Research, and the Ministry of Professional Training and Education. These ministries have the authority to decide on budget and resource allocation, student quotas, curricula design and personnel management for the related education sector. The educational administration is highly centralized, with each ministry handling decisions that affect the entire country. The government has recently developed the '2009-13 Development Plan for Education' whose aims are to better prepare the workforce and decrease the high unemployment rate of 14%. To achieve these goals, the government plans to better align the VET curricula with job market needs, and to broaden the use of information and communication technology (OBG, 2011). Also, the government plans to build new VET centers in order to meet 14% of the country's projected training needs for 2025.

## 3.2. The Current Status of Education

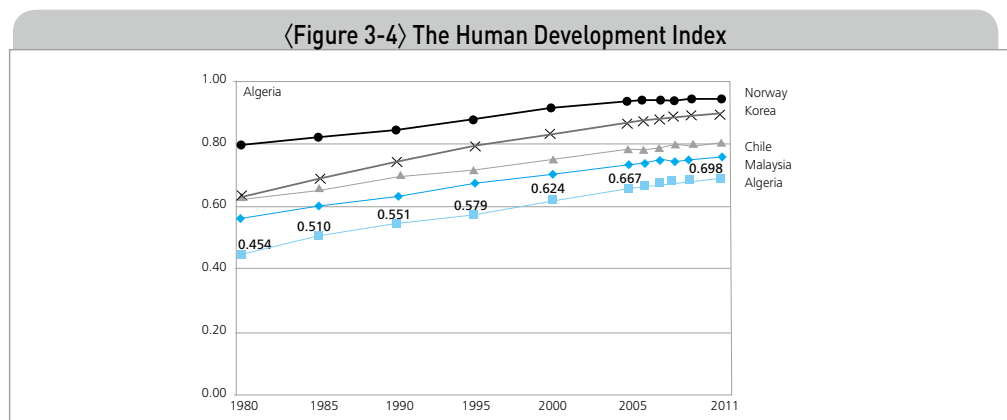
Basic indicators about the education of Algeria have improved significantly over

the past decades. The enrollment rate of primary education was 110.0% in 2010, and that for secondary education was 95%. As seen in Figure 3-3, Algeria has achieved similarly to most developed countries in terms of access to education. The enrollment rate for secondary education is higher than that of Chile or Morocco. However, the enrollment rate for higher education in Algeria is much lower than those of all the countries in the figure, except Morocco.



Source: UNDP (n.d.)

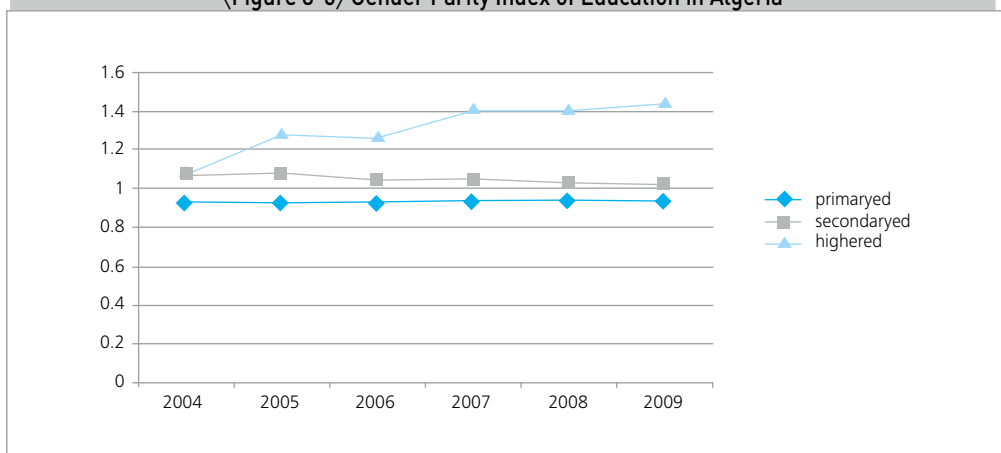
Along with the improvement of enrollment rates, the value of human development index (HDI) in Algeria has also improved. The Human Development Index (HDI) which is developed by the UNDP, is a composite index measuring the average achievement in three basic dimensions of human development — a long and healthy life, knowledge, and a decent standard of living (UNDP, 2011). The HDI value of Algeria in 1980 was only 0.454, but it rose to 0.698 by 2011. With such an increase, the gap between Algeria and the developed countries in <Figure 3-4> has decreased over time.



Source: UNDP (n.d.)

Meanwhile, gender equity in education has improved over the years in Algeria <Figure 3-5>. In 2009, the gender parity index value of primary education in Algeria was 0.09, and that of secondary education 1.06. Even the value for index of higher education was 1.44, which implies that there are more girls than boys enrolled in the HEIs. Also, the literacy rate (for 25 years old and above) of Algeria is estimated at about 70%, which is higher than those of Morocco and Egypt, respectively. The breakdown of the literacy rate by gender in Algeria is 79 percent for males and 61 percent for females (Library of Congress, 2008).

<Figure 3-5> Gender Parity Index of Education in Algeria



Note: The 2006 and 2007 data for secondary education were missing, and thus were substituted with the average of the 2005 and 2009 data.

Source: United Nation (n.d.). Millennium Development Goals Indicators.

Overall, the condition of basic education in Algeria has steadily improved. As shown in <Table 3-2>, the number of students per teacher has decreased over the past decade, fostering more intimate learning environments. Furthermore, all high schools are equipped with a computer lab, and one additional computer lab will be installed to each of the 1,679 high schools (OBG, 2011). The number of personal computers per 100 students rises according to each grade level as shown in <Table 3-3>. Also, the government has recently allocated €8.36 bn to finance the construction of schools, training institutes and universities (OBG, 2011).

<Table 3-2> Number of Students per Teacher in Algeria

	2001	2005	2010
Primary school	27.6	24.4	23.5
Lower secondary school	20.3	20.2	21.0
Upper secondary school	18.2	18.9	16.1

Source: Lee (2008). National Development Strategy and Education Policy (modified for this paper).

〈Table 3-3〉 Number of Personal Computers per 100 Students in Algeria

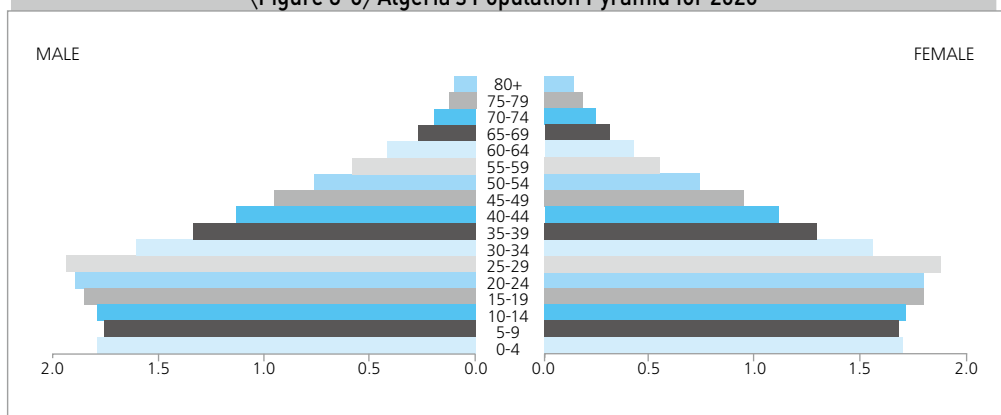
(Unit: student)			
Lower secondary school	Upper secondary school	Universities	FEP
0.58	2.54	4.72	4.8

Source: Lee (2008). National Development Strategy and Education Policy (modified for this paper).

## 4. Key Issues for Education in Algeria

As seen above, Algeria has made continuous improvements in education, and thus is likely to meet its UN Millennium Development Goals by 2015. Despite the improvements, Algeria still faces several challenges in terms of education. The greatest challenge is to deal with an increasing demand for education that stems from the large proportion of young in the population. Among the total population, the percentage of people aged 25 and under is 49%. As shown in <Figure 3-6>, this trend toward youth will continue. Such a high percentage of young Algerians poses daunting challenges to the education sector since it requires a rapid expansion of schools, teachers, etc.

〈Figure 3-6〉 Algeria's Population Pyramid for 2020



Source: U.S. Census Bureau (n.d.). International data base.

Furthermore, Algeria faces other issues with regard to improving education. <Table 3-4> summarizes them by the type of education sector. In the case of vocational education and training, Algeria faces two major issues: 1) insufficient provision; and 2) ineffective response to the needs of industries. In regard to higher education, Algeria has to deal with the following issues: 1) increasing demand for higher education; 2) lack of diversity in HEIs; 3) low level of social appropriateness of

university education; and 4) weak research capacity. Regarding policy coordination, Algeria faces the following issues: 1) lack of coordination among educational policies; and 2) insufficient linkage between educational and economic policies.

〈Table 3-4〉 Key Issues for Education in Algeria

Education Sector	Key Issues
Vocational Education and Training	Insufficient provision Ineffective response to the needs of industries
Higher Education	Increasing demand for higher education Lack of diversity in HEIs Low level of social appropriateness of university education Weak research capacity
Policy Coordination	Lack of coordination among educational policies Insufficient linkage between educational and economic policies

Source: Lee (2008). National Development Strategy and Education Policy (modified for this paper).

## 4.1. Key Issues in Vocational Education and Training

VET is becoming a critical issue in Algeria, especially as the government is challenged in dealing with both an increase of youth and a high rate of unemployment. Most of all, an insufficient coverage of VET remains as a key issue, although the government plans to build new VET centers in order to meet the 14% of the country's projected training needs for 2025 (OBG, 2011). Several factors have contributed to the problem. First, the rapid growth of the young population requires the expansion of VET as well as the compulsory education sector. As of 2012, the percentage of children under 16 accounts for 28% (Ministry of Prospective and Statistics, 2012). Second, relatively high dropout rates of compulsory education have triggered more demand for VET. In 2012, the completion rate of compulsory education occupied 75% (Ministry of Prospective and Statistics, 2012). Furthermore, the ineffective response of VET to the needs of industries remains as a key issue. Although the number of VET institutes has grown over the past decades, the gap between the demand of industries and the quality of the workforce provided by VET has not lessened desirably (OBG, 2011). This result may be associated with several factors. First, VET has failed to attract talented students since many Algerians perceive it as an option for students who are unable to enter university.

Second, there has been a lack of collaboration between the VET institutes and industries. In fact, one of the main challenges facing the trainers is to incorporate practical training and professionalism into the classroom curriculum. While internships are designed as a part of VET, there are few incentives for corporations and industries to take the time to train interns. Also, the participation of industries

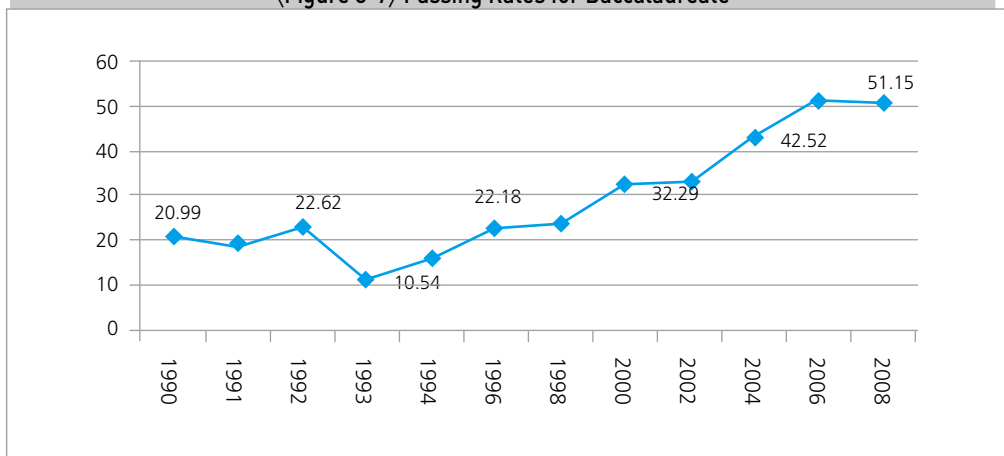
in creating the VET curriculum has been weak. Despite the fast transformation of industries and businesses, most VET institutes focus on just a few industries, including agriculture, industry and tourism. Third, there is a shortage of professional development for VET trainers. It is a serious problem because the influence of VET trainers on the quality of VET becomes greater with the rapid development of technology and knowledge.

## 4.2. Key Issues in Higher Education

The higher education in Algeria has both prospects and challenges. While the role of higher education in Algeria is growing, especially with the country trying to improve its economy, universities, in reality, are under great strain to meet the increasing demand. The main issues facing higher education include: 1) increasing demand for higher education; 2) lack of diversity in HEIs; 3) low level of social appropriateness of university education; and 4) weak research capacity.

First of all, access to higher education remains a key issue, even with the recent improvement. The passing rate for the baccalaureate, the national university entrance exam, reached a record of 61.2% in 2010, an increase from 45% in 2009 (OBG, 2011). The enrolment rate of higher education was 31% in 2011. The demand for higher education is growing at a fast rate. The number of students enrolled in HEIs is predicted to grow to 2 million by 2015 (OBG, 2011). Thus, the greatest challenge lies in HEIs' ability to accommodate the growing number of young students.

〈Figure 3-7〉 Passing Rates for Baccalaureate



Source: Ministry of Prospective and Statistics (2012). Education System.

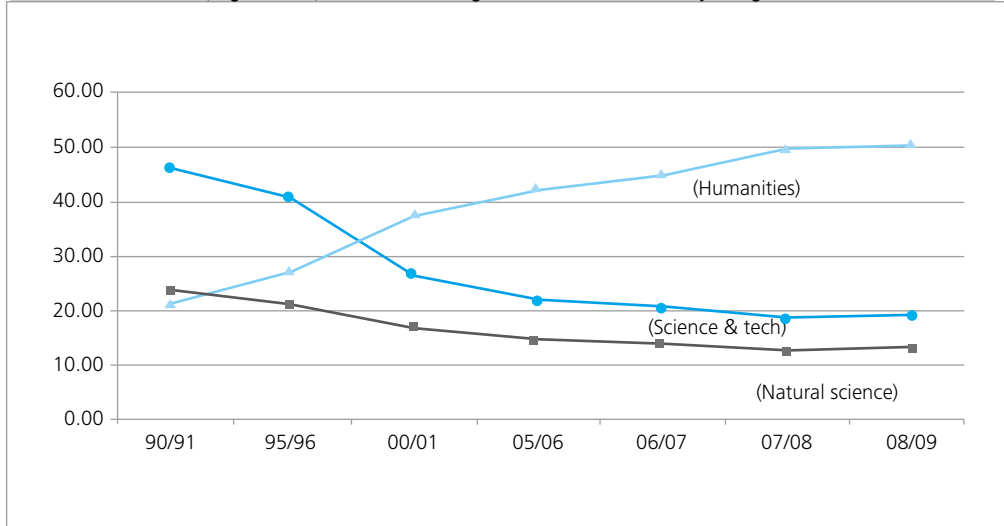
To respond to the shortage of universities, the government issued a law in 2008 which would authorize the establishment of private HEIs. At the postsecondary education level, private institutions which offer a two-year technical diploma (Brevet de Technicien Supérieur, BTS) have been in operation since the 1990s (OBG, 2011). Some of these institutions, in partnerships with foreign universities, offer a higher education diploma. However, these few private HEIs may not be enough to accommodate the increasing numbers of students. Despite the shortage of HEIs, higher education should be expanded with caution due to the current high level of unemployment among college graduates. As of 2012, the unemployment rate of college graduates accounts for 21.4%, which is higher than the rate of vocational training programs.

Second, the lack of diversity among HEIs remains as a key issue. Humanities-oriented four-year public HEIs are dominant in Algeria while the specialized HEIs are scarce. As of 2012, 36 universities, 15 university centers, 21 Grandes Ecoles and 10 Ecoles préparatoires prepare students for the entrance exam for Grandes Ecoles (OBG, 2011). Except for the very few private HEIs and foreign HEIs, most HEIs in Algeria are public. Furthermore, there are no two-year colleges that offer associates' degrees.

Third, a low level of social appropriateness is another issue that Algeria faces in terms of higher education. As shown in <Figure 3-8>, there have been noticeable changes in the share of college students enrolled according to the type of program. Until 1995/96, there were more students enrolled in Science and Technology programs than in other programs. However, students enrolled in Humanities programs have outnumbered those in other programs since 2000/01. To address such an unbalance, the government needs to restructure university programs to reflect economic and social changes.



〈Figure 3-8〉 Share of College Students Enrolled by Program



Source: Ministry of Prospective and Statistics (2012). Education System.

Fourth, the weak research capacity is another area to which the government needs to pay attention. As seen in <Table 3-5>, Algeria's research capacity, which is measured by the number of internationally well-known research papers, is lower than that of most developing and developed countries. Researchers in Algeria published fewer papers than those of the neighbouring countries, such as Saudi Arabia and Morocco in 2006.

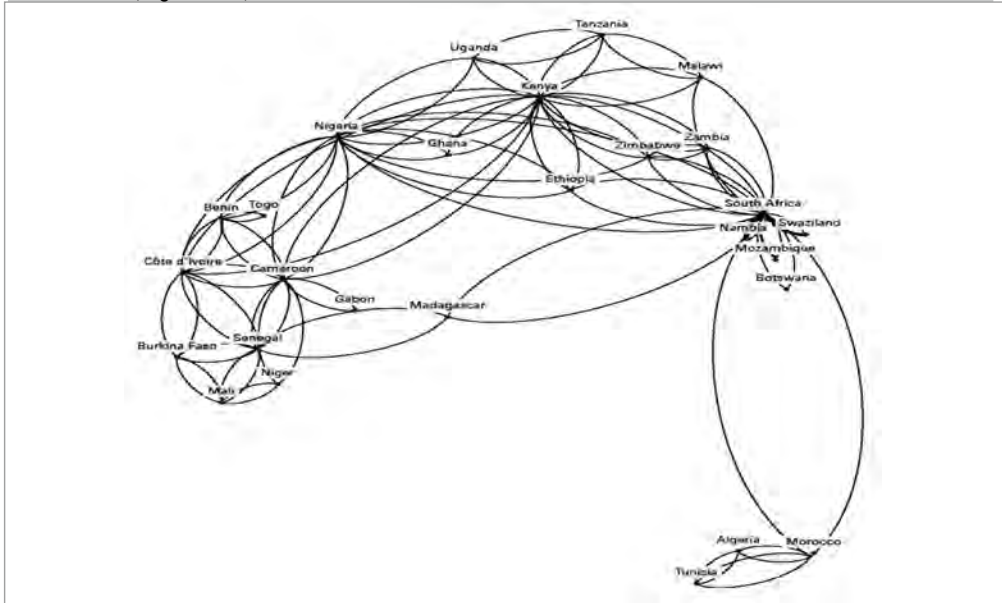
〈Table 3-5〉 Distribution of Countries according to their Publication Output and Growth over the Twenty-year Period (1987-2006)

Type of Country	Country	2006 Output	Growth Factor
Emerging	Korea	22,380	(x 23)
	India	19,290	(x 1.8)
	Brazil	13,000	(x 5.2)
Candidates Emerging	Singapore	5,250	(x 11)
	Iran	3,710	(x 28)
	Chile	2,220	(x 2.5)
	S. Africa	3,850	(x 1.0)
Intermediary	Saudi Arabia	930	(x 1.3)
	Colombia	605	(x 4)
	Morocco	860	(x 6)
	Algeria	730	(x 5)
Small Science Countries	Qatar	80	(x 2)
	Botswana	95	(x 5)
	Zambia	90	(x 2)
	Guatemala	60	(x 1)

Source: Meek, V.L., Teichler, U., & Kearney, M. (2009). Higher Education, Research and Innovation: Changing Dynamics (modified for this paper).

Furthermore, the HEIs of Algeria have been relatively inactive in terms of research collaboration with other African countries. <Figure 3-9> shows the patterns of collaborations between countries based on the numbers of jointly authored research papers (The Royal Society, 2011). As shown in the figure, researchers of Algeria have mainly collaborated with researchers in neighbouring countries such as Tunisia and Morocco, while other African researchers are actively engaged with more geographically dispersed countries.

〈Figure 3-9〉 Research Collaboration between African Countries (2004-08)



Source: The Royal Society (2011). Knowledge, networks and nations.

### 4.3. Key Issues in Policy Coordination

Aside from the issues mentioned above, there are common issues that affect all educational sectors in Algeria. First of all, there has been an absence in the coordination mechanism among the three ministries related to education. Although the Ministry of National Education, the Ministry of Higher Education and Scientific Research, and the Ministry of Professional Training and Education promote human resources development as a common function, there are no mechanisms which coordinate the policies across all Ministries. Consequently, each ministry has difficulties in aligning its own policy with the others. This lack of coordination renders educational initiatives inefficient.

Furthermore, there has been a lack of linkage between the educational policies and economic planning. Overall, the ministries related to education and the ministries<sup>27)</sup> associated with the economy have few opportunities to connect their policies with each other. As a result, the policy decisions on the expansion of education have not been effectively linked to the demand for human resources by industries and businesses. Also, an effective division of labor seems to be absent between the central government and local administrative bodies in terms of

27) Ministries associated with the economy include the Ministry of Industry, Ministry of Finance and the Ministry of Commerce.

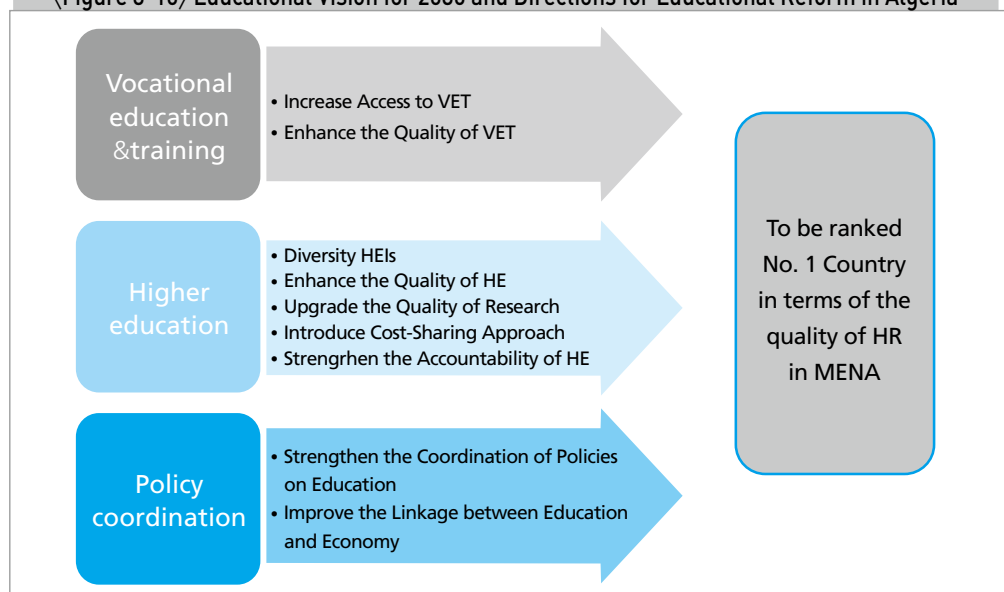
educational policies. The central government has the most decision-making authority to develop educational policies, whereas the local administrative bodies have few opportunities to formulate their own regional educational policies.

## 5. Policy Recommendations for Education Reform in Algeria

### 5.1. Educational Vision for 2030 and Directions for Educational Reform

Algeria is a very ‘young’ nation where the proportion of people aged 25 and under accounts for 40%. Thus, as the educational vision for 2030, the government should aim to be ranked No. 1 with regard to the quality of human resources in the MENA (Middle East and North Africa) region. Algeria’s abundant natural resources in combination with competent human resources should be regarded as strong drivers for economic development, rather than the ‘curses’ of development. For the Algerian people, the 2030 vision means that everyone can have opportunities in receiving high quality education, thus being able to develop their potential to the fullest. For industries and businesses, it implies that every company should have a highly competent workforce, thus enabling them to succeed in a competitive international trade environment. For the nation, educational reform can spur international competitiveness and enable Algeria to become an economic leader in the MENA region.

〈Figure 3-10〉 Educational Vision for 2030 and Directions for Educational Reform in Algeria



To be ranked as the No.1 nation in the MENA region, Algeria should produce high quality human resources that support economic development, as was the case in Korea. As described earlier, the Korean government aligned the expansion of education with economic development for several decades. By doing so, the Korean government was able to provide industries and businesses with the human resources needed in each economic development stage. The Algerian government can benchmark against the Korean case to reform its VET and HE in the following directions.

First, the Algerian government needs to take an incremental approach in reforming its VET and HE. The experiences of many countries indicate that a drastic reform policy is likely to fail due to a strong resistance from interest groups and organizations. To reform education successfully, the Algerian government needs to launch some policies that would strengthen the capacities of VET and HEIs, then later overhauling the VET and HE systems. An incremental approach will not only help government officials improve the reform plans, but will also help stakeholders understand the reform. Second, the government should diversify the financial sources needed to expand both VET and HE. Like other developing countries, Algeria also has to deal with various political leaders' demands for the allocation of the national budget. Thus, the government should find alternatives to finance the expansion of VET and HE. Lastly, the government needs to create competition among educational institutions in order to increase the quality of VET and HE. Whereas excessive competition is likely to harm the welfare of students and teachers, too little competition can discourage students and teachers from performing better.

## 5.2. Policy Options for Improving Vocational Education & Training

There are some policy options that the Algerian government needs to consider in order to improve the vocational education and training. First, it should increase access to VET. Second, it should enhance the quality of VET. The following section will present the policy options in detail.

### 5.2.1. Increasing Access to VET

It is very crucial for the government to increase access to VET, especially when considering the growing number of students enrolled in compulsory education. The government needs to do so in a way that supports the development of industries. Accordingly, the government first needs to build new VET institutions that would train the human resources needed by leading industries. Here, the Korean case can be considered for benchmarking. Since the early 2000s, the Korean government has built VET centers which reflected the industrial characteristics of each region in order

to foster technical personnel for small businesses (Jeong et al., 2002). Table 3-6 shows how each region focused on different types of vocational training to reflect the strengths of regional industries. For instance, in the machinery category, the Busan region focused on machine control, Gwangju focused on precision machinery, and Gongju focused on machine processing.

〈Table 3-6〉 Specialization of Vocational Training Centers

Industry	Computer Applications	Machinery	Textiles	Electricity, Electronics	Information, Design	Transport and Construction Equipment
Region	Seoul	Busan, Gwangju, Ansan, Gongju, Hongcheon	Daegu	Okcheon	Daejeon	Paju

Source: Lee (2009). Vocational Education and Training in the Process of Industrialization.

Second, the Algerian government needs to create internal vocational training courses within companies to increase opportunities for VET as well as to reduce costs related to the provision of VET. For instance, the Korean government has offered ‘internal vocational training’ since the early 1970s in order to respond to the increasing demand of semi-skilled labors. The employers with more than 200 workers in Korea were required to train at least 15% of their full-time workers. As a result, the number of trainees increased from 12,000 to 96,800 (Lee, 2009).

### 5.2.2. Enhancing the Quality of VET

The quality of VET should be considered as the key factor in reforming the VET of Algeria. The government first needs to enhance the professional development programs of VET trainers. As in other educational arenas, the quality of trainers is the key factor that determines the quality of VET. This principle has been evident in the fact that many developed countries have greatly invested in the professional development of VET trainers. For instance, UK’s Skills Commission developed a unified professional development system for vocational teachers (Skills Commission, 2011). An incentive scheme was developed to help employers provide placement schemes for trainers in vocational education. In addition, long-term funding was made available for training mentors for newly qualified trainers.

Second, the Algerian government needs to support the ‘industry-VET institutes’ cooperation’ not only to produce the workforce needed by industries, but also to respond to the constantly increasing pace of technological development. In many developed countries, systematic cooperation between industries and VET institutes is the core of the VET reform. For instance, the Korean government has created

the Contract Based Training (CBT) program. According to the CBT, training areas, contents, terms of training and instructional materials are determined by the company and the school. Under this contract scheme, the vocational high school is in charge of developing and implementing a training program. Accordingly, a company promises to employ students who successfully complete the program, and the students agree to take the job for two years with the contracted company after finishing the program.

Third, the government needs to upgrade the national qualifications framework in order to improve the coherence of the qualification structure, including the accumulation of credits and the recognition of prior learning according to the international trend of VET. Many African countries have already developed a very sophisticated VET qualifications framework. For example, South Africa established the National Qualifications Framework (NQF) to provide a mechanism for awarding qualifications based on each student's achievement of specified learning outcomes (AfriQAN, 2008). South Africa then implemented the NQF with the recognition of prior learning and in alignment with the South African Qualifications Authority. Learning outcomes were specified by the employer-dominated Sector Education and Training Authorities (AfriQAN, 2008).

Lastly, the government needs to develop the 'quality assurance system' of VET by providing an external assessment of the quality of training. Without external evaluation, it is difficult to determine the quality of VET objectively and fairly. In the case of Ireland, the Further Education and Training Awards Council was established in 2001 as the single national awarding body for further education and training (CEDEFOP, 2009). Accordingly, a provider must be able to demonstrate each school's capacity to monitor, evaluate, and improve the quality of programs and services the school offers to learners. Sweden can also be a benchmarking case for Algeria in developing the quality assurance system of VET. The Swedish Agency for Advanced Vocational Education is responsible for approving and accrediting the continuation of training courses according to quality standards (CEDEFOP, 2009).

### 5.3. Policy Options for Improving Higher Education

There are several policy options that the Algerian government needs to take into consideration for improving the competitiveness of its higher education. They include: 1) the diversification of HEIs; 2) enhancing the quality of higher education; 3) upgrading the quality of research; 4) introducing cost-sharing approaches to finance HEIs; and 5) strengthening the accountability of HEIs. This section discusses each of the policy options in detail.

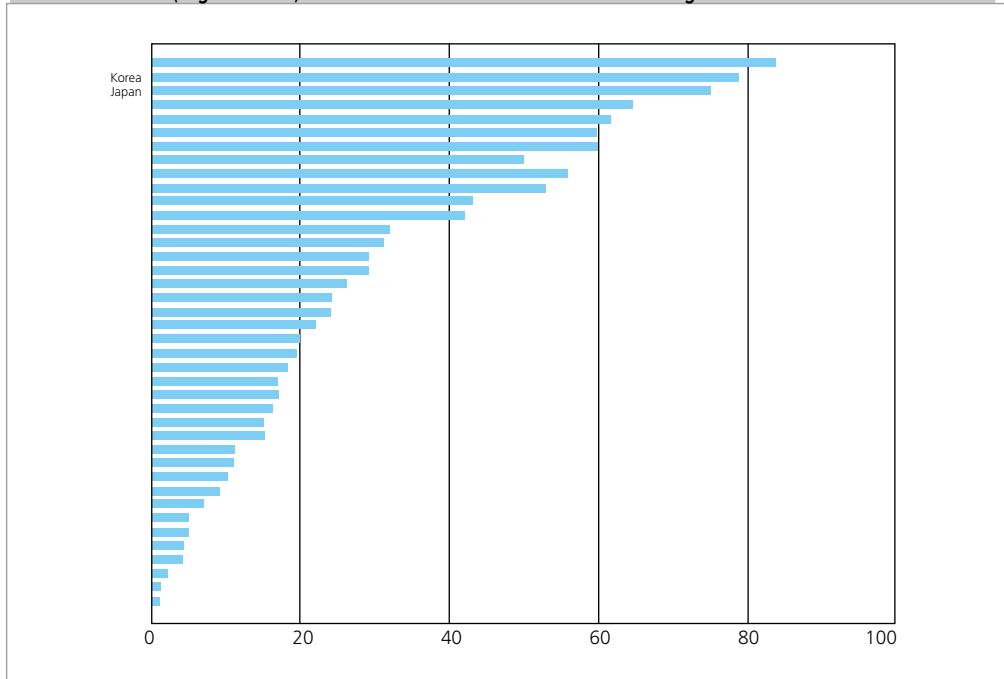
### 5.3.1 The Diversification of HEIs

Given the rapid increase in the number of secondary students, it is very important for the Algerian government to increase access to higher education. In selecting policy strategies to do so, however, the government needs to take a cautious approach. After all, there is also plenty of need for investments in other types of education. In this context, the diversification of HEIs could be an effective strategy since the government could not only use various financial sources to increase the number of HEIs, but also in adding variety to a system dominated by public HEIs. The government first needs to introduce the 'junior college system' which offers associates' degrees. This system can provide graduates from high schools and VET institutions with opportunities to pursue higher education, thus further developing the students' capabilities. The cases of Korea and the U.S. can be used as examples for Algeria. In Korea, there is a junior college system which prepares specialized workers. As of 2011, there were 147 junior colleges and 183 four-year universities in Korea (KEDI, 2011). In the U.S., community colleges provide open access to higher education, prepare students to transfer to four-year institutions, and provide workforce development and skills training (Cohen & Brawer, 1996).

Second, the government needs to encourage the establishment of private HEIs in order to mobilize additional funding for higher education as well as to diversify HEIs. As shown in Figure 3-11, private higher education has become universalized in many countries. In response to limited government funding, many governments have used 'privatization' as a way of increasing access to higher education (Psacharopoulos, 1986; Johnstone, Arora, & Experton, 1998). Korea provides an excellent example of the international trend. Korea's participation rate in higher education increased from below 6% in 1960 to over 65% by 2007 (KEDI, 2009). Such an expansion was made possible through both the rapid increase in the number of private HEIs and minimal government funding. Although over 80% of Korean HEIs are private and enrol about 80% of all undergraduates, the proportion of government subsidies to the total revenue of private universities is less than 7% (KEDI, 2007). As shown in the Korean case, privatization of higher education can be an effective mechanism in expanding higher education with minimal costs in Algeria.



〈Figure 3-11〉 The Share of Enrollment in Private Higher Education



Source: The World Bank (2000). Higher Education in Developing Countries, p.30

Third, the government needs to provide ‘foreign HEIs’ with incentives to establish branches in Algeria that will meet the increasing demand for higher education. Many countries, including China, Malaysia, Singapore and Korea, have attracted branches of foreign universities not only to increase access to higher education, but also to internationalize higher education. A strategy to attract foreign HEIs can take one of the following forms: 1) the establishment of independent branches of foreign HEIs; 2) the establishment of a joint branch campus; and 3) the operation of collaborative degree programs (Kritz, 2006). The support these countries provide to foreign HEIs includes funds for the HEIs’ preparation activities before the opening of a campus; provision of campus facilities, including faculty houses, free of charge; or subsidization of school operations.

### 5.3.2. Enhancing the Quality of Higher Education

With the global shift towards a knowledge-based society since the 1980s, higher education has become influential in the training of highly-qualified human resources (World Bank, 2002). Thus, the Algerian government needs to take a proactive approach in improving the quality of higher education. First of all, it needs to establish a National Center for Teaching & Learning to develop and disseminate best practices on teaching and learning. Most HEIs in the U.S. and Korea have a center for

teaching and learning whose role is to promote excellence in teaching and student learning inside and outside the classroom. For instance, the Center for Teaching and Learning at Stanford University provides various services to university members. As seen in <Table 3-7>, the center provides faculties with teaching consultation, evaluation, and midterm student feedback, etc. For students, it offers academic skills counselling, oral presentation assistance, peer tutoring and other services.

<Table 3-7> Roles of the Center for Teaching and Learning (Stanford Univ.)

Target	Type of Help
Faculty Member	Teaching consultation, evaluation and improvement, midterm student feedback, etc.
Teacher Assistant	TA orientations, workshops, presentations coaching, etc.
Undergraduate Student	Academic skills counseling, oral presentation assistance, peer tutoring, etc.

Source: Stanford University (n.d.).

Second, the government needs to initiate a ‘university-industry cooperation program’ by benchmarking the Korea’s Leadership in the Industry-University Cooperation Initiative. The initiative aims to reform the university education system, promote the growth of regional industries, and link graduation and employment through industry-university cooperation. Such a program would not only help industries and HEIs to collaborate with each other in developing curricula and internships, but would also provide industry experts with opportunities to teach and conduct research at HEIs. The benefits for HEIs from such a program are as follows: 1) exchange of staff, job placements and internships for students; 2) enrichment of academic programs; 3) identification of projects and partners for research collaboration; and 4) improvement in research activities (Barluenga, 2010). Meanwhile, the program can also provide benefits to the society. Those benefits can include: 1) creation of new companies, jobs and products; 2) increasing educational levels; 3) supply of new technologies and techniques; and 4) increased involvement of HEIs in the economic environment (Barluenga, 2010). The major forms of university-industry cooperation can take various forms as shown in <Table 3-8>.

〈Table 3-8〉 Major Forms of University-Industry Cooperation

Forms	University-Industry Cooperation
Mobility of People	Graduate placements Internships Mobility from/to public knowledge institutes to/from industry Temporary exchange of personnel
Sharing of Facilities	Shared laboratories/ Common use of machines Common location or building (Science parks)
Cooperation in Education	Contract education or training Retraining of employees/Working students Influencing curriculum of university programs Providing scholarships/ Sponsoring of education
Spin-offs and Entrepreneurship	Spin-offs/ Start ups Incubators at universities Stimulating entrepreneurship

Source: Barluenga (2010). Enhancing University-Industry Relations

Third, the government needs to develop a project such as the 'National Science & Engineering Project' which provides HEIs with incentives to increase the proportion of science and engineering programs. The project can help prepare the Algerian government for the global economy, which is considerably driven by science and technology. According to the U.S. Department of Commerce Economics and Statistics Administration, science and engineering fields are projected to grow 17% between 2008 and 2018 (Kuenzi, 2008). Taking this prediction into consideration, the Algerian government should increase its investment in science and technology. In the case of Korea, the government introduced the 1974 Regional Universities Specialization Scheme that mainly supported engineering departments in all universities. In addition, it has increased the student quotas for engineering departments of HEIs to provide human resources for heavy and chemical industries.

### 5.3.3. Upgrading the Quality of Research

With the advancement of the knowledge-based economy, the role of research on the economic and social development has become increasingly salient. Therefore, research should be one of the key areas that Algeria improves in order to be ranked No. 1 in the MENA region. To enhance the research capacity of the HEIs, the government first needs to create a University Research Support Project that will increase the quality of research at HEIs as well as educating researchers. The Brain Korea 21 Project can be used for benchmarking. This project emphasizes specialty areas that have high growth potential, and through open competition selects excellent graduate schools in these areas to provide substantial financial support for graduate students. The project has helped increase the number of internationally well-known papers produced by Korean scholars. Korea, thus, ranked 12th in the

number of papers published in SCI-level journals<sup>28)</sup> among 180 countries in 2011 (MEST, n.d.).

Second, the government needs to encourage international cooperation in research by financing international joint research through bilateral, inter-governmental or inter-institutional agreements. Through international cooperation, researchers will learn the state-of-the-art skills. For instance, Korea used to rely heavily on international cooperation for the development of science and technology (NRF, n.d.). Until the early 1980s, Korea promoted the transfer of foreign technologies to obtain technical knowledge and technical training.

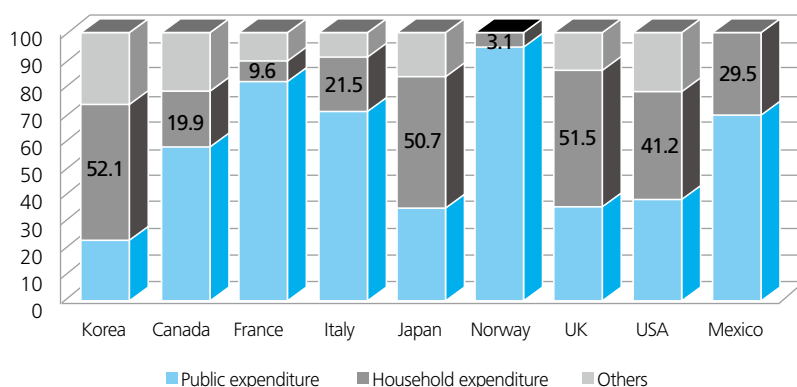
Third, the government needs to establish a National Research Foundation that will fund research at HEIs. In the case of Korea, for example, the government established the National Research Foundation of Korea in 2009. The foundation has such roles as: 1) supporting academic and R&D activities; 2) fostering and utilizing researchers in academia and R&D fields; 3) promoting international cooperation for academic and R&D activities; 4) facilitating the survey, analysis, and application of useful resources for research funding and the development of policies; 5) assisting in managing research performed by academic and R&D organizations; and 6) promoting cooperative exchange between domestic and overseas institutes and organizations in the fields of academia and R&D (NRF, n.d.).

#### 5.3.4. Introducing a cost-sharing approach to finance HEIs

In many countries, higher education has to compete for limited public revenue with other compelling needs of society, such as basic education, social welfare and public health (Johnstone, 2006). Thus, a key strategy to increase access to higher education in many countries has been to adopt a cost-sharing approach (Albrecht & Zideman 1993). The major obstacle that faces Algeria in introducing this approach has to do with the free public higher education system. Although it will be very challenging for Algeria to change the financing system for higher education, it could consider the following policy options. First, it could introduce a 'tuition fee system' which has college students pay for their education. As shown in Figure 3-12, many countries have adopted the tuition system to secure additional funding. Even in countries such as France, UK and Italy where higher education has been heavily subsidized by the government, students share the costs of higher education.

<sup>28)</sup> The SCI, a citation index owned by Thomson Reuters, covers the world's leading journals of science and technology.

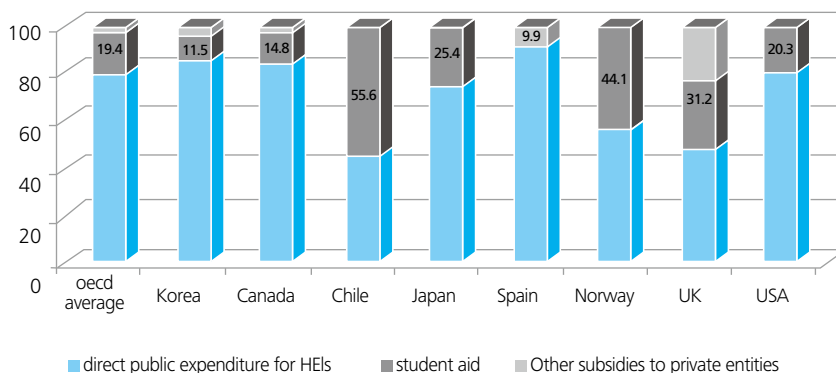
〈Figure 3-12〉 Relative Proportions of Public and Private Expenditure on Educational Institutions, as a Percentage, for Tertiary Education (2008)



Source: OECD(2011). Education at a Glance 2011.

Furthermore, the government could introduce a student aid (grants and loans) system which would help college students pay tuition and living expenses. Student loans have been introduced as policy tools for cost-sharing in the expansion of higher education (Woodhall, 2004). Loans transfer the responsibility of higher education costs from governments and taxpayers to parents and students, based on the rationale that access to higher education can be improved by having students share the financial burden (Johnstone, 2004). As shown in <Figure 3-13>, many OECD member countries have adopted a student loan system.

〈Figure 3-13〉 Direct Public Expenditure on Educational Institutions and Subsidies for Households and Other Private Entities (2008)



Source: OECD (2011). Education at a Glance 2011.

### 5.3.5. Strengthening the Accountability of HEIs

Accountability – the idea of holding schools and educators responsible for results — has become an important issue to policy makers under financial austerity. Traditionally, governments monitored the “inputs” in education such as school facilities, and yet paid little attention to the “performance” of education. However, this traditional model is no longer popular among policy makers since the government has to deal with public requests for higher levels of scrutiny about the quality of education (Anderson, 2005). In Algeria, the concept of accountability is still new to most of the policy makers and educators. The government first needs to introduce a ‘quality assurance system.’ Quality assurance (“QA”) is a planned and systematic review process of an institution or program to determine whether or not acceptable standards of education, scholarship and infrastructure are being met, maintained and enhanced (AAU, 2007). In designing its own QA system, the Algerian government can use the cases of Korea and other countries for reference. In 2009, the Korean government initiated a higher education evaluation and accreditation system, in a bid to reinforce the autonomy and accountability of higher education institutions and refurbish the sector with a quality assurance framework of international standards. The system works in a way for institutions to first conduct self-review and self-evaluation, the results of which are then assessed and accredited by accredited agencies (MEST, n.d.).

Second, the government needs to introduce a performance funding system for HEIs which ties funding to outcomes, thereby providing HEIs with incentives to graduate students. In Korea, the Lee Myung-bak government has introduced the Formula Grants Scheme for Enhanced Higher Education Capacity which assesses and awards the best performing HEIs based on a non-competitive evaluation formula. Pre-determined quantitative indices are used to evaluate each HEI’s educational achievement level and environmental status. In Finland, the block grant funding formula for polytechnics includes the number of students enrolled (70%), the number of graduates (30%), and the number of students going on to the postgraduate level (MHEC, 2009).

Third, the government needs to introduce performance-based rewards for faculties which encourage professors to devote themselves to teaching and research. The features of a performance-based compensation scheme include the following: 1) be transparent and fair; 2) be tied to available budget; 3) provide incentives to faculty in order to pursue actions that are in line with the HEI’s strategy; and 4) provide rewards for meritorious productivity in a timely manner (Haddawy, 2006). An application of the performance-based compensation scheme can be a full model or partial model. It can also be a research-only model or a combined model of research and lecture.

Lastly, the government needs to set up a ‘university information disclosure system’ which reveals the key performance indicators of HEIs. The system will not only provide students and parents with key information on each HEI, but will also encourage competition among HEIs. In Korea, for instance, all HEIs are required to make information public on curriculum, school management, student selection, enrollment rates, graduate employment rates, full-time faculty rates, faculty research achievements, budgets and closing accounts, specialization plans and funding for research projects, and libraries. Also, the government has built a website on the University Information Disclosure System ([www.academyinfo.go.kr](http://www.academyinfo.go.kr)) to help people access it anytime from anywhere.

## 5.4. Policy Options for Improving Policy Coordination

Policy coordination is an essential factor in determining the effectiveness of multiple related policies. Without an effective policy coordination, related policies are likely to increase inefficiencies and problems during the implementation period. The key challenge that faces Algeria in terms of policy coordination related to education is the limited alignment of various ministries on education and economy. Several policy options can be discussed as ways of overcoming them. Most of all, the government needs to create a council such as the National Human Resources Development Council to ensure the systematic alignment of the policies formulated by the ministries on education and economy.

Also, it needs to make it a periodical activity to create a mid-term national development plan which connects the education policies to economic development. Finally, it needs to create a monitoring process to examine the close alignment of the key educational and economic policies. Korea’s HRD policy can be a benchmarking case for Algeria. It aims to administer policies associated with human resource development (HRD) at the national level with a long-term perspective, and to integrate the policies of HRD implemented across different ministries. The Ministerial Commission for HRD was created in 2001 as a ministerial policy consultation organization that coordinated HRD policies of each ministry and deliberated the basic direction of the policies (MEST, n.d.).

## 5.5 Education Reform Timeline

<Table 3-9> presents the education reform timeline based on the importance and urgency of each policy option. The policy options are listed for each phase of economic development plan in Algeria.

〈Table 3-9〉 Education Reform Timeline

		1st Phase (2013-2020)	2nd Phase (2021-2030)
Vocational Education & Training	Increase access to VET	-Build new VET institutions -Create internal training system within companies	
	Enhance the quality of VET	-Improve professional development for VET trainers -Support industry-VET institutions cooperation	-Upgrade National Qualifications Framework -Develop the Quality Assurance System for VET
Higher Education	Diversify HEIs	-Encourage the establishment of private HEIs -Provide foreign HEIs with incentives to establish their branches in Algeria	-Introduce the junior college system
	Enhance the quality of HE	-Initiate the University-Industry Cooperation Program -Develop the National Science & Engineering Program	-Establish the National University Teaching & Learning Center
	Upgrade the excellence of research	-Create the University Research Support Project -Encourage international cooperation among HEIs in research	-Establish the National Research Foundation
	Introduce cost-sharing approach		-Introduce the tuition fee system -Provide grants & student loans to college students
	Strengthen the accountability of HEIs	-Introduce the Quality Assurance System -Introduce the Performance Funding system for HEIs	-Set up the University Information Disclosure System Introduce the Performance-based Payment System for faculty
Policy Coordination	Enhance the alignment of educational policies with economic plans	-Create the National Human Resources Development Council -Create a monitoring process which ensures that key educational and economic policies are closely aligned	Make it a periodical activity to create a mid-term national development plan

Source: Stanford University (n.d.).



## 6. Conclusion

This study aimed to present policy options the Algerian government may consider in creating its vocational education and training and higher education. Both VET and HE were chosen as the topics of this chapter since each of them involves issues beyond basic education in Algeria. Even though Algeria has almost achieved the educational goals included in both the Millennium Development Goals established by the United Nations and the Education for All by UNESCO, there is still room for improvement in both VET and HE. In this context, this chapter first described the Korean case which could be used as a reference for Algeria to reform its VET and HE. Second, it provided an overview of the education system in Algeria, while also discussing key issues and problems of its VET and HE. Third, it suggested the 2030 educational vision and reform directions for Algeria. Lastly, it provided a range of policy options for the Algerian government to consider in designing its education reform plans. The major findings of this study are as follows.

Algeria has made continuous improvements in education over the past decades, and thus is likely to meet its UN Millennium Development Goals by 2015. However, it still faces several challenges with regard to education. The greatest challenge is to deal with an increasing demand for education that stems from a large proportion of young population. People aged 25 and under represented 49% of the total population in 2012. To overcome the challenges, the government needs to aim for being ranked No. 1 in terms of the quality of human resources in the Middle East and the North African region. To realize this vision, it needs to align the education reform with the economic development plan by benchmarking the Korean Case.

*The policy options for improving vocational education and training* are as follows. First, the Algerian government needs to increase access to VET by: 1) building new VET institutes that will train the human resources needed by leading industries; and 2) creating internal vocational training courses within companies. Second, the government needs to enhance the quality of VET by: 1) enhancing the professional development programs of VET trainers; 2) supporting the cooperation of industry-VET institutes; 3) upgrading the national qualifications framework; and 4) developing the quality assurance system of VET.

*The policy options for improving higher education* are as follows. First, the government needs to diversify its higher education institutions (HEIs) by: 1) introducing a “junior college system” which offers associates’ degrees; 2) encouraging the establishment of private HEIs; and 3) providing foreign HEIs with incentives to establish branches in Algeria. Second, it needs to enhance the quality of higher education by: 1) establishing the National Center for Teaching & Learning which develops and disseminates best practices on teaching and learning;

2) initiating a university-industry cooperation program; and 3) developing a project such as the 'National Science & Engineering Project'. Third, the government needs to upgrade the quality of research by: 1) creating the University Research Support Project; 2) encouraging international cooperation in research; and 3) establishing the National Research Foundation which supports the research at HEIs. Fourth, the government needs to introduce a cost-sharing approach to finance HEIs by: 1) introducing the 'tuition fee system' which has college students pay for their own education; and 2) introducing a student aid (grants and loans) system which will help students pay the tuition. Finally, it needs to strengthen the accountability of HEIs by: 1) introducing the quality assurance system which ensures the quality of HEIs; 2) introducing the performance funding system for HEIs which ties funding to outcomes; 3) introducing the performance-based rewards for faculties; and 4) setting up the university information disclosure system which reveals the key performance indicators of HEIs.

Lastly, the policy options for improving policy coordination are as follows. First, the government needs to create a National Human Resources Development Council to ensure the systematic alignment of the policies formulated by the ministries on education and economy. Second, it needs to make it a periodical activity to create a mid-term national development plan which connects the education policies to economic development. Finally, the government needs to create a monitoring process which ensures that key educational and economic policies are closely aligned with each other.

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# Health Sector Development Plan 2030 in Algeria

1. Health Care System in Algeria: Key Issues and Challenges
2. Health Care Financing
3. Health Care Provision
4. Vision for Health Sector Development in Algeria
5. Policy Options for Health Sector Development in Algeria
6. Road Map



## Health Sector Development Plan 2030 in Algeria

*Soonman Kwon (Seoul National University)*

### Summary

Health indicators of the Algerian people have improved steadily, but the under-five year old mortality rate and maternal mortality rate fail to satisfy the MDG target. Along with a rapid decline in fertility, Algeria has experienced population aging and epidemiological transitions to non-communicable diseases (NCD).

Health expenditure as a % of GDP has been increasing, and the rapid increase in pharmaceutical expenditure is a concern. The public share of health expenditure has increased, leading to a decrease in out-of-pocket payment for health care with a minimum user fee, implying that there is little financial barrier to health care. In terms of financing mix, the role of the state budget relative to social security contribution has increased. Health insurance is a part of the social security system, which is mandatory for formal sector workers and their dependents. In health insurance, the big informal sector is a concern as many of them do not join the health insurance system, but not all of its subscribers are poor. There is little role for an active purchaser.

The number of health personnel and physical resources has steadily increased, but the inequity in their geographic distribution is a major challenge. The majority of hospitals are public, and their operating efficiency is low. The role of the private sector in health care delivery was limited, but it is now growing fast. Although there is little barrier to access health care, the quality of care is a concern.

Low levels of out-of-pocket payments by patients and low financial barriers to access health care need to be maintained. However, Algeria needs to find the optimal balance between government budget and social security contribution to finance its healthcare system. If the Algerian government wants to increase the fiscal role of social health insurance, informal sector workers, who can afford to pay, should pay health insurance contribution, and the government should improve a means-testing system to identify the real poor that cannot pay insurance contributions and thus need to have access to government subsidies. To raise more resources in health care as well as to improve the efficiency in health care utilization, the government can consider increasing the user fee in public facilities, along with an exemption mechanism for the poor.

To empower the role of purchasing in health financing, the government can reduce direct budget allocation to public providers. The government could instead channel the funds to the insurance agency as a subsidy for the poor, and the insurer can exercise an increased purchasing power with respect to providers. The purchasing agency should have an expertise not only in fund management, but more importantly in the management of how health care is provided and utilized. Algeria needs to consider introducing a health care purchaser (insurer), separate from the social security system. The new health care financing agency will play the role of an active purchaser: design and implement payment systems for health care providers, monitor provider behavior, define benefit packages, and review the utilization of health care by patients.

The government needs to provide some degree of financial autonomy for public hospitals and implement performance-based budgeting to improve their efficiency. The health insurance agency as a purchaser should adopt capitation for primary care physicians and case-based payments such as DRG (Diagnosis Related Group)-based payment for hospitals.

The organization of health care delivery needs to be strengthened, and treatment of the right type of cases by the right level of health care provider, such as non-severe cases being treated by primary care providers to act as a gatekeeper while severe cases should be treated by tertiary-care hospitals. This will contribute to health care cost containment. To improve the quality of care, the government needs to keep its commitment to increase investment in public health facilities to strengthen their technical capacity.

Accreditation and quality evaluation programs should be strengthened to guarantee the quality of care in both public and private health care facilities, and information technology can be a useful tool for quality improvement. Algeria needs a capacity building initiative for human resource for health care both in policy

and management and in clinical areas. To meet the increasing demand caused by population and epidemiological change, Algeria needs more primary care physicians, who can handle the health needs of the elderly and provide gate-keeping in continuum of care for the elderly.

Increasing the use of (less expensive) generic medicines will contribute to both pharmaceutical cost containment and the development of a domestic pharmaceutical industry. Price regulation of pharmaceuticals needs to be supported by other important elements of overall pharmaceutical policy and regulation such as registration, quality and safety monitoring, efficient and transparent procurement, financial incentive to physicians and pharmacists, financial incentive for consumers such as reference pricing, and an active role of the purchaser in the decision of benefit package, cost sharing and reimbursement systems.

## 1. Health Care System in Algeria: Key Issues and Challenges

The health care system of Algeria can be examined in terms of health outcomes, health care financing and health care provision. Financing and provision are two major pillars of the health system, whose performance can best be measured by health outcomes. The role of the government in health care financing and its provision is high in Algeria. The strong role of public financing and public hospitals have had a positive impacts on health care access and financial protection for people, but a public sector dominated health care system has some concerns related to the efficiency of health care delivery and quality of care.

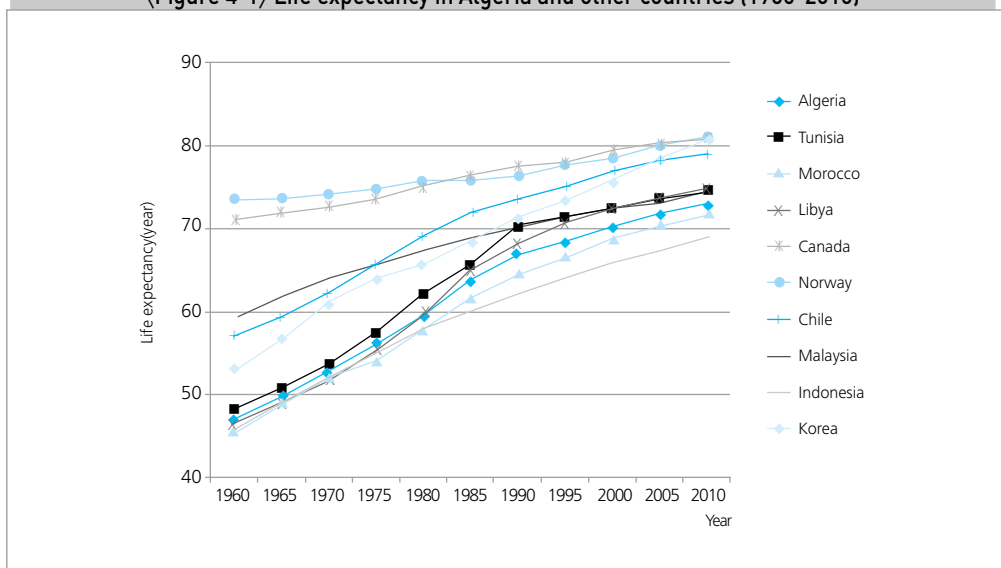
### 1.1. Health Outcomes (from WHO, 2010)

#### 1.1.1. Health Indicators

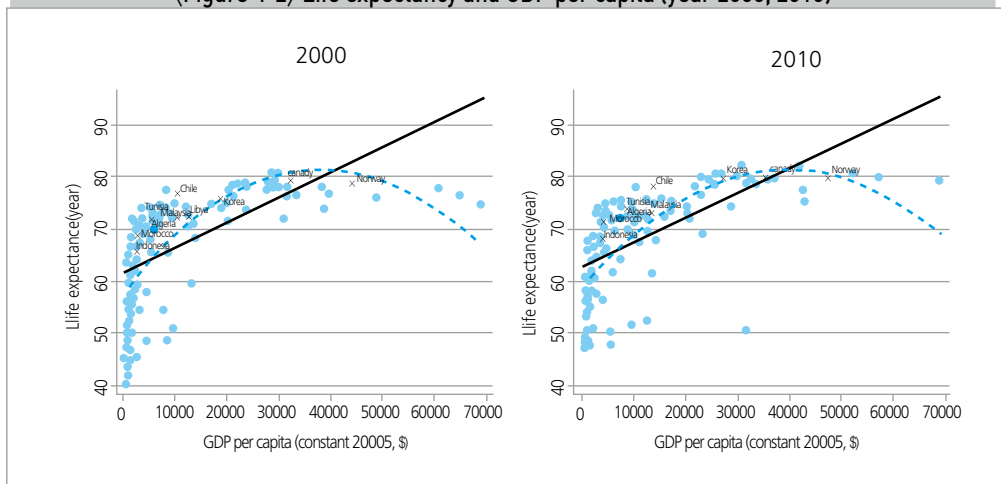
Health indicators of the Algerian people have improved steadily. Life expectancy has increased from 66 in 1990 to 71 (70 for male, 72 for female) in 2008 <Figure 4-1>. The Algerian government statistics show greater improvements in life expectancy, which is 75.6 in 2008 and 75.5 in 2009. Under-five year old mortality per 1,000 live births was 61 in 1990 and decreased to 32 in 2009, but this is still much higher than the MDG (Millennium Development Goal) target of 20 in 2012. Infant mortality rate per 1,000 live births decreased from 51 in 1990 to 29 in 2009 (24.8 according to Algeria government statistics) <Figure 4-3>. Maternal mortality per 100,000 live births decreased from 250 in 1990 to 120 in 2008 <Figure 4-4>, but it seems impossible to achieve the MDG target of 63 in 2012.

Maternal and child health (MCH) are important determinants of the future health state of a population. However, under-five year old mortality and maternal mortality of Algeria are well below the target set by the MDG. The government of Algeria needs to increase its policy priority and investment in MCH area. The level of health indicators of Algeria is more or less similar to that of other North African countries. Based on its GDP per capita and health care outcomes, life expectancy of Algeria performs slightly better than the world average <Figure 4-2>, while infant mortality of Algeria is right on the average trend line <Figure 4-5>.

〈Figure 4-1〉 Life expectancy in Algeria and other countries (1960-2010)

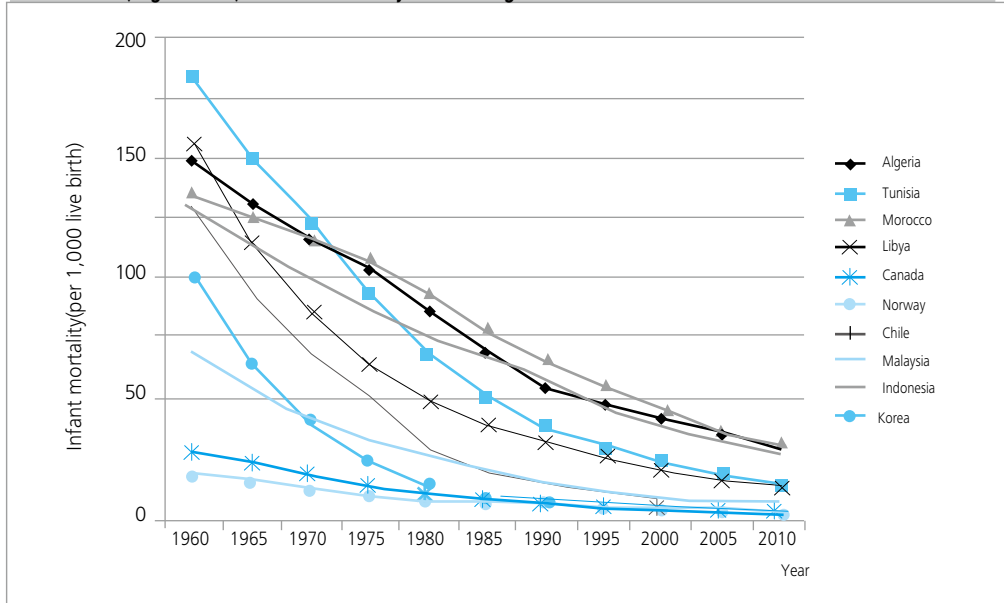


〈Figure 4-2〉 Life expectancy and GDP per capita (year 2000, 2010)

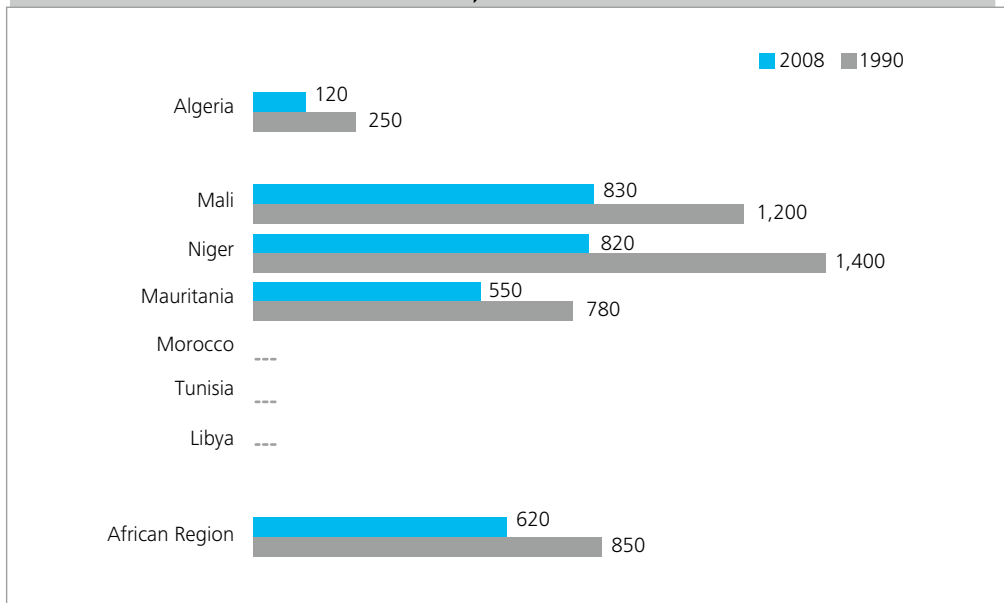


Source: World Bank, WDI

〈Figure 4-3〉 Infant mortality rate in Algeria and other countries (1960-2010)

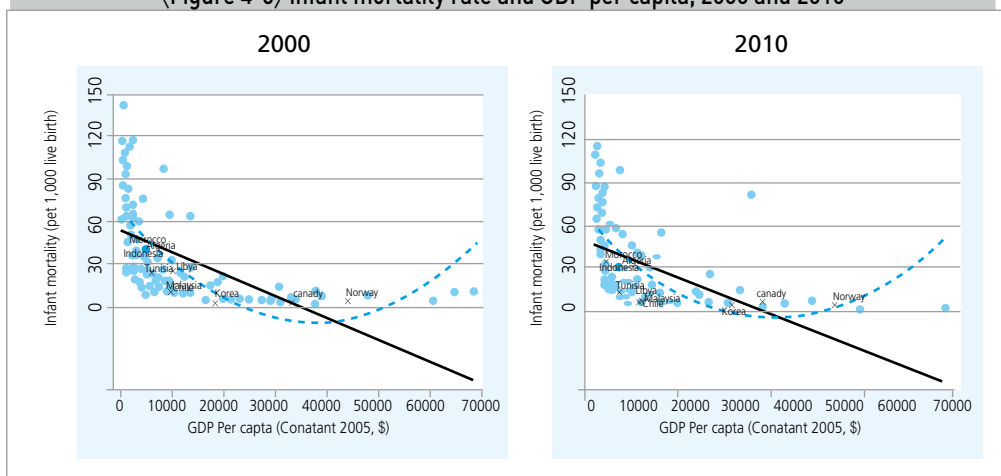


〈Figure 4-4〉 Maternal mortality ratio per 100,000 live births in Algeria and neighboring countries, 2008 and 1990



Source: IGME 2009 Estimates; ...: No data (WHO, 2010)

〈Figure 4-5〉 Infant mortality rate and GDP per capita, 2000 and 2010

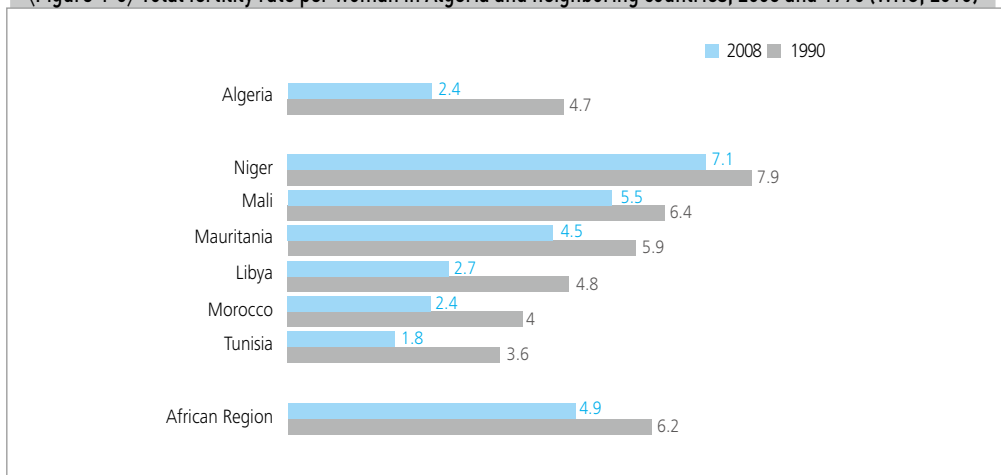


Source: World Bank, WDI

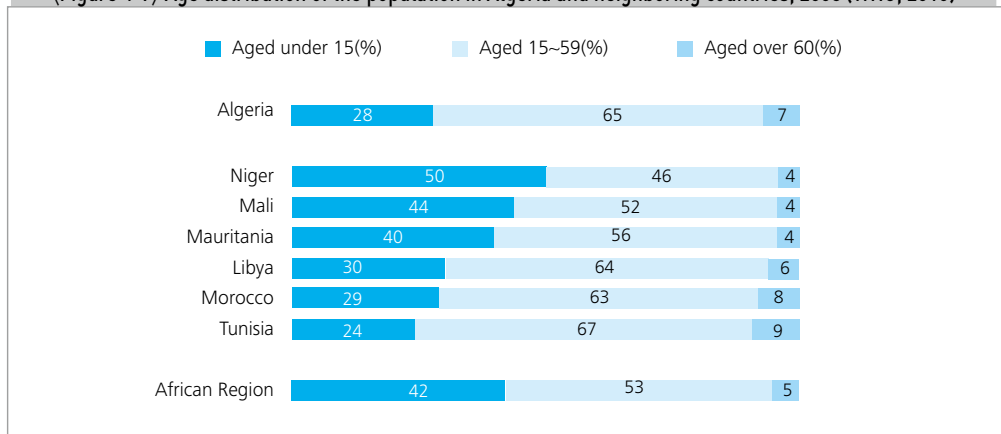
### 1.1.2. Demographic and Epidemiological Change (from WHO, 2010)

Algeria has experienced a rapid decline in fertility from 4.7 in 1990 to 2.4 in 2008 <Figure 4-6>. The population is aging, and the proportion of people aged 60 or older is 7% 2008, which is expected to rise rapidly due to low fertility and high life expectancy <Figure 4-7>. In contrast, population growth is low and the annual growth rate of the population is 1.5 for the period 1998-2008, compared with 2.1 in 1988-1998 <Figure 4-8>. With increased education for women and their participation in the labor force, the fertility rate is likely to decline further in the future. Social support, rather than family support, for childbearing will play an important role in stopping the fertility from declining sharply.

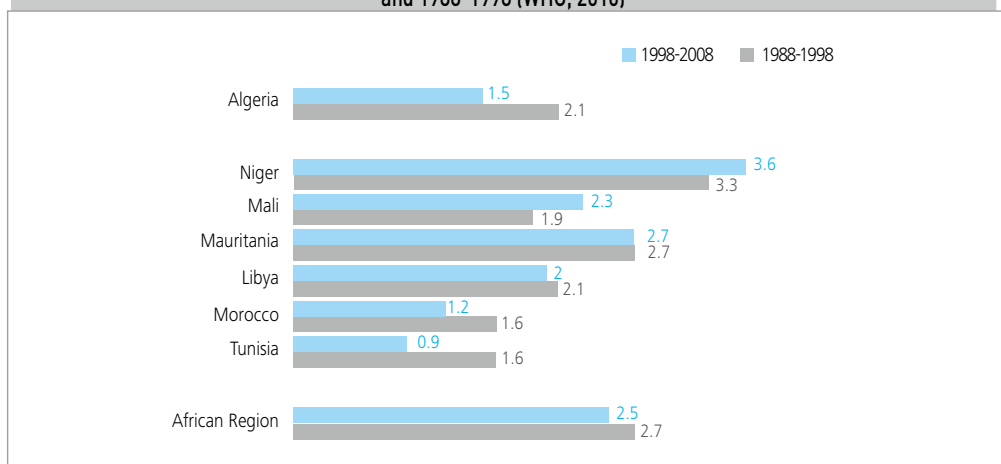
〈Figure 4-6〉 Total fertility rate per woman in Algeria and neighboring countries, 2008 and 1990 (WHO, 2010)



〈Figure 4-7〉 Age distribution of the population in Algeria and neighboring countries, 2008 (WHO, 2010)



〈Figure 4-8〉 Annual growth rate (in percent) of population in Algeria and neighboring countries, 1998-2008 and 1988-1998 (WHO, 2010)



Along with an aging population, the disease patterns are changing. About 60% of mortality is attributable to NCD (Non-Communicable Disease). The burden of diseases as a % of total DALY (Disability Adjusted Life Years) in 2004 was 33% from communicable disease, 11.6% from injuries, and 54.7% from non-communicable disease. Following the change in disease patterns into non-communicable diseases, Algeria needs to re-orient its health care system.

However, there is little information available on the equity in health care outcomes. Not only the average population health care outcomes, but also their distribution across socioeconomic groups (e.g., the poor and the rich) and by geographic regions are regarded as good performance indicators of a health system and its policy. The Algerian government needs to generate statistics and

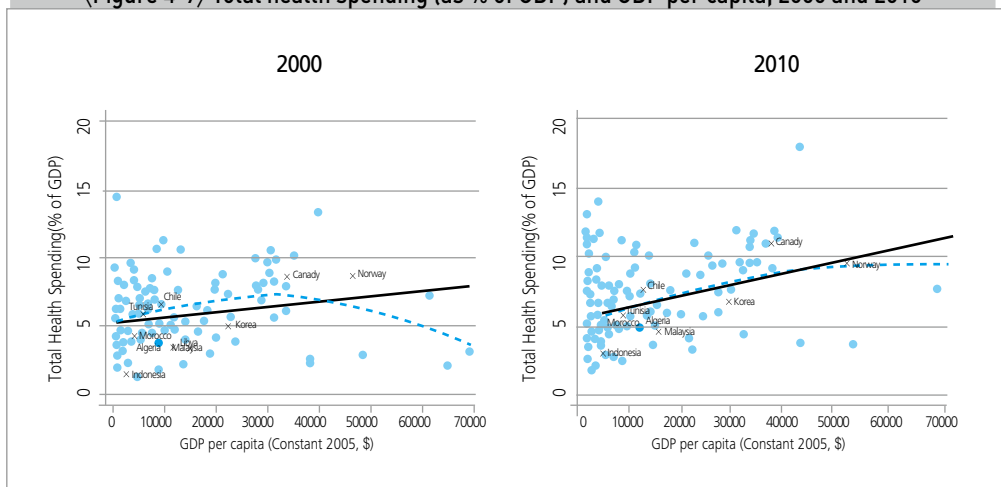
monitor them in an attempt to reduce the difference in health status across socioeconomic groups and across geographic regions. Health information systems are also important to measure and monitor the incidence and prevalence of non-communicable diseases.

## 2. Health Care Financing

### 2.1. Health Expenditure

Per capita health spending has tripled from 1999 to 2009. According to World Bank <Table 4-1> health expenditure as a % of GDP, which is most commonly used as a measure of the level of health spending, has increased from 3.9% in 1999 to 4.6% in 2009. (But, Algerian government statistics show different numbers, which are 6.8 % in 2007 and 8.0% in 2009, implying a more rapid increase in health expenditure.) Health expenditure is expected to increase due to the increase in income and population aging. Health budget as a % of government budget, which shows a government's commitment to health care, is stable, at 8.96% in 2000 and 8.60% in 2009. Based on the plot of the relationship between GDP per capita and health spending of countries around the world, health expenditure as a % of GDP of Algeria is lower than the global average considering the per-capita GDP level <Figure 4-9>. Compared with neighboring countries, health expenditure as a % of GDP in Algeria is lower than that in Morocco and Tunisia <Figure 4-10>.

<Figure 4-9> Total health spending (as % of GDP) and GDP per capita, 2000 and 2010



Source: World Bank, WDI

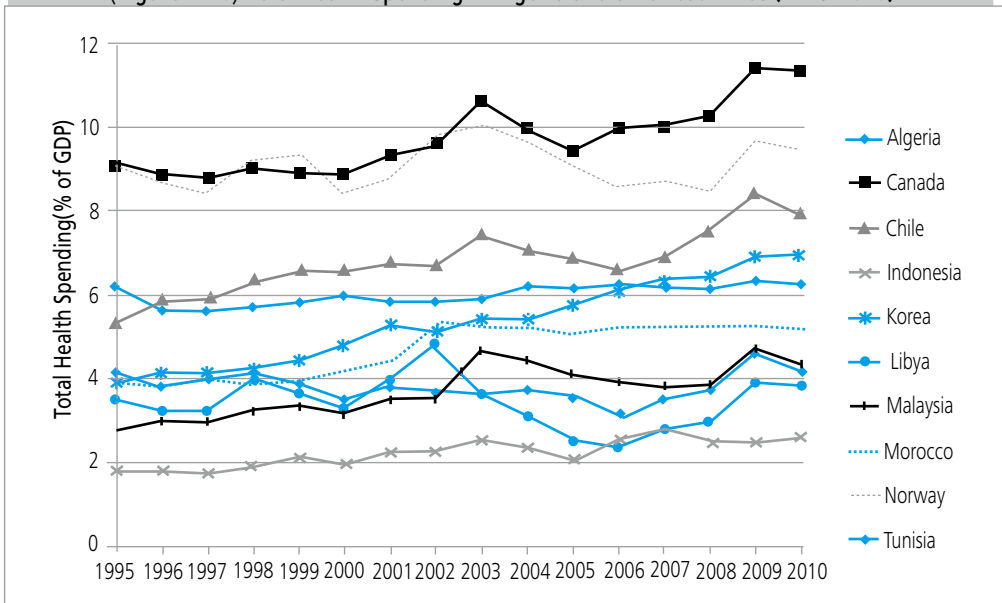


〈Table 4-1〉 Health expenditure in Algeria

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Health exp Per capita (current US\$)	62.58	62.66	67.88	65.95	77.35	98.02	111.24	109.84	140.85	185.85	180.54
Total Health exp (% of GDP)	3.87	3.49	3.84	3.65	3.63	3.72	3.54	3.13	3.53	3.73	4.58
Health exp, public (% of total H exp)	72.85	73.33	77.43	75.95	78.02	73.7	75.83	74.36	77.32	79.54	79.29
Health exp, public (% of gov exp)	9.44	8.96	9.51	8.09	8.81	8.91	9.9	8.07	8.21	7.84	8.60
Out-of- pocket H exp (% of Total H exp)	26.34	25.79	21.67	23.02	20.95	24.87	22.87	24.26	21.48	19.38	19.61

Source: World bank

〈Figure 4-10〉 Total health spending in Algeria and other countries (1995-2010)



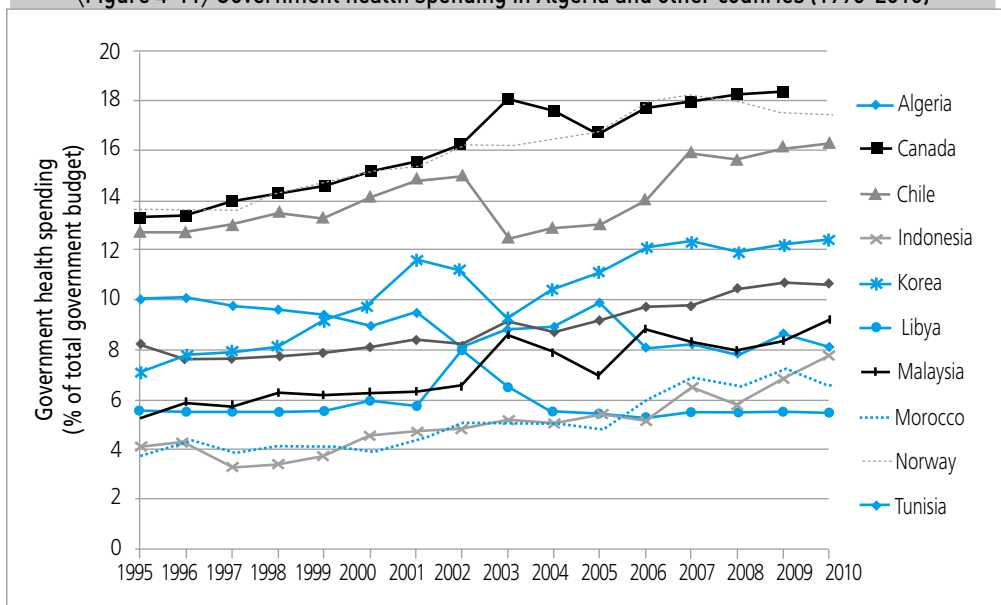
The rapid increase in pharmaceutical expenditure is a concern. Pharmaceutical

expenditure accounts for 1.9% of GDP in 2010 (Business Monitor International, 2011). People with chronic conditions do not make out-of-pocket (OOP) payments for medicines, but there are about 20% of OOP payments for non-chronic conditions. The elderly depend a lot on medicines, and population aging will be a big threat on the containment of pharmaceutical and total health expenditure in the future. According to BMI (2011) and in terms of market share generic drugs account for 22.6%, OTC (Over-the-Counter) medicines 16.4%, and patented drugs 61.0%. For cost containment, the market share of patented medicines should be reduced and the government should introduce policy measures to increase the use of generic medicines.

## 2.2. Financing Sources

Not only the level, but also the composition of health expenditure is important. Public sources of financing (government budget and social security contribution) contribute to an equitable access to health care while out-of-pocket (OOP) payments (direct household payment) pose a financial barrier to health care. Public share of health expenditure in Algeria has increased from 72.9% in 1999 to 79.3% in 2009 <Table 4-1>, but government health care spending as a percentage of the total government budget has decreased from 10% to 8% over the last 10 years <Figure 4-11>.

<Figure 4-11> Government health spending in Algeria and other countries (1995-2010)

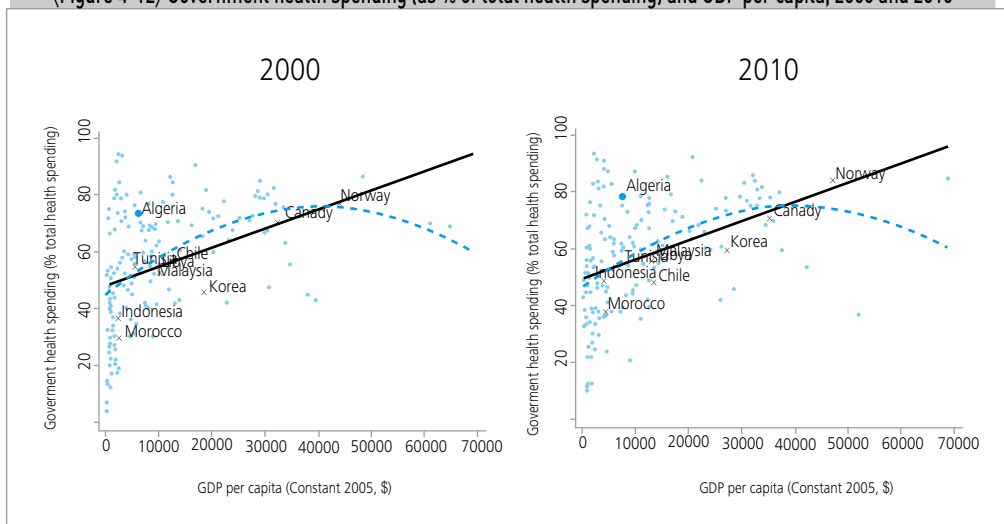


As a result the big role of public sector financing, the proportion of out-of-pocket

payment in total health expenditure has decreased from 26.3 % in 1999 to 19.6 % in 2009 <Table 4-1>, <Figure 4-12>. The role of private health insurance is minimal, which is 5.1% of private health expenditure (WHO, 2010). Considering the low level of out-of-pocket payments, financial barriers to health care are not a concern in Algeria, with the exception of geographic access issues in rural areas.

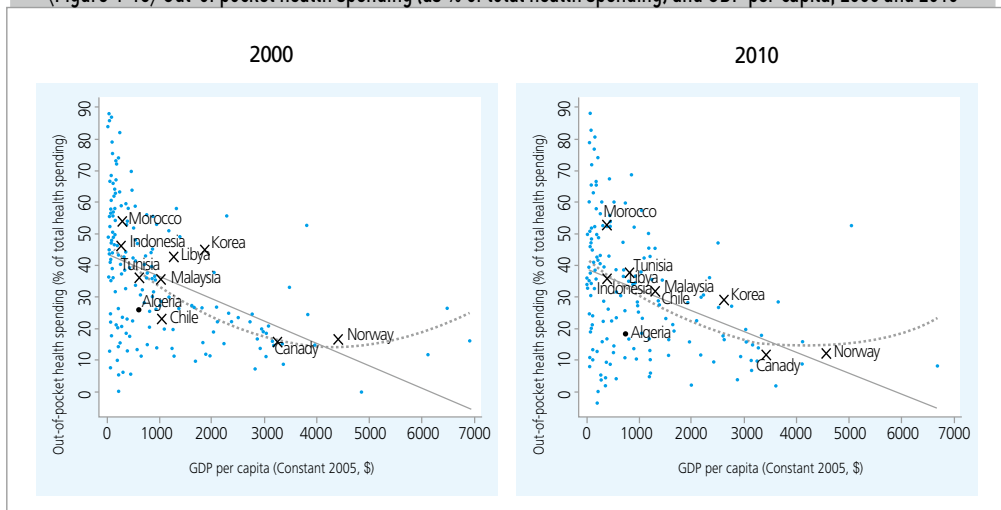
Based on the plot of the relationship between GDP per capita and the mix of health spending, out-of-pocket payment as a percentage of total health spending and government health spending as a percentage of total health spending are respectively lower and higher than the global average considering per-capita GDP <Figure 4-13, 14>.

(Figure 4-12) Government health spending (as % of total health spending) and GDP per capita, 2000 and 2010



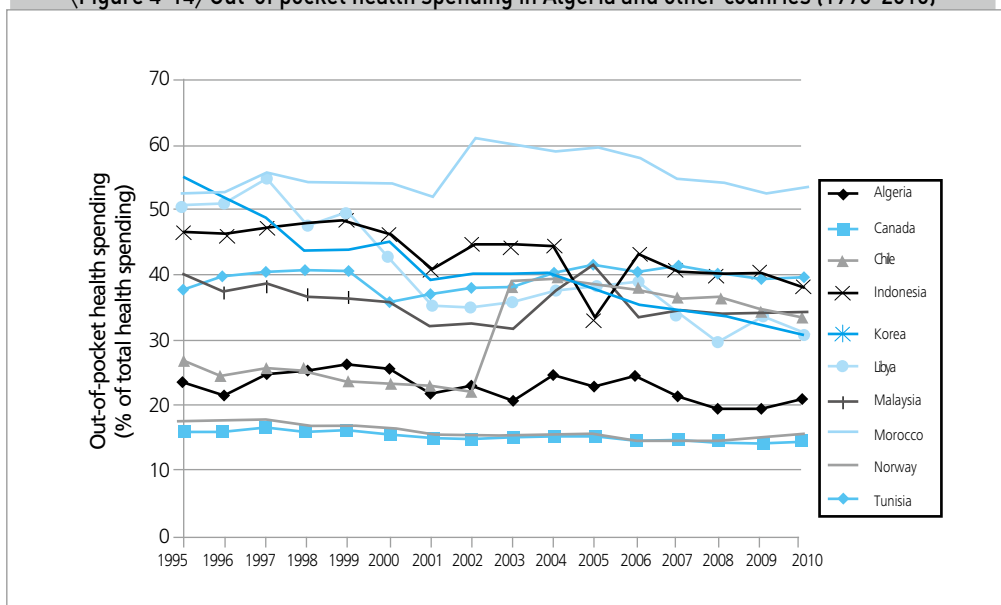
Source: World Bank, WDI.

〈Figure 4-13〉 Out-of pocket health spending (as % of total health spending) and GDP per capita, 2000 and 2010



Source: World Bank, WDI

〈Figure 4-14〉 Out-of pocket health spending in Algeria and other countries (1995-2010)



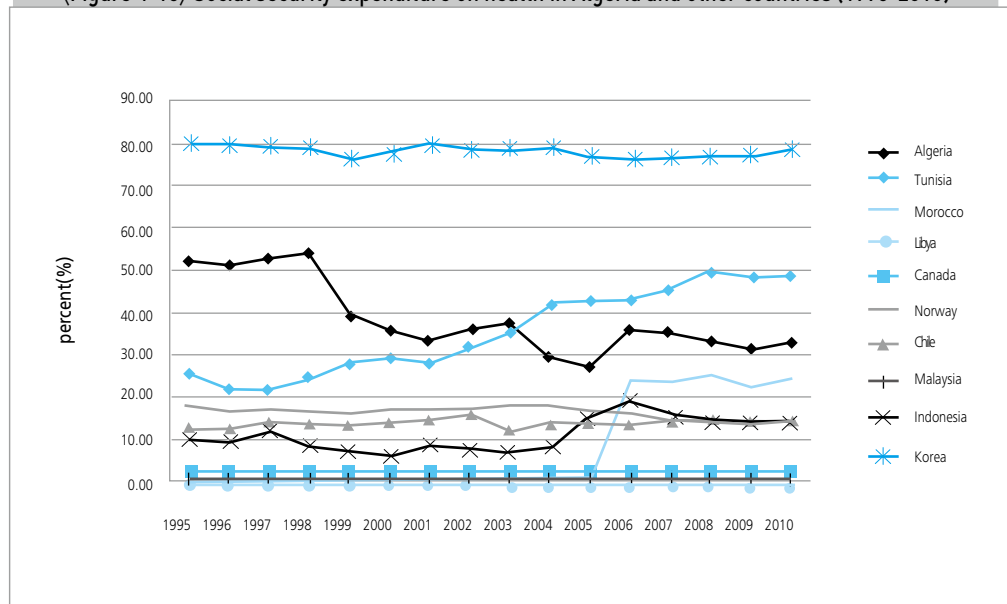
According to Algerian government statistics, the relative share of state budget, social security, out-of-pocket (OOP) payment, and other sources was 30:41:22:7 in 2000, but changed to 43:28:18:11 in 2007. The role of public expenditure as a whole has not changed, but the mix has. In other words, the role of state budget relative to social security contribution has increased in Algeria. In Tunisia and Morocco,

however, the share of social security expenditure in total public expenditure for health has increased <Figure 4-15, 16>.

Patients' out-of-pocket payment is required mainly for private providers in Algeria. Out-of-pocket pay or user fee for public providers is minimal: only one fifth of patients actually pay, which is 100D per day for hospitalization, and in case of outpatient care, it is 50D for generalists and 100D for specialists. Hospitals do not have financial autonomy to use the user fee revenue.

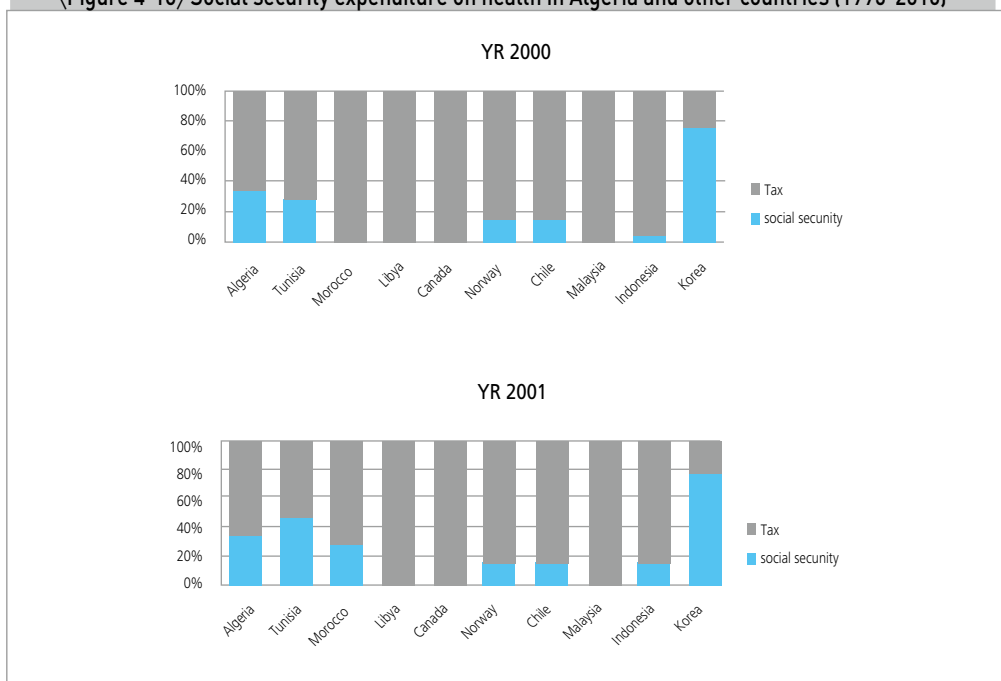
Current tobacco tax rate is 11D per pack, and 2D per pack are attributed to the health promotion (smoking cessation) fund. Although statistics show that the smoking rate is not extremely high in Algeria, the government needs to consider increasing the tobacco tax <Figure 4-17>.

<Figure 4-15> Social security expenditure on health in Algeria and other countries (1995-2010)



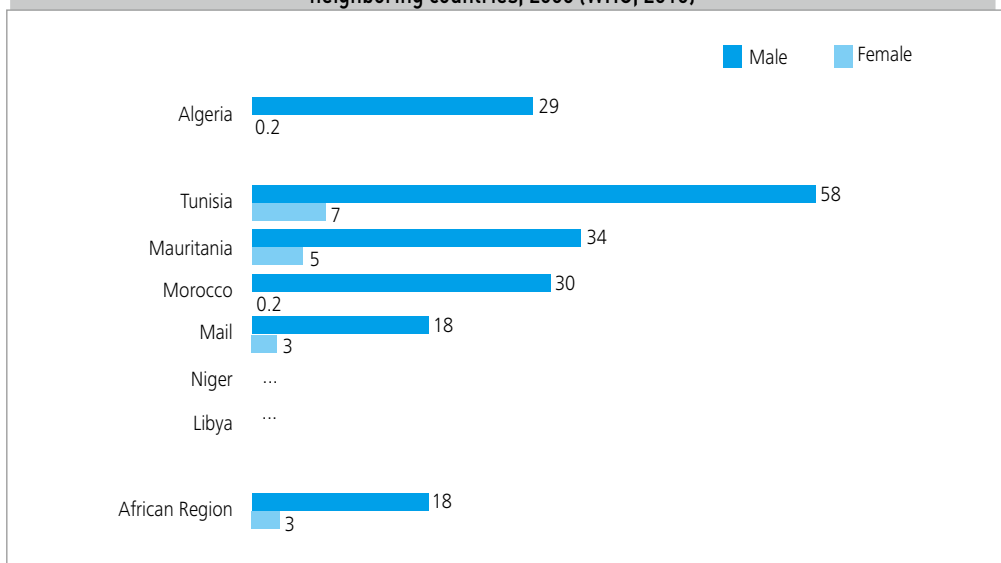
Source: WHO health statistics

〈Figure 4-16〉 Social security expenditure on health in Algeria and other countries (1995-2010)



Source: WHO health statistics

〈Figure 4-17〉 Percent of current tobacco use in persons 15 years of age or older in Algeria and neighboring countries, 2006 (WHO, 2010)



A strong role of the public sector in health care financing reduces the financial barrier to health care. However, the optimal share of household direct payment

(OOP payment at the point of service) in total health expenditure should be considered, taking into account the government's fiscal capacity and efficient resource utilization as well as the financial burden on households. The Algerian government should consider whether the current user fee level is adequate and if there is a potential that health care is over-utilized due to low user fees.

User fees can limit access to health care by increasing the financial burden on individuals, but they can also increase utilization by improving quality of care or replacing informal payments (James et al., 2006). It is also possible, however, that financial resources generated through user fees can be used to improve the infrastructure and quality of public health facilities. There is a broad consensus from literature that user fees in low-income countries provide a barrier to health care utilization and the poor are affected the most, especially when exemption mechanisms for the poor did not work well in many low-income countries due to corruption and the lack of administrative capacity. The effect of user fees, however, critically depend on the existing infrastructure of health care delivery, people's overall capacity to pay, and the government's administrative capacity to appropriately test for financial means.

Tax (state budget) and social health insurance (as a part of social security system) have their own strengths and weaknesses. The optimal balance between those two major sources of public financing for health care should be an important issue in Algeria. Many low- and middle-income countries have experienced low quality of care provided by the public health care system due to a lack of resources and a lack of responsiveness to patients. One of the key political attractions of social health insurance (SHI) is ear-marking, in other words, funds are designated for health programs and can avoid chronic under-funding in the health sector. A health insurance agency can also play the role of active purchaser, providing financial incentives for hospitals in return for better quality of care. In the health insurance system, no patient means no revenue for providers, and they have incentives to improve their quality to attract more patients.

In general, tax financing based on progressive income tax is more equitable than SHI, whose contribution is proportional to income. In low- and middle-income countries, SHI may not be as inequitable as expected (or tax-based health care financing may not be as equitable as in high-income countries). The income-tax system is often regressive in low- and middle-income countries due to serious tax evasions. In the tax-based financing system, a government maintains better financial control over the health care system through budget allocation. However, public hospitals, financed by tax, may have low incentives to treat patients well and to be responsive to their needs when state budget allocation is not related to performance.

In reality, SHI in low- and middle-income countries has implementation challenges, including the problem of income assessment and premium collection for the informal sector. Covering the informal sector through SHI can be difficult in those countries unless the government provides subsidies to the poor or informal sectors. Even in the high-income countries of East Asia, such as Korea, Japan and Taiwan, governments provide partial subsidy for premium contributions of the informal sector. Tax-based financing faces challenges in many low- and middle-income countries, too. Mobilizing sufficient amounts of tax revenue for health care (by increasing the policy priority to health sector) may not be politically and financially viable. Equity of tax-based financing (as a supply-side financing) in those countries also depends on the availability of public delivery system and its quality of care especially in disadvantaged areas.

## 2.3. Health Insurance

In Algeria, health insurance is part of the social security system, which is mandatory for formal sector workers and their dependents. In health insurance, a big informal sector is a concern as many of them do not join the health insurance system, but not all of them are poor. Some of them do not pay health insurance contribution because they can access health care (as a safety net) even when they are not insured. The government of Algeria needs to carefully assess the current status and the future challenges of health insurance, such as benefit package, payment system to providers, contribution rate, and population coverage.

The social security system has two sickness insurance funds (World Bank, 2007): Caisse Nationale des Assurances Sociales des Travailleurs Salariés (CNAS: National Social Insurance Fund for Salaried Employees) and the Caisse Nationale de Sécurité Sociale des Non-Salariés (CASNOS: National Social Security Fund for Non-Wage Earners). CNAS covers salaried employees, their dependents, students, unemployed disabled persons, and indigent recipients of state welfare support, all of which account for about 7 % of the population. CASNOS covers independent workers such as merchants, artisans, and farmers. Indigent persons not affiliated with CNAS are covered directly by the state (Ministry of Employment and National Solidarity). Contracting between insurers and private providers is still limited in Algeria. As the role of private providers increases, the insurers should actively contract with the private sector.

In the SHI (Social Health Insurance) system, the SHI agency can play the role of effective purchaser of medical care and pharmaceuticals from providers. SHI is a more powerful purchaser than individual patients, thanks to fiscal leverage and channeling of patients by making money follow patients. Introducing a purchasing mechanism in a public delivery system under tax-based financing can improve



efficiency, especially when quality primary care physicians have a gate-keeping role as is the case in the UK. But institutional design associated with introducing a new purchaser in the existing public hospital system can be costly in low- and middle-income countries due to the lack of institutional infrastructure (e.g., capable primary care physicians as gate-keeper).

In the case of Algeria a more cost-effective way of strengthening the purchasing function can be to empower the existing health insurance agency. In the case of SHI system, the government can channel funds to the SHI insurer (in the form of a premium subsidy for the poor), not to public providers directly, and the SHI agency distributes funds to public providers through purchasing mechanism. Reducing the role of state budget allocation to public providers, and instead channeling it to health insurer increases the leverage that health insurance can utilize to affect providers of health care and pharmaceuticals. Pooled purchasing, i.e., pooling of state budget allocation and health insurance reimbursement to hospitals, can maximize the purchasing power of financing mechanism (state and insurer), providing strong incentives for public hospitals to maximize efficiency.

In Korea, most public hospitals have some degree of financial autonomy, and the majority of their revenues comes from the treatment of patients (i.e., reimbursement from the national health insurance system, which has a universal coverage of population). Direct budget allocation by the government to public hospitals is small. Instead, the major form of direct government financing in health care is through subsidies to the health insurance system. The Korean government provides full subsidies for the health insurance contributions of the poor and partial subsidies for the self employed. In other words, state budget/tax is channeled to the health insurance agency, which, given its big bargaining power, purchases medical care from the providers. This type of pooled purchasing is more efficient than fragmented purchasing by government and insurance agency.

Health insurance systems should play the role of an active purchaser with payment system reform. Payment systems as an essential element of financial incentive to health providers are a key factor affecting provider behavior and the efficiency and equity of the financing system. Fee-for-service (itemized) payment systems result in an increase of the amount and intensity of health care provided even if the fee is regulated by the government or insurer. Capitation payments, which pay a fixed payment per patient for a given time period regardless of the actual cost of treatment, including expenditure of medicines, provides incentive for cost minimization and health promotion. Therefore a capitation payment system is ideal for primary care providers as they can maximize their income by keeping registered patients healthy. Case-based payments, which are a fixed payment per case (e.g., DRG (Diagnosis Related Group)-based payment), has been adopted in

many health care systems around the world to encourage the cost-effective use of medical care and pharmaceuticals in inpatient care.

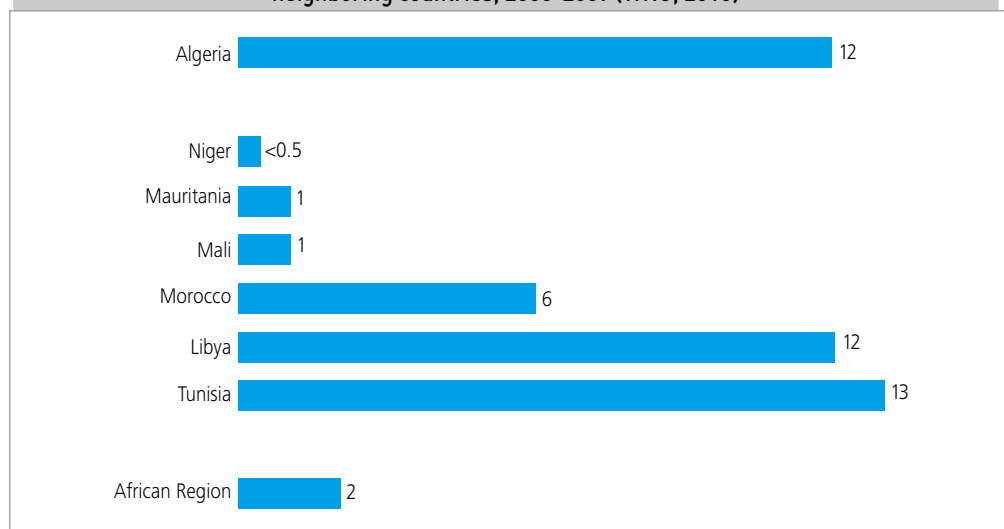
## 3. Health Care Provision

### 3.1. Health Care Resources

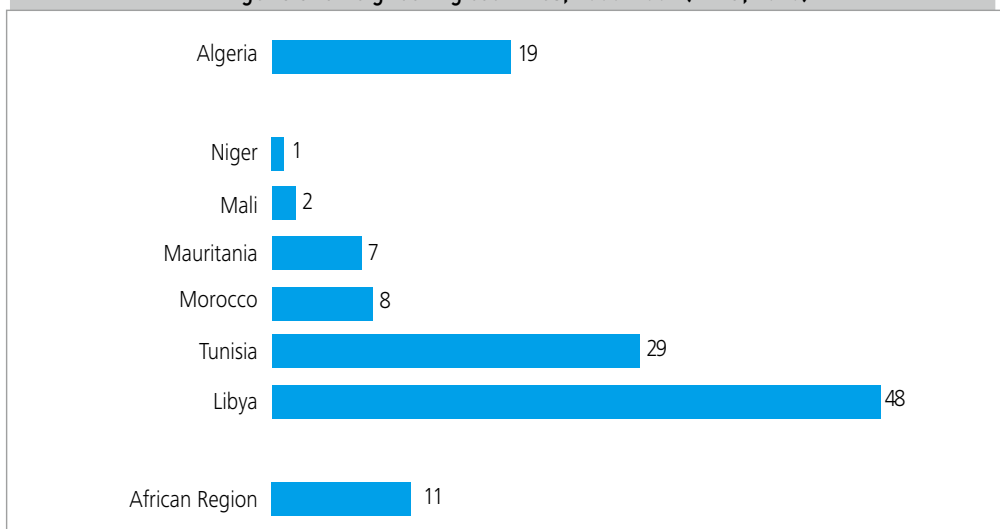
The total number of physicians has increased to 12 per 10,000 people <Figure 4-18>, but there is a shortage of specialists, and some specialist have to be imported from foreign countries, such as Cuba and China. The number of nursing and midwifery personnel is 19 per 10,000 people, which is much lower than that of Tunisia (29) and Libya (48) <Figure 4-19>. The number of hospital beds per 10,000 people is 17, which is lower than that in Tunisia (20) and Libya (37) <Figure 4-20>.

The regional distribution of health personnel is a concern as they are concentrated in only 5 out of the 48 regions of Algeria (41.4% of doctors, 32.3% of dentists, 30.8% of pharmacies practice in those 5 regions, according to the workshop presentations by Algerian government in February 2012). Large secondary and tertiary health care facilities are concentrated in the large northern cities, and the number of physicians per 10,000 people varies from 0.81 in the Southeast to 1.52 in the Center (World Bank, 2007). For better geographic access, the Algerian government may need to increase the supply of nursing personnel, which is less costly to educate and train than physicians.

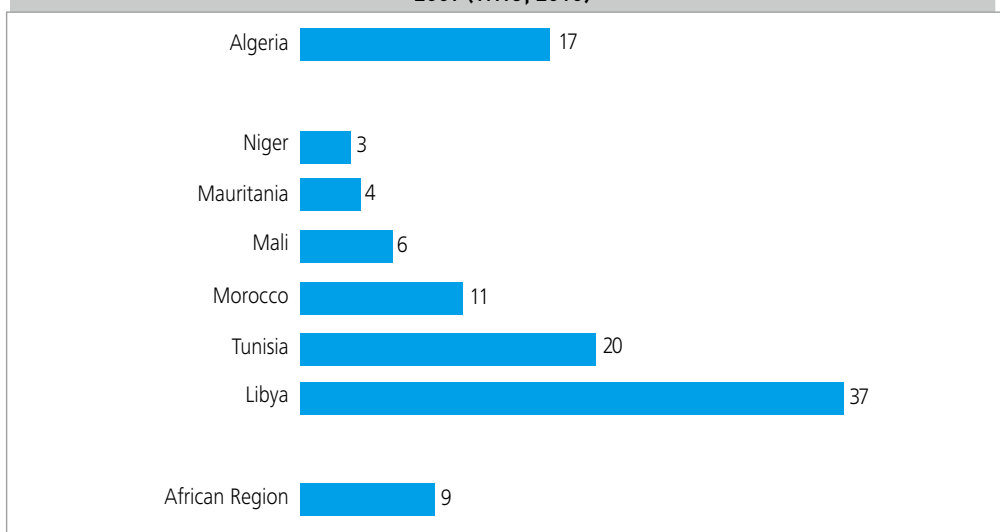
<Figure 4-18> The physician to population ratio (per 10,000 population) in Algeria and neighboring countries, 2000-2009 (WHO, 2010)



〈Figure 4-19〉 The nursing and midwifery personnel to population ratio (per 10,000 population) in Algeria and neighboring countries, 2000-2009 (WHO, 2010)



〈Figure 4-20〉 Hospital beds per 10,000 population in Algeria and neighboring countries, 2000-2009 (WHO, 2010)



### 3.2. Efficiency of Health Care Delivery

The low efficiency of public (especially secondary) hospitals is a concern. Low occupancy of health care facilities is related to the geographic characteristics of Algeria, but it is also related to the problems of historical and line-item budgeting as it gives little incentive to improve efficiency. Occupancy rate is only around 50-60%

overall with very low occupancy rates in rural areas.

Currently, budgets are allocated by input classes such as salary, drug, equipment, fuel, etc., and not linked to output or outcome. Although the expenditure list and related amounts are clear and accurate, with clear budgeting and accounting responsibilities, it is inflexible and hard to deal with unexpected incidents or changing needs. By focusing on budget items and monetary inputs (expense items), as opposed to the result of a project, line-item budgets can fail to achieve initial goals of government health programs. It also pays limited attention to the value of money and is difficult to monitor and evaluate the efficiency and effectiveness of health care resource allocation.

The Algerian government can consider performance-based budgeting for the public health sector. Performance-based budget allocates budget based on output or by programs such as maternal health, primary care, immunization, hospital inpatient care, HIV/AIDS, etc. It can help citizens understand what the government is doing and why, it can help to establish better long-term health care plans, and use government health care resources more flexibly. It can include performance objectives in the budget, and the budget is used as a management tool to compare actual and planned performance, such as the percentage of infections have been reduced or the percentage reduction of low birth rates.

### 3.3. Private Sector in Health Care

Private health facilities have been allowed to operate in Algeria since 1988. The role of the private sector in the health care sector is growing, but still smaller than that of the public sector. The private health care sector is concentrated in large cities and in specialized areas such as surgery. All the general hospitals are public, and only about 6% of beds are private, according to the workshop presentations by the government.

Private health care providers are mainly small-scale clinics, providing a wide range of treatments with modern equipments, which has competitive advantage in terms of access and convenience. Private health care sector can expand its role for non-essential health services or convenience-related services. Currently little information is available on how private health care is provided and how private sector quality of care is evaluated.

In terms of employment of health care personnel, 60% of specialists and 57% of general practitioners work in the public sector <Table 4-2>. 54% of dentists work in the public sector, while only 1% of pharmacists work in the public sector. The above statistics show that a significant portion of health care professionals work in the

private health care sector.

For efficient health care delivery, public-private partnerships are important. With the increase in income, the public health care sector cannot meet all the medical needs of the population. Health insurance should be able to guarantee the quality of private health care providers when the insurer has contracts with them. For the insured services, public and private providers should be subject to the same fee/reimbursement and quality standards. Reimbursement rates from the insurance agency needs to be based on costing, not to discourage the private providers to provide care for the insured. In Algeria, the reimbursement rate has not been revised for a while, and private providers complain that the rates fall short of actual costs.

〈Table 4-2〉 Health care personnel in the public/private sector, 2010

Type	Private	Public	Total
Specialists	6 851	9 947	16 798
Generalists	6 548	8 587	15 135
General pharmacists	7 197	79	7 276
Dentists	4 830	5 619	10 449

Source: Algerian Government Statistics

### 3.4. Quality of Care

Although Algerian people have guaranteed access to basic medical care, the government now needs to pay attention to the quality of care. Currently there are few mechanisms to actively monitor and ensure the quality of health care in Algeria. Quality of care is not a high priority in health care institutions and the health insurance system. The health insurance system does not clearly define benefit packages, without active review utilization programs. The gap in the quality of care between the northern coastal regions and other areas seems to be big (BMI, 2011). The government should evaluate the quality of care and the performance of public hospitals. It needs to allocate budget to public hospitals based on the quality and performance of these institutions.

In many high-income countries, including Korea, the health insurance system, along with the government, play a major role in benefit package decisions. Health insurance systems need to define what services are covered with what condition and at what price. Whether a medical care service is included in the benefit coverage can be decided on the basis of cost-effectiveness, impact on the budget, medical necessity, etc. Once a service is included in the benefit package, its price should be

set, and the proportion that the insurer pays (or cost sharing by the patients) is decided. Providers should not be allowed to charge more than the price set by the insurance agency or government, i.e., ban on balance billing by providers. Otherwise, providers can increase the price charged to patients after the service is included in the benefit package, resulting in an increased financial burden on patients.

Utilization review is also necessary. When providers submit claims for reimbursement, the insurer needs to review and assess if services provided are medically necessary and justifiable. If not, the insurer can deny the claim or reduce the reimbursement. Rapid development of information technology can contribute to the efficiency of review and assessment by the insurance agency. The insurance agency needs to disseminate the results of the review and the assessment of provider performance to consumers. Information asymmetry between providers and consumers is a fundamental cause of market failure in the health sector, and information dissemination by the insurer will help the insured to choose high quality providers.

The Insurer can go further in linking the reimbursement to providers with good outcomes and performance in patient treatment. This type of pay for performance (P4P) is being increasingly adopted in many high-income countries, e.g., some European countries adopt incentive pay for the efficient management of chronic conditions. Korea has recently adopted P4P for AMI (Acute Myocardial Infarction) and C-section. Performance measures of AMI include volume, process (use of timely interventions and medications), and outcomes (mortality within 30 days). Performance of C-section is measured by the difference between actual C-section rate and the risk-adjusted C-section rate. The performance of 43 large general hospitals was first evaluated at the end of 2008, with the results being classified in 5 groups (relative ranking). Financial incentives (1% of total insurance reimbursement) were paid to group 1 at the end of 2009. A financial 'disincentive' (-1% of reimbursement) was also introduced in 2010 for those hospitals whose score was lower than the (absolute) threshold (highest score of hospitals in group 5 in 2008).

### 3.5. Pharmaceutical Sector

The pharmaceutical industry in Algeria is weak. 82.4% of medicines are imported, and Sanofi-Aventis had a market share of 18.6% in 2008 (BMI, 2011). 3 public pharmaceutical manufacturers (Simedal, Saidal, Central Pharmacy Hospital) account for 90% of domestic pharmaceutical production. To boost the competitiveness of domestic producers, the Algerian government has requirements for foreign pharmaceutical manufacturers in investment and technology transfer

Pharmaceutical expenditure is determined by the price and quantity of

medicines. The government also needs to carefully regulate the price of medicines as competitive market mechanism do not work in the pharmaceutical industry due to patents, monopolistic market structure, huge research and development costs, etc. so that there need to be several types of price regulation for pharmaceuticals. The government can directly regulate manufacturers' prices, which include cost-plus pricing (manufacturing cost plus profit margin), external reference pricing (price setting based on a comparison with reference countries with similar income), and value-based pricing (pricing and reimbursement listing based on additional values provided by the medicine, calculated by economic evaluation method). In addition to the regulation of manufacturer price, the regulation of wholesale/retail mark-up determines the final price that patients pay.

The quantity of medicine consumed is determined by the 'type' and 'amount' of medicines. Consequently, the use of cost-effective medicines (e.g., essential medicines) contributes to pharmaceutical cost containment. Generics, when of assured quality, offer the same therapeutic effect at a lower cost than the corresponding originator brand. Increasing the use of generic medicines is therefore an important strategy in pharmaceutical pricing and cost containment.

Branded and generic medicines face different market forces as branded drugs have a monopoly status thanks to patent protection while the competition can work for generics. Even after the entry of generic medicines, big price differences exist between the original and generic drugs. Smaller-than-expected price decreases in original medicines are a result of a market segmentation strategy by the manufacturers of original branded medicines: high price for those with lower price elasticity of demand. Prescribing physicians are reluctant to switch to generics and insured consumers tend to be price insensitive. Prices can even be viewed as a quality signal whenever there is an information asymmetry.

Decisions on benefit packages and the prices of medicines have a fundamental effect on pharmaceutical utilization and expenditure. In Korea, the insurance agency; the Health Insurance Review and Assessment (HIRA) makes the decision whether or not a new medicine or technology is included in the benefit package on the basis of its cost-effectiveness (i.e., positive listing). Then another insurance agency; the National Health Insurance Corporation (NHIC) negotiates the fee/reimbursement with the manufacturer, while taking into account the volume of sales/utilization. Economic evaluation such as cost effectiveness (in contrast to clinical effectiveness only) has been increasingly adopted as a criterion of benefit package decisions in many countries around the world. Pharmaceutical manufacturers need to submit the data and evidence of cost effectiveness to the insurance agency.

## 4. Vision for Health Sector Development in Algeria

### 4.1. VISION: No. 1 country in MENA in health sector

We set the vision for the development of the Algerian health sector at the highest level and with the lowest inequity in health indicators among MENA countries, e.g., life expectancy, infant mortality, and maternal mortality. There should be a balance between economic growth and social policy because economic development provides financial resources to social development and a healthy population contributes to economic growth. For coordination among economic and social developments, Algeria should aim to have sustainable health care financing characterized by health expenditure less than 10 % of GDP and the share of out-of-pocket payment in total health expenditure less than 20%. Then health system guarantees access to health care and financial protection from illness, and at the same time, health system is efficient and does not consume too much social resource.

### 4.2. Policy Areas

Based on the assessment of key issues and challenges of the Algerian health care system, the government needs to target key health policy areas. Those key areas include efficiency in health care financing, efficiency in health care delivery, quality of care, human resources for health care, and pharmaceutical cost containment.

## 5. Policy Options for Health Sector Development in Algeria

### 5.1. Efficiency in Health Care Financing

#### 5.1.1. Financial Resource Generation

##### 1). Balance between State Budget and Social Insurance

**Mix of Public Finance for Health Care:** Access to health care or lack of financial resources are not a major concern for Algeria. Low levels of out-of-pocket payment by patients and low financial barriers to health care need to be continued. However, Algeria needs to consider the optimal balance between government budget and social security contribution. If the Algerian government wants to increase the fiscal role of social health insurance, it can provide health insurance benefits only to those who pay contributions and to those who are poor (and thus their contribution is



subsidized by the government).

Informal sector, who can afford to pay, should pay health insurance contributions, and the government needs to improve its means-test to identify the real poor that cannot pay contributions. The government can provide partial subsidies to informal sector workers in order to encourage them to join health insurance. Contribution for informal sector workers can depend not only on income, but also on assets or wealth because their wage income is difficult to assess. For example, the value of property or vehicle can be considered to set the premium contribution.

**Resource Pooling and Purchasing:** How financial resources are pooled is as important as the type of resources used. The role of purchasing/fund pooling is crucial, and most financing systems are a mixture of tax and SHI rather than pure tax-financing or SHI. When tax and SHI are pooled, they can be more effectively used in purchasing. To empower the role of purchasing in health financing, the government can reduce direct budget allocations to public providers, and instead channel the funds to the insurance agency, which can exercise greater purchasing power with respect to providers.

## 2) Increase the User Fee in Public Hospitals

**Role of User Fee:** To raise more resources in health care as well as to improve the efficiency in health care utilization, Algeria needs to consider increasing the user fee for utilizing health care in public facilities, along with exemption mechanisms for the poor. The effect of user fees on access to health care is a controversial issue in low-income countries. However, in mid-income countries, such as Algeria, with the administrative capacity to implement exemption mechanisms for the poor, user fees can improve the efficiency and equity of resource allocation in the health sector.

**Strategic Implementation of User Fee:** Facing limited funding to health care, user fees can mobilize additional financial resources. User fees can improve the efficiency in resource allocation by reducing the utilization of unnecessary care caused by low user fees or free health care. Equity can be sustained by targeting resources for the vulnerable through exemption mechanisms for the poor. But increasing user fees can be a highly sensitive issue in politics, and the Algerian government may want to increase user fees incrementally.

**Exemption Mechanism and Monitoring:** The government needs a strong commitment for an accurate exemption mechanism to waive or reduce user fees for the poor so as not to pose financial barriers to the disadvantaged. The government should monitor if health care payments result in catastrophic expenditure for households or whether some households become poor (i.e., impoverishment) due to

catastrophic health care payments.

### 3) Increase the Tobacco Tax

Smoking causes a big social cost due to smoking-related diseases such as cancer, respiratory and circulatory diseases. An increase in the tobacco tax will reduce smoking, leading to savings in health care costs. The additional revenues from the tobacco tax can be used to strengthen health promotion programs. Smoking should be banned or more strictly enforced in buildings and other public places.

## 5.1.2. Efficient Purchasing

### 1) Strengthen the Purchasing Function in Health Care Financing

**Importance of Purchasing in Health Care Financing:** Currently, active purchasing is practiced neither by the state nor by the health insurer. How health care funds are allocated and paid to providers in return for health care purchased/provided is a key element of health care financing. Purchasing medical care from providers through the financing agency is crucial for the quality of care, cost containment and sustainability of the financing system. The purchasing agency should have an expertise not only in fund management, but more importantly in the management of how health care is provided and utilized. A key element of purchasing is how funds are allocated (reimbursed) to health care providers by the government or insurer.

**Limitations of Social Security System as a Purchaser:** There are advantages for health insurance to be handled by the social security system in Algeria, such as economy of scale in premium collection and economy of scope in the management of social security programs. However, performance of health care financing depends crucially on purchasing, such as contracting with and payment to providers, while there is no concept of purchasing in pension financing. As a result, the purchasing function of health insurance is very limited in Algeria, resulting in an inefficient payment system to health care providers and a limited role of utilization review program. The insurer as a purchaser should be able to deliver benefits to the patients with the maximum value for contribution they pay, which is closely related to the type and amount of services provided by physicians and hospitals.

### 2) Separate Purchasing Agency for Health Care

**Role of Separate Purchaser:** Algeria needs to consider introducing a health care purchaser (insurer) that is separate from the social security system. The new agency

would play the role of an active purchaser: designing and implementing payment systems for health care providers, monitoring provider behavior and reviewing the utilization of health care by patients, etc. With increasing entries of private health care providers, the health insurance agency should be able to effectively contract with and purchase services from private providers as well as to monitor their performance in terms of quality and cost.

The new purchaser would also need to work on benefit packages, deciding which will and which will not be covered by the health insurance system. Facing limited health care resources, benefit package decisions are very important and can be based on a political consensus, economic evaluation (cost-effectiveness analysis) or evidence from research. Health care financing agencies in many countries, e.g., NICE (National Institute of Clinical Excellence) of the UK and HIRA (Health Insurance Review and Assessment) of Korea, have the capacity for research and development as well as that of a purchaser. For example, they evaluate new technologies and medicines based on cost-effectiveness compared to the existing ones and make decisions on whether or not they will be included in the benefits package.

**Benefit Package Design:** Benefit packages can use a formulary and restrict reimbursement to essential or cost-effective health care services or medicines. Differential cost sharing can be adopted based on service characteristics to affect financial incentives of patients, such as low co-payment for generic medicines and higher co-payment for brand-name medicines. In (internal) reference pricing, reimbursement to patients is made by reference to the price of other drugs in a given category while the price difference should be paid by the patient. The level of cost sharing needs to consider the tradeoff between access and incentive for cost-effective utilization, so as not to impose financial barriers to essential or cost-effective health care. High cost sharing can give incentives for cost-effective utilization, but may limit access to health care.

For efficiency, higher co-payments are needed for cases without referral letter from primary care physicians when patients visit secondary or tertiary care providers directly. Financial protection requires the exemption of cost sharing for the poor and vulnerable population (e.g., elderly), ceiling on the cumulative amount of copayment for a given time period, and discounted coinsurance rate for chronic or catastrophic cases (e.g., cancer). The ceiling on the total amount of copayment means that patients with severe health problems do not have to pay once their health expenditures reach the limit.

## 5.2. Efficiency in Health Care Provision

### 5.2.1. Improve the Efficiency of Public Hospital System

**Financial Autonomy of Public Hospitals:** The majority of health care providers in Algeria are public, and they, compared with private providers, can provide better access to the poor and disadvantaged population of Algeria. However, public hospitals suffer from inefficient operation due to the lack of competition and incentive mechanisms for staffs. Providing some financial incentives for efficiency by changing the method of resource (budget) allocation to public hospitals is necessary in Algeria. For example, the government needs to adopt performance-based budgeting to public hospitals along with providing some degree of financial autonomy. The government can also consider outsourcing of non-essential services, such as laundry, cleaning, and food services. Financial autonomy and outsourcing is a big change, and the government can incrementally introduce the reform starting with pilot programs. <Table 4-3> shows the trend in hospital reform including increasing financial autonomy in European hospitals

〈Table 4-3〉 Major Trends of Hospital Reform in Europe

System	Purchaser-hospital split	Latitude for decision-making by hospital regarding services, staffing, etc.	Financial autonomy of hospital
Beveridge countries (e.g., tax-financed National Health Service)	Traditionally non-existent fully introduced in Finland, Italy, Portugal and United Kingdom, and to a lesser extent in Denmark, Spain and Sweden	Slightly to considerably increasing, e.g. in United Kingdom and some hospitals in Italy, Spain and Sweden	Moderately to considerably increasing, in United Kingdom and some hospitals in Italy, Portugal, Spain and Sweden
Bismarckian countries in western Europe (e.g., contribution-based social health insurance)	Traditionally existing	Usually limited; no uniform direction of reform	Existing and arguably increasing through prospective forms of reimbursement, at least if they allow retention of profits
CEE (Central and Eastern European) countries (except Albania)	In 1990, non-existent; during 1990s, introduced by changing to SHI	Generally low (high in certain Estonian hospitals)	Introduced but varying in extent
CIS (Commonwealth of Independent States) countries	Vary widely from non-existent (e.g. Kyrgyzstan) to complete split (e.g. Georgia)	Varying, but usually low	Varying, often low (but high, for example, in Georgia)

Source: Adapted from Busse, van der Grinten and Svensson (2002), p. 135.

**Performance-based Budgeting for Public Hospitals:** Budgeting is a major form of resource allocation to public health care facilities in Algeria. Currently, health care budgeting is primarily based on line-items, which distributes expenditures item by item, to make it possible to control budget expenditure. But line-item budgeting with command-and-control type state bureaucracy results in the inefficient operation of hospitals. Algeria needs to incrementally adopt performance-based budgeting based on performance evaluations and contractual relations, starting from some public hospitals. Setting performance targets is not easy, especially in the health sector where health care performance/indicators/outcomes are not easy to measure. Initially it can depend on outputs measured by the number of patients, number of vaccinations, etc. Later, performance can be based on outcomes measured by morbidity or mortality, which is more difficult to measure compared to outputs. Institutional infrastructure and support is important for the success of performance

budgeting.

### 5.2.2. Health Care Cost Containment and Payment System Reform

**Economic Incentive for Providers:** Due to information asymmetry in the health sector, health care providers are more dominant than patients in health care utilization and expenditure. As a result, economic incentives for health care providers and how they are reimbursed by the financing agency are a key determinant of health care costs. Both the level and method of payment matter. In terms of the level of payment, fees paid to providers should be able to cover the actual cost of service provision. In terms of the method of payment, the health insurance agency (purchaser) of Algeria needs to adopt capitation for primary care physicians and case-based payments (e.g., DRG (Diagnosis-Related Group) payment) to provide hospitals with financial incentives to improve efficiency.

**Role of Case-based Payment:** Case-based payments can give financial incentives to physicians and hospitals to provide care in a more cost-effective way. Under FFS (Fee for Service), providers do not have financial incentives to minimize the cost of care, because actual costs are reimbursed by the insurer. Under the case-based payment system, the amount of payment is pre-determined per case, and it is financially beneficial for providers to minimize the cost per case. In other words, providers should take financial risk associated with overprovision and high health care expenses. As a result, case-based payment leads to efficiency in provider behavior and health care resource use. A case-based payment system can also reduce the non-trivial cost of the lengthy process associated with claim filing, claim review and payment to providers. Traditional budgeting cannot account for the severity of patients (types of outputs) of health care facilities. Case-based payment can better account for the differences in health care resource consumption of different patient cases.

**Design of Case-based Payment System:** In the case-based payment system, the payment for each case is determined as follows:

Payment for case  $i$  = base rate \* cost weight for case  $i$

Algeria would be advised to start with a small number of cases, instead of using a very detailed case classification system from the beginning. Over the years, it can elaborate on the classifications and incrementally increase the number of cases for payment. The base rate needs to be determined through a top-down process (rather than bottom-up approach of costing), considering policy implications such as budget constraints, rate of return for health care providers, and price-quantity (volume) considerations. The case-based payment system should provide the same

payment for the same case to secondary and tertiary care hospitals, but the Algerian government could adopt higher co-payment for tertiary care providers to prevent excess demand. Pilot programs are recommended and pilot hospitals can be selected, in consideration of the representativeness of hospital types (secondary and tertiary) and regional characteristics. It is recommended that the pilot program does not provide adjustment for outliers (e.g., health care expenditure greater than two or three standard deviation of the case), but carefully assess the potential need for outlier payment by monitoring provider behavior and the distribution of patient severity within case groups.

**Monitoring Mechanism for Case- based Payment:** The DRG is not a perfect payment system, but it has been proven to have very positive effects on cost containment and increased efficiency in health care delivery around the world (Coulam and Gaumer, 2005). The design and implementation of case-based payments need to consider potential substitution problems for unregulated sectors (e.g., outpatient, home care) and for the regulated ones (e.g., inpatient), patient selection and quality problems (under-provision), increased (re)admission, and DRG creeping (selection of diagnosis that yields greater reimbursement). The government needs to introduce a monitoring mechanism to cope with those potential negative effects of the case-based payment system. <Table 4-4> shows the role of DRG-based payments in European hospitals.

〈Table 4-4〉 DRG-based Hospital Payment System for (Acute Care) Hospitals

Country	DRG-based hospital payment model	% of hospital revenues related to DRGs	Other payment components	Other payment components
Austria	DRG-based budget allocation	≈96	Per diems	Per diems
England	DRG-based case payments	≈ 60	GB, additional payments	GB, additional payments
Estonia	DRG-based case payments	≈ 39	FFS (33%), per diem (28%)	FFS (33%), per diem (28%)
Finland	In 13 out of 21 districts: DRG-based case payments (within GB)	Varies	Varies	Varies
France	DRG-based case payments, MLPC	≈ 80	GB, additional payments	GB, additional payments
Germany	DRG-based case payments (within GB)		GB, additional payments	GB, additional payments
Ireland	DRG-based budget allocation	≈ 80	GB, additional payments	GB, additional payments
Netherland	DRG-based case payments (within GB for 67% of DRGs)	≈ 84	GB, additional payments	GB, additional payments
Poland	DRG-based case payments, MLPC	≥ 60	GB, additional payments	GB, additional payments
Portugal	(1) DRG-based budget allocation (NHS) (2) DRG-based case payments (health insurance)		Additional payments	Additional payments
Spain (Catalonia)	DRG-based budget allocation (Catalonia)	≈ 20	GB (based on structural index), FFS, additional payments	GB (based on structural index), FFS, additional payments
Sweden	DRG-based case payments with volume ceilings or GBs (region-specific allocation methods)	Varies	Varies	Varies

Source: Cots, Chiarello, Castells and Quentin (2011), p. 81.

Notes: FFS: fee-for-service (payment); GB: global budget; MLPC: macro-level price control.



### 5.2.3. Organizing the Delivery of Health Care

**Health Care Delivery System:** The organization of health care delivery needs to be strengthened in Algeria. The treatment of the right type of cases at the right level of health care providers, such as non-severe cases being treated by primary care providers and severe cases being treated by tertiary-care hospitals, will contribute to health care cost containment. Charging higher co-payments for cases without referral letter can help reduce the concentration of patients in higher-level health care facilities.

**Primary Care and Gate-keeping:** The role of the primary care system and its gate-keeping function are crucial for the overall efficiency of health care delivery, but it becomes more important in an era of population aging as it supports the continuity of care and efficient management of non-communicable health problems. Capitation for primary care providers can provide financial incentives for preventive measures and health promotion. Along with the management programs of NCDs (cancer, diabetes, etc) by primary care providers, a screening program for the early detection of NCDs can contribute to the improvement of population health outcomes. Public financing for screening programs, however, needs to be carefully designed to maximize its performance and cost-effectiveness by targeting the high risk population group.

## 5.3. Quality of Care

### 5.3.1. Technical Capacity and Distribution of Health Care Providers

**Technical Capacity of Public Providers:** Although access to public hospitals is guaranteed in Algeria, the quality of care remains an issue. To improve the quality of care, the government needs to keep its commitment to increase its investment in public health facilities and to strengthen their technical capacity, such as funding specialized health facilities (e.g., cancer, geriatric, cardiovascular centers), pharmaceuticals, medical equipment and staff (especially specialists). Unless competitive compensation is provided to medical staff, the draining of health personnel from the public to the private sector can result. Without strengthening the clinical capacity of primary health care facilities, people will by-pass them and go directly to secondary or tertiary care hospitals even for minor cases, thereby wasting resources.

**Geographic Distribution of Public Providers:** The government also needs to put priority on strengthening the technical capacity of public facilities in remote areas. Due to geographic characteristics, equity in health system and health outcomes is a key concern in Algeria. The government needs to expand public health care facilities

in under-served areas and reduce financial and non-financial (e.g., geographic, cultural) barriers to health care for the poor and disadvantaged groups. Financial incentives should be provided or increased for health care personnel to practice in under-served areas.

### 5.3.2. Accreditation and Quality Evaluation

**Accreditation and Quality Evaluation:** Accreditation and quality evaluation program should be strengthened to guarantee the quality of care in both public and private health care facilities. Accreditation can be done by the government or by the hospital association. The number and role of private providers will increase in Algeria as national income increases and people have higher expectations for health care and the quality of life. The increasing role of private health providers can have a positive impact on quality, patient satisfaction and the efficiency of health system. However, without proper monitoring and regulation, the private sector can result in demand inducement, quality deterioration and challenges for cost containment.

**Quality of Care in the Private Sector:** Quality assurance for private providers can start with the profiling (characteristics) of private providers by the government: who are they, what types of services they provide, etc. At the next step, government should regulate the safety and quality of care provided by the private providers. Ensuring that quality of care provided by the private sector is adequate is a necessary condition for the public trust in the private health sector and successful PPP (Public-Private Partnership) in health care.

**Information Technology for Quality Improvement:** As information technology can be a useful tool for quality improvement in health care, the government needs to invest in information technology for health care. Getting information on health providers and monitoring and comparing their performance becomes less costly with the help of information technology. Providing consumers with the information on the (comparative) performance of health care providers will help consumers to rationally choose providers and encourage healthy competition among the providers. Government or social security agency can link compensation to providers to their clinical performance. In Korea, the health insurance agency discloses several indicators in the performance of health care providers on its website. It also introduces the pay-for-performance program for secondary- and tertiary-care hospitals.

### 5.3.3. Information and Monitoring System

**Monitoring System:** The government needs to adopt various monitoring mechanisms through medical audit or peer review to improve quality and monitor

the behavior of health care providers. Compliance with clinical practice guidelines can contribute to preventing the deterioration in the quality of care. Clinical pathways need to be revised and their impact on provider behavior should be monitored. Physician associations and academic societies need to collaborate with the government in the production of clinical guidelines and pathways. The government should conduct periodic patient surveys and monitoring of their financial burden (out-of-pocket payment), while also checking the equity in payment for health care.

**Information System:** Information system plays a key role in the introduction of a case-based payment system and its further development. In a facility level, the hospital needs to develop an information system with the discharge data of patients and their cost information, leading to the coordination (integration) of clinical and financial information, as well as an effective operations management system (e.g., product-line management of cases). Quality data from hospitals is also essential to monitor the trend in a case-mix, and to refine case grouping and cost weights as a continuous process. Algeria needs to develop and institutionalize good health information system in a national level along with standards and manuals following the introduction of a case-based payment system and performance-based budgeting.

## 5.4. Human Resource for Health Care

**Capacity for Planning and Analysis:** The health care sector is labor-intensive, and it takes more time to build the capacity of human resource than capital inputs. Algeria needs to conduct capacity building for human resources in health care both in policy and management and in clinical areas. To strengthen the planning and evaluation function of the government in the health sector, Algeria needs more experts in health economists, health financing and planning, and health policy research. The government can also support the health care personnel get additional training in the above areas.

**Capacity for Patient Care and Management:** To meet the increasing demand caused by population and epidemiological change, Algeria needs more primary care physicians who can handle the health needs of the elderly, provide gate-keeping for continuum of care for the elderly, and cope with the epidemiological transition to NCDs. Facing geographically dispersed population, Algeria needs to strengthen the education and increase the supply of paramedical personnel to improve access to care in under-served areas, where physicians are less willing to practice. A supply of health care management experts needs to be increased, especially when facing the government policy change toward hospital autonomy and payment system reform for a performance-based budgeting and a case-based payment.

**Capacity of Medical Schools:** The capacity of medical schools should be strengthened too. Algeria suffers from a shortage of specialists. The balance between specialists and primary care physicians needs to be monitored, and even though too many specialists is a waste of resources, Algeria needs to increase the training of specialists. The capacity of medical schools is crucial not only for the training of medical personnel, but also for research and development in health care. Medical schools and their teaching (often tertiary-care) hospitals need to be a base for health care innovation, which will eventually contribute to the economic development of Algeria.

## 5.5. Pharmaceutical Cost Containment

### 5.5.1. Pharmaceutical Regulation

**Domestic Pharmaceutical Industry and Generic Medicines:** Pharmaceutical cost inflation is a big concern, especially in an era of population aging as the elderly have a high demand for health care and medicines. Strengthening the capacity of domestic pharmaceutical industry can, to some extent, contribute to pharmaceutical cost containment as Algeria currently imports most of its drugs. However, the main products of the domestic pharmaceutical industry are generics rather than originator brand-name medicines. Therefore, increasing the use of (less expensive) generic medicines can contribute to both pharmaceutical cost containment and the development of domestic pharmaceutical industry. Pros and cons of the ban on imports need to be assessed including its potentially perverse impact on the efficiency of the local industry.

**Quality of Medicines:** The system of production and distribution of pharmaceuticals is very complex. Government intervention on pricing is not sufficient to guarantee the rational use of medicines. Price regulation of pharmaceuticals needs to be supported by other important elements of the overall pharmaceutical policy and regulation. Efficacy, safety and quality of medicines are affected by pharmaceutical regulation/policy measures such as registration and monitoring. Efficient and transparent procurement systems also contribute to keeping the prices low. Human resources also matter such as the behaviors and financial incentives to physicians and pharmacists.

### 5.5.2. Increase the Use of Generic Medicines

**Competition:** Competition contributes to the increased use of generic medicines. Lowering the entry barrier for generics (through bio-equivalence test) and monitoring and providing information on quality of generics can increase market share of generic medicines. Strengthening the bio-equivalence test for generics

will improve the quality of generics and help providers and consumers improve their perception of the quality of generics relative to the originator medicines. The government also needs to abolish regulation on retail pharmacies (e.g., regulation on location and ownership) to increase competition among them, which can result in the decrease in the price of generics.

**Active Purchaser:** The role of price-sensitive purchasers is also important as a downward pressure on the price of medicines. Health care financing agency can negotiate for a low price, based on purchasing power and benefit package decisions (e.g., formulary, differential cost-sharing for consumers such as lower cost sharing for patients using generic medicines). The purchaser can adopt the criterion of cost effectiveness in the decision making for the benefits and pricing of medicines. The Algerian government needs to consider reference pricing, in which health insurance reimbursement is determined with reference to the minimum or average price of medicines for a given category. <Table 4-5> shows different types of reference pricing in European countries.

**Pricing:** Price (or maximum price) of generic medicines can be set relative to (e.g., certain % of) that of originator medicines. However, setting the price of generic medicines in relation to originator drugs can result in price collusion among generic producers, converging of prices to the set price. Beside its weak theoretical rationale, how to determine the optimal level (e.g., how much percentage of the price of originator drugs) is a concern. The government needs to monitor the price level of generic medicines and adjust the price based on the real price of transaction in the market.

**Financial Incentives to Physicians and Pharmacists:** Physicians play a critical role in the rational use of medicines. Prescription behavior of physicians is affected by marketing and information by manufacturers too. For increased use of generic medicines, the government can mandate generic prescription by physicians, or higher compensation for pharmacists who dispense generic medicines. Government can allow pharmacists to substitute generic medicines for brand-name prescriptions. Financial incentive of pharmacists is influenced by the level and type of mark-ups and dispensing fee. Unless regressive percentage mark-up or dispensing fee (i.e., discounted mark-up or fee for high price medicines) is adopted, pharmacists have incentives to dispense costly medicines.

〈Table 4-5〉 Comparative Definitions of Reference Price in Selected EU Schemes

Country	Year	Definition of Reference Price
Germany	1989	Statistically derived median price for drugs containing the same active substance and having comparable efficacy
Netherlands	1991	Average price of drugs with similar pharmacotherapeutic effects
Denmark	1996	Lowest priced generic equivalent available on the market
Spain	2000	Arithmetic mean of the three lowest cost-per-treatment-day grouped by formulation and calculated by DDD
Belgium	2001	Equal to a price that is 26 per cent lower than the price of the original brand for generic equivalent products
Italy	2001	Lowest priced generic equivalent available in the market
Portugal	2003	Lowest priced generic equivalent available on the market

Source: Mrazak and Mossialos (2004) p. 125.

## 6. Road Map

Although detailed action plans should take into account various factors, the following road map for health sector development of Algeria is based on such considerations as whether it takes a long time to build technical capacity to implement the policy, whether it is difficult to have a political consensus on the policy, etc. For example, pooling of the state budget and health insurance reimbursement needs consensus among the government ministries. Also, politicians are very reluctant to increase cost sharing for patients. As a result, pooling of funding sources and raising cost sharing for patients are recommended to be implemented in phase 2.

	2013 – 2020 (phase 1)	2021 – 2030 (phase 2)
Efficiency in Health Care Provision	<ul style="list-style-type: none"> <li>• Performance-based budgeting for public hospitals</li> </ul>	<ul style="list-style-type: none"> <li>• DRG-based payment for hospitals</li> </ul>
Efficiency in Health Care Financing	<ul style="list-style-type: none"> <li>• Strengthen means-test for the non-poor to pay insurance contribution</li> <li>• Active utilization review program by health insurance system</li> </ul>	<ul style="list-style-type: none"> <li>• Pooling of the state budget &amp; health insurance reimbursement to hospitals</li> </ul>
Quality of Care	<ul style="list-style-type: none"> <li>• Strengthen the technical capacity of public hospitals</li> <li>• Accreditation program for hospitals</li> <li>• Increase financial incentives for providers in under-served areas</li> </ul>	<ul style="list-style-type: none"> <li>• Quality evaluation of providers and dissemination to the public</li> <li>• Generate government statistics on equity in health outcomes (across regions and socioeconomic groups)</li> </ul>
Human Resource Development	<ul style="list-style-type: none"> <li>• Invest in education/training programs for specialists</li> <li>• Policies to increase the supply of primary care physicians, paramedical personnel, and management personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen medical schools for health care R&amp;D</li> </ul>
Pharmaceutical Industry	<ul style="list-style-type: none"> <li>• Generic prescription for physicians</li> </ul>	<ul style="list-style-type: none"> <li>• Cost-sharing for consumers who use brand-name medicines</li> </ul>

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# Towards Strengthening Governance and Institutions for Algeria's Inclusive Medium- and Long-term Development: Focusing on the Role of Government and Enhancing Its Implementation Capacity

1. Why Governance and Institutions Matter: Recasting Algeria's Developmental Task
2. Redefining the Role of Government and Enhancing Its Implementation Capacity: Focusing on the Role of a Pilot Agency for Development
3. A Brief Benchmarking of the Malaysian Model
4. Managing the Process of Change and Reform
5. Conclusion and Some Policy Suggestions

## **Towards Strengthening Governance and Institutions for Algeria's Inclusive Medium- and Long-term Development: Focusing on the Role of Government and Enhancing Its Implementation Capacity**

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### **Summary**

In 2012, as Algeria celebrates its 50th year of independence, its government aims to rise to the historic challenge of attaining inclusive and sustainable long-term development. Against such a backdrop, this chapter examines how to strengthen the role of the Algerian government in policymaking, implementation and coordination across ministries and in governing the market economy and the interactions between the public and private sectors. In particular, it devotes special attention to the issue of implementation as key to the success of any vision or policy, as no policy, if unimplemented or poorly implemented, can turn out to be good.

As Korean development experiences suggest, it is crucial to ensure that a new pilot ministry like Korea's Economic Planning Board (EPB), to be the primary institution for driving the nation's long-term development, has sufficient power, authority, human and budgetary resources for successful implementation. As a key structural-institutional source of the implementation problem in many underdeveloped economies frequently lies in the lack of close coordination among concerned government ministries, it is critically important to ensure that the pilot ministry for development is capable of coordinating across ministries and thereby actually resolving any bottlenecks or entangling problems.

Perhaps the President's attending the regular, if not necessarily monthly, pilot ministry-coordinated meetings on economic trends or the state of the Algerian

economy and reform may empower the process as well as the pilot ministry, powerfully mobilizing both the public and private sectors for the cause of inclusive, long-term development.

Here the professional expertise and credibility that a national think tank like an Algerian Development Institute can bestow on the government's plans and policy proposals may indeed constitute a critical dimension to any successful effort at and engineering of government-led reform and change.

It is in this context that also based on the Korean experience, creating an Algerian Development Institute (ADI) as an effective interface between state and society can help win the hearts and minds of its citizens, as such a national think tank can become a chief supplier of credible expertise and social consensus-building policy ideas and proposals, which may prove more effective and influential than advocacy groups or individual scholars in universities. As a matter of fact, it can help the government prepare long-term development plans, analyze strategic and policy adjustment issues, monitor and evaluate the process of reform and its implementation, and develop and operate intellectually-grounded public awareness campaigns.

However, it is people or the so-called developmental focus groups that make difference by making things happen, and they would be pivotal to such institutional revamping and upgrading for long-term, structural development. Hence, no less important than the implementation mechanism itself is the problem of shortage of highly competent and dedicated officials to staff the government bureaucracies. For this purpose, indeed, Algeria may want to adopt a more systematic two-track recruitment system to recruit elite cadre of officials who staff the pilot ministry or take on other key developmental functions of the government—separately from the existing track and at an intermediate level. To be sure, the Korean leadership made sure that the EPB drafted the best and the brightest, including top-notch U.S. university-educated economists whose ethos of economic rationality greatly influenced the upstart ministry. EPB officials were thus viewed inside and outside government circles as the most “rational,” objective or public-spirited among all bureaucrats.

The Algerian government's creation of a separate track of elite cadre of officials, imbuing and empowering them with a sense of mission and esprit de corps, and rewarding their dedicated performances with faster promotion would not only enhance the effectiveness of the government's implementation mechanism, but also provide great examples or role models to emulate to the next generation of young Algerian minds, which would have a powerful signaling effect on the Algerian economy and society as well.

It should be noted here that Algeria's restructuring and reform of the National School of Administration to establish France's ENA-like professional graduate program in November 2005 provides an innovative alternative. Upon careful evaluation, therefore, Algeria may consider expanding this elite track recruitment program as part of the solution.

## 1. Why Governance and Institutions Matter: Recasting Algeria's Developmental Task

Theories or arguments on the empirical determinants of economic growth have abounded in the last decades.<sup>29)</sup> More specifically, although the empirical evidence on the relationship between political regimes or democracies and economic growth remains ambiguous,<sup>30)</sup> there exists a vastly growing and strongly supportive array of scholarly works on the economic effects of institutions and governance structures.<sup>31)</sup> For instance, Knack and Keefer's seminal work in 1995 corroborates the indispensable role that the quality of institutions in terms of the security of property rights and contract enforcement plays for economic and investment growth.<sup>32)</sup> Mauro's seminal research in the same year also finds supporting evidence for the causal impact of institutional quality, defined in terms of subjective indexes of corruption, on negative economic and investment growth.<sup>33)</sup>

29) For some excellent reviews and/or exemplary works of this literature, see R. Barro, *Determinants of Economic Growth: A Cross-Country Empirical Study*, (Cambridge: The MIT Press, 1998); A. Drazen, *Political Economy in Macroeconomics*, (Princeton: Princeton University Press, 2000); E. Helpman, *The Mystery of Economic Growth*, (Cambridge: Harvard University Press, 2004).

30) For a comprehensive evaluation of the literature on this subject, see Y. Feng, *Democracy, Governance and Economic Performance: Theory and Evidence*, (Cambridge: The MIT Press, 2003).

31) See, for instance, S. Knack and P. Keefer, "Institutions and Economic Performance: Cross Country Tests Using Alternative Institutional Measures," *Economics and Politics*, Vol. 7, (1995); P. Mauro, "Corruption and Growth," *Quarterly Journal of Economics*, Vol. 110, (1995); A. Alesina, "The Political Economy of High and Low Growth," Annual World Bank Conference on Development Economics 1997, (Washington, D.C.: World Bank, 1998); R. Hall and C. Jones, "Why Do Some Countries Produce So Much More Output per Worker than Others," *Quarterly Journal of Economics*, Vol. 114, (1999); D. Acemoglu, S. Johnson, and J. Robinson, "The Colonial Origins of Comparative Development: An Empirical Investigation," *American Economic Review*, Vol. 91, (2001); D. Acemoglu and J. Robinson, *The Origins of Power, Prosperity, and Poverty: Why Nations Fail*, (New York: Crown Business, 2012). For the purpose of this report, the non-problematic OECD definition of governance is used as "the use of political authority and exercise of control in a society in relation to the management of its resources for social and economic development" (cited in T. Weiss, "Governance, Good Governance and Global Governance: Conceptual and Actual Challenges," *Third World Quarterly*, Vol. 21, (2000)), as well as D. North's definition of institutions as "humanly devised constraints that shape human interaction" (See D. North, *Institutions, Institutional Change and Economic Performance*, (Cambridge: Cambridge University Press, 1990)).

32) S. Knack and P. Keefer, "Institutions and Economic Performance," *op cit*.

33) P. Mauro, "Corruption and Growth," *op cit*. A. Alesina's piece "The Political Economy of High and Low Growth" provides further empirical evidences on the linkage between economic growth and the quality of institutions, operationalized in terms of bureaucratic efficiency, absence of corruption, protection of property rights, and the rule of law.

However, the institutional political economy of economic growth as a research program has not been without its own critiques, a few of which are worth mentioning here. The first concerns the measurement issue, since such concepts as democracy, political authority and accountability as well as most indicators of institutional quality remain hard to measure or operationalize. Second, the institutional quality indicators, which actually measure institutional outcomes, are often inadequately fitted for use in any rigorous causal analysis, especially of large-N type research, on institutions and economic growth. Perhaps most importantly for the purpose of this report, the otherwise excellent researches on the linkage between institutions and growth per se may not be of much practical value without the follow-up studies on how good quality institutions can emerge or be developed. In this regard, it should be noted that the institutional economics literature has generally slighted the role of government in making, implementing and coordinating good policies, including those which can build such quality institutions as well as in facilitating close consultation and cooperation between the public and private sectors especially in the early stages of economic growth or industrialization. It is against such a backdrop that the present report aims to focus on the role of government and enhancing its implementation capacity towards strengthening governance and institutions for Algeria's inclusive medium- and long-term development.

The Growth Report, which the World Bank Commission on Growth and Development issued in May 2008, identifies some essential features commonly shared by 13 economies with success stories of sustained, high growth in the postwar period: 1) an open-economy growth strategy; 2) institutions characterized by openness, rule of law, competent and developmentally-committed bureaucracy; and 3) political stability.<sup>34)</sup> As David Brady and Michael Spence note in their edited volume, *Leadership and Growth*, which followed the Growth Report, it is not surprising that there exists considerable allowable variation in making choices over the set of essential features. Nonetheless, there is no question that the governance structure or institutional foundations have a critical impact on the success and sustainability of any medium and long-term development plan and its policy outcomes. The *Leadership and Growth* volume demonstrates that “sustained growth is tied to quality institutions, and that good governance ensures maintained quality.”<sup>35)</sup>

According to Daron Acemoglu and James Robinson, put differently, what explains any nation's success in attaining sustained growth or development is “the way its institutions, both economic and political, shape the incentives of businesses,

34) See David Brady and Michael Spence, eds., *Leadership and Growth*, (Washington, D.C.: The World Bank Commission on Growth and Development, 2010), pp. 2-3.

35) Ibid. p. xiv.

individuals, and politicians.”<sup>36)</sup> It is the quality of economic and political institutions a nation has that play a critical role for generating sustained economic development in the country: “Economic institutions shape economic incentives: the incentives to become educated, to save and invest, to innovate and adopt new technologies, and so on. It is the political process that determines what economic institutions people live under, and it is the political institutions that determine how this process works.”<sup>37)</sup> In short, economic and political institutions shape and influence how people behave, and without such an institutional framework, no societal transformation of individual talent into a sustainable positive force can take place.<sup>38)</sup>

Among others, in fact, the Korean and East Asian developmental experiences provide particularly strong support for such a proposition. Indeed, the core component elements of governance structure or institutional foundations which have proved conducive to long-term development in Korea and East Asia include: 1) political stability and market institutions; 2) the government’s clear and credible commitment to development; 3) competent bureaucracy with long-term vision, dedication, and effective policy tools for market-conforming intervention, and 4) a pilot agency for development policymaking, implementation and coordination.

In the case of Korea, for instance, development and catch-up industrialization were Korea’s predominant goals particularly after liberation from the Japanese colonialism.<sup>39)</sup> The national security concern was uppermost in the leaders’ minds; given the linkage between industry and independence in their thinking, they pursued industrialization to build the economic base for national independence and self-determination. Once the commitment to development of the political leadership was clear and credible, what Chalmers Johnson called the developmental state’s bureaucracy could go beyond the market; what made the “plan rational” state in Korea as well as in Japan more effective than both the Communist and the liberal-capitalist states was that its competent and autonomous bureaucracy intervened in accord with long-term market opportunities.<sup>40)</sup> This was possible in part due to its more comprehensive, long-term vision and competent personnel, whom it recruited from the best and brightest graduates of the nation’s elite universities through grueling civil service exams. The bureaucracy possessed many effective policy tools to target industries: finance, tax breaks, control of foreign exchange and import/export, various protection for infant industries, broad regulatory powers, and informal administrative guidance — albeit not backed up by forces of law; still, the state could

36) D. Acemoglu and J. Robinson, *The Origins of Power, Prosperity, and Poverty*, op cit., p. 42.

37) Ibid.

38) Ibid., p. 43.

39) The ruthless exploitation of the 35 years of Japan’s colonial rule hijacked, derailed and aborted Korea’s early modernization efforts in the late 19th century.

40) Chalmers Johnson, *MITI and the Japanese Miracle*, (Stanford: Stanford University Press, 1982); “Political Institutions and Economic Performance,” in Frederic Deyo, ed., *The Political Economy of the New Asian Industrialism*, (Ithaca: Cornell University Press, 1987).

get you if you made trouble or did not obey such a guidance.

The bureaucracy helped create dynamic comparative advantages by moving up the ladder of value-added from light, labor-intensive industries to heavy, capital-intensive and more knowledge-intensive industries. Also, taking advantage of the product cycle, it promoted the sun-rise industries or industries with many forward and backward linkages, while phasing out the sun-set industries. The bureaucracy also undertook industrial rationalization programs, taking steps necessary to bring such industries as steel, auto, gas and electricity up to global standards.

Comparatively, however, Algeria not only has a low level of trust (World Value Survey, 2002), but also the quality of its institutions remains low-ranked (122nd out of the total 142 countries by the World Economic Forum). Also, according to the 2012 Doing Business Report, Algeria ranked 136th out of 180 countries. (For a more systematic comparison, see the Annex Figures of this chapter.)

Algeria remains a highly centralized — if often heavy-handed and indifferent to its citizens — rentier state, and the success of the current Algerian government's historic effort to turn the country into a more liberal and participatory democracy may prove most critical in the long run, not only to eliminating terrorist violence but also to mobilizing and funneling the nation's social and economic resources into enhancing entrepreneurship, productivity and development performances.<sup>41)</sup>

More concretely and immediately, for the purpose of enhancing the capacity and effectiveness of the Algerian governance and institutions for long-

41) Algeria was the first country in the region to introduce a multiparty democratic system. Although its life was cut short by the military intervention, it has once again embarked on a path to a multiparty democracy by the President's lifting of the country's 19-year state of emergency in January 2011, promising of constitutional reforms in April 2011, and actually allowing umpteen grass-roots parties to rise in January 2012 to compete in the legislative election scheduled to take place in May 2012.

Algeria stands at a critical juncture. Although its economy currently cruises in the midst of an oil price boom, the prospects of the country's medium and long-term development remains uncertain at best, even if the presently high price of oil continues for the foreseeable future. It is so because Algeria suffers from some deeper-level problems in its governance structure and institutions underlying its economy: 1) the entangling consequences of the not as yet fully-integrated or democratic rentier state on the political economy, 2) the resultantly low level of social entrepreneurship and pervasive presence of unregulated informal sector in the economy, and 3) the malfunctioning of the rather ineffective and inefficient government bureaucracies. Algeria's current industrial structure stands in the way of its pursuing an inclusive and sustainable development; 98 percent of its total exports, over 40 percent of its GDP, and about 60 percent of the government budget come from the petroleum and gas sectors. As a result, the latest unemployment rate for those Algerians who are under 30 years old still recorded 21 percent, almost double that of the overall rate of about 11 percent in 2009, and that of the female college graduates reached 33 percent, triple that of the male college graduates. Hence, Algeria's vision or plan to turn its economy into a more diversified and knowledge-based one, which may well be essential to both ensuring long-term development and creating good and productive jobs, especially for the young and educated, requires a clearer understanding of the true size of the challenges and tasks that confront the nation.



term development, one needs to look at the important issue of narrowing the gap between the nation's plan and the actual ministry policies. While five-year development plans can help build national consensus and mobilize public support for longer-term structural development, Algeria's practice in that regard has as yet to be the case — let alone the lack of close linkage between the proposed plan or policies and the government budget. The same can be said for the problem of public officials and their playing competent and dedicated roles to make, implement and coordinate good policies for development, especially as the Algerian government does lack a sufficient number of competent and dedicated officials particularly at the middle level for effective policymaking, implementation, monitoring and follow-up.

## **2. Redefining the Role of Government and Enhancing Its Implementation Capacity: Focusing on the Role of a Pilot Agency for Development**

In any economy's transition to a more diversified and knowledge-based one, the increasing emphasis gets placed on the role of the private sector. Undoubtedly, the market constitutes the most efficiency-enhancing mechanism ever devised by humanity, and deepening and solidifying such an open market system would be in the interest of the long-term development of the Algerian economy. However, no two market economies can exactly be the same, and an open, fair, transparent and equitable market economy does not come naturally; instead, it is an outcome of politics and institutions. The withdrawal of the government from the market does not automatically create a competitive, well-functioning market. As the economy matures, of course, the desirable role of government changes; the importance of it does not. In fact, the role of the government, the kind of policy tools it has, and the way it exercises such tools for what purposes and with what level of capacity, competence and dedication would critically determine the nature, systematic design and framework of the knowledge-based economy and society that Algeria will have.

Against such a backdrop, this chapter examines how to strengthen the role of the Algerian government in policymaking, implementation and coordination across ministries and in governing the market economy and the interactions between the public and private sectors. In particular, it devotes special attention to the issue of implementation as key to the success of any vision or policy, as no policy, if unimplemented or poorly implemented, can turn out to be good.

According to Kang et al. (2008),<sup>42)</sup> there were three key components to the effectiveness of the Korean government during the country's development decades: 1) the political leadership; 2) the policy implementation mechanism; and 3) the five-year development plans.<sup>43)</sup> First, with respect to the political leadership issue, Park Chung Hee proved a ruthlessly results-driven leader, who saw economic development as a battle to be fought and won at all costs:

"Steep hurdles will be in our path. They will prove to be challenging enemies. But the dice have been cast, and we have proclaimed a ten-year war...The trials will be great. You will feel tired. However, we must not turn away. The people's discomfort from the first five-year plan will be great. The challenge will be overwhelming. I am well aware of that! But Korea is a young boy, and when young, one must purchase suffering as the saying goes. A young Korea must go through suffering. We have endured plenty before. Are we to continue this misery or are we to expect a better future by volunteering for a little more suffering?"<sup>44)</sup>

Second, with regards to the policy implementation mechanism, the source of this institutional problem lies in the lack of close linkage and coordination among concerned government ministries, especially centering around the pilot agency for development. In the case of Korea, in fact, the creation of the Economic Planning Board (EPB) in July 1961 proved the critical turning point in the history of the nation's modernization and development, which not only clearly symbolized a strong commitment to economic development by the new Korean leadership under Park Chung Hee, but also provided a key institutional agency to ensure sustained implementation of the government plans.

The EPB in Korea took over several critical functions from other ministries: 1) the development planning function (the Economic Planning Bureau) from the Ministry of Construction (formerly the Ministry of Reconstruction), 2) the Budget Bureau from the Ministry of Finance, and 3) the Statistics Bureau from the Ministry of Home Affairs.<sup>45)</sup>

42) Kwang-Ha Kang, et al., *The Policymaking Mechanism of Korea during the Development Decades*, (in Korean), (Seoul: KDI, 2008).

43) The Malaysian model of development, a modified Japanese or Korean model which successfully diversified its natural resource-based economy into manufacturing and industry, contained basically the same three key components: Mahathir's political leadership; the Economic Planning Unit (EPU) directly under the Prime Minister's Office, and a series of long-term visions — including Vision 2020 — and five-year development plans and their execution. See Zainal Aznam Yusof and Deepak Bhattachali, "Economic Growth and Development in Malaysia: Policy Making and Leadership," *The World Bank Commission on Growth and Development, Working Paper No. 27*, (2008).

44) Park Chung Hee, *The Country, the Revolution, and I*, (Seoul: Hollym, 1970), p. 173.

45) The EPB was composed of three offices (Planning and Management, Budget, and Fair Trade) and five bureaus (Economic Planning, Price Policy, Policy Coordination, Investment Projects Appraisal and Statistics). It also oversaw the Agency for Government Procurement.

With respect to the third key component, it is true that the traditional-style, comprehensive five-year planning practice has been in decline; yet, that does not deny the importance of strategic and effective five-year plans. Particularly in Algeria, where the private sector remains underdeveloped, and the nation's developmental challenges fundamentally require a structural and societal transformation, a strategically well-designed and coordinated five-year plan has a symbolic and practical value as a vehicle for mobilizing the Algerian citizens to promote a positive and long-term development. Strategic execution of a series of five-year plans in accord with the nation's developmental plan would prove indispensable in helping Algeria to move closer to where it wants to be by 2030 and beyond.

One can take a step further and argue that even after economic development takes off, and the economic structure matures, strategic use of mid- and long-term planning can still be of great value. In the Korean case, in fact, the five-year plans were no longer in use. However, setting the government's, if not nation's, policy priorities continued to be important, and the use of mid- or long-term planning could have provided a nice mechanism for continuing to do so — as such a national planning process can help build a national consensus and enhance the predictability of policy directions. Also, although the Korean government dissolved the Economic Planning Board at the end of 1994 for having accomplished its mission, some criticisms have been raised regarding the decision. Prior to the government restructuring, the Economic Planning Board, together with the Ministry of Finance and the Ministry of Commerce and Industry, has constituted a system of checks and balances at least in making economic policies, and such a system of policymaking process arguably represented a better and wiser one than the one that came into being after the restructuring.

Prior to the restructuring in Korea, in any event, on top of the higher hierarchical order which the EPB Minister as the Deputy Prime Minister (DPM) enjoyed over other ministers, the DPM commanded a formal authority to coordinate the process of economic policymaking for an effective implementation of the development plans. He did so, for instance, by chairing the Economic Ministers' Conference, where economic policy plans already agreed upon by the concerned ministries were approved and recommended to the State Council or Cabinet, and the Economic Ministers' Consultation Meeting, a more informal, policy deliberating body to which more important or controversial policy proposals were submitted.<sup>46)</sup>

During Korea's rapid development decades, the DPM, as head of the EPB, conducted monthly meetings on the state of the Korean economy called Monthly

46) The economic ministers during Korea's development decades included the Heads of the EPB, Ministries of Finance, Trade and Industry, Agriculture and Fisheries, Construction, Transportation, Communications, Labor, Health and Social Welfare, and Science and Technology.

Briefings on Economic Trends, and out of the total of 146 such meetings held at the EPB from January 1965 to the end of 1979, then President Park never missed attending them — except only once. The President's consistent attendance of the meetings had at least three-fold effects: First, it demonstrated the political leadership's commitment to development, and the monthly follow-up meetings had an evaluative and disciplining effect on bureaucratic officials, minimizing the possibility of their rent-seeking behavior. Second, the President's commitment to the meetings translated into delegation of power and authority to the DPM with respect to economic development planning and implementation, effectively stemming resistance or foot-dragging by other line ministers or ministries. Third, the implementation policies hammered out at the meetings had a clear signaling effect on the private sector as well as the public sector about the government's policy priorities. As a consequence, the development policies became more predictable and credible, which enhanced trust and confidence in as well as the policy acceptance or response capacities of the society and private sector firms.

It should be noted that through attending such Monthly Briefings on Economic Trends, the military-turned-civilian leaders, including Park Chung Hee, could obtain the current and latest information on the state of the economy, its exports, economic trends and the international markets, turning out to be a sort of an on-the-job-training. In addition, thanks to the top leader's participation and emphasis, the press ran lengthy reports on the meetings, ultimately increasing the public awareness and knowledge about such matters as the economy, economic growth rates, the importance of exports, export growth rates, and per capita GNP. As the reports on successes, small and big, accumulated, they provided the public with a sense of focus on development and hope for a better future as well as some added incentives to contribute to the construction of the economy and the nation.

For the purpose of enhancing the effectiveness of inter-ministerial policy coordination and implementation of the five-year plans, in short, the presence of three institutional features may be essential. The first is a strong pilot ministry such as the EPB for long-term development planning and implementation. The second is the political leadership's empowering of the head of the pilot ministry like the EPB, who as the first among all economic ministers would take charge in cross-ministry coordination. The third is to give the pilot ministry power over budget allocation. In any medium-term or five-year planning, having concerned economic ministries actively participate in the preparation of sectoral projects or plans would be important to ensure effective implementation. In the end, however, the pilot ministry must have the authority to resolve any inter-ministerial conflicts over sectoral plans or their respective shares of the government budget with a high-level of policy consistency and in accord with long-term plans and strategic goals.

In coordinating economic policies, the EPB could retain its core competence, reputation and credibility as the pilot ministry for the nation's long-term development, not only because the political leadership in Korea gave the EPB such a broad mandate or mission, but also because unlike other government ministries or agencies, the EPB remained fundamentally autonomous from any particular societal groups. While being largely free from societal interest groups and without the constraint of parochial institutional interests, the EPB could pursue the nation's broader and long-term development goals. In fact, the persuasiveness of EPB's policies or arguments stemmed from its less biased and more rational analytical capacities: its ability to identify short- and long-term policy issues or problems as well as to offer more progressive and internally coherent policy alternatives to the pressing problems of the time.

As a result of the works of the EPB and the efforts to implement the nation's first series of five-year economic development plans, there was a tremendous boost in the growth potential of the economy. Whereas the Korean economy had grown by four percent per annum between 1953 and 1961, it showed an annual average growth rate of ten percent between 1962 and 1969.

However, that does not mean that the seemingly miraculous growth of the Korean economy which followed the onset of the First Five-Year Economic Development Plan in early 1962 was the direct outcome of the smooth and flawless implementation of a perfectly designed development plan. The First Five-Year Economic Development Plan clearly constituted the very first comprehensive mid-range economic development plan that was actually put into implementation. Yet the design of the plan was far from water-tight, and the process of implementation remained far from smooth or orderly. Available statistical data stayed poor in quality, and the planning officials largely lacked adequate technical skills to perform the task superbly or impressively. The development goals were set too high and ambitiously partly to appease the people and their pent-up expectations. The suggested means for securing financial resources needed for various investment projects remained also unrealistic. At the end of 1962, in fact, Korea possessed only \$167 million worth of foreign exchange reserves, and the reserves further dwindled to \$105 million by September 1963.<sup>47)</sup> Given the sorry state of the country's foreign exchange reserves, no country or international financial institutions came forward to provide it with investment capital.

Hence, already by November 1962, the EPB had to initiate some substantial revisions or adjustments to the First Five-Year Economic Development Plan: lowering the target annual economic growth rate to five percent from seven percent; downsizing the capital investment ratio to total capital stock to 16 percent from 21

47) O Won-chol, *The Korea Story*, 76.

percent; decreasing the projected share of foreign aids and loans in the total capital resources supply; and thus reducing the targeted overall investment ratio to 17 percent by cutting down on the domestic savings ratio to seven percent from nine percent and foreign savings ratio to ten percent from 12 percent.

However, perhaps the most significant revision to the plan occurred only with the appointment of Chang Ki-Young as the DPM of the EPB in May 1964, when the government shifted its economic development strategy from an import-substitution industrialization to an export-oriented one. By then, it was clear that the country with a small and undeveloped domestic market had almost completed easy import substitution in non-durable consumer goods, let alone postwar reconstruction. At the same time, with the declining foreign aids, the economy had to increase its foreign exchange earnings to resolve the worsening balance of payments problems. Thus, it made sense to shift the focus of the country's economic development strategy and plan to exporting labor-intensive products.

The then military-turned-into-civilian government under Park Chung Hee succeeded in reforming the exchange rate system from 1964-1965 in accord with the more market-conforming export-oriented industrialization (EOI) strategy. The government through the EPB devalued the Korean won and adopted a unitary floating exchange rate system. Although the government's persistent intervention in the foreign exchange market did not quite allow a flexible market-driven change in the exchange rate, the nominal exchange rate at least started to change. Also, along with the foreign exchange rate reform, which significantly improved the price competitiveness of Korean export products, the government employed a comprehensive array of export promotion measures such as export subsidies, tax breaks, bank loans, export-import linkage and generous import wastage allowances.

The government also undertook some institutional reforms to support the implementation of the EOI, including the establishment of the government-owned Korea Trade Promotion Corporation (KOTRA) for helping and assisting overseas marketing activities of exporters, and the creation of the Monthly Export Promotion Meeting, where President Park himself also attended as the top-level recognition and signaling of the export drive as the most critical engine of the state-led economic development strategy and plan (See Figures 1 and 2; Table 1).

The Monthly Export Promotion Meeting, which had its first kick-off meeting with the President in January 1965, provided an official and open forum for direct

communication between the President, the executive and the business.<sup>48)</sup> Thanks to the President's developmental commitment and the government's tying of its strong policy support and various subsidies, including tax incentives and highly subsidized credits to export performance, rent-seeking behaviors of both government officials and private businesses could be minimized. As a result of such redirecting of the state and the business for export promotion, the annual export growth rate from 1964-1970 recorded 42 percent,<sup>49)</sup> with the amount of total exports jumping to \$623 million in 1969, from \$55 million in 1962. More importantly, the share of manufactured goods in total exports shot up during the period: to 77 percent by 1970 from a mere 15 percent in 1961. Moreover, as the labor force moved to urban, labor-intensive light industry sectors, the unemployment rate dropped from nine percent to five percent during the 1960s.

Learning from the umpteen trial and error of the First Five-Year Economic Development Plan and its implementation process, which basically was a comprehensive resource plan developed without much help from international experts, the Second Five-Year Economic Development Plan (1967-1971) showed much improvement, the preparation of which had started from late 1964. The formulation of it came on the basis of more reliable data, in terms of both national accounts and input-output tables, and through a far wider participation process in order to ensure a more effective and efficient implementation of the plan, by way of enhancing the sense of ownership of the plan among all participants who would also be executioners of the plan.

International experts also greatly contributed to the development of the Second Five-Year Economic Development Plan, which included the Economic Division of the United States Operation Mission, Nathan Advisory Delegation and Advisory Delegation of the German government. The gross economic development model of Irma Adelman represented the backbone of the second five-year plan. The Second Five-Year Economic Development Plan was indeed a product of collaborative work between the domestic and international experts and personnel. The second five-year plan remained a similarly comprehensive resource plan, emphasizing sector by sector

48) The regular participants included the following: from the central government, the President, ministers including the DPM and the Minister of Finance, and director generals; from the financial institutions, their heads including the Governor of Bank of Korea, the Governor of Korea Development Bank, the President of Korea Exchange Bank and the President of Industrial Bank of Korea; from state-owned institutions, among others, the President of KOTRA, the Chairman of Korea Chamber of Commerce and Industry, and the Vice Chairman of the Federation of Korean Industries; from the business sector, representative CEOs or Chairmen of top corporations; and others from academia, the Prosecutors' Office, and the legislature which included Head of the governing party and the Chairman of the Commerce and Industry Committee.

Among others, the Monthly Export Promotion Meetings: 1) provided an open forum for direct communication between the President, the executive and the business; 2) signaled the export drive as the most critical engine of the state-led economic development strategy and plan.

49) From 1971-1979, exports continued to grow rapidly: 40 percent per annum.

material balances and attempting to consolidate all investment projects for the whole economy.

Obviously, the Second Five-Year Economic Development Plan and the process of its implementation were not seamless either. For instance, a major expansionary modification to the plan had to be made by May 1968, increasing the number of investment projects by 50 percent and raising the annual economic growth rate to 11 percent from seven percent, among other things. In fact, such major investment projects as the Seoul-Busan Expressway and the construction of the Pohang Steel Company (POSCO) were carried out actually outside of the original second five-year plan.

Beginning with the Third Five-Year Economic Development Plan (1972-1976), the nature and function of the plan changed from the previous resource planning to the so-called policy planning. By then, the planning officials had realized that it was pointless to plan and implement all private investment projects, although they were still included in the overall investment plan as necessary for satisfying material balances. Such a change reflected the change of the developmental government's approach to economic development: Giving up on the notion of trying to allocate all economic resources, the government switched to policy planning, which by way of announcing major policies it planned to pursue during the development plan period, aimed to put everyone involved on the same page in terms of the government's policy emphasis and direction, thereby guiding the decision making process in the business of the private sector. Starting with the Third Five-Year Economic Development Plan, therefore, the role of empirical research on the system of incentives in formulating the economic development plans gained importance. Then, beginning with the Fifth Five-Year Economic Development Plan (1982-1986), the government resorted to an indicative planning method with the objective of enhancing the effectiveness of policy planning.

Clearly, the economic development plans were not designed for direct allocation of all economic resources except those under the government's direct control. Yet, the process of planning as well as implementation greatly contributed to building consensus, interaction and cooperation among the participating state and societal actors. The medium-term plans provided a national forum for policy dialogue concerning alternative development policy strategies. The process itself facilitated not only training of government officials, but also the search for national consensus and public support for the government's economic policies. It also enhanced the predictability of government policies, thus the private sector's confidence in them; the private sector had every reason to take the government's planning, albeit indicative, seriously as such a plan announcement signaled the future direction of government policy and resource allocation.



With regards to the government's monitoring and follow-up on the implementation of the five-year development plans,<sup>50</sup>) Korea first introduced a formal system in 1962, a basic planning management system similar to the one employed by the Korean military forces. According to the scheme, all central government ministries and agencies were required to prepare a basic annual management plan to submit to the Office of Planning Coordination under the Prime Minister's Office for the sake of coordination and consolidation. Once the overall annual budget estimates for a new fiscal year were made and approved by the National Assembly, the ministries and agencies prepared their own annual budget estimates on the basis of their revised management plans, which became subject to final coordination and approval of the Prime Minister's Office. Then, the implementation of the approved plans of the ministries and agencies became the subject of performance monitoring and follow-up by the ministries and agencies themselves as well as the Office of Planning Coordination.

Performance monitoring and follow-up measures were supposed to be carried out for all projects and programs specified in the annual management plan. Each government ministry and agency had the primary responsibility to monitor and evaluate the quarterly status of implementation on projects and programs and report to the Office of Planning Coordination under the Prime Minister's Office. The Office of Planning Coordination, in turn, was to conduct an overall evaluation of the individual status reports by relying on the reviews of civilian experts in the Economic Performance Evaluation Group. The Office of Planning Coordination's quarterly reviews and evaluations were reported to the President, and in case some corrective measures deemed necessary, the Prime Minister's Office followed up on them by sending appropriate instructions to each ministry or agency.

The monitoring and follow-up system did not quite work well, however, mainly because it did not go hand in hand with the budget process. Since the Office of Planning Coordination lacked control over the budgetary process, it largely lacked the power of enforcement in the follow-up stage; it only collected the management plans that the ministries and agencies submitted without being able to coordinate or make effective adjustments to them.

Thus, the Korean government created a new system of monitoring and follow-up in 1981, replacing the basic annual management planning system. It abolished the Office of Planning Coordination and created the Bureau of Evaluation and Analysis within the EPB for performance monitoring, evaluation and follow-up measures. As a result, the EPB now carried out all three interrelated functions: planning,

<sup>50</sup>) This section draws heavily on Kwang Suk Kim, "The Experience of Economic Planning and Management," in Kwang Choi and Chin-Seung Chung, eds. *Economic Development and Economic Policy in Korea*, (Seoul: KDI School of Public Policy and Management, 2004).

budgeting and performance evaluation.

In the new performance evaluation system, all central government ministries and agencies were required to prepare work implementation schedules for all important policy measures and government-financed projects of any given year. The schedules were supposed to be completed early in the year after the budget had been approved. The EPB were to send its guidelines for the formulation of major work implementation schedules to all government ministries and agencies by the end of January in the year of implementation. The ministries and agencies then submitted their prepared implementation schedules to the EPB by February 20, which the EPB consolidated and used as the basis for performance monitoring, evaluation and follow-up.

The EPB also sent out guidelines on performance monitoring and evaluation to all ministries and agencies by the end of February, stipulating that the ministries and agencies should monitor and evaluate the performance of major projects or programs in accord with the guidelines, and then submit the results to the EPB on a quarterly basis. According to the EPB guidelines in 1982, when the new performance evaluation system became fully operative, for instance, each ministry or agency was required to reclassify its major work projects or programs by unit projects or unit measures and specify the quarterly schedule of implementation for each unit project. In 1982, hence, a total of 1,120 unit projects were selected from all work projects and programs of the central government for preparation of major work implementation schedules.

Of this total, the government selected top 301 projects in the order of importance, in terms of their potential and real impact on the national economy, for monthly performance monitoring and evaluation, while also selecting top 40 major unit projects especially for close, targeted monitoring and direct follow-up. All the other projects were the subject of monitoring and evaluation by the concerned ministry or agency, the results of which were reported to the EPB, which, in turn, consolidated the reports and submitted them to the President, while making recommendations for corrective measures as deemed necessary.

Under the new system, the performance monitoring process consisted of three stages: monitoring the progress of implementation including the status of budget executions; comparing the progress of implementation with the project implementation schedule; and analyzing problems causing any delays in implementation. The performance evaluation process also consisted of three stages: analyzing and evaluating the economic efficiency of implementation in view of the scarcity of budgetary funds, human resources and time; comparing the actual result of each project with the planned or projected result; and determining the

appropriateness of the timing and sequence in the implementation of each project in relation to other ones. The resultant follow-up system as practiced under the EPB proved much more effective than the old one under the Prime Minister's Office.

To briefly recap the stylized, refined-over-time process of making a five-year economic development plan in Korea, it typically took up to two years and three stages to complete: the preparatory stage (3-6 months); the preparation of sectoral plans (12 months); and the compilation and finalization of the plan (3-6 months).

During the preparatory stage, the EPB prepared plan guidelines in consideration of the external environment of the time, emerging policy issues, broad policy directions and major goals. During the process, the EPB in conjunction with such government-funded research institutes as the Korea Development Institute (KDI) would organize umpteen public forums to induce the participation and contribution of many experts, opinion leaders, and other private sector representatives such as those from various industrial associations. No doubt that the EPB also closely consulted and coordinated with other economic ministries by involving them even from this preparatory stage of the planning process.

During the second stage, at the request of the EPB, varying ad hoc work groups were formed. For each group, an assistant minister or sometimes a director general of the concerned ministry assumed its chairmanship, and a planning staff from the EPB served as the secretary for coordinating and organizing the group's work and meetings. Each group also held public forums to facilitate the process of drafting the sectoral plans and refining them.

During the compilation and finalization stage, the EPB integrated the sectoral plans through a Work Group for Policy Coordination. The EPB's assistant minister presided the work group, where heads of sectoral work groups from various concerned ministries participated as its members. The Work Group eliminated or resolved any conflicts or inconsistencies among the sectoral plans, checking for sectoral balance in accord with the long-term goals. At this stage, the EPB, usually, with the help of the KDI also updated macroeconomic plan targets by incorporating into the plan any latest changes in the domestic and international environment.

It should be noted here that the Korean government made sure that the EPB also took charge of coordinating annual planning of fiscal projects — linking the budgetary spending with the five-year plans for effective yearly implementation of the plans.

Thus, in order for the Algerian government to successfully meet the challenges of the nation's long-term development, it may be crucial to establish and empower

a pilot government ministry like Korea's EPB and ensure the ministry has sufficient power, authority, human and budgetary resources to play a pivotal role in devising long-term strategies and plans, coordinating across ministries, and following upon implementation and evaluating the resultant performances.

Also, for the pilot ministry to succeed, the importance of recruiting highly competent and dedicated officials to staff the ministry cannot be overemphasized. For that purpose, Algeria may want to adopt a two-track recruitment system, where the elite cadre of officials who staff the pilot ministry or take on other key developmental functions of the government are recruited separately and at an intermediate level. To be sure, the Korean leadership made sure that the EPB drafted the best and the brightest, including top-notch U.S. university-educated economists whose ethos of economic rationality greatly influenced the upstart ministry. EPB officials were thus viewed inside and outside government circles as the most "rational," objective or public-spirited among all bureaucrats.

For the purpose of enhancing the effectiveness of inter-ministerial policy coordination and implementation, in short, the presence of three structural-institutional features may be critical. The first is a strong pilot ministry such as the EPB for long-term development planning and implementation. The second is the political leadership's empowering of the head of the pilot ministry, who as the first among all economic ministers would take charge in cross-ministry coordination. The third is to give the pilot ministry the power over budget allocation. In any medium or long-term planning, having concerned economic ministries actively participate in the preparation of sectoral projects or plans would be important to ensure effective implementation. In the end, however, the pilot ministry must have the authority to resolve any inter-ministerial conflicts over sectoral plans or their respective shares of the government budget with a high-level of policy consistency and in accord with long-term vision and strategic goals.

In the Algerian case, the Ministry of Prospective and Statistics (MPS) can closely coordinate with the Ministry of Finance in linking the plan and budget. In coordinating economic policies, just as was the case with Korea's EPB, the MPS can retain its core competence, reputation and credibility as the pilot ministry for the nation's long-term development — if it enjoys such a broad mandate or mission provided by the political leadership and remains fundamentally autonomous from any particular societal groups. If largely being free from societal interest groups and the constraint of parochial institutional interests, the MPS can pursue the nation's broader and long-term development goals. In fact, the persuasiveness of its policies or arguments would stem from its less biased and more rational analytical capacities: its ability to identify short- and long-term policy issues or problems as well as to offer more progressive and internally coherent policy alternatives to the pressing problems

of the time.

It is in this context that also based on the Korean experience, creating an Algerian Development Institute (ADI) as an effective interface between state and society can help win the hearts and minds of its citizens, as such a national think tank can become a chief supplier of credible expertise and social consensus-building policy ideas and proposals, which may prove more effective and influential than advocacy groups or individual scholars in universities. As a matter of fact, it can help the government prepare long-term development plans, analyze strategic and policy adjustment issues, monitor and evaluate the process of reform and its implementation, and develop and operate intellectually-grounded public awareness campaigns.

The KDI was established in 1971 as a national think tank directly under the EPB, with the generous endowment funds coming from the United States Operations Mission (USOM), the subsidiary of the USAID in Korea, and the Korean government — as part of Korea's Second Five-Year Economic Development Plan. There was a consensus on the need for a strong think tank in the process of preparing for the second economic development plan, and the idea was readily adopted by President Park, who had already established the Korea Institute for Science and Technology (KIST) in 1966. Just as was the case with the KDI, the newly-created national institution in Algeria can become a chief supplier of credible expertise through painstaking research, objective policy analysis, and fresh alternative policy proposals. It could exert important and immediate influence on current and short-term policy debates. However, far more importantly, through systematic and methodologically rigorous analysis, its policy experts can offer the government and the society independent, balanced, politically neutral, and thus social consensus-building policy ideas and proposals.

Indeed great would be the contributions that the social scientists in the national think tank can make in terms of providing rigorous, compelling, defensible, and yet politically detached diagnoses and prescriptions for solving important and pressing policy problems. As the top researchers at the policy think tank apply rigorous research and analysis to questions of public policy, they and their policy studies and recommendations command more credibility than those of interest groups or advocacy organizations.

Even in the case of the United States, where many of its think tanks have raised concerns about their credibility by becoming more politicized, ideologically-driven, and marketing-oriented policy advocacy organizations in the recent decades, think tanks have historically helped shape how the government institutions evolve and operate in terms of their mission, purpose, role, size and function. For instance, it

was the Brookings Institution that gave birth to the idea of creating the Budget Bureau in the government at the turn of the twentieth century.

Even when national think tank experts become mobilized by policy makers to justify and rationalize, instead of prescribing in a perfectly detached and neutral manner, the preferences of policy makers, the experts may prove more effective and influential than advocacy groups or individual scholars in universities because of their established political access, perceived and accumulated credibility, and timely and relevant research outputs made available to the policymaking process either in the form of research reports, strategically placed opinion pieces, or holding well-timed sets of meetings with major stakeholders, intellectuals or professionals of the society. The credibility that a national think tank can bestow on the government policy proposals may indeed constitute a critical dimension to any successful effort at government-led reform and change.

Key institutional requirements for a successful national think tank include the following: 1) strong support for and blessing on it as a policy research center of excellence by the top political leadership; 2) close but independent and autonomous working relationship with the government in general and the pilot ministry in particular; 3) generous funding and compensation as well as good research facilities.

In the case of Korea, the EPB oversaw the KDI, appointing its president and approving its budget. However, the relationship between the two was not necessarily lop-sided. It was so partly because the EPB itself was a broad, liberal-minded and analytically-oriented ministry, and also partly because President Park Chung Hee himself took a personal interest in the management of the KDI, which enhanced the think tank's institutional pride and autonomy. According to Chung-yum Kim, who had served President Park for over nine years in the 1970s as the chief of staff at the presidential Blue House, the first President of the KDI, Mahn Je Kim, was recommended twice to President Park as a candidate for the EPB's DPM position on one occasion, and for the Minister of Finance position on the other; however, President Park insisted that Mahn Je Kim be kept to continue to do his good work at the helm of the KDI instead, stressing that the role the KDI played was as important as that of the EPB.<sup>51)</sup>

Just as was the case with the KDI in Korea, it is the quality of policy research outputs produced by the national think tank that ultimately decides and solidifies its position as a center of excellence. In that regard, the importance of attracting

51) Chung-yum Kim, "President Park Chung Hee and the KDI," Special Lecture at the 40<sup>th</sup> Anniversary of the KDI (in Korean), March 10, 2011. During the special lecture, Chung-yum Kim also testified to the fact that President Park made sure that despite the government's funding, the KDI maintain its full independence in managing its personnel, budget, and research projects — being governed only by an independent board of directors.

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top-quality researchers to staff the think tank cannot be overemphasized. On that score, the Algerian government may emulate the key ingredients of the KDI model of governance, incentive structure and organizational culture.

First, the KDI's governance system, as discussed above, maintained research autonomy, balance between practical policy research and academic rigor, and minimum hierarchy. Second, to attract and keep top-notch researchers, who were mostly U.S.-educated economists, the KDI paid its research fellows above-the-market salaries as well as various perks such as chauffeur-driven cars, secretaries, personal and competent research support staff, and decent housing. It should also be noted that there was no nepotism, favoritism, or any external pressure allowed in the recruiting process; recruitment remained strictly on the basis of the researchers' merits, credentials and achievements. Third, the KDI's open, liberal, and horizontal organizational culture was instrumental in sustaining the quality of its research products by way of strict internal review and referee process for research papers and policy proposals. Thus, the KDI and its research fellows have developed a strong commitment to excellence as well as a robust institutional pride and autonomy.

In short, it is very difficult to exaggerate the centrality of the political leadership's clear and credible commitment to any major successes in attaining development; such a leadership commitment becomes clearly and credibly demonstrated in the eyes of its citizens when it is reflected in necessary institutional changes for reform. However, it is people or the so-called developmental focus groups that make the difference by making things happen, and they would be pivotal to such institutional revamping and upgrading for long-term, structural development.

Hence, no less important than the implementation mechanism itself is the problem of shortage of highly competent and dedicated officials to staff the government bureaucracies. For this purpose, indeed, Algeria may want to adopt a more systematic two-track recruitment system to recruit elite cadre of officials who staff the pilot ministry or take on other key developmental functions of the government — separately from the existing track and at an intermediate level. To be sure, the Korean leadership made sure that the EPB drafted the best and the brightest, including top-notch U.S. university-educated economists whose ethos of economic rationality greatly influenced the upstart ministry, as already mentioned above. EPB officials were thus viewed inside and outside the government circles as the most "rational," objective or public-spirited among all bureaucrats. It should be noted that the elite officials at the EPB were not necessarily endowed with super competence, but they approached the development challenge with a pragmatic, problem-solving approach: "We can make mistakes as long as we can correct them; we can get feedback from the international market."

However, there appears a gap in particular between the MPS's mission and the capabilities of its career officials. No matter how motivated they may be to the cause of successful implementation and follow-up of the nation's medium and long-term development plan, they especially at the middle level seem to be largely undertrained and ill-equipped. It may have something to do with the question of how appropriate the incentive system is for good and qualified officials to continue working hard for the nation's development.

The Algerian government's creation of a separate track of elite cadre of officials, imbuing and empowering them with a sense of mission and esprit de corps, and rewarding their dedicated performances with faster promotion would not only enhance the effectiveness of the government's implementation mechanism, but also provide great examples or role models to emulate to the next generation of young Algerian minds, which, in turn, would have a powerful signaling effect on the Algerian economy and society as well.

It should be noted here that Algeria's restructuring and reform of the National School of Administration to establish France's ENA-like professional graduate program in November 2005 provides an innovative alternative. Upon careful evaluation, therefore, Algeria may consider expanding this elite track recruitment program as a part of the solution.

### 3. A Brief Benchmarking of the Malaysian Model<sup>52)</sup>

The Malaysian model, a modified version of the Japanese or Korean model of development, contained basically the same elements: 1) political leadership; 2) the Economic Planning Unit (EPU) directly under the Prime Minister's Office; and 3) a series of long-term visions — including the Vision 2020 — and five-year development plans as well as their execution for state-led diversification of its natural resource-based economy into manufacturing and industry (See Figures 3 and 4).

First, Malaysia's political leadership has proved critical in transforming its multiethnic poor agrarian economy into a diversified industrial economy through two phases of growth and development: The pre-1970 period posed on the leadership the challenge of diversifying the economy away from predominantly relying on the declining and unstable commodity prices of rubber, tin and palm oil; and the post-1970 period challenged it with the pressing need to raise the speed

52) This section heavily draws on Yusuf and Bhattasali, "Economic Growth and Development in Malaysia: Policy Making and Leadership," *The World Bank Working Paper No. 27*, (2008).



and scope of industrialization as well as to meet the rising distributive demands of various ethnic groups. The two phases called for different kinds of political leadership, and Prime Ministers Tun Abdul Razak and Tun Hussein Onn provided the leadership in turn for the first period, whereas Prime Minister Mahathir Mohamed led the country's rapid industrial development in the second period. In particular, Prime Minister Mahathir's leadership proved more visionary, if more forceful and confrontational, in transforming the structure of the economy, albeit with continual concerns for equity issues particularly between different ethnic groups of the country. The Prime Minister's personal commitment to developmental policies ensured the implementation of the planned or proposed policies.

Second, along with Malaysia's Ministry of Finance and its central bank, Bank Negara Malaysia, the EPU under the Prime Minister's Office constitutes the main source of development policy origination. The Ministry of Finance actively provides fiscal incentives for manufacturing industries, and the Bank Negara Malaysia makes and supervises the long-term Financial Sector Master Plan, while developing the country's commercial banking and insurance industry. However, it is the EPU that takes the responsibility to formulate the five-year development plans and the mid-term reviews of the five-year plans as well as the long-term development plans which cover 15 to 20 year periods (See Figure 5). The EPU serves as the secretariat of the Inter-Agency Planning Group (IAPG), which, with the three main policymaking organizations as well as other selected ministries and departments as its members, gets activated for the preparation of the five-year plans and for policymaking in between the planning cycles.

Third, a series of long-term visions and five-year development plans played an instrumental role in Malaysia's economic transformation. Especially since 1970, Malaysia has pursued its development and industrial diversification on the basis of the three long-term visions or policies: the New Economic Policy (NEP) of 1971-90; the National Development Policy (NDP) of 1991-2000; and the National Vision 2020 (See Figure 6).

## 4. Managing the Process of Change and Reform

Clearly, no strategy or plan for change can succeed or get done without implementation. Government reform or policy frequently fails because it is poorly implemented. For instance, no matter how sound the design of the strategy or plan, it will wither if its purposes are not clearly understood, or if key stakeholders view it as a threat or burden. In order to succeed, therefore, it must win over those who produce information, provide services, and manage bureaus and agencies,

taking account of the motives and incentives of those whose careers may be changed by new systems and procedures. The stakeholders have to be drawn into the reform process and understand its logic and aims, comprehending why change is desirable and how they can be its co-owners. In short, the process of change or implementation matters, and the more consultative and participatory the process is, the better. (See Box below for the general lessons from the OECD experiences, as reproduced from the OECD's latest report.)<sup>53)</sup>

#### Box 5-1. Some General Lessons from the OECD's *Making Reform Happen*

Although the MRH review of the OECD experience does not yield any universal “toolkit” for reformers, or even suggest that such a toolkit exists, it does point to a number of striking regularities in the way reform processes unfold.

- It is important to have an ***electoral mandate*** for reform. This is one of the strongest findings to emerge from the studies that have fed into the MRH work. The evidence suggests that an electoral mandate appears to be most important in respect of reforms that are all encompassing (labour markets, pensions, environment), including those that affect basic public services (health care, education, public administration).
- The importance of meaningful mandates makes ***effective communication*** all the more important. Successful reforms have usually been accompanied by consistent co-ordinated efforts to persuade voters and stakeholders of the need for reform and, in particular, to communicate the costs of non-reform. Where, as is often the case, the costs of the status quo are opportunity costs, the challenge is all the greater, because the cost of opportunities forgone tends to be politically “invisible.” Clear communication of the long-term objectives of reform is particularly important in a crisis: where reforms are undertaken in response to exogenous shocks, there is often a lack of clarity about their aims. Yet communication should not be confined to “marketing”: real engagement with stakeholders also involves listening to their concerns, and may well result in some modification of reform proposals. This can improve the quality of those proposals, as well as prospects for their adoption.
- This points to the need for policy design to be underpinned by ***solid research and analysis***. The MRH review of OECD experiences suggests that an evidence-based and analytically sound case for reform serves both to improve the quality of policy and to enhance prospects for reform adoption. If reform advocates can build a broad consensus on the merits of a reform, they will be in a stronger position when dealing with its opponents. However, the challenges involved in evidence-based policy making vary across policy domains.
- The foregoing challenges, in turn, are more likely to be met where ***appropriate institutions*** exist, capable of supporting reform from decision to implementation. The impact of

53) See OECD, *Making Reform Happen: Lessons from OECD Countries*, (Paris: OECD, 2010).

economic analysis, in particular, depends to a significant extent on the source: research presented by an authoritative, non-partisan institution that commands trust across the political spectrum appears to have a far greater impact. Yet institutions capable of providing expertise and advice are not all that is needed. Effective institutions are often required to guide and monitor implementation.

- **Leadership** is critical. Virtually all of the assessments prepared so far in the context of MRH point to the importance of strong leadership — whether by an individual policy maker or an institution charged with carrying out the reform. Much of the work also points to the importance of government cohesion in support of reform: if the government is not united around a reform proposal, it will send out mixed messages, and opponents will exploit its divisions; defeat is usually the result. That said, the call for strong leadership should not be read as endorsing a top-down approach to reform or a preference for unilateral action by the executive. While unilateral reforms are sometimes the only way forward and reformers may need both toughness and political cunning, the OECD experience suggests that successful leadership is often about winning consent rather than securing compliance.
- Partly for these reasons, successful structural reforms take **time**. The more successful reforms examined in the MRH analyses generally took several years to prepare and adopt, and they often took far longer to implement. By contrast, many of the least successful reform attempts were undertaken in haste, often in response to immediate pressures: when it comes to policy reform, more haste can indeed make for less speed. Thus, while crises may provide opportunities to press ahead with reforms, the ability to make good use of such opportunities may depend on the work that has already been done to prepare a reform.
- Successful reforms often take **several attempts**. Many of the biggest reform successes analysed in the secretariat's work followed earlier setbacks, and less successful reform attempts can often be seen in hindsight to have helped set the stage for subsequent, sometimes far-reaching reform initiatives, often by deepening policy makers' understanding of the problems involved.
- To a greater or lesser extent, all the MRH studies address the question of **how to deal with the** opponents of reform. While the nature and intensity of opposition to reform varies, some broad themes appear to emerge in almost every context. First, it pays to engage those who will be most directly affected by reform. Inclusive, consultative policy processes are no guarantee against conflict, but they seem to pay dividends over time, not least by allowing greater trust among the parties involved. Second, concessions to potential losers need not compromise the essentials of the reform: it is often possible to improve the prospects of particular groups that will be affected by a reform without contradicting its overall aims.

The question of **whether, when and how to compensate** those who will lose out as a result of

reform emerges in virtually all the studies. Failure to compensate may reinforce opposition to reform, but excessive compensation may be costly or may simply blunt the effects of the reform. The most common compensation strategies involve “grandfathering” rents and long transition periods. Concessions in the form of “side payments,” such as policies in other domains that might offset the cost of reform for some groups, are employed less frequently.

Clearly, transforming a nation’s long-term developmental plan or vision necessarily involves major structural and institutional changes, and such major reforms constitute huge challenges to any political leadership. Hence, to realize Algeria’s long-term developmental plan or vision requires strategic thinking and a gradual and phased approach to transformation, strategizing both the pace and the sequence of the process so that the Algerian citizens can absorb and embrace the proposed changes in their hearts and minds: The first phase from 2013-2020 may launch the transformation drive through execution of the initial, easier but impactful, change initiatives, thus gradually deepening the change momentum through some structural and institutional reforms. The second phase from 2021-2030 accomplishes major structural reforms in favor of consolidation and institutionalization.

In order to turn the developmental plan or vision into reality successfully, showing some impactful results fast would be particularly critical. Especially in the early part of the first phase, delivering quick and visible results or improvements preferably in such citizen service programs where people frequently use or directly observe in their everyday lives could have a clear signaling effect on the population about the leadership’s commitment to the determined execution of the developmental plan or vision.

In such a context, a strategic use of oil revenues would especially be handy in winning the hearts and minds of citizens as well as civil servants for the cause of reform and change. In fact, the current oil price boom provides an exceptional financial wherewithal for Algeria to pursue an implementation of its ambitious developmental plan and policies — without worrying about fiscal soundness or shortage of funds to access reform measures for impactful initial initiatives.

## 5. Conclusion and Some Policy Suggestions

By way of conclusion, it may be appropriate to re-emphasize the fact that as Korean development experiences suggest, it is crucial to ensure that the MPS or a new pilot ministry, to be the primary institution for driving the nation’s

long-term development, has sufficient power, authority, human and budgetary resources for successful implementation. As a key structural-institutional source of the implementation problem in many underdeveloped economies frequently lies in the lack of close coordination among concerned government ministries, it is critically important to ensure that the pilot ministry for development is capable of coordinating across ministries, and thereby actually resolving any bottlenecks or entangling problems.

Perhaps the President's attending the regular, if not necessarily monthly, MPS or pilot ministry-coordinated meetings on economic trends or the state of the Algerian economy and reform may empower the process as well as the pilot ministry, powerfully mobilizing both the public and private sectors for the cause of inclusive, long-term development.

Here the professional expertise and credibility that a national think tank like an Algerian Development Institute can bestow on the government's plans and policy proposals may indeed constitute a critical dimension to any successful effort at and engineering of a government-led reform and change.

〈Figure 5-1〉 Monthly Export Promotion Meetings



IX-11 School of Public Policy and Management

〈Figure 5-2〉 Export Day Award Ceremony

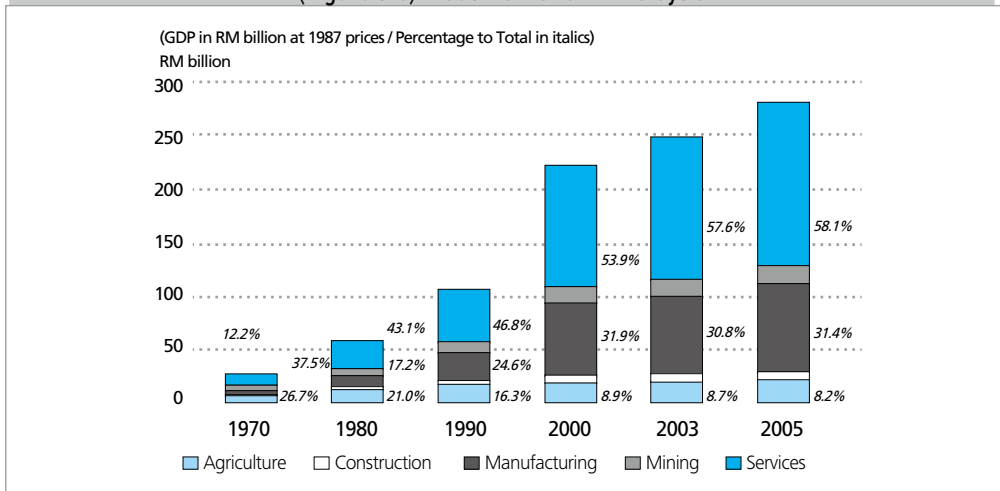


IX-12 School of Public Policy and Management

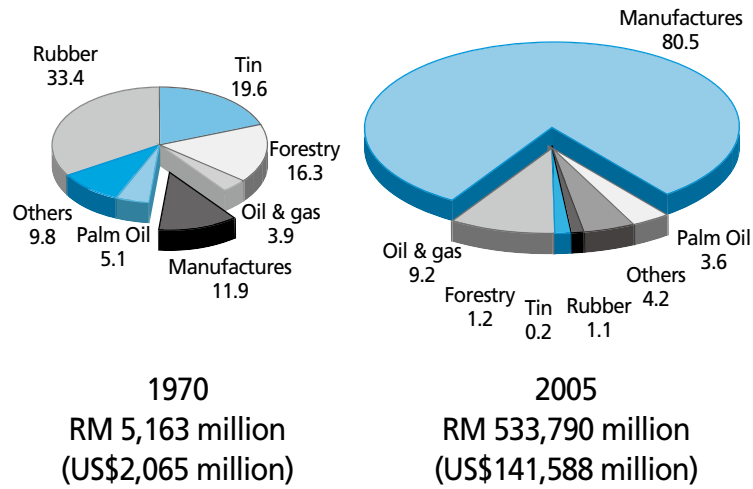
〈Table 5-1〉 Frequency of the Tow Monthly Meeting

Tear	Economic Trends Meeting	Export Promotion Meeting	Total
1965	11	5	16
1966	10	11	21
1967	12	12	24
1968	11	12	23
1969	11	12	23
1970	11	12	23
1971	11	11	22
1972	11	11	22
1973	11	10	22
1974	11	11	21
1975	9	10	19
1976	8	10	18
1977	8	10	18
1978	7	9	16
1978	4	6	10

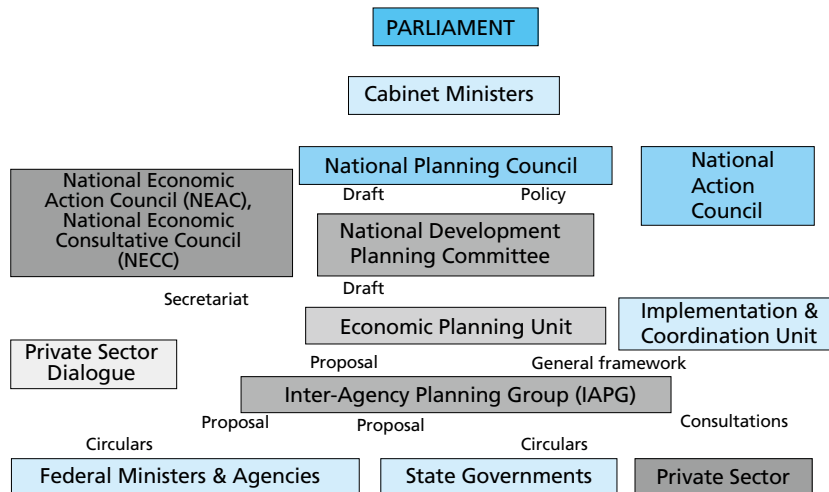
〈Figure 5-3〉 Industrialization in Malaysia



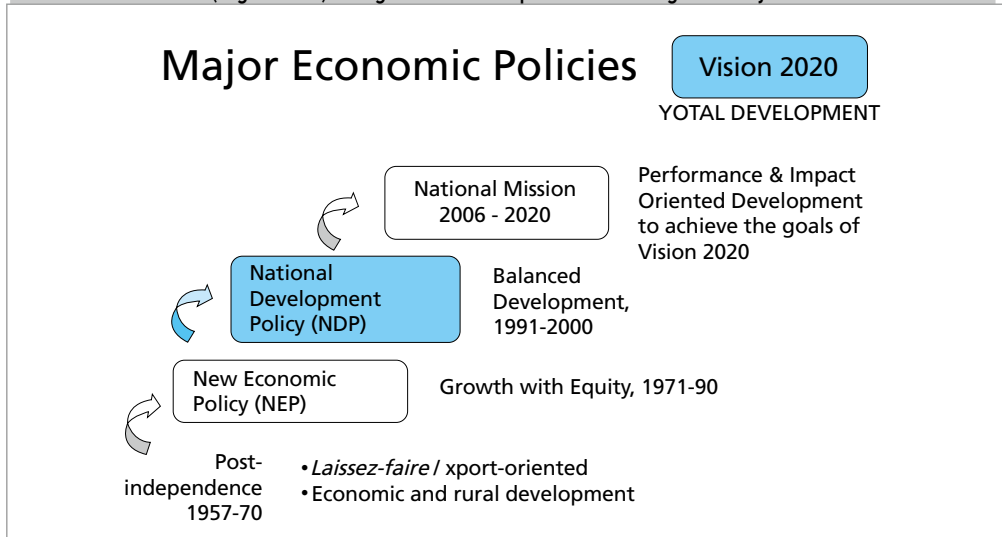
〈Figure 5-4〉 Diversification in Malaysian Exports



〈Figure 5-5〉 The Policy Implementation Mechanism in Malaysia



〈Figure 5-6〉 Long-term Development Planning in Malaysia





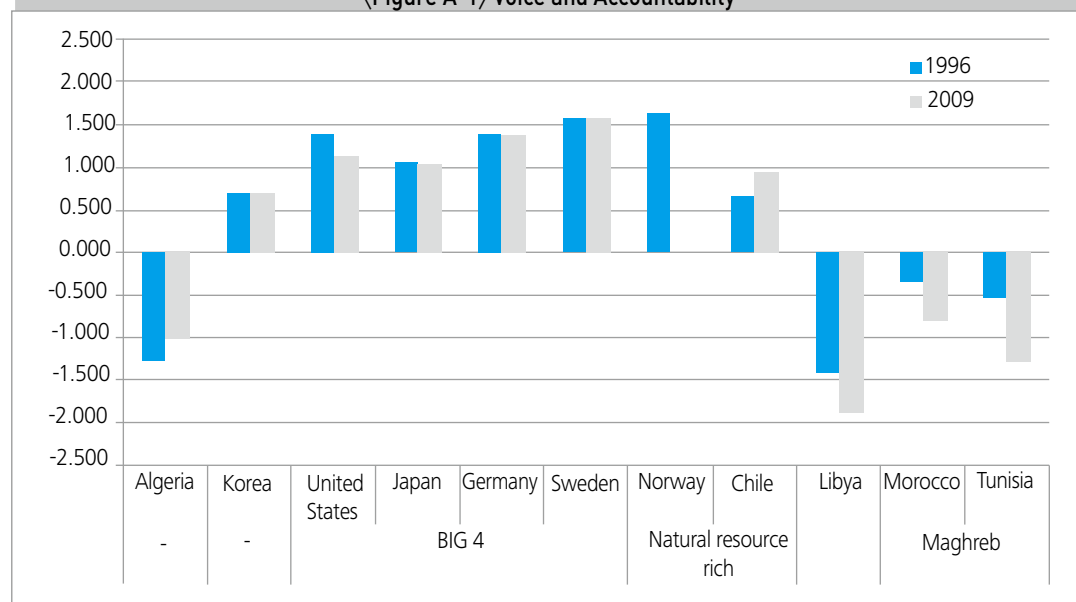
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## A Snap Shot View of Algerian Governance in Comparative Perspective

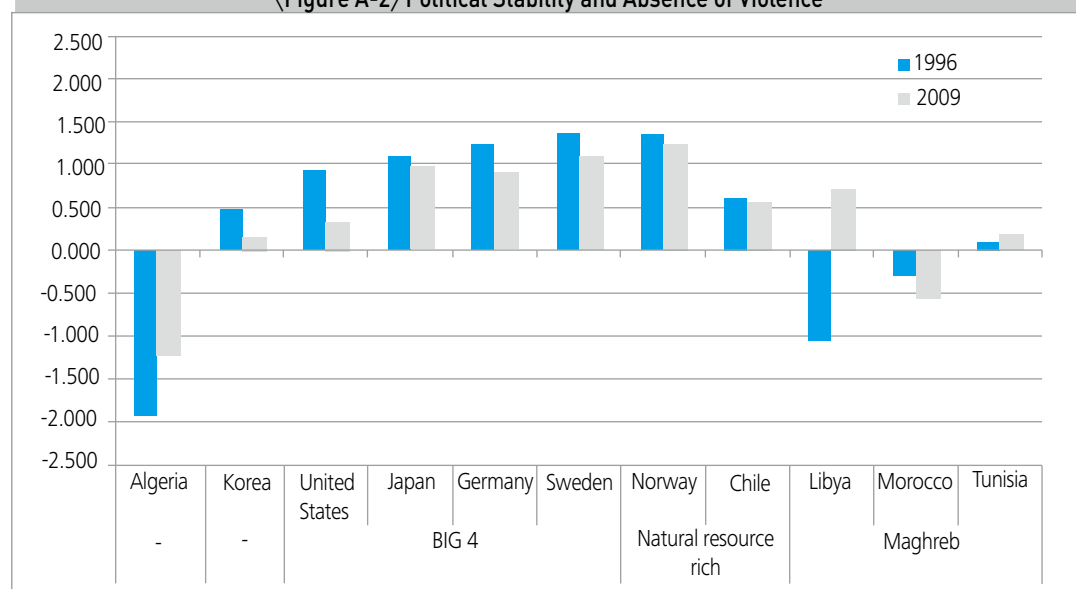
〈Figure A-1〉 Voice and Accountability



Source: The World Bank, Worldwide Governance Indicators (WGI)

Note: Estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance

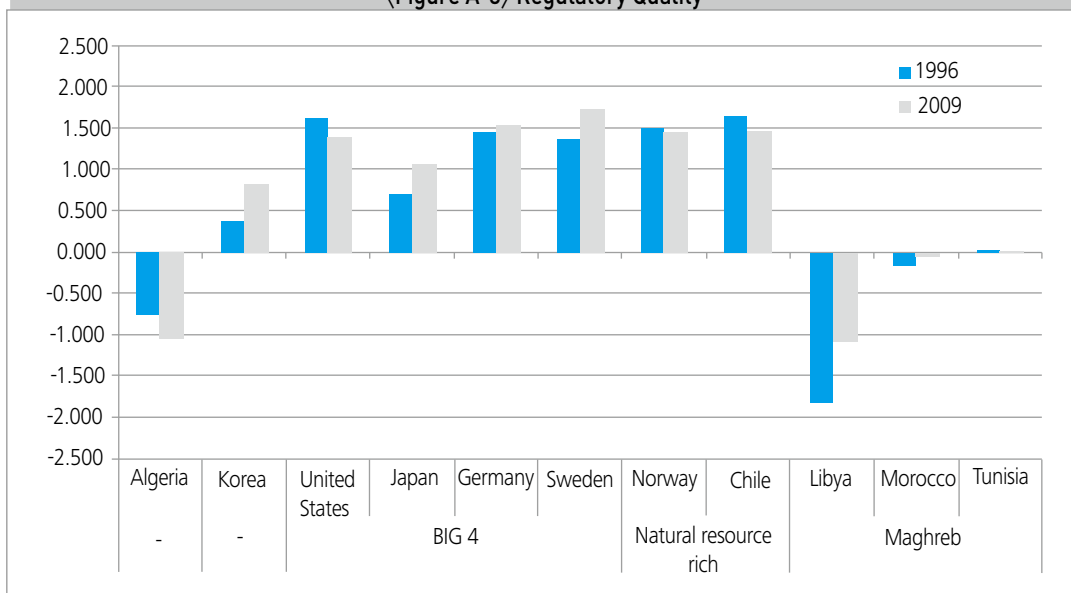
〈Figure A-2〉 Political Stability and Absence of Violence



Source: The World Bank, Worldwide Governance Indicators (WGI)

Note: Estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance

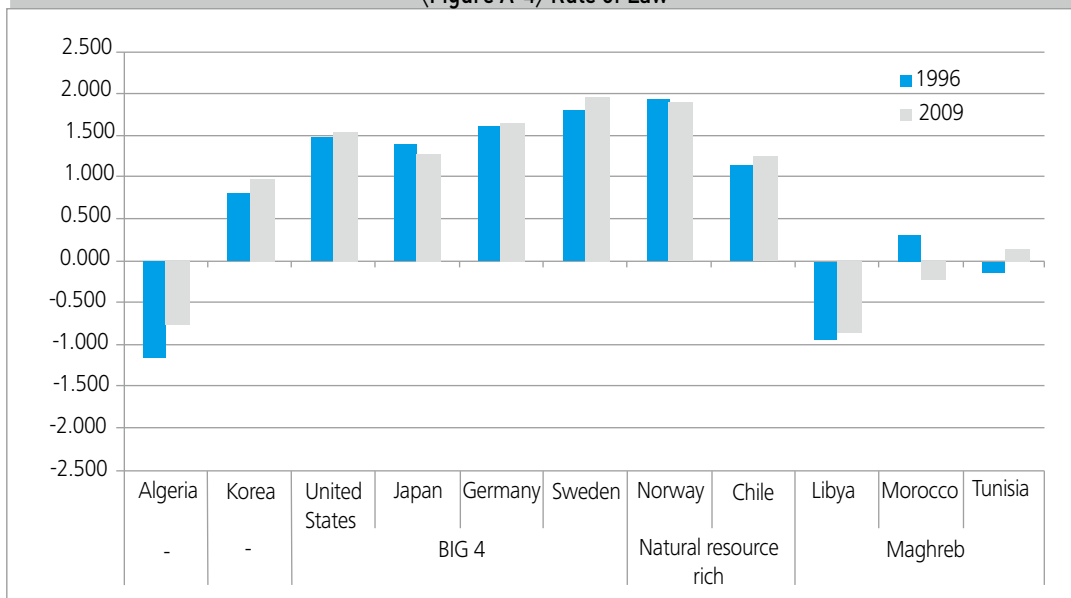
〈Figure A-3〉 Regulatory Quality



Source: The World Bank, Worldwide Governance Indicators (WGI)

Note: Estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance

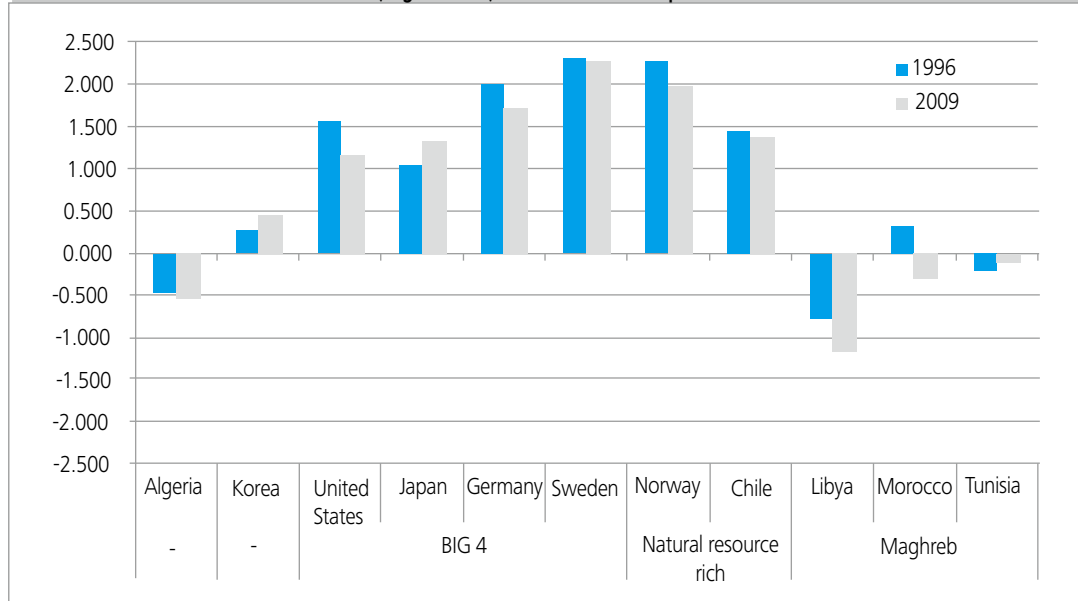
〈Figure A-4〉 Rule of Law



Source: The World Bank, Worldwide Governance Indicators (WGI)

Note: Estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance

〈Figure A-5〉 Control of Corruption



Source: The World Bank, Worldwide Governance Indicators (WGI)

Note: Estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance

# Conception of the National Land Development Plan in Algeria

1. Introduction
2. The Overview of National Land in Algeria
3. Korea's National Land Development Experience and Its Implications
4. Conception of the Medium and Long-term National Land Development Plans in Algeria
5. Conclusion

## Conception of the National Land Development Plan in Algeria

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### Summary

The purpose of this study is to explore the Korean national land development policies and to search for methods to support the establishment of an efficient national land development strategy in Algeria on this basis. The scope of study was as followed.

Firstly, the national land status in Algeria will be examined through considering land and industry development plan, analyse concerned data and comparative analysis. Secondly, Korean economic growth strategy and policy as well as its implication to Algeria will be discussed. Thirdly, mid-long term strategy for Algeria national land development will be derived from Korean experiences.

### Diagnosis of National Land in Algeria

The actual size of Algerian national land is 2,381,740km<sup>2</sup>, the total population is 34,361,756 people and the percentage of citizens living in urbanized areas is 65.2%(2008). When comparing these figures with Korea, the size of Algeria's total land is roughly 24 times larger than Korea's total land mass, and its population is only about 66% of Korea's population. The population density of Algeria is much lower than that in Korea. The current population of Algeria is equivalent to the population of Korea in the early 1970s and the urbanization rate and GDP are similar to Korea in the 1980s. After analysis on Algeria National land status from the aspects

of the metropolitan regional status, SOC and Industrial structure.

As a result of examining the Algerian national land status from the aspects of metropolitan, SOC and industrial structure, several issues impeding national land development can be found as follows. Firstly, population and industries are significantly concentrated in the 'TELL' region. Secondly, the insufficient use of the plateau area and the Sahara region means that the majority of national land is not being used effectively. Thirdly, the infrastructure of the national land is not linked sufficiently.

The majority of population in Algeria is mainly concentrated in the "TELL" and metropolitan area. With a population concentration in some of large cities being deepen, however, particular problems facing include the insufficient linkage between neighboring cities and the insufficient formation of the urban sphere. In addition, platform cities for driving the national economy development have not yet matured. On the other hand, new town policies and the cultivation of planned cities do not fully perform a role as an anchor for the restructuring of national land through industrial linkages and renewal of already established cities is becoming more imperative for improving urban competitiveness.

When comparing SOC level of Algeria with similar economy with World Bank's LPI, Algeria's general LPI(Logistic Performance Index) is ranked 130th and the SOC index relating to logistics(road, port, information-oriented technology) is 2.06, which is ranked in 122th. It means that logistical competitiveness and the level of SOC in Algeria are extremely low and it is at a much lower level than other neighboring nations in North Africa. Since the SOC plays an important role in the improvement of the national industrial competitiveness and economic development, the Algerian Government is required to pay a large amount of attention to the expansion of SOC investment.

In respect to the industrial structures based on the value added, Algeria has economic structure focusing on the second industry. The major export product of Algeria is Hydrocarbon products whereas growth level of the manufacturing industry is vulnerable and the weight of the advanced sector in export is very low. This could be an impediment for transferring to a knowledge based economy in near future. In addition, Industrial infrastructure facilities are concentrated around the 'TELL' region, much like the population and connectivity between natural resources distribution and major industrial complexes is insufficient.

### National Land Development Experiences in Korea and Implications

The characteristics of the Korea rapid economic growth policy are as follows;



① 'Compressive growth' in a short term; ② Strong nation-led form of development policy; ③ Export-oriented industrialization policy; ④ Adaption of unbalanced growth strategy; ⑤ Use of national land space as a strategic means of economic growth.

The Korean government is responsible for SOC investment with strong government led economic growth strategy and the SOC investment policy has played an important policy method for the national economy and land development.

As a result, the industrial location surrounding the manufacturing industry acted as an important factor for the economic development and the change of the national land space structure.

Korea rapid economy growth can be classified into two steps. Step-1 of the economic growth period of Korea was the change from an agricultural country to a traditional industrial country, constituting the first Industrial Revolution and Step-2 of the economic growth period was the change from a traditional industrial country to a knowledge-based society, constituting the second Industrial Revolution. The Korean government established economy development strategy focusing on a certain strategic industrial sector and developed differentiated space for its growth. Especially, Korean government developed specialized Industrial Parks and New Town to improve the effectiveness of the policy.

The Key success factors of the Korean national land development policy can be explained as follows; ① Selection and Concentration; ② Suitable policy operation step by step (stepwise strategy); ③ Maintenance of political stability. The sustainable economy could be achieved through the success of the step by step introduction of appropriate policies. Selection of a suitable time in the conversion period of policies and the success of policy involvement to overcome conflict and concern factors in the conversion period also played a crucial role in sustainable economy growth.

The Korean national land development policy was accelerated under the 'development on growth' policy during the period of 1960~1970s whereas the policy direction was converted to a 'balanced development' plan after 1990s. In this regard, the Korean government promoted national land development concentrate on the 'construction of industrial infrastructure' in the period of Step-1 economy growth, and on the 'increase of fairness' in the Step-2 period.

Algerian government has keen interest to the Korea's experience of economy growth as well as other developing countries to seek a new development strategy on the occasion of the 50th anniversary of its independence.

Although Korea land development experience cannot be applied directly since the political, economic and geographical environment are very different from Algeria, a few suggestions for Algerian national land development policy can be considered in the sense that Korea made a successful economy growth with limited resources.

Firstly, step-by-step development growth strategy is required. Korea succeeded in the economic structures suitable for a traditional industry country, and the planned national land space development emerged out of economic structures from an agriculture economy and naturally generated national land space structures, while passing through Step-1 from the 1960s to the 1980s. As a result, Korea prepared the opportunity to leap step to step from an undeveloped country to a developed country. Only after building an industrial nation, Korea promoted its growth strategies to become a knowledge-based industrial society from Step-2 growth period. However, the national land development policy at that time pursued a different direction from Step-1. Since Algeria is currently moving from an agricultural nation to a industry nation, it is important to establish suitable strategies for the economic development and national land development of Algeria. Establishing step by step development strategies for the preparation of transfer to a knowledge-based society after maturing into a industry nation will be suitable for the next step. Secondly, establishing development plans on 'selection and concentration' is more efficient than establishing development strategies in all areas of the national land.

There are several implications by sectors derived from Korean experiences.

In regard with SOC sector, the arrangement of all SOC's firstly requested in the 21C economy must be executed for the most efficient economic growth and national land development. SOC's are very important production factors in the growth of national economies and they play the driving force of economic growth. Efficiency must be increased through selective concentrated investment. In particular, Algerian government is required to pay much attention to logistical systems and the construction of international container ports to support increase exports since the logistical infrastructure level of Algeria, including roads and port facilities has deteriorated considerably from an international point of view. It is recommended to strategically construct 2 port system in Alger-Oran to maximize the synergy effect.

In terms of urban and land development, Korea government took advantage of land development plan as a means for the national economic development strategy. The Algeria therefore, it is important to maintain the unity of the sectoral policies linked to the national economic development strategies and land development plans. It is recommended that step-by-step depending on the goal of the overall national strategy provide a priority for industrial and urban development and spatial

development strategy. In order to gain an international competitive, it is necessary to develop Alger, Oran, Annaba to be internationally competitive cities with metropolitan area development strategy.

Implications applicable to Algeria from the Korean industrial development strategies are summarized as follows: First, Korea established the growth strategy for industrialization and utilized the development of industrial parks as a means to rapidly provide insufficient industrial land. The industrial parks were not provided uniformly but were supplied through the formation of the differentiated industrial space step by step, through the economic growth. Secondly, Korea recognized early on the necessity for well-arranged main facility networks for economic growth, and installed the main facility networks in the accumulated locations of strategic industries to cultivate the strategic industry and the export industrial base. Thirdly, it is important to select the location so that the prior/post connectivity industry can be closely located in the development of the strategic industry space. And the strategy can develop forward and backward linkage industries in the development of strategic industrial space located close to each other was.

From the Korean experiences, we could conclude that Algeria's industrial location policies have been insufficiently developed by the prior/post connectivity industry. So the development of prior/post connectivity industries for the petro-industry, which is the most important industry, is very urgent. It is required to promote the development of the petro-chemical industry that manufactures derivative products produced in the petroleum refining course. To maximize the accumulative effect is desirable by fostering the specialized industrial complex around the petroleum refining factory for this purpose. In addition, policy efforts for the distribution of industrial facilities currently concentrated in the Tell region of Algeria should be considered in conjunction with examples from Korea.

Korea achieved the result of national land development to support rapid economic growth so far, but unbalanced development of the national land space deepened over this course and the problems of environmental destruction following obsolescence, decline of the existing towns and diffusion of towns. In addition to this, the national lifestyle began to deteriorate due to the exacerbation of housing, land and traffic problems. Accordingly Algeria must prepare counter-measures against problems such as the diffusion of houses, lands and cities and the obsolescence of the existing towns, and the unbalanced development of the national land that occurred during national expansion.

### Conception of National Land Development in Algeria (proposal for Vision 2030)

The basic philosophy of the national land development is outlined in the

E.S.P.O.I.R model. The model encompasses the following values; Equilibrium, Sustainability, Polyvalence, Ouvert, Intégration and Réseaux. The national land development goal of Algeria 2030 is to 'grow as a Hub and Core of the MEAN region'.

Firstly, it is required to adapt "Step by step Strategy for vision 2030. Step-1, the period of 2013 through 2020 is the period of the 'Arrangement period of base' to establish the infrastructure, system and the master plan necessary for national growth. Step-2, from 2021 through to 2030, is 'a leaping period toward the Hub and the Core of the MENA region'.

Secondly, it is more recommended to pursue 'selection and concentration' strategy for development efficiency. Algeria must intensively develop the Alger-Oran axis with the largest potential power to grow in Step-1 after cultivating it as an internationally competitive space, and then it must develop the Alger-Annaba axis in Step-2, in order to cultivate the coastal area in the Mediterranean as a core economic space in the MENA region.

Thirdly, the arrangement of all SOC's firstly requested in the 21C economy must be executed for the most efficient economic growth and national land development. In addition, it is required to construct the national information networks to establish digital national land.

## 1. Introduction

The economic growth of Korea has become a typical example that many developing countries benchmark for the growth of their own economies. Korea's rapid economic growth, which has gained global attention, can be explained by the following core characteristics: Firstly, this economic growth took place over a very short period of time, which could be described as 'compressive growth'. In only 20 to 30 years, Korea was converted to a new emerging industrial country from an undeveloped agricultural nation. Secondly, this economic growth is the result of promoting a strong nation-led development policy. This policy, however, was implemented primarily to pursue the promotion of civil corporations in a capitalist society. Thirdly, an export-oriented industrialization was carried out in Korea. Industrialization was promoted through mass production and mass consumption, but since profitability could not be obtained solely through the narrow domestic markets in Korea, investments were made in production facilities and locations were selected from early on on the premise of promoting international exports. Fourthly, an unbalanced growth policy focused on specific industrial sectors was adopted. In addition to this, it is noticeable that the Korean government promoted the national

land space policy as a strategic means for economic growth. Namely, the government promoted industrialization through the supporting of civil corporations, while simultaneously taking direct charge of the SOC investments in order to achieve a strong nation-led economic growth. The Korean national spatial policy, especially the investment policy for infrastructure (SOC), was used as a policy means to connect the economic development policy with the change in spatial structures. Concretely, the industrial space around the manufacturing industry acted as an important factor for economic development as well as the change in national land spatial structures.

Thus, to properly understand Korea's national growth, it is important to understand the relationship between the foreign-oriented capitalist economic development and the developmental policy of national space.

That said, Korea's growth can be explained by classifying it into two sudden changes. The first change was the transition from an agricultural to an industrialized society, and the second change was the conversion from a traditionally industrialized country to a knowledge-based industrial society. The wave of change was triggered by the change in the industrialized structure, which also resulted in an effect on national land space as well as an overall change in the national living standards.

The national economic development was notably accompanied by a change in the industrial structure, and the industrial sectors that the Korean government cultivated through concentrated investments differed by period. In the 1960s, the export strategy industry and the export substituting industry were cultivated in the labor-intensive industry, while the heavy chemical industry was fostered in the 1970s. The electricity/electronic, automobile and machine industries were promoted in the 1980s to 1990s and the advanced industries were cultivated in the 2000s.

Development strategies, including the development of new industrial towns and the formation of differentiated industrial parks, are generally promoted to provide a space in society that enables these industry sectors to grow through the economic growth process. The development of this planned industrial space pursues investments through 'selection and concentration' and specific locations are grounded on the growth-base strategy. Problems causing an imbalance among regions, however, arose due to the pursuit of an unbalanced development strategy. Accordingly, the Korean government has endeavored to address the problem of regional imbalance by complementing the policies in order to seek a balanced national land development since the rise of the economy.

## 1.1. The Purpose and Contents of Study

The purpose of this study is to introduce the Korean policies regarding national

land space, especially those that had initially achieved economic development through the national land development strategy, in order to compare the economic development of Algeria and Korea as well as to search for methods to support the establishment of an efficient national land development strategy in Algeria.

In celebration of the 50th anniversary of its independence, the Algerian government, which promotes the establishment of new development strategies for the nation, is experiencing a similar situation to other countries in the third world, thus showing a significant interest in the Korean example of economic growth. Since the domestic and foreign political, economic and geographical situations are very different between Korea and Algeria, the direct application of Korean economic strategies to Algeria would probably be difficult. However, it is perceived that the Korean strategies will be able to provide Algeria with many helpful ideas, especially with respect to Korea having achieved successful national growth through efficient distribution policies amid its limited resources.

The contents of this study will be classified into three parts for efficient research.

The first part is an examination of the national land status in Algeria. Since the national land area and the population size differ between Korea and Algeria, and an unconditional application of Korean examples to Algeria may result in distortion, it is essential to have a comprehensive understanding of Algeria's status. Thus, the key sectors that have an effect on Algeria's national growth will be examined after introducing the overall national land condition of Algeria. The actual condition of cities, industry and SOC sectors will mainly be examined as well as the direction of the development policies of the Algerian government. In this case, an accurate understanding of the actual conditions of Algeria will be pursued through a comparison with Korea or with other countries in the world.

The second part is to introduce the examples of national land development policies that supported the rapid economic development of Korea. In this case, differentiated policy directions and policy means will be introduced by largely classifying the Korean growth process into two steps. Step-1 involved a change from an agricultural society to a traditionally industrialized one, and Step-2 involved a change from a traditionally industrialized country to a knowledge-based industrial one. The overall orientation of national land development policies as well as the SOC sectors will be listed, followed by the industrial and urban sectors that the Korean government intensively developed. On this basis, implications to apply to Algeria will be derived.

Lastly, suggestions will be made for the direction of the national land development policies that the Algerian government could implement over the short

or long-term, based on the Korean examples that have been introduced. In this case, the period from the present to the year 2030 will be classified into two steps with the policy directions being suggested step by step.

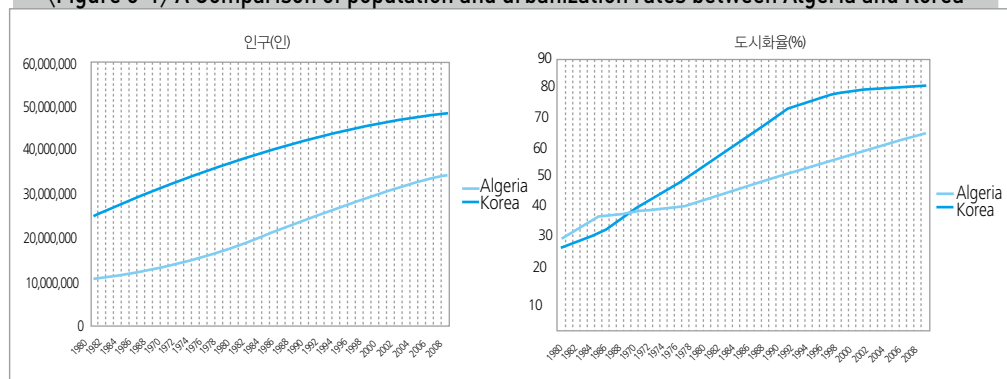
## 2. The Overview of National Land in Algeria

### 2.1. The Comparison of National Land between Algeria and Korea

The actual size of Algeria's national land is 2,381,740 $\text{km}^2$ , with a total population of 34,361,756 people, and the percentage of citizens living in urbanized areas is 65.2% (2008). On the other hand, Korea has a national land area of 98,730 $\text{km}^2$  with a population of 50,750,837 people (as of January 2012), and the percentage of people living in urban areas is 90.5% (2009). When comparing these figures, the size of Algeria's total land is roughly 24 times larger than that of Korea, while its population is only about 66% of Korea's. Algeria's population density is much lower than that of Korea. In fact, the current population of Algeria is equivalent to that of Korea in the early 1970s.

With respect to the rate of urbanization, Algeria shows an urbanization rate of 65.2% as of 2008, whereas the Korean urbanization rate reached 81.5% at that time. The Algerian urbanization rate in 2008 was similar to that of Korea in 1985. The rapid urbanization trend in Algeria appeared during its conversion from an agricultural to an industrialized country.

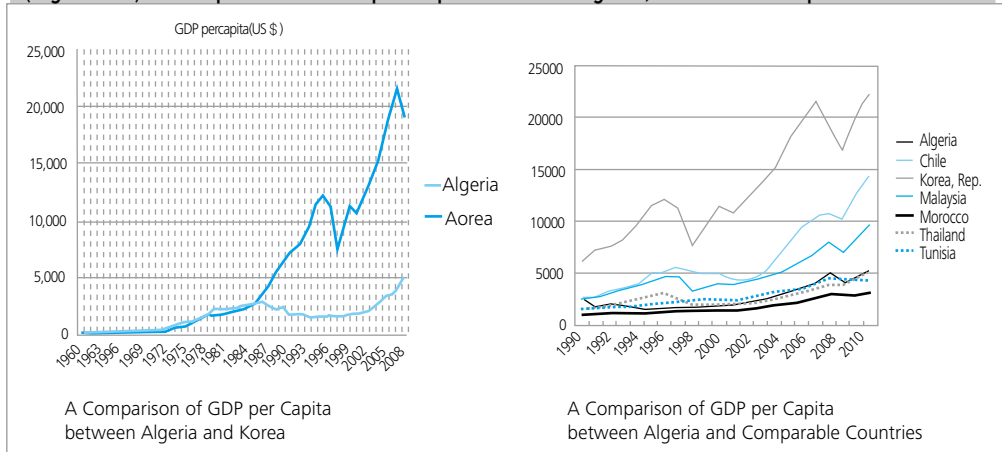
〈Figure 6-1〉 A Comparison of population and urbanization rates between Algeria and Korea



In regard to the economic status of Algeria, its GDP stood at \$5,060 in 2008. Except for the presence of the hydrocarbon sector, Algeria's GDP in 2008 was similar to that of Korea in the early 1980s. Currently, the Korean GDP stands at

\$19,114. When comparing the national land situation between Algeria and Korea, the population rate of Algeria is similar to that of Korea in the 1970s, and the urbanization rate and GDP of Algeria is similar to that of Korea in the 1980s. In this regard, Korea can be a suitable example for Algeria to benchmark when considering its future national development policies.

〈Figure 6-2〉 A Comparison of GDP per Capita between Algeria, Korea and comparable countries



## 2.2. The Situation of Population Distribution and the Urban Area in Algeria

When examining the overall national land of Algeria, it is possible to classify the national land into the overall national land level, the regional development level, the non-urban region and the in-city region. Major problems that occur at the national land level and the regional level are as follows: First, there has been a rapid increase in the population density as well as a growing concentration in the industrial development region. Second, the insufficient use of the plateau area and the Sahara region implies that the majority of the national land is not being used effectively. Third, the infrastructure of Algeria is poor with the national land being insufficiently linked.

Particular problems facing the urban region include the insufficient linkage between neighboring cities and the insufficient formation of the urban sphere. In addition, the wide-spread urban sphere and the platform city that drives the development of the national economy have not yet matured. Meanwhile, some negative characteristics have appeared in the construction of new towns and in the formation of industry-based cities that have been promoted at the national level. This indicates that the new town policies and the cultivation of planned cities do not fully perform their roles as an anchor for the restructuring of national land through



industrial linkages. In addition, with the apparent obsolescence of these already established cities, the renewal of these cities is becoming more imperative. One of the problems facing these non-urban areas is that the basic population is insufficient for the implementation of the SOC due to a decline in population. Naturally, the living standards in non-urban areas have dropped considerably, especially when compared to the living standards of more urbanized areas. The results from comparing major problems between the national land policies of Algeria and Korea are as follows:

### 2.2.1. A Concentrated Population

Today, the population of Algeria densely resides in the Tell region. The Tell region comprises around 4% of the national land area, equivalent to 95,269 . The population residing in this region stands at 22,335,141 people, representing over 65% of the overall Algerian population. However, it is difficult to determine whether the living conditions in this area are severe, especially when considering the geographical factors of the region in contrast to other countries. When examining the status of the population distribution in Korea, 49.1% of the whole population reside in the metropolitan sphere within an area of 11,650 , which is equivalent to 11.8% of the overall national land. Furthermore, 26% and 13% of the overall population resides in the metropolitan sphere in England and France, respectively. Upon observing the population's concentration intensity in the Tell region, it is clear that Algeria is under strain. However, in terms of the actual population density when comparing the population size between the Tell region of Algeria and the metropolitan sphere of Korea, they seem to be relatively similar. When taking a closer look at the Tell region, Algeria reaches eight times the population in the metropolitan sphere than the rest, but overall, Korea exhibits a much higher level of population density. As a matter of fact, the concentration of population in the Tell region may potentially improve the efficiency of economic activities in the area. Therefore, it is difficult to conclude whether or not the population concentration phenomenon is positive or negative for the society as a whole.

### 2.2.2. Urban Competitiveness

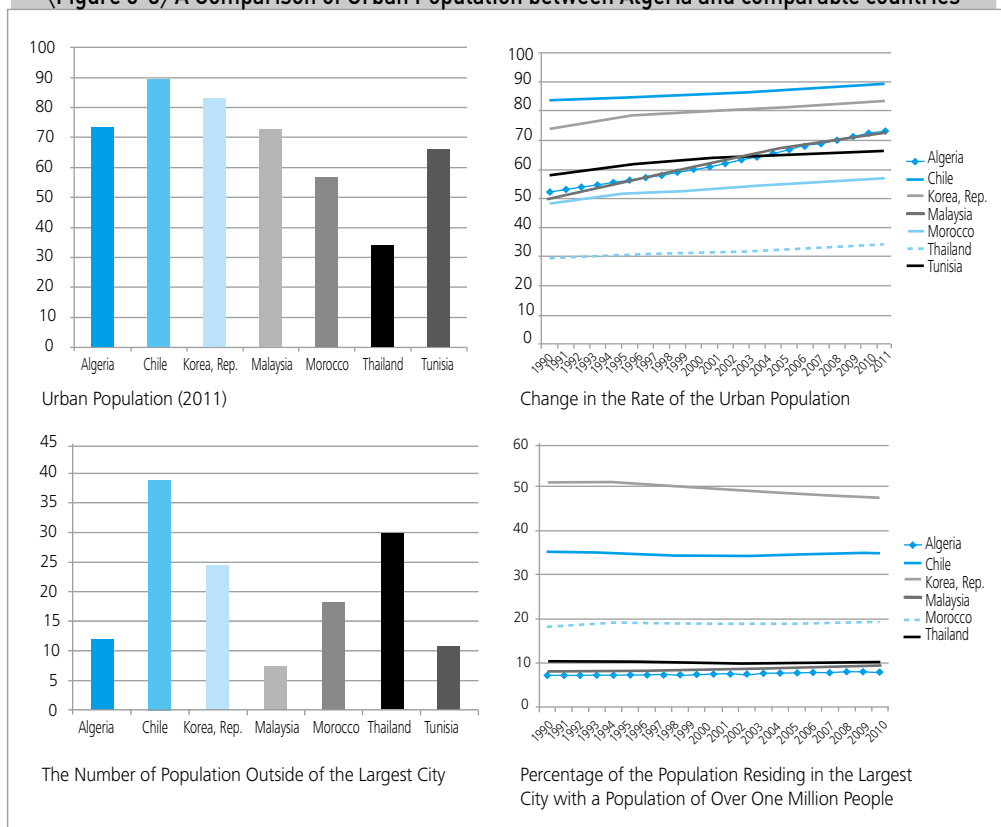
Research has suggested that the urban competitiveness in Algeria is lower than that in other advanced countries. The large scale cities contribute to national development through their role as a national growth platform. The capital of Algeria, Alger, has a population of 3.7 million people. However, since there is no city in Algeria with a population over one million people except for Alger, the number of cities with the potential power to drive the development of the national economy is insufficient. There are three cities with populations exceeding 0.5 million people, including Oran, and there are eight cities where the total population exceeds 0.1

million people.

As for Korea, there are nine cities where the population exceeds one million people. The population of Korea's capital, Seoul, is over 10 million people, and the second largest city, Busan, has a population of over 3 million people. Additionally, there are 13 cities with a population of over 0.5 million people in Korea as well as 49 cities with a population of 0.1 ~ 0.5 million people. Overall, there are 71 cities with a population of over 0.1 million people in Korea. Considering the fact that the population size of Algeria is two thirds of that of Korea, it has been difficult for Algeria to have developed large cities with competitiveness. Moreover, it has been insufficient for the cities to perform as the drivers of national competitiveness. Most of the world's largest urban areas contain populations of roughly 10 million people. As the total of the large urban population in Algeria reaches merely 6 million people, it is essential to enhance the competitiveness of the large city sphere in Algeria.

The importance of cultivating large urban areas becomes even more apparent when countries like Chile, Malaysia and Thailand are compared with Algeria. Until now, the urban population in Algeria has increased at a higher rate than the other comparable countries, thus exceeding the growth rate of other comparable countries in 2003. Algeria currently holds a larger urban population than that of countries like Morocco and Thailand. However, the population of large cities in Algeria is relatively lower than that of the other countries, where the cities of other countries generally maintain a population of over 1 million people. Thus, Algeria demonstrates a lower urban competitiveness than other countries.

〈Figure 6-3〉 A Comparison of Urban Population between Algeria and comparable countries



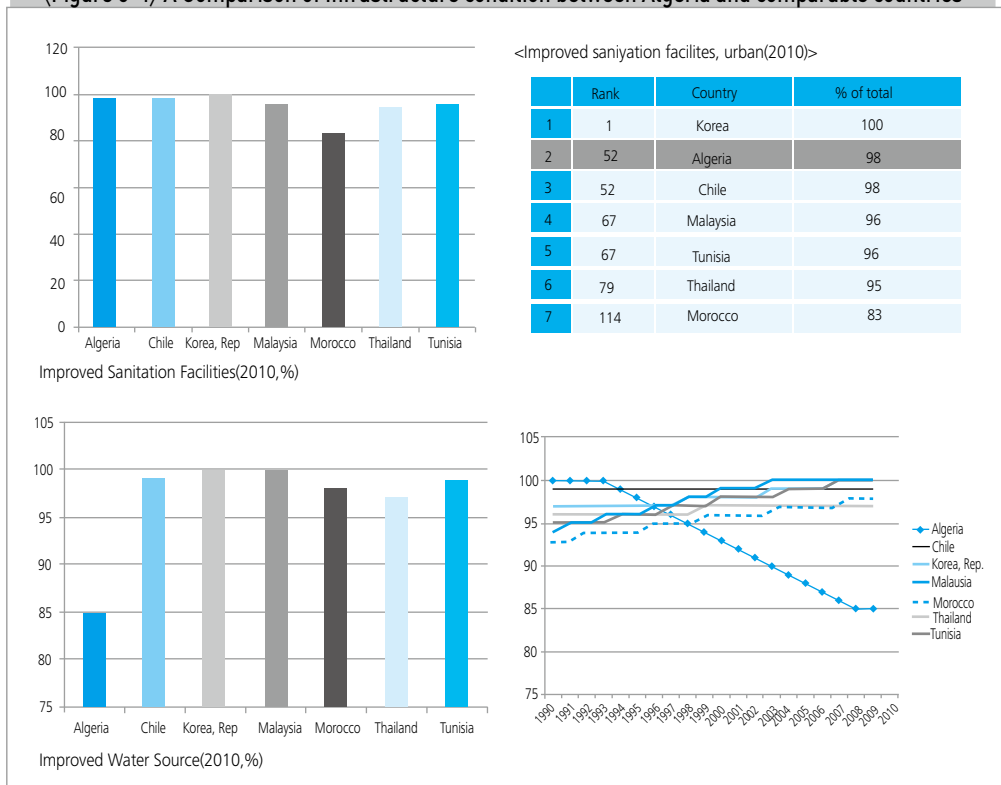
### 2.2.3. The Status of Urban Areas

Due to a rapid population growth, the concentration of Algeria's urban areas is deepening in some regions. The population concentration in large cities represents a continuously increasing trend. According to the ONS statistical data, the concentration of the youth population in large city spheres is extremely high. This concentration also reveals trends in investment status as well as in the population. The investment concentration in the four metropolitan regions is currently higher than at the end of the 1990s. In other words, it is expected that three to four platforms currently formed in the Tell region, together with the population concentration status in the large city spheres such as Alger and Oran, will develop even further in the future.

Currently, the development strategy for the urban regions in Algeria is based on the establishment of platform cultivation plans for four metropolitan cities. These regions are classified into three spheres for establishing specialization and the Algerian government has prepared various methods such as the fostering of universities for each region and city, specialization of industries, financial areas, and

support for corporations. The growth restriction policies are applied to large cities such as Alger, but it is expected that the growth of urban population will continue due to continuous population concentration. Since the residential population per house is currently higher than that in other cities, large cities such as Alger are characterized by poor residential and living environments. It is expected that such conditions will worsen in the future due to population growth. So, methods for housing supply, expansion of the SOC and the development of educational facilities together with the implementation of anti-urban expansion measures around large cities are some of the required steps to improve living conditions. To prevent the continuous growth of large cities and to create a balanced development with other regions, restrictions must be implemented on locations transferring industrial types and industrial facilities that are non-suitable for the metropolitan sphere to other regions. It is imperative to carry out preparations of support policies for the movement of non-suitable industrial types to other regions, as well as the implementation of movement policies. In addition to this, the expansion of SOC is required. Particularly urgent is the expansion of the SOC for water resources. Research has suggested that access to water resources has deteriorated in Algeria since the 1990s.

〈Figure 6-4〉 A Comparison of Infrastructure condition between Algeria and comparable countries



#### 2.2.4. The Development of Industrial Hub-cities and New Town Development Plans

The development plans for new towns in Algeria played an important role in the restructuring of industrial platform cities and in the national land spatial structures. Algeria's national land was classified into the coastal region, the plateau region and the southern region in order to establish development plans for the new towns. The new towns that were granted the role of differentiation by region were planned and developed. In the coastal regions of the Tell area, such as Sidi Abdallah and Bouinan, urban areas have been expanding increasingly. In the plateau region, including Boughezoul, and in Moulay Slissen, plans were implemented to pursue the balanced development of the nation. In the southern region, three cities are being developed in order to promote the new development of national land in conjunction with resources.

However, plans for over 10 new towns were created, with three to four cities being planned for development in each region. This may result in weakening the competitiveness of each city by redistributing the population of the existing cities. Moreover, it cannot be disregarded that the linkage between these plans and the national industrial development plans is weak.

In short, it is clear that the strategies for the establishment of industrial cities and new towns need to be carried out in consideration of the macro functional setting of the nation. For example, plans for the establishment of a national industrial base as well as large cities should be set, while implementing middle and long-term development strategies step by step, thus linking the cities together.

#### 2.2.5. The Direction of National Land Plans in Algeria

As previously mentioned, Complementation points derived from the analysis of the national land status and plans in Algeria can be largely classified into national land plans, urban region plans and industrial and new town plans. The related complementation direction includes; 'cultivation of the platform and formation of a wide-spread sphere', 'establishment of development strategies for industrial and new towns linked step by step with the national industrial development plans', 'formation of mega-regions in large cities through selective cultivation' and 'preparation of environmental conservation plans against urban growth' to increase national competitiveness and continue the pursuit of balanced development.

### 2.3. The SOC Situation in Algeria

The SOC situation in Algeria will be examined by comparing the SOC levels

with those nations of similar size to Algeria. Accordingly, the SOC status of Algeria was compared with other nations initially through the data provided by publically recognized international institutes. Then, the road extension rate of filled vacancies was estimated and compared in order to contrast the differences in economic and geographical conditions of every country.

### 2.3.1. The Trend of the SOC Size in Algeria

The "World Development Indicators" data that the World Bank issued was analyzed to examine the SOC size in Algeria with regard to the flow of time. The SOC facility was classified into road, railroad, airlines and port sectors for detailed analysis, and the WDI data was used extensively during the period of analysis.

#### 1) The SOC Size of Roads

<Table 6-1> summarizes the trend of road extension (km) in Algeria every five years for a period of 15 years from 1994 to 2009. The figures demonstrate that the road size in Algeria gradually increased. The roads were extended to 99,974km in 1994, after which gradually increasing to 112,039km in 2009. Once the new expressway, currently under construction between Alger and Oran, is completed, the road connection level among regions in Algeria will be largely improved.

<Table 6-1> The Trend of Road Extension in Algeria

(Unit: km)				
Year	1994	1999	2004	2009
Extension(km)	99,974	104,000	108,302	112,039

Source: The World Bank, World Development Indicators, 2011.

#### 2) The SOC Size of Railroads

<Table 6-2> examined the trend of railroad extensions (km) in Algeria every five years over a 20 year period from 1989 to 2009. Research demonstrated that Algeria's railroads in 2009 were extended by about 900km than in 1989. However, the railroad extension over the last 20 years repeatedly increased and decreased, and the extent of the fluctuation differed depending on the period of time.

〈Table 6-2〉 The Trend of Railroad Extension in Algeria

(Unit: km)					
Year	1989	1994	1999	2004	2009
Extension	3,836	3,945	3,973	3,572	4,723
Increase or decrease against previous term	-	109	28	-401	1,151

Source: The World Bank, World Development Indicators, 2011.

### 3) The SOC Size of Airlines

In order to compare the SOC size in the airline sector, an indirect analysis was made to determine the number of airline passengers (persons) in Algeria. However, this was difficult due to the limited amount of data. <Table 6-3> demonstrated the number of airline passengers (persons) in Algeria from the period of 1974 to 2009. The number of airline passengers in Algeria over 25 years increased in general, but it is clear that a fluctuation in the numbers has occurred constantly since the 1980s. In 1974, the number of airline passengers in Algeria stood at 1,252,100, increasing to 2,663,400 people in 1979, and 3,781,000 people in 1984. Thus, the number of airline passengers increased continuously from 1974. However, 621,300 passengers showed a decline in 1994 since 1989, and there was a further decrease of 304,200 passengers in 1999 from 1994. Nonetheless, the number of airline passengers gradually increased from that period on and stood at 4,370,917 people in 2009.

〈Table 6-3〉 The Trend in the Number of Airline Passengers

(Unit: Person)								
Source	1974	1979	1984	1989	1994	1999	2004	2009
Passenger	1,252,100	2,663,400	3,781,000	3,862,300	3,241,000	2,936,800	3,236,364	4,370,917

Source: The World Bank, World Development Indicators, 2011.

### 4) The SOC Size in Ports

The SOC figures in Algeria's port sector were indirectly examined through the study of container port traffic, rather than the size of each container, due to limited data. <Table 6-4> shows the container port traffic from the period of 2000 to 2010 in Algeria. No information was found during the period of 2002-2006, but it was apparent that the container port traffic was maintained at a similar level overall. In the early 2000s, however, it began to decline. The container port traffic in 2001 increased by 43,581 TEU, but then declined by about 111,061 TEU in 2007 over the

course of around five years. On the other hand, similar levels were shown in 2000, even though the container port traffic had increased at a constant level every year from 2008 to 2010. This indirectly suggested that the capacity level of the port containers was stagnating, considering the high level of the recent economic growth in Algeria. In addition, logistical costs can be reduced only when cargos are handled by containers. According to the World Bank, the rate of the average container began to decrease over the world around 2004, but the figure remained at about 33% for Algeria. The results also show that the port level in Algeria was deteriorating.

〈Table 6-4〉 The Trend of Commercial Container Traffic across Ports in Algeria

							(Unit: TEU)
Year	2000	2001	...	2007	2008	2009	2010
Traffics	267,530	311,111		200,050	225,140	247,986	265,628

Source: The World Bank, World Development Indicators, 2011.

### 2.3.2. An International Comparison of SOC Size

Next, the SOC status of Algeria will be examined by comparing the SOC level of Algeria with countries of a similar economic level. Accordingly, the SOC level of Algeria was first compared with other nations through data released by publicly recognized international institutes. An international comparison was made between the overall logistical levels, and the roads and port levels by sector, due to the limited data. Meanwhile, the fact that the geographical and economic conditions of every nation were different was taken into consideration with regard to the roads for which time-series of data could be obtained (for over 180 nations in the world), and the road extension rate of filled vacancies was compared by making additional estimations.

#### 1) A Comparison of LPI (Logistic Performance Index)

The SOC index was examined, and the ranking of the World Bank's LPI suggested the need for an examination of the SOC status related to logistics in Algeria. LPI is a logistical operational index that the World Bank surveys and it shows the logistical competitiveness of 155 nations around the world. Its data indicates the



competitiveness of every nation in six sectors<sup>54)</sup> related to logistical competitiveness. Algeria's general LPI was ranked 130th among 155 nations and the SOC index relating to logistics (road, port, railroad, information-oriented technology) was 2.06 (122th rank). Algeria's level of both logistical competitiveness and SOC was extremely low, being at a much lower level than the neighboring Tunisia. The SOC plays a very important role in the improvement of the national industrial competitiveness and economic development, especially in the aspects that provide long-term economic benefits through the improvement of overall productivity. The Algerian government, which promotes economic development through industrial development including the future development of the petro-industry, is determined to focus a large amount of interest in the expansion of the SOC.

〈Table 6-5〉 LPI and the Ranking of Algeria and Major Comparable Nations (2010)

Ranking	Nation	General LPI	Index of SOC (ranking)
1	Germany	4.11	4.34 (1)
23	Korea	3.64	3.62 (23)
49	Chile	3.09	2.86 (50)
61	Tunisia	2.84	2.56 (65)
130	Algeria	2.36	2.06 (122)
142	Angola	2.25	1.69 ((149)

Note: The range of the index is from 1 to 5. The higher the points, the higher the competitiveness.

Source: The World Bank, The Logistics Performance Index, 2010

## 2) A Comparison on the Status of Road Facilities

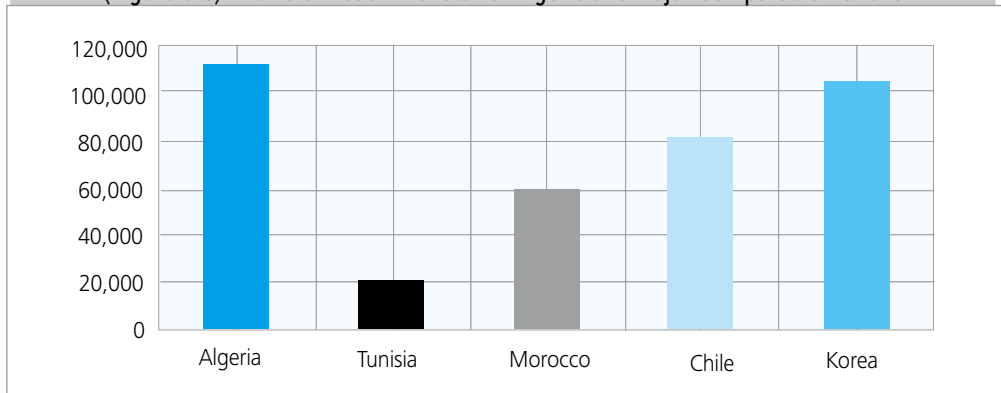
The road extension data of the "World Development Indicators" data that the World Bank issued in the year 2011 was used in order to compare the total level of roads between Algeria and the major comparable nations.

〈Figure 6-5〉 portrays the total road extension in Algeria and major comparable nations as of 2008. However, even though the road facility levels among Algeria and major comparable nations could be accurately compared through a simple

- 54) ① Efficiency of the clearance process (i.e. speed, simplicity and predictability of formalities) by border control agencies, including Customs;  
 ② Quality of trade and transport related infrastructure (e.g. ports, railroads, roads, information technology);  
 ③ Ease of arranging competitively priced shipments;  
 ④ Competence and quality of logistics services (e.g., transport operators, customs brokers);  
 ⑤ Ability to track and trace consignments;  
 ⑥ Timeliness of shipments in reaching the destination within the scheduled or expected delivery time.

comparison of road extensions, it appears that the data does not take into consideration the different geographical and economic conditions of each nation.

〈Figure 6-5〉 The Total Road Extension of Algeria and Major Comparable Nations



Note: As of 2008

Source: The World Bank, World Development Indicators, 2011

This study compared the road extension rate of filled vacancies of every country, taking into account the different geographical and economic conditions of each nation. The road extension rate of filled vacancies means the rate of the actual road extension of the relevant nation compared to the changes in the international average when considering the geographical and economic conditions of each country. To estimate the international average trend value, a random effect panel regression was performed with the formula below, by using road extension as a dependent variable and the GDP per capita, the area of the cultivated land, the population and the rate of urbanization as independent variables, by way of a panel data of 180 nations that were provided by in the World Development Indicator:

$$\ln(Road)_{it} = \alpha_1 + \alpha_2 \ln(perGDP)_{it} + \alpha_3 \ln(atable)_{it} + \alpha_4 \ln(population)_{it} + \alpha_5 \ln(urban\ pop\ rate)_{it} + \epsilon_{it}$$

As a result of this estimation, it can be seen that the road extension of every nation has a very close relationship with its GDP per capita, the area of cultivated land, the population numbers, and the rate of urbanization as shown in <Table 6>.

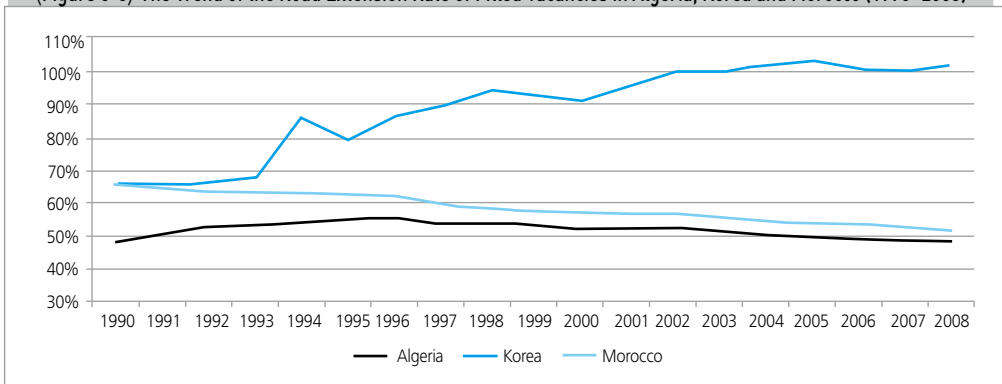
〈Table 6-6〉 Estimated Results of Regression Analysis (1990~2008)

Variable	Parameter	Variable	Parameter
Con	-1.3164***		0.6182***
	0.0763***		0.0803*
	0.1144***		0.81

Note: \*\*\*, \*\*, \* represents the significant level of 0.01, 0.05 and 0.10 respectively.

As a result of this analysis, the road extension rate of filled vacancies in Algeria compared with the international trend has continuously declined since 1995, thus standing at 47.48% in 2008. In 1990, the road extension rate of filled vacancies between Algeria and Korea was not significantly different. However, it is clear from the road extension rate of filled vacancies that continuing investments in 2008 led Korea to approach 100%, which was very different from Algeria. Of course, if the recent construction of a new expressway between Algeria and Oran is completed, it is predicted that the connection road level between the East and West regions would be largely improved, but it was later found that the road extension would be insufficient, especially when considering the geographical and economic conditions of Morocco, a comparable neighboring nation as of 2008.

〈Figure 6-6〉 The Trend of the Road Extension Rate of Filled Vacancies in Algeria, Korea and Morocco (1990~2008)



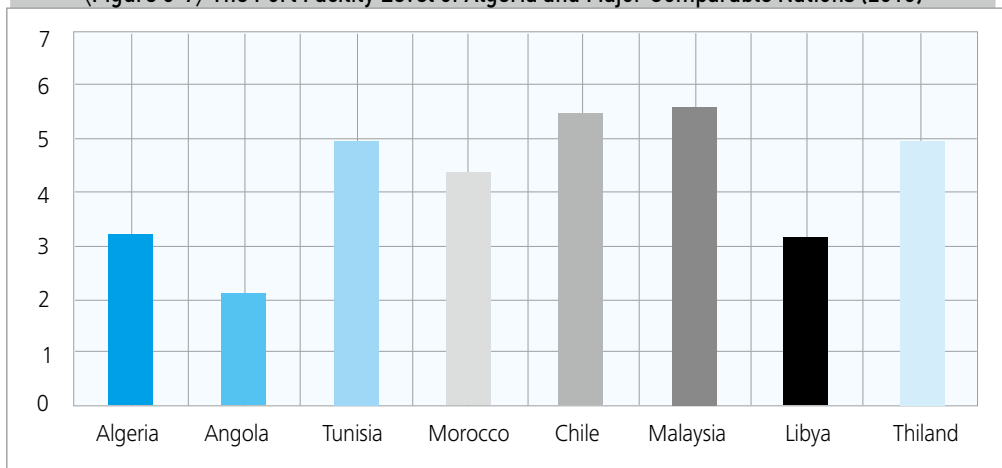
Note: Estimations from the World Bank, World Development Indicators, 2011.

### 3) An International Comparison of Port Facilities

Roads and railroads as overland traffic infrastructure have a large effect on long-term economic growth, but the importance of port facilities in moving large quantities of goods cannot be undervalued, especially when considering that the development strategies of Algeria will be oriented around sustainable economic development through the promotion of other industries while moving away from

the future petro-industry. Accordingly, an international comparison of port facilities suggested by the WDI (World Development Indicators) was examined. The levels of port facilities put forth by the WDI were to measure the recognition given by corporate members of about 133 nations on the port facilities of their nations, and the related data was gathered through the World Economic Forum's Executive Opinion Survey. As shown in <Figure 6-7>, it was found that Algeria has a relatively lower quality of port facilities compared to major nations and that the level was much lower than that of Tunisia, Morocco and other neighboring nations with geographical and economic similarities. The Algerian government must keep in mind that the level was significantly low, even in comparison to Malaysia, Chile and other nations with economically similar structures in regards to the wealth of resources.

<Figure 6-7> The Port Facility Level of Algeria and Major Comparable Nations (2010)



Note: 1 = extremely underdeveloped to 7 = well developed and efficient by international standards

Source: The World Bank, 2011 World Development Indicators, 2011.

## 2.4. The Industrial Situation of Algeria

To examine the competitiveness of the industrial sector in Algeria, the distribution status of resources and the industrial composition in Algeria will be investigated, followed by an examination of the development strategy for the industrial competitiveness pole by region, as was suggested by the SNAT 2030 in Algeria.

### 2.4.1. Industrial Composition in Algeria

In examining the industrial structures on the basis of added value, it is found that Korea has economic structures centered on the service industry, while Algeria has economic structures focused on the second industry. Algeria shows a much larger

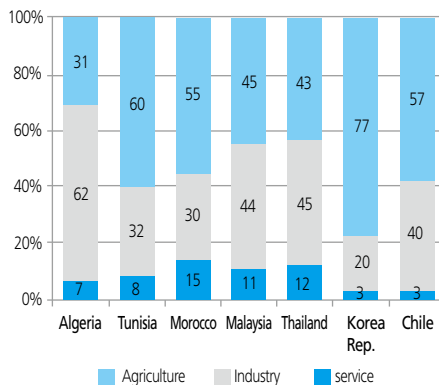
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weight in the second industry than Malaysia, Thailand or Chile, which are equally recognized as wealthy resource nations in other continents. When comparing the transitional trend on the share of the second industry through the time-series method, Algeria has maintained 50~60% of the second industry since 1980, while also showing an increasing trend since the 2000s. It is predicted that Algeria will steadily grow around the second industry.

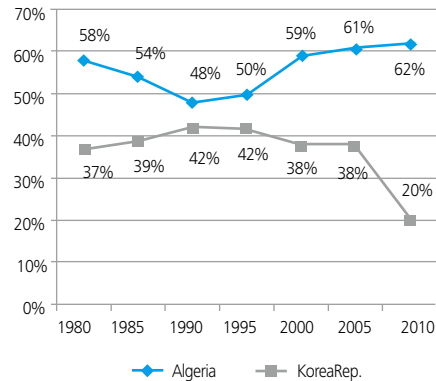
On the other hand, the importance of the second industry has decreased since the 1990s in Korea, suddenly falling to 20% in 2010, while maintaining half of its level in the 1990s. It is interpreted that this development has appeared as a result of the transfer to a knowledge-based industrialized society from the traditional industrial nation in the 2000s.

Meanwhile, the weight of the second industry is continuously increasing in Algeria. However, this does not mean that the growth of the manufacturing industry in Algeria is like that of Korea, but instead is likely caused by the high share of added value in the hydrocarbon sector. Research demonstrates the weight of added value in the manufacturing industry of Algeria (4.6% in 2008). In contrast, Tunisia and Morocco, the neighboring nations in North Africa, recorded 18.7% and 14%, respectively.

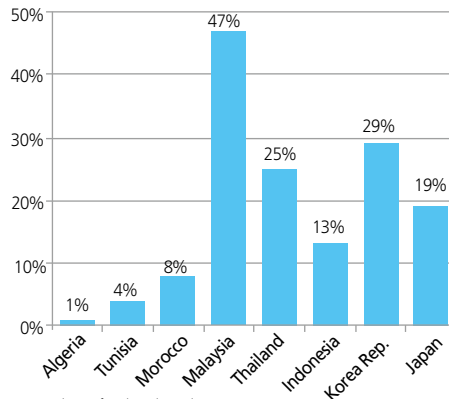
〈Figure 6-8〉 An International Comparison of Algerian Industry



A Comparison of Industrial Compositions, Algeria (added valued weight, 2010)  
\* Source: The World bank, WBI, 2011.



The Changing Trend in the Second Industry, Algeria and Korea (added value)  
\* Source: The World bank, WBI, 2011.



Export Share of High-tech Products among Exports

\* High-tech products: Air products, drugs, computers, scientific devices and electronic machines, etc. as a high level of R&D products

\* Source: The World bank, WBI, 2011.

The major exports of Algeria include crude oil as a natural resource, natural gas, condensation and LPG, and the share of the natural resource exports among the overall exports in Algeria reaches 98.2%.<sup>55)</sup> In contrast, the proportion of high-tech product exports is extremely insignificant, standing at only 1%. It is a lower rate than in Tunisia and Morocco, the Maghreb neighboring nations. This figure was also lower than the 47% registered by Malaysia, which is a newly industrialized wealthy nation in South-East Asia, rich in its resources. In terms of the industrial structure of Algeria, the results show that the growth of the advanced high-tech industry is relatively insufficient. Thus, it is clear that Algeria is still in the early stages of transferring to a knowledge-based society.

55) On the basis of reserves, crude oil in Algeria was ranked 14th in the world and third in Africa. Natural gas was ranked 8th in the world and second in Africa. Algeria is a resource wealthy nation.

〈Table 6-7〉 International Comparison, Algeria (added value, 2008)

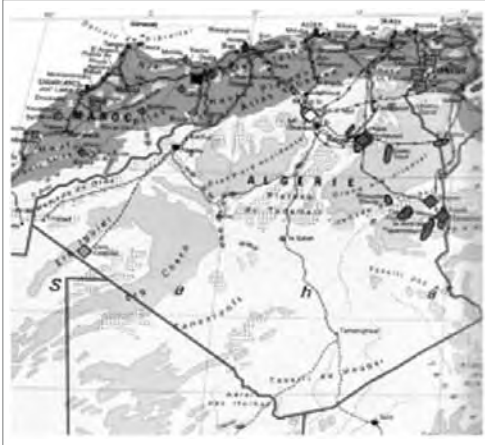
Classification	Export of Natural resources		Manufacturing industry
	Weight	Rank	
Algeria	98.2 %	1	4.6%
Tunisia	19.0%	65	18.7%
Morocco	17.6 %	67	14%
Malaysia	20.2 %	58	26.2%
Indonesia	37.1 %	43	27.8%
Korea Rep.	11.2 %	85	27.9%

Source: The World bank, WBI, 2011.

With regard to the distribution of major natural resources, the major natural resources are found around the Sahara, a dry area to the south of Algeria. The wide Sahara desert constitutes 4/5 of the nation, and contains resources such as natural gas, gold, uranium, silver, diamonds, iron and tungsten. This region has the largest potential power to produce renewable energy, and it recently emerged as an area of interest due to its sufficient capacity to generate solar energy. Relatively speaking, industrial facilities in Algeria are concentrated around the northern region of the country, much like the population. About 2/3 of all corporations are located in the northern region, and half of them are over concentrated on the coast. Important heavy chemical industrial parks are concentrated in the coastal region. They are especially located around large cities such as Alger, Oran and Annaba.

As the competitiveness of Algeria's large sized industrial parks, which were established in the 1960s to 1970s, gradually become weaker, the Algerian government plans to construct industrial parks reaching 9,000 ha in 33 Wilayas in order to expand the future industrial base. Additionally, the construction of over 40 industrial parks is also concentrated in the Tell region. This is possibly related to the fact that most infrastructures are intensively developed around the north and the coastal Tell region. The planned industrial parks are arranged along the main expressway network connecting the east and the west.

〈Figure 6-9〉 The Distribution Status of Industrial Resources in Algeria



〈Figure 6-10〉 The Development Plan of Industrial Parks in Algeria



## 2.4.2. Policy Direction for Industrial Development in Algeria

According to the Algerian industrial development reports recently issued, the Algerian industrial policy faces a serious turning point. Firstly, the previous inner-oriented industrialization strategy of the Algerian government has become more outer-oriented, and the focus has been shifted from import to export. Secondly, the Algerian government has firmly recognized the importance of developing the manufacturing industry, thus designating a strategic industry to be promoted. The labor-intensive industry and industries related to petroleum, such as fibers, clothes, shoes and leather products, that have formed the core axis of the Algerian industry up until now were excluded from these strategic industries, rather designating industries including IT, steel, metal, machines and electric/electronic products, etc. Thirdly, the Algerian government recognized the necessity for the restructuring of the country's industrial structures, thus establishing strategies to utilize foreign investment inducement and pursue a positive liberalization policy. In addition, it recognized the importance of 'revolution,' which emerged as a key factor for competitiveness in the 21<sup>st</sup> century, and developed the space for constructing a revolutionary system while establishing policies for the obtaining of related technology.

For this purpose, the SNAT 2030 selected six excellent strong points of competitiveness (POC) that were linked with a large city, suggesting the development direction of the Techno Park.



〈Table 6-8〉 Specialized Sectors of 6 POCs in Algeria

Major Strong Points	Specialized Sectors to Cultivate
Alger-Sidi Abdellah-Bouinan	Information communication, advanced technology, food bio-tech, health, sports, nutritional science, medical science
Oran-Mostaganem-Sidi Bel Abbès-Tlemcen	Organic chemistry, energy, space engineering
Constantine-Annaba-Skikda	Biotech, steel-making, machine, petro-chemistry
Sétif-Béjaia-Bordj Bou Arréridj	Plastic, food biotech, computer-integrated production
Boughezoul-Médéa/Laghouat	Renewable energy, biotech, environment, agriculture and health, food, water resources
Ouargla-Hassi Messaoud-Ghardaïa	Petro-chemistry, renewable energy, biotech

Source: The Ministry of the National Land Development Environment, Algeria, SNAT 2030.

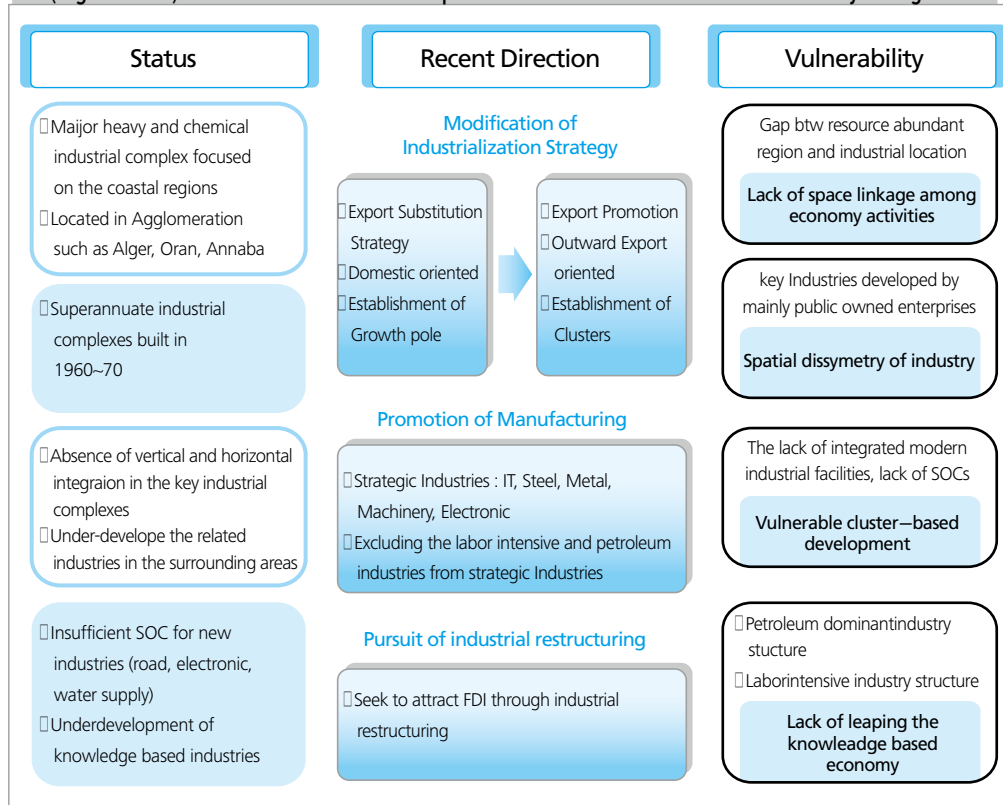
### 2.4.3. Vulnerable Points of Industrial Space in Algeria

Here, the directions for improving the industrial space in Algeria are examined that has been recently required to efficiently accommodate the industrial policies in Algeria.

First, the largest problem in the industrial space in Algeria is that major industrial resources and industrial facilities are spatially concentrated. Accordingly, there is a geographical gap between the distribution regions which have an abundant supply of natural resources and the industrial facilities that can drive the industrial development in Algeria. As previously examined, natural resources are found in the South Sahara region, whereas the major industrial parks are located only in the Mediterranean region. The Algerian industrial structures developed around large nation-managed corporations, rather than the small or medium-sized corporations. Hence, the spatial concentration of industrial facilities is relatively severe. In addition, such situations present problems as there is a lack of spatial linkage in the economic space, thus separating each part. This problem is caused by the under-development of the main transportation infrastructure such as the roads and railroads, and the insufficient SOC acts as a factor that interrupts the establishment of new corporations. Secondly, the vertical and the horizontal integration within the main industrial park are insufficient, and major industrial parks contain a structure that hinders the synergy effect from integration as a result of the underdeveloped linkage industry in the surrounding regions. It is clear that they are highly vulnerable to the cultivation base of clusters, which in turn will affect their direction in the future. Thirdly, since there is a current industrial structure governed by the labor-

intensive industry and the petro-industry, there are vulnerable and under-developed points that the base requires for a leap towards a knowledge-based industry.

〈Figure 6-11〉 The Status of Industrial Space and the Direction of Industrial Policy in Algeria



### 3. Korea's National Land Development Experience and Its Implications

#### 3.1. National Land Development Strategies in Korea

Korea's national land development policies were established around the platform of development methods supporting rapid economic growth in the 1960s to 1970s. However, 'balanced development' rather than a 'development method around growth' was selected as the most important target for national land since the 1990s. It was connected to economic growth through industrialization. Thus, the characteristics of Korea, such as the success of the outer-oriented industrialization policies having been led by a strong leadership as well as the achievement of Korean economic growth, must be acknowledged in order to understand the national land

development of the country. In this section, the Korean national land development policies will be overviewed first, followed by providing an explanation of the SOC development policies, the industrial space development policies and new town development policies, etc. that have had an effect on the economic growth of Korea.

The national land development policies that Korea implemented will be introduced, of which were to adjust capital distribution, industrial structures and spatial structures according to the change in the domestic and foreign environments through the step by step economic development process over the period from the 1960s to 2010. This is the period in which Korea positively initiated modernized economic growth.

Here, examples are provided through classifications into Step-1 of the economic growth period of Korea (the change from an agricultural country to a traditional industrial country, constituting the First Industrial Revolution), and Step-2 of the economic growth period (change from a traditional industrial country to a knowledge-based society, constituting the Second Industrial Revolution), as suggested in the Introduction.

Since its independence, Korea experienced a rapid change through these two step processes. The first was 'a change from an agricultural to a traditional industrial country' with the characteristics of the First Industrial Revolution in Korea constituting Step-1 of the economic growth period. The second change was the 'change from a traditional industrial country to a knowledge-based society,' comprising Step-2 of the economic growth period.

The period of the First Industrial Revolution in Korea occurred from the 1960s until the 1980s. During this period, the region with excellent spatial conditions and large potential growth was intensively developed in order to maximize the efficiency of development. This period can also be classified into two steps of the growth process. The first step, occurring in the 1960s, involved the period of change in the industrial structures from a primary industry to a manufacturing industry. This period positively cultivated the labor-intensive industries through the introduction of foreign capital in order to overcome the limits of low capital and low technology. The second step in the growth process involved the promotion of the heavy chemical industry, shifting away from the industrial structures surrounding the light industry. This step occurred in the 1970s to 1980s. The government pushed ahead with the heavy chemical industry promotion policies focused on exports based on the economy of scale to generate higher added values and to enhance national productivity. Due to the heavy chemical industrialization achieved through strong policy enforcement, Korea achieved rapid growth and became one of the 'four dragons in Asia.' However, the unbalanced development policies adopted for the

overall development of the nation caused unbalanced growth to deepen among regions.

The growth cycle surrounding the manufacturing industry is generally recognized as 30 years. Thus, the Korean government prepared policies to promote new strategic industries for the substitution of growth after the manufacturing industry had matured. As a result, there was a change from a traditional industrial country to a knowledge-based industry, which was recognized as the Second Industrial Revolution in Korea starting from the 1990s.

The Korean government performed the restructuring of industrial structures from traditional industrial sectors into advanced industrial sectors as it began to lose competitiveness in the world markets due to a reduced productivity of the traditional manufacturing industries based on low wages and low land prices, factors that had previously acted in Korea's favor. The government cultivated advanced industries such as the IT and bio-industries to emphasize both the synergy effects and learning effects as a growth driving industry. Policies were prepared to generate global competitiveness to respond to knowledge-based industries, such as the cultivation of the advanced composite industry and the development of innovative generating types of economic space around R&D.

〈Table 6-9〉 Specialized Sectors of 6 POCs in Algeria

Classification	The First Comprehensive National Land Plans (1972-1981)	The Second Comprehensive National Land Plans (1982-1991)	The Third Comprehensive National Land Plans (1992-1999)	The Fourth Modification Plan of Comprehensive National Land Plans (2006-2020)
GNP per Capita	US\$319 ('72)	US\$1,824 ('82)	US\$7,007 ('92)	US\$12,030 ('03)
Background	- Promotion of industrialization	- Improvement of national life environment - Relief of overpopulation in the Capital Region	- Weakened competitive power due to insufficient SOC - Development of autonomous local development	- Guide of local revolution - Realization of general national land for local balanced development and South-North superpose

〈Table 6-9〉 Specialized Sectors of 6 POCs in Algeria

Classification	The First Comprehensive National Land Plans (1972-1981)	The Second Comprehensive National Land Plans (1982-1991)	The Third Comprehensive National Land Plans (1992-1999)	The Fourth Modification Plan of Comprehensive National Land Plans (2006-2020)
Basic Target	<ul style="list-style-type: none"> <li>- Efficient use and management of national land</li> <li>- Development section of national land &amp; resources and conservation of nature</li> <li>- Improvement of national living standards</li> </ul>	<ul style="list-style-type: none"> <li>- Guide in the local settlement of population</li> <li>- Nation-wide expansion of development possibilities</li> <li>- Rise in the national welfare levels</li> <li>- Conservation of national land and nature environment</li> </ul>	<ul style="list-style-type: none"> <li>- Formation of local distribution types of the national structure</li> <li>- Construction of productive, resource-saving type of nation use system</li> <li>- Improvement of national welfare and conservation of the national land environment</li> <li>- Formation of national land bases for the South and North unification</li> </ul>	<ul style="list-style-type: none"> <li>- Balanced national land</li> <li>- An open national land</li> <li>- Welfare of the national land</li> <li>- Green national land</li> <li>- Unites national land</li> </ul>
Development Strategy and Policy	<ul style="list-style-type: none"> <li>- Construction of large scale industrial basis</li> <li>- Arrangement of the supply network for traffic communication, water resources and energy</li> <li>- Enhancement of local function for the development of run-down areas</li> </ul>	<ul style="list-style-type: none"> <li>- Formation of multi-core structure of national land and an adjustment of local life sphere</li> <li>- Growth restrictions and management of Seoul and Busan</li> <li>- Expansion of SOC such as traffic and communication</li> <li>- Improvement of local development in the culturally under-developed areas</li> </ul>	<ul style="list-style-type: none"> <li>- Cultivation of province and restriction on concentration in the Capital Region</li> <li>- Formation of new industrial zones and the advancement of industrial structure</li> <li>- Construction of general high-speed exchange networks</li> <li>- Increased investments in the national life and environmental sector</li> <li>- Enhancement of execution power of the national land and arrangement of systems related to the use of national land</li> </ul>	<ul style="list-style-type: none"> <li>- Construction of the self-support type for local development</li> <li>- National land management and formation of unity based in the North-East Asian region</li> <li>- Construction on the network type of infrastructure</li> <li>- Creation of beautiful human settlement environments and sustainable national land</li> <li>- Construction of decentralized national land and execution systems</li> </ul>

〈Table 6-9〉 Specialized Sectors of 6 POCs in Algeria

Classification	The First Comprehensive National Land Plans (1972-1981)	The Second Comprehensive National Land Plans (1982-1991)	The Third Comprehensive National Land Plans (1992-1999)	The Fourth Modification Plan of Comprehensive National Land Plans (2006-2020)
Characteristics and Problems	<ul style="list-style-type: none"> <li>- Adaptation of local development methods</li> <li>- Caused polarization around the Seoul-Busan axis</li> </ul>	<ul style="list-style-type: none"> <li>- Pursuit of balanced national land developments by growth restrictions both on cities and the cultivation of growth-poles</li> <li>- Continued imbalance in the national land due to absence of execution means</li> </ul>	<ul style="list-style-type: none"> <li>- Sufficient reflection of conditions such as globalization, liberalization and localization</li> </ul>	<ul style="list-style-type: none"> <li>- Formation of open types of (<math>\pi</math> type) national development axis for the eastern coast axis</li> <li>- Multi-core types of national structures to promote symbiosis between self-reliance types of localization and region (7+1 economic sphere)</li> </ul>

## 3.2. Step-1 of the Economic Growth Period in Korea

### 3.2.1. The Direction of National Development Policy

The Korean national land development strategies were continuously established and performed in a close relationship with the national economic development plans since the 1960s. Korea established its fourth national land plans as well as the development strategies and policies for the development of national land space according to the target of these plans.

The Korean Government in the 1960s established economic growth as a target for the national policy, and emphasized the industrial sector with its high productivity, placing a focus on the formation of the basis for economic growth, regional development, and the growth of the industry. Thus, the national land development policies were not separately established and promoted, but were rather carried out in line with the economic development plans. During this period, an intensive investment into the SOC sector was achieved. For policies related to national land, a concentrated platform development method was adopted, and the target was the preparatory basis for economic growth through investments in light industries. The government firstly began to develop the regions with high potential

for development around the Seoul-Busan axis. The population concentration in the cities increased due to the economic development and industrialization process that began in 1962. This triggered an unbalanced growth between the rural areas and cities.

However, the second national land plan for Korea in the 1970s aimed to mitigate overpopulation in the Capital Region (Seoul metropolitan area), while also seeking to improve the overall standard of living for the Koreans. The targets of the plan in this period were to guide the settlement of the population in the province, to expand the development possibilities for the national land across the entire country, and to raise the welfare level of the people. In addition to this, the concept of conserving the national land environment was introduced at that time. Strategies for carrying out this plan included the formation of a multi-core structure for national land, the formation of the local life sphere, and the restriction and management of the excessive expansion of Seoul and Busan. The local development also began promoting cultural norms. The characteristics of the Korean national land development policies during this period demonstrated that the imbalance of national land continued due to the absence of the executive means for the pursuit of the balanced development of national land. Thus, suitable policies had not been implemented to pursue the balanced development of Seoul and Busan, and neither the cultivation of hub cities to promote further growth.

### 3.2.2. SOC Development Policy

Korea grew as a trade giant through splendid economic growth, even though it suffered from political confusion as well as the Korean War not long after it gained its independence. Its national income was below \$100 in 1960, but exceeded \$20,000 in 2008. Undergoing such changes, Korea became the first nation to pay back its debts after the Second World War. One of the important factors behind the Korean economic development was the steady investment in the social overhead capital and the planned promotion of the national land project. The development of traffic and logistical networks largely contributed to the rise in national competitiveness as well as strongly improving the quality of lives in Korea.

In respect of the classification by period, the government continuously expanded financial investments in the SOC sector around roads and railroads as a part of enhancing national competitiveness. This occurred throughout the 1970s while driving economic growth and reducing logistical costs, which aimed to maximize the efficiency of investments under limited resources. Financial investments prioritized the development of industrial parks around the eastern and southern coastal spheres as well as the development of ports for the cultivation of the heavy chemical industry. The related traffic infrastructure expanded in time to support the high level

of growth in the 1970s to 1980s.

The 1980s was a period when the traffic and logistical businesses grew as a whole with the help of infrastructure that expanded in the 1970s, but the overall investments for the new infrastructure was insufficient. These reductions in investments involved the increase of logistical costs while lowering national competitiveness in the 1990s. Logistical costs largely increased since there were not enough investments in the port facilities in comparison to the explosive increase in the export and import of goods due to rapid economic growth. There were urgent requests for the expansion of the extensive investments in Busan Port and Gwangyang Port, which were the existing major ports at that time.

〈Table 6-10〉 Korean SOC Development Policy (1970s ~ 1980s)

		1970s	1980s
Target of National Land Plans		<ul style="list-style-type: none"> <li>- Efficient use of national land</li> <li>- Environmental conservation</li> <li>- Suppression of overpopulation in large cities</li> </ul>	<ul style="list-style-type: none"> <li>- Expansion in the development of possibilities</li> <li>- Decentralization of population</li> <li>- Conservation of the natural environment</li> </ul>
Investment Policy		- Efficient and modern SOC	- Fairness and growth
Direction of the Traffic and Logistics project		<ul style="list-style-type: none"> <li>- Pavement of national roads and construction of expressways</li> <li>- Subway-orientation of industrial railroad for a diesel engine locomotive</li> <li>- Ensuring a national flag carrier and safe travel of container vessels</li> <li>- Expansion of the domestic routes for Korean Air</li> <li>- Construction of urban subways</li> <li>- Arrangement of road transport business systems</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement and expansion of local roads</li> <li>- Construction of the urban railroad network</li> <li>- Deregulation related to the marine transportation industry</li> <li>- Enhancement of transportation power regarding international air cargos</li> <li>- Expansion of metropolitan railroad networks</li> <li>- Construction of cargo terminal facilities</li> </ul>
Infrastructure	Road (road pavement rate)	46,951km (33.2%)	56,715km (71.5%)
	Railroad (double track railroad)	3,134.6km (22.9%)	3,091.3km (27.4%)
GNP per Capita		\$1,660 (1980 year)	\$6,303 (1990 year)



### 3.2.3. Industrial Development Policy

The policies that Korea selected in the 1960s included the modernization policy for industrialization and the openness policy, which opened Korea to the world economy. At that time, specialization was promoted in the world economy around the comparative advantage between nations as international trade was rapidly developing with the development of capitalism and Fordism. Thus, even though Korea's capital and industrial base was vulnerable, it still entered into the global economy with specialization structured on the basis of its labor force, which in fact increased competitiveness for Korea. Moreover, Korea lacked natural resources and there was little growth in the domestic markets, but it was able to develop an export-led industrialization policy in order to promote the economic development and foreign exports through the cultivation of national basic industries. Even though Korea claimed to stand for the export-led industrialization policy that imported, processed, manufactured and exported raw materials and intermediary goods, it also made the effort to continuously substitute imports through the cultivation of self-sufficient capacity. The cultivation of the petro-chemistry and steel industries occurred through the export-oriented industrialization policy, but the effect of substituting imports was significant. Due to the localization of synthetic resins and synthetic fibers, a complete production from raw materials to final products was achieved domestically. This in effect led to the domestic production of the main raw materials for machines, automobiles and the electronic industry through the cultivation of the steel industry, which was achieved by the light industry products.

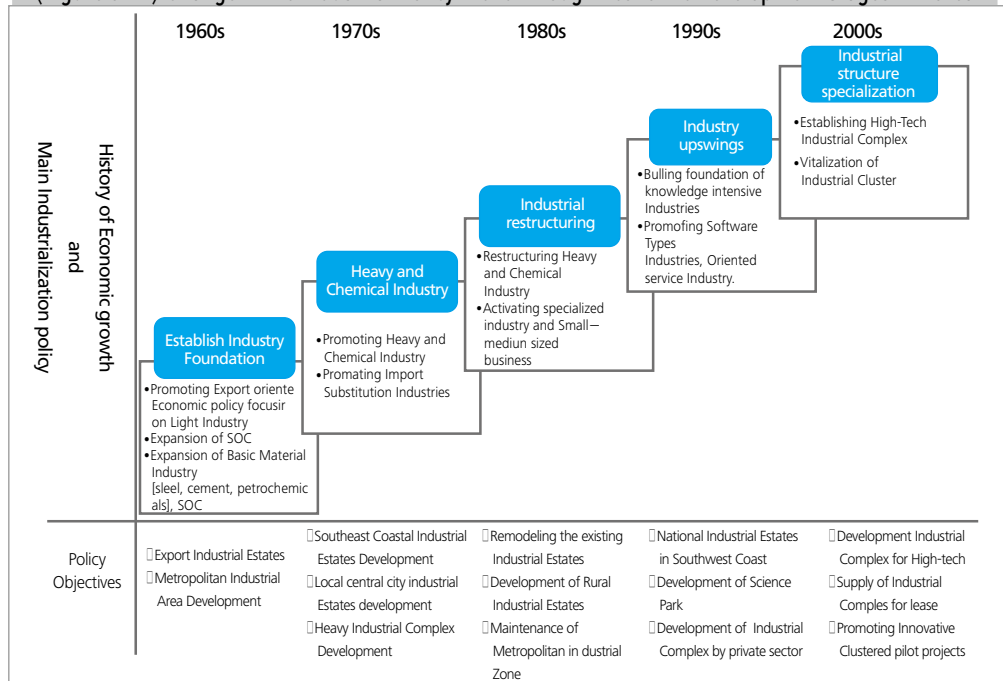
Since Korea lacked natural resources and capital, it established national industrialization policies for the nation to distribute resources. The most important component was the implementation of the Five-year Economic Development Plan. Korea selected unbalanced development strategies to achieve rapid industrialization, while establishing policies for the promotion of strategic industries that had potential and concentrated industrial conditions of the certain location. The industrial location policies emphasized economic efficiency even in the 1970s. The export free zones for the promotion of exports together with the construction of industrial parks and industrial good towns for the development of the heavy and chemical industry took place. At that time, addressing the matter of insufficient housing and infrastructure followed rapid industrialization, and industrialization emerged as an important policy subject.

The heavy and chemical industrialization led by the government began to show signs of division of labor. The trend towards labor divisions in the form of 'the main offices residing in Seoul, and the location of production units in the south-eastern sphere' was formed in the 1970s, but the divide deepened in the 1980s. This meant that the industrial sectors were concentrated around the metropolitan sphere, and

the branch factories in the non-advanced industry sectors and the mass production systems were located in the regional areas.

It was also found that Korea in the 1980s had the characteristics of peripheral Fordism. In other words, strategic functions such as research and development around the large corporations was vertically inter-integrated, while the professional producer's service functions formed vertical distribution and vertical near-integration with sub-systematization with small and middle corporations producing parts.<sup>56)</sup>

〈Figure 6-12〉 Change in the Industrial Policy Trend through Economic Development Stages in Korea



### 1) Industrial Location Policy

The formation of industrial parks in Korea was an important industrial policy for the nation, and it was referred to as the 'industrial park policy.' The Korean Government developed and supplied the differentiated industrial parks step by step through economic growth. The location, size and the land use plans varied depending on the characteristics of the induced industrial sector. Early on in the

56) Corporations formed various tie-up relationships with universities, administrative institutes, professional institutes and unions as well as other corporations through a new relationship network. In the relationship network, large corporations performed the inner orientation and the outer orientation of organizations for the divided tasks simultaneously, while also pursuing both the 'economies of scale' and 'economies of scope,' thus showing characteristics that were spatially concentrated. Thus, accumulation of flexibility is formed around a megalopolis.

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process, there were political issues to consider when deciding the location, but decisions were gradually made with a focus on economic property, efficiency and interface with cities over time.

The first step of Korean economic growth was in the 1960s, and the export-led industrial parks focused on the light industry were established around the inland regions, especially large cities. Since the light industry was the key point, the urban regions benefitted from the supply of an inexpensive labor force, and hence were selected as the location regions.

Since the Korean economic growth solidified its base on industries that were foreign dependent and related to processed products, a large quantity of goods, compared to its economic size, was transported. This trend further promoted an increase in the quantity of international goods that were transported around the export/import ports due to the promotion policies of the heavy chemical industry in the 1970s. The characteristics of economic development dependent on foreign trade had a significant effect on the direction of the Korean national land space policy.

Accordingly, the industrial space for the heavy chemical industries was formed around the coastal regions in the 1970s. The coastal region in the south-eastern sphere that offers excellent ports and water supply conditions was, thus, set as the location. Since the heavy chemical industry needed an economy of scale, large scaled complexes were formed.

In addition, as the foreign direct investment from advanced economies to developing countries increasingly grew, Korea introduced various location policies in order to attract foreign investment. Hence, a Free Trade Zone, a Foreign Investment Zone and a Free Economic Zone were designated. This industrial space contributed to the inducement of foreign corporations in the technical sectors that were needed in Korea, especially by designating some of the large scaled national industrial parks that had been established. However, these complexes were not independently formed as foreign investment inducing zones provided the premise of a free lease of factories as well as tax benefits.

As the restructuring of industrial structures into heavy chemical industries continued in the 1980s, then came the cultivation of the under-developed "agricultural and industrial estates" for the development of the agricultural region. "The agricultural and industrial estates" were constructed on a smaller scale than the national industrial parks or the general industrial parks. Through these efforts, the foundation was set to promote the second industry in the uncultivated agricultural areas, which was far from the industrialization process.

## 2) The Industrial Park Support System

Since the development of industrial parks is limited to promoting only private capital, the Korean government devised various support policies for the industrial parks. The Korean support measures of the industrial park are largely classified into the support system for the development project of the industrial park and the support system for the taxes and finances of the occupying enterprises.

### Support System for the Industrial Park Development Projects

The support system for the development project of the industrial park includes the national support and cost subsidies for the infrastructure of industrial parks, support of investment funds and tax support system for the project executor.

A typical factor among these points is the subsidy for industrial park development costs and the installation support for outside infrastructure.

Since public facility costs such as entry ramps, roads within complexes, water supply facilities and sewage facilities account for most of the industrial park development costs, it is unreasonable for them to be constructed by the project executor, thus being included in the allotment price, as some of it should be assumed by the nation or the local government. Generally, cost subsidies of about 50% are provided, but support for 100% of the public facility costs is provided via the assessment on the review conference of the industrial location policies. These facilities are deemed especially necessary for the development of culturally under-developed regions.

〈Table 6-11〉 Target of Support Regarding the Industrial Park Development Costs

- Construction costs of arterial roads within the industrial park	- Land purchase costs of industrial parks for the lease purpose
- Construction costs of green facilities within the industrial park	- Land purchase costs for the construction of apartment-type factories
- Water supply facility and sewage facility	- Premise creation costs, thorough fare roads, electric power, communication facility costs and land purchase costs
- Business costs for emigration measures	- 100% support provided after the assessment by the review meeting of industrial premise policies for struggling areas

A noticeable point is that the nation and the local governments support costs

for constructing the SOC required for operating industrial parks. Such support costs for constructing the SOC, including the outside facilities surrounding the industrial parks, is different from the support for some of the costs for constructing facilities within the industrial parks, which was previously explained. The Minister of Land, Transport and Maritime Affairs determined the size and methods of support via the review by the industrial location policy review conference for the construction of SOC. This has an effect on the rise of competitiveness of the industrial park, and impacts the ports, roads, railroads, communication, electric facilities, gas facilities, water supply facilities, waste water and end-disposition facilities, waste processing facilities and group energy supply facilities.

Additionally, there was also administrative support and a tax support system. In terms of administrative support, all kinds of licenses necessary for the development of the national industrial park are processed, and special exceptions for the applications of some of the laws are accepted to support the swift performance of the development project. In addition to this, the Land Appropriation Law outlines the method to obtain the required land for the development of industrial parks formed as a part of public projects. The public-owned property within the industrial park is permitted for lease or transfer via a private contract to the project executor.

Acquisition taxes, registration taxes, property taxes and general land taxes, etc. are exempted for the land owned by the developer in a way of providing tax support. In addition to this, there are five types of burden charges, including development burden charges, imposed on the development project for the industrial park in the region. Only the metropolitan sphere is exempted.

### Support Systems for Residential Enterprises

Typical support systems for enterprises occupied in the industrial park include the reduction or exemption of national taxes and local taxes. Acquisition taxes and registration taxes for acquired land or buildings are exempted, and the property taxes and the general land taxes are reduced or exempted within the limit of five years after occupation.

Facility funds and operation funds are loaned for the corporations occupying the agricultural and industrial parks. Facility funds are provided to newly occupying corporations within two years from the occupation contract date and to corporations within a year. This occurs after the notification of a suitable occupation is awarded, and operation funds are supported if necessary after completing the construction of the factory. Preference is applied to loans of other funds for industrial rationalization.

### 3.2.4. Development Strategies of Urban Areas

Korea's major strategies for the development of cities and regions include the promotion of the specialized large city sphere and the development of hub-cities (regional centers or growth poles).

These strategies were devised in the direction of developing and promoting the great-sphere hub to a complement single concentration of the Capital Region and to drive national competitiveness through the selective functional enhancement of the metropolitan area. In the 1970s when the first Comprehensive National Land Plans was created, it was said that the Industry Arrangement Law was legislated in response to the concentration of the capital Region and the resulting urban sprawl, and at this time, plans were established to relocate the population of the Capital Region.

It allowed the restructuring of the single hub structure of the national land into a dual hub structure. In addition to this, a green-belt system and a residence tax, among others, were introduced to physically restrict an indiscreet diffusion of large cities. The removal of unlicensed buildings within the city and a mitigation of residents in the outskirts of the city were also enforced. A city was formed to accommodate industrial functions in the outskirts of the large city for the improvement of the environment within the large city due to the dense population.

The national land was restructured into a multi-core hub structure in the 1980s, and the Arrangement Plan Law of the Capital Region was legislated to complement the single core in restricting the installation of new overpopulation facilities such as schools, factories, universities and general business facilities. In addition, the evaluation of the population effect was performed for the development of the large-scaled residential site, and the planned urban region policies were implemented through the granting of tax benefits and by creating priorities for purchasing land for the relocation of the existing facilities. The new industrial belts were enhanced in the 1990s and a strict restriction against the metropolitan sphere was selectively mitigated. The restriction against locations in the metropolitan sphere for the business types, such as advanced industries for upgrading the area's competitiveness, were mitigated, and the installation increased by 50%. This allowed for seven types of advanced industries to be installed. On the other hand, the basis to restrict the growth of the whole metropolitan sphere was based on the overpopulation burden charges, and the total amount was maintained.

### Development Strategies for New Towns

Korea's strategies for the development of new towns are largely classified into

those related to the strategies for national land and local development and the strategies for solving problems of a large city. They can be classified by period, and new towns acting as a hub of the national land and local development were mainly developed in the 1960s through to the 1970s, and they were mainly constructed to solve the overpopulation problems especially in the metropolitan sphere. The houses were supplied after the 1980s. The characteristics of new towns further diversified in the 2000s along with the size of the towns.

New towns formed in the 1960s and the 1970s were closely related to the national land plan. Ulsan and Pohang were formed for the promotion of industrialization and economic development policies, and were developed in coastal areas. The populations of each city stood at roughly 150,000 people. Among them, Changwon was formed together with Yecheon and Gumi for the cultivation of the machine industry in the size with a population of 300,000 people. These industrial cities positively demonstrated the effect of the Promotion Law of the Industrial Base Development, which was legislated in 1973. It was planned as a background residence complex with an area of 4 million pyeong (13.2 million square meters) and an industrial park of 6 million pyeong (19.8 million square meters) for a total urban area of 10 million pyeong (33 million square meters). In addition, an administrative town with an overall size of 60,000 pyeong (198,000 square meters), established for the transfer of administrative functions of the existing city, was put in place at the same time. This town had the characteristics of the main industrial city around the machine industry, but was differentiated from the heavy chemical industry belts between Pohang and Busan that were formed in the 1960s. In the planning of the city, a great-sphere in link with Masan was created, thus them sharing the downtown functions of Masan and improving the productivity through the systematization of the industrial function.<sup>57)</sup>

A new town was constructed in Seoul due to the overpopulation as well as the housing shortage in Seoul becoming serious in the 1980s. It successfully supplied mass houses in the short term but deepened the urban sprawl phenomenon in Seoul.

Accordingly five new towns called the 'First New Town' were formed in the location around 25km from Seoul as a part of the construction policies of 2 million houses at the end of the 1980s. This brought in a positive effect for addressing the housing shortage. However, post-criticism emerged against the mass supply of houses in the short term and traffic problems caused by commuting residents in the new town. Problems due to the shortage of self-supplying functions also began to appear.

57) Lee Woo-bae, 2003, Pending tasks of the Namak New Town as seen in example of Changwon New Town, Autumn Academic Conference held by the Korea Urban Administration Academy

## Construction of the Industrial New Town

Korea modified the economic development policy to cultivate the labor-intensive shipbuilding as well as electronics and chemical industries. These industries had been weakened in the advanced countries since the comparative advantage of the light industry sector had led to economic growth in the 1960s, and these advantages were disappearing during the massive global restructuring of the 1970s. The construction of the national land space to support the heavy industrialization process was selected with the emergence of the conversion of divided structures in the world economy. The comprehensive land space policies to restructure existing space were naturally adopted in the planned space according to new growth strategies. Since the single and low-skilled women labor force formed the main employment class of the light industry, the growth strategies utilized the agricultural population to migrate to the cities where existing urban infrastructure was available. However, since the labor demand in the heavy industry was mainly composed of a skilled workforce of married men, there was a need to construct industrial new towns where production facilities and life facilities were spatially assembled. Typical industrial new towns included Ulsan, Changwon and Gumi. In the development plans of the industrial new towns, it was suggested that specialized industrial sectors be cultivated. Ulsan is specialized in petro-chemistry and automobile, Changwon in the machine industry, and Gumi in the electric/electronic industry.

As assembly processed types of heavy chemical industries such as electric/electronic, automobile, and shipbuilding flourished in the 1980s, the growth of small and middle-sized corporations also began to rise. Vertical integration and horizontal integration were pursued mainly around the subcontracting corporations that supplied parts within the planned industrial cluster region.

As these industrial new towns were formed outside of the metropolitan sphere, these industrial new towns grew in a way which was comparable to the growth in the metropolitan sphere. Especially, as Ulsan and Changwon were connected with Busan, the metropolitan sphere of Busan made significant contributions to the growth of the area to gain competitiveness in the East Asian sphere following Seoul.

The next section will examine the development and growth process of Changwon to see the functions and the development effect of the industrial new towns in Korea.

Changwon is an agricultural region neighboring Busan and Masan, and it is also close to industrial cities such as Ulsan (petro-chemistry, automobile) and Geoje-island (shipbuilding, machine & equipment for transportation), which are specialized in heavy chemical complexes formed in Gyeongnam-do within a one to



two hour distance. Busan Port, as the largest international container port in Korea, is located nearby Gimhae Airport, which is only 40 minutes away, thus offering highly accessible conditions.

The construction of industrial new towns with a population of 0.3 million people was planned to cultivate a main industrial city which was specialized in the machine industry, as part of the plans to form a heavy industry belt in the eastern and southern coastal areas that connect Pohang and Busan. At the time of the planning in 1974, Changwon was formed as a city with a total area of 43,350,000 m<sup>2</sup>, an industrial area of 17,450,000 m<sup>2</sup>, a residential area of 8,690,000 m<sup>2</sup> and other lands totaling 17,210,000 m<sup>2</sup>. The city grew (ranking 9th) with a population of 1.1 million people, integrating with Masan as a neighboring city. The total area of the new town region expanded to a size of 53,120,000 m<sup>2</sup>. 1,294 corporations occupy the Changwon national industrial park and are producing ten trillion dollars per year, which is equivalent to 20% of the Korean machine industry output, while 72,600 workers are employed in the area. Large corporations and small and medium-sized enterprises that occupy the industrial park are connected, and have developed a cooperative and subcontracting relationship with each other.

Changwon has become an economic core in the world by creating connections with other industrial parks and cities nearby, and it has also grown as a city due to its strong competitiveness.

### 3.3. Step-2 of the Economic Growth Period in Korea

#### 3.3.1. The Direction of National Land Development Policy

Important characteristics of the national land development policy since the 1960s were based on the idea that fairness was more important than efficiency. For the balanced development between regions, the direction of policies changed to the direction of emphasizing regional innovation and self-capacity in the provinces for the self-reliance economic activities and the even industrial distribution in the industrial sector.

The third national land plan in Korea was enacted between 1992 and 1999, and the GDP per capita in 1992 at the early stage of the plan stood at about \$7,000. The basic target of this period was to form the decentralized territorial structure, to construct a productive, resource saving kind of national land utilization system, to improve national welfare and to conserve the national land environment. Development strategies and policies for this purpose included the cultivation of the provinces, suppression of concentration in the metropolitan sphere, formation of new industrial belts, intensification of industrial structures, construction of general high speed exchange networks, increase of investments in the human settlement

and environmental sectors, enhancement of the execution of power of national land plans and arrangement of systems related with the use of national land. In other words, Korea has problems of overpopulation in the metropolitan region and the assignment of formation of multi-core structures of national land like that of Algeria, in the form of national land problems. To solve these problems, the overpopulation mitigation policies in the metropolitan sphere and the cultivation of the provinces and growth hubs were pursued as major national land policies.

### 3.3.2. SOC Development Policy

The 1990s was a period when requests for balanced development increased, and high speed railroad times were opened with the completion of the test travelling section of the Seoul-Busan high speed railroad. For the port sector, the Korean Government positively started to cultivate the Two Port System around Busan Port and Gwangyang Port in 1991 to mitigate the severe stagnation of ships and accumulated cargos due to a shortage of port facilities. Investments in this area have continued to expand up until now.

In the 2000s, balanced development strategies were promoted as national policies, and Korea built the high speed KTX railroad, which started to operate in the early 2000s. Connecting the whole nation within a two hour time span caused large changes across society, such as national lifestyles, economy, society and culture. The container port facility rate in Korea first exceeded 90% in 2006 with the expansion of container ports around Busan Port and Gwangyang Port. This was according to the port development system interfaced with the quantity of goods transported (trigger rule) in the port sector, and this also reflected the continuous investment into the development of new ports. This almost achieved a balance between demand and supply in 2008 and the utilization rate rose to 111% in 2009, even though this was temporary and there was an occurrence of the supply of port facilities temporarily exceeding the demand. Accordingly, the trigger rule was applied, causing the development of some of the new ports to be postponed.

The extension of pavement roads as a result of investments for the SOC sector increased by 6.19% from an annual average of 10,912km (1976) to 84,196km (2010). The extension of the expressway increased by 3.65% from the annual average of 1,142km (1976) to 3,860km (2010). The extension of a double track subway increased by 3.28% from the annual average of 714km (1982) to 1,763km (2010). The travel figures of international ships increased by 7.23% in the annual average from 90,082 times (1995) to 256,688 times (2010). The unloading capacity on the port increased by 6.51% in the annual average from 248,635,000 tons (1995) to 822,504,000 tons (2010). It was found that these SOC investments acted as useful policies in response to the economic conditions, such as the generation of employment and the

generation of effective demand, in the case an economic crisis should occur.

〈Table 6-12〉 SOC Development Plans in Korea (1990s – 2000s)

		1990s	2000s
Targets of National Land Plans		<ul style="list-style-type: none"> <li>• Overpopulation control in the metropolitan sphere</li> <li>• Settlement of geographical differences</li> <li>• Environmental conservation</li> <li>• Enhancement of national competitiveness</li> <li>• Expansion of national land infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Active response to global competition liberalization and the growth of Northeast Asia</li> <li>• Preparation of development strategies responding to localization</li> <li>• Creation of national land conditions suitable for knowledge information-planning</li> <li>• National land alignment responding to conversion to a stable growth period</li> <li>• Realization of the global nation opening</li> <li>• Realization of the creative advanced land</li> <li>• Realization of the low-carbon green land</li> </ul>
Investment Policies		<ul style="list-style-type: none"> <li>• Mitigation of traffic jams and logistical costs</li> <li>• Expanded investment into the logical traffic infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Local developments</li> <li>• Increased investments of railroad infrastructure</li> </ul>
Direction of the Traffic and Logistics projects		<ul style="list-style-type: none"> <li>• Expansion of national roads and expressways</li> <li>• Construction and opening of high-speed railroads (KTX)</li> <li>• Cultivation and support of international compound corporations</li> <li>• The flight of Asiana Airlines and the construction of local airports</li> <li>• Operational support of city buses</li> <li>• Construction of a composite cargo terminal</li> </ul>	<ul style="list-style-type: none"> <li>• Interlink of arterial road networks, expansion of environmental protection facilities</li> <li>• Expansion of Korean-type high-speed railroad networks</li> <li>• Introduction of putting-out system essentials for the nation and tonnage system</li> <li>• Construction of Incheon International Airport, flight of low-cost airlines</li> <li>• Introduction and expansion of the bus central-lane systems</li> <li>• Expansion of logistical facilities</li> </ul>
Infrastructure	Road (road pavement ratio)	88,775km (75.8%)	105,565km (80.0%)
	Railroad (double track railroad)	3,123km (30.1%)	3,557.3km (49.6%)
GNP per Capita		\$11,292 (2000 year)	\$20,562 (2010 year)

### 3.3.3. The Development Strategy of Industrial Space

The 1990s is a process whereby the Korean industrial structures are restructured around the advanced industries, and the distribution of the industrial park started to expand on a national scale, away from the pattern of surrounding the specific region. A composite industrial complex was promoted where logistical, research and residential functions were included, not around the process in which simple manufacturing functions were developed. After the 2000s, the government's policies were converted to the location policies around downtown again as the industrial cluster construction policies around the knowledge-based industry were implemented.

Like this, the industrial park functioned as an important means to drive the miracle of Korean economic growth, and it quickly became a key measure of the industrial policy. Over 950 industrial parks, as of 2010, have been formed.

However, most Korean industrial parks are concentrated around the Seoul-Busan axis, since the unbalanced growth strategies are adapted for rapid growth, and thus, the distribution of manufacturing companies are also concentrated around the Seoul-Busan axis. As the spatial concentration of these industrial activities deepens over time, the problem of the unbalanced national land begins to intensify.

〈Figure 6-13〉 Distribution of Industrial Parks and Manufacturing Companies in Korea



### 3.3.4. The Development Strategy of the Urban Area

New industrial belts were enhanced in the 1990s and strict restrictions against the Capital Region (Seoul Metropolitan sphere) were selectively mitigated. The

restriction against the location in the metropolitan sphere for business types, such as advanced industries, was mitigated in order to enhance the competitiveness of the Capital Region, thus increasing the installation by 50% for the seven types of permitted advanced industries. On the other hand, the basis to restrict the growth of the Capital Region was maintained by overpopulation burden charges and by the total amount system.

An emphasis was placed on the cultivation of the regional hubs in the province through the construction of a revolutionary city in the 2000s. The national land was classified into spheres, and there was a cluster where industry, university and research functions were connected for the cultivation of the hub city by sphere. A zoning system for the arrangement development was introduced in the Capital Region and the system of prohibiting new or increased installations for existing large corporations and factories on a lump-sum was mitigated. In addition to this, the industrial park of about 2 million m<sup>2</sup> was supplied every year to accommodate the advanced industry, and the relocation of universities within Seoul was permitted. Additionally, the permission of the formation of a large-scaled tourist spot within the Capital Region was examined and the partial mitigation of the restriction of the growth management area is currently in process.

### The Development Strategy for a New Town

The development direction of new towns after the 1980s was converted due to the small size of distributed developments, but was accompanied by many problems as many developments began to take place without much thought. From the 2000s, 'the second new towns' located around 40km away from Seoul were promoted as they heightened their self-sufficiency functions. The second new towns established general countermeasures by sphere to improve the congestion of great-sphere facilities, and they targeted the construction of regional life hubs in the metropolitan sphere. In addition to this, the new towns applied various low-carbon, environment-friendly factors to function as a green city. Moreover, Korea recently constructed an administrative-oriented composite town according to the policies of the balanced development of the national land, and the government created a revolutionary city for the transfer of major core functions.

The preparation of a suitable system acts as a major cause for the success of the urban development policies. In the time when the development of a large scale new town was requested, Korea legislated the Promotion Law for the Promotion of Housing Site Development in the year 1980, which specified special cases for obtaining, developing, supplying and managing the housing sites and supported the creation of new towns. In addition, Korea enacted the Urban Development Law so that the civil sector could execute the development of housing sites and support the

request for housing development projects using various methods. This law functions as a system to foster an under-developed site around the city for various purposes such as industry, and distribution conducted away from the simple development of a housing site.

〈Table 6-13〉 Characteristics of Periodical New Town Developments in Korea

Development Time Purpose of Development		1960	1970	1980	1990	2000
Development of Nation and Area	Industrial city/ background city of industrial base	Ulsan (1962) Pohang (1968)	Gumi (1973) Changwon, Yeojeon (1977)	Gwangyang (1982)		National industrial park, free economic zone
	Development of under-developed areas		Donghae (1978)			General plans for a new development area
	Research and academic urban		Daeduk (1974)			Promotion of an international scientific business belt
	Cultivation of new growth platform					Promotion of general plans for Saemangeum
Settlement of Large City Problems	Removal and transfer of illegal houses, Seoul	Seongnam (1968)				
	Movement of population- causing factories, Seoul		Banwol (1977)			
	Distribution of administrative functions, Seoul (a balanced development of nation territory)		Gwacheon (1979)	Dunsan (1988) Gyeryong (1989)		Composite cities around administration (2007) Revolutionary cities (2008)
	House supply to the metropolitan sphere and the population distribution of Seoul				Bundang, Ilsan, Pyeongchon, Sanbon, Joongdong (9189~1996)	Paju, Unjeong, Hwaseong, Dongtan, Seongnam, Pankyo, Suwon, Gwanggyo (2005) Kimpo, Wuirye, Geomdan, Pyeongtaek, Yangju
Movement of the government office following the restructuring of administrative areas			Changwon (Gyeonnam-do government office)		Namag (Jeonnam- do government office)	Promotion of Choongnam-do government office, Gyeonbug-do government office and new town

### 3.4. Evaluation and Implications of the Korean Policy

#### 1) Implications of the Korean SOC Development Strategies<sup>58)</sup>

Based on the above discussions, several political proposals are presented related to the SOC of Algeria in this section.

First, the Algerian Government must enlarge investments to improve the whole infrastructure level. SOC's are not directly used for production activities but are essential social infrastructure facilities to smoothly perform economic activities. Since it has been required for a long time from planning to supply, in the nature of a large scale construction project, the suitable prior plans and investments are essential. SOC's are very important production factors in the growth of national economies and they play the driving force of economic growth. Even for Korea, it is clear that the continuous expansion of SOC's entailed the economic growth known as the miracle on the Han River and led to the creation of the economic growth base. Since the infrastructure was prepared only in one specific sector, higher competitiveness has led to the exertion of greater efficiency. All infrastructure facilities have an effect on economic growth, and the national development in the early days of performing the national development policy must be initially arranged.

However, the logistical infrastructure level of Algeria, including roads and port facilities, as discussed previously, has deteriorated considerably, especially from an international point of view. It is thought that the infrastructure shortage may act as a hindrance to growth, considering the long-term plans of the Algerian government that promotes sustainable economic growth through the overall industrial development. This development will shift away from the petro-industry-cored policy in the future.

Secondly, the infrastructure status of Algeria was examined. It is clear that the road and port facilities have deteriorated considerably. For example, as previously examined in the analysis of the rate of filled vacancies, the road facilities are ranked much lower than international trend values. The road pavement rate of Algeria is 72% according to the World Bank's survey and is higher than Morocco (56%) and Tunisia (66%), but it appears that only about 39% of the overall roads are in condition. Of course, it is clear that the road level will improve somewhat if the east-west expressway is completed, but a steady investment must be given to reduce the logistical costs. On the other hand, problems look more severe considering the level of port facilities that assume most of the foreign trades of Algeria. In other words, the overall logistical level of all the data that the World Bank issued (LPI),

58) Partial reference of the World Bank's A Public Expenditure Review(2007)

questionnaires for World Economy Forum's members and container-oriented rates shows that the port facility levels of Algeria have deteriorated. Furthermore, it is expected that the actual increase rate of export/import of Algeria will be 3.2% and 8.8% on average annually, for the forthcoming 10 years (2013~2022) according to the Global Insight's World Overview (2012). The port quantity of goods transported to Algeria by 2030 will continue to increase. The container's processing rate must be increased to efficiently process the port quantity of the increased goods transported. Since some Algerian ports have currently modernized container facilities, the Algerian Government must urgently promote the expansion of the container logistical facilities, considering the characteristics of the port facilities of which construction requires a longer period. Since it is perceived that the concentrated development around the hub industrial park is desirable, especially considering the current steps of economic growth in Algeria, a strategic investment for the construction of a two port system in Alger-Oran is proposed in order to maximize the synergy effect.

Thirdly, the raising of investment efficiency through the establishment of systematic national land plans and the establishment of a strong public investment management system is also proposed. For Korea, the establishment of national land plans and infrastructure plans has been assembled by the Ministry of Land, Transport and Maritime Affairs as the responsible department, while an ex-ante/intermediate/ex-post evaluation of the investment project is performed by the Ministry of Strategy and Finance. For Algeria, double investment and non-efficient investments have occurred since the basic plans for roads and railroads are established by different institutes, even though they follow the same infrastructure plans, and non-efficient investment and extension of the construction period frequently occurs since management or supervision systems (such as through robust appraisal of the investment project based on economic efficiency and management of total project costs) have not been sufficient. Accordingly, the establishment of the systematic national land development plans and the establishment of a strong public investment management system are proposed.

## 2) Implications of Korea's Urban Development Strategy

The development of Korean national land and the urban region has been the result of the successful implementation of the national economy development strategies. Korea established the space development strategies by nation land, region and city according to the national economy's development plans and the establishment of a target, and it also established particular execution targets for the infrastructure facility, land, houses and the industrial sector. Accordingly, Algeria must grant priority to the industrial development plans and the national economy development plans to enhance competitiveness of the large cities and to establish



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the development plans for this realization.

Korea also used various policies from the 1970s to solve the problems of overpopulation in large cities and unbalanced national land that resulted from rapid economic growth. Korea created new towns with industrial functions to form a pole and they cultivated these ambient regions. Korea suppressed new facilities in the metropolitan sphere that would lead to overpopulation, and promoted the transfer of the existing facilities. Rational cultivation methods have been implemented through selective new installation policies for the advanced industry to continuously enhance competitiveness of the Capital Region and the metropolitan areas.

For Algeria, the competitiveness enhancement policy in the metropolitan area and the suppression of overpopulation must be undertaken, without suppressing growth. Selection of business types and the preparation of government actions are required to distribute the population evenly, creating facilities and fostering strategic industries in metropolitan regions. An immediate response to house problems, a shortage of basic facilities, and pollution problems is required.

Problems such as housing difficulties and an imbalance in national land caused by the enhancement of Korean national industry functions and an overpopulation in the metropolitan sphere could be viewed as a cross relationship with the new town policies the Algeria is actively promoting in the development of new towns. The effect may be significant when it is related to the economic development plans and the arrangement plans of the metropolitan sphere. However, as many new towns are promoted at the same time, the driving force and concentrative effect may be insignificant. Accordingly, the execution power must be reconsidered through the preparation of a promotion system such as the implementation of special laws, together with the adjustment of the development time and the particular financing plans for the construction of new towns.

Until now, Korea achieved national land development to support rapid economic growth, but an unbalanced development of the national land space deepened over this course, resulting in the problems of environmental destruction followed by obsolescence as well as the decline of the existing towns and diffusion of towns. In addition, the national lifestyle began to deteriorate due to the exacerbation of housing, land and traffic problems. Accordingly Algeria must prepare counter-measures against problems such as the diffusion of houses, lands and cities and the obsolescence of the existing towns, and the unbalanced development of the national land that occurred during national expansion.

### 3) Implications of the Korean Industrial Development Strategy

Implications applicable to Algeria from the Korean industrial development strategies are summarized as follows: First, Korea established the growth strategy for industrialization and utilized the development of industrial parks as a means to rapidly provide insufficient industrial land. The industrial parks were not provided uniformly but were supplied through the formation of the differentiated industrial space step by step along with economic growth. Industrial cities such as Ulsan (automobile, shipbuilding industry), Gumi (electronic industry) and Changwon (machine industry) were formed for the construction of the base for a strategic industry.

Secondly, Korea recognized early on the necessity for well-arranged main facility networks for economic growth and installed the main SOC networks in the agglomeration of strategic industries in order to cultivate the strategic industry and the export industrial base. Korea guided rapid growth through selection and concentrated investment with limited capital. However, such unbalanced investment can cause social problems due to the unbalanced growth of the national land.

Thirdly, it is important to select the location so that the forward/backward integrated industry can be closely located in the development of the strategic industry zone. Korea maximized the agglomeration effect by planning a vertical integration method within a complex when developing a petro-chemical complex. Ulsan is a typical strategic industry complex. Korea integrated 11 to 12 factories by vertically integrating processes through changing the imported crude oil into the production of gasoline as a final product, and took actions so that the industries manufacturing various petro-chemical products as a derivative were located near one another.

In addition, Korea improved the spatial linkage effect by forming industrial complex related with the automobile industry where Ulsan was located within a two hour distance.

On this basis, the following points are proposed:

First, Algeria is required to create a specialized industrial zone to foster a strategic industry. In this case, it is required to select the location considering the accessibility of markets after clarifying the targeted market by strategic industries.

Secondly, since the SOC arrangement level of Algeria is currently deteriorating, the expansion of insufficient SOC is required to foster economic growth. In this case, pursuing concentrated investments on the strategic industry by establishing the

priority is more desirable than a random provision of distributed investments.

Thirdly, the contents of Algeria's industrial location policies have been insufficiently developed by the forward/backward linkage industry. The development of forward/backward linkage industries for the petro-industry, which is the most important industry, is very urgent. It is required to promote the development of the petro-chemical industry that manufactures derivative products produced in the petroleum refining course. To maximize the agglomeration effect is desirable by fostering the specialized industrial complex around the petroleum refining factory for this purpose.

However, policy efforts for the distribution of industrial facilities currently concentrated in the Tell region of Algeria should be considered in conjunction with the examples from Korea. This is required to consider the construction of an industrial new town.

## **4. Conception of the Medium and Long-term National Land Development Plans in Algeria**

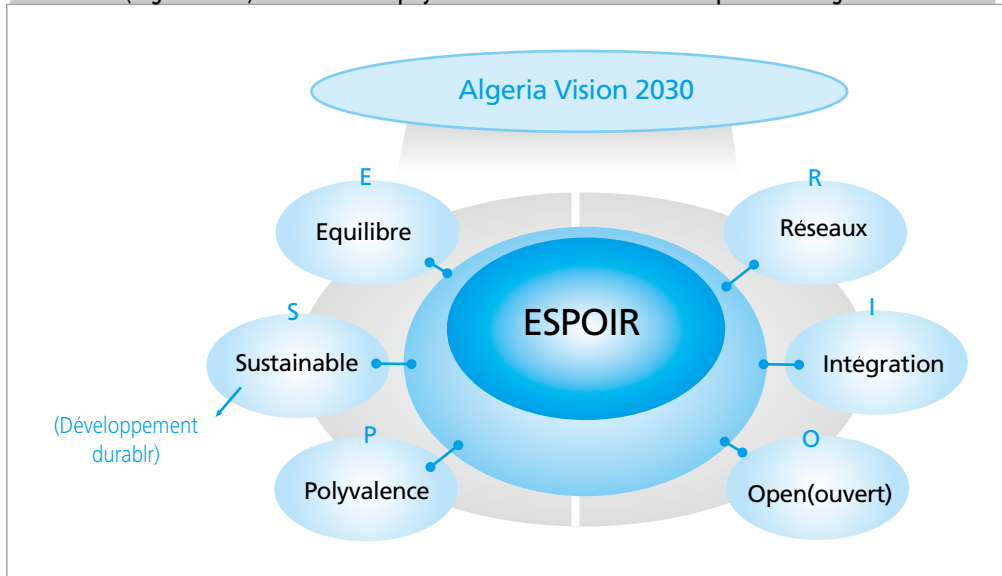
### **4.1. Basic Direction for the Conception of the National Land Development in Algeria**

The basic direction will be suggested for the conception of the national land development policy in Algeria working towards the year 2030. Here, the direction of the national land arrangement is recommended to help Algeria convert to a new economic structure.

The target of the national land development in Algeria for 2030 is determined to grow as a 'Hub and Core of the MENA region.'

In addition, E.S.P.O.I.R. is suggested as a basic philosophy for the national land development in Algeria. Equilibre, Sustainable, Polyvalence, Ouvert, Intégration and Réseaux are established as value oriented for the spatial development.

〈Figure 6-16〉 Basic Philosophy of the National Land Development in Algeria



## 4.2. Proposal of Promotion Methods and Priorities Step by Step

In this section, strategies, projects and priorities to be promoted gradually will be proposed by classifying the period until the year 2030 into two steps. For the classification of this period, step-1 will occur from 2013 until 2020, and step-2 will occur in 2021 until 2030. The period of 2013-2020 in Step-1 will be classified as 'a period to arrange the base'; to establish SOC, systems and master plans required for national growth. In addition, it is desirable to establish the period from 2021 to 2030 in Step-2 as 'a leap period toward the Hub and the Core of the MEAN region'.

It is more desirable to firstly develop the Alger-Oran axis with the same potential power as international cities, rather than to develop all the regions uniformly for the national land development strategies. In particular, the development as international cities to induce foreign capital through the development of the large city sphere is important. Since the Oran region is a familiar region to European countries, it is important to search for space development strategies that pursue openness with the nation to induce tourism or investment from European corporations.

The policies for establishing SOC to support the growth of the Alger and Oran axis must be prepared in the SOC sector. Currently, the competitiveness of international ports and international airports of Alger and Oran is insufficient compared to world cities. Thus, policies to complement it must be settled in Step-1. The construction of communication facilities is important to ensure that foreign

corporations can perform economic activities with global subsidiaries and with customers that are scattered around the world, as well as to physically promote the construction of international container ports and international airports. In addition, innovative policy is required to construct the national information networks to form the digital national land.<sup>59)</sup>

Efforts must be made for the diversification of maritime cargo networks connected to every country in the world on the basis of physical facilities so constructed in Step-2. The construction of a teleport to support the arrangement of more rapid internet networks and the flow of information in order to support economic activities of global corporations is required.

Since Step-1 of the industrial development strategy sector is a step where industrialization of the traditional industry in Algeria as an agricultural country is performed, it is a period that requires the cultivation of a new strategic industry in the heavy chemical industry sector, while also requiring the high added value-oriented policy of the labor-intensive industry. For this purpose, the arrangement of infrastructure related to the development of the new strategic industrial space is very important. It is possible to change the industrial structure of Algeria to an industrial structure with a higher added value on the basis of the industrial base constructed through Step-1. Efforts to cultivate a new petro-chemistry or chemical fiber industry, etc. are required on the base of the industry related with petroleum that is being developed in Oran.

It is also important to cultivate the advanced industry so that a knowledge-based industry can be born around Alger and Oran in the future. Policies to construct the scientific and research complexes, and the organization of the R&D manpower and organizations are also required.

It is important to create an environment to create vertical and horizontal integration through new industrial sectors introduced in the time of base construction, which can be grown and expanded within the industrial structures in Algeria in Step-2. An industrial eco-system by self-completion will be constructed within the Algerian land through which the derived industrial sectors are generated and cultivated through these efforts. This period may become a time period where Algeria can obtain the capacity of a firm industrial country.

Furthermore, Step-2 prepares a transfer to the knowledge-based industrial sector

59) Korea has implemented the NGIS (National Geographic Information System) project to digitalize the overall land for 20 years since 1990, and thereby navigation services are now provided in all lands with the digital information networks in place. The sub-structures were constructed to complement the ubiquitous nation to plan, manage and maintain the whole nation through communication.

in the next step. Thus, policies are devised to develop an industrial cluster where more added values are realized around the place, and where traditional industries are settled. These efforts to concentrate in one place factories are insufficient. These areas must be promoted to ensure that corporations concentrate in one site and can form an industrial eco-system. These efforts will construct the environment to create innovation through mutual cooperation based on the physical and nonphysical understructure. Thus, policies to support the construction of a good environment for business activities and an economic space for the advanced activities are required. Also, it is required to cultivate a lot of private companies with innovation potential.

### 1) Step-1: 2013-2020 year

Step-1 is a period where we can create a physical, systematic, and political base that Algeria needs to grow as the core of the MENA region. This period is a period when the 'Alger-Oran axis' is developed according to the selective and concentrated strategy.

The cultivation of the metropolitan region is firstly required for the cultivation of a platform to drive the national growth in the national land level. For starters, the growth of Alger must be continuously cultivated and the Oran region must be intensively cultivated as a dual core (two major metropolitan) by the year 2020.

In addition, it is important to cultivate the related derivative industrial sectors and around the petro-chemical industry in Oran. For this purpose, the formation of a new development zone to accommodate the growth of new industrial functions around the cities, the preparation of systems for the rapid promotion of the plans and the formation of an institutional basis is required. Preparation of policies for the development of new towns for R&D against the industrial growth in Algeria after Step-2, and the concentration of research manpower, R&D institutes and innovative enterprises in the new town are also required.

The development of a suitable space and the arrangement of SOC are required by selecting Oran as a platform for the economic development in European countries. In particular, the arrangement of international container ports and the expansion of international airports must be undertaken for the rising urban competitiveness in Oran. In addition, the East-West expressway being currently constructed must be nearly completed for the increase in connectivity in Algeria. Preparatory works for the development of the digital national land are required to obtain the competitiveness of the information-oriented period. The installation of high-speed cable networks and the construction projects of NGIS are also required. Even in this case, it is desirable to firstly start around Oran and Alger.

## 2) Step-2: 2021-2030 year

Step-2 will develop the Alger-Annaba axis and connect the 'Oran-Alger axis' that are cultivated in Step-1. It will cultivate the coastal area around the Mediterranean Sea. Algeria will become a proper hub and core of the MENA region.

It is important to carry out the strategy to cultivate Annaba as the third platform region by 2030 in the land and urban sector. Annaba must be cultivated as the third metropolitan region in Algeria for the inducement of industries differentiated from Oran in order to settle the three-core structures.

Thereby, it is important to develop Alger as an urban region with a population of over five million people, Oran as an urban region with a population of over three million people, and Annaba as an urban region with a population of over one million people to establish strategies so that the growth power formed around them can be gradually spread to the ambient regions. It is important to develop Annaba by generating the character of the city and demonstrating how it is different from Oran.

For the SOC sector, it is desirable to concentrate on the development of on-land traffic to connect Alger and Annaba. In this case, the construction of traffic networks to connect Annaba and in-land Constantine in the future is required.

Like the Oran-Alger axis, extension to the digital national land region by the Annaba region is required. In addition, efforts to cultivate Annaba as the third international airport and make it an international economic space east of Algeria are required.

## 5. Conclusion

There are three main points where a comparison between Korea and the other country could take place.

Firstly, Korea established the 'selection and concentration' strategy. Korea selected the most essential policy without investing everything and then cultivated it as goods that are competitive in the world market through concentrated investment and development. Secondly, Korea efficiently used 'step by step policies.' If the step by step policy succeeded, and prepared the base to some degree, then the next step would be reached. In this case, Korea efficiently selected the point in time to transfer to the next step. Shifting to the next step is often accompanied by various resistance and suffering, but Korea established policies so that people could understand and

comply with them, and achieved success through supporting and promoting these policies so that the change could be accepted. Thirdly, Korea enjoyed 'political stability.' There were no wars during the time of economic development as well as little political conflict between the elite groups. The creation of a social atmosphere to achieve the same target on political stability acted as a base to achieve continuous economic growth. This situation is not limited to Korea.

It is regarded that the Korean experience will give a lot of knowledge to Algeria, a country that is currently ready for a new leap.

The point that Algeria must especially note is that the Korean national land development policies were realized step by step.

It is important to understand that the target of national land policy is varied step by step through the process of economic growth. It must be noted that the Korean national land policy focused on the 'construction of an industrial base' in Step-1, and the economic growth period concentrated on 'improvement of fairness and balance' in Step-2, with the next step moving towards 'growth and harmony'.

In other words, it must be noted that the 'step by step growth strategy' is adopted to leap to a new growth period. Step-2 focused on the national, economic and social bases prepared in Step-1, the first growth period. Korea succeeded in the economic structures suitable for a traditional industry country, and the planned national land space development emerged out of economic structures from an agricultural economy, naturally generating national land space structures, while passing through Step-1 from the 1960s to the 1980s.

As a result, Korea prepared the opportunity to leap step by step from an undeveloped country to a developed country.

Only after building an industrial nation, Korea promoted its growth strategies to become a knowledge-based industrial society from Step-2; the growth period. However, the national land development policy at that time pursued a different direction from Step-1, especially with regard to the target and means.

Therefore, a 'stepwise growth strategies' must be prepared for the future growth in Algeria. Since Algeria is currently moving from an agricultural nation to a traditional industrial nation, it is important to establish suitable strategies for the economic development and national land development of Algeria. Establishing step by step development strategies for the preparation to ultimately transfer into a knowledge-based society from maturing into a traditional industrial nation will be the suitable next step.



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Secondly, establishing development plans on 'selection and concentration' is more efficient than establishing development strategies in all areas of the national land. Algeria must intensively develop the Alger-Oran axis, which has the largest potential to grow, in Step-1 after cultivating it as an internationally competitive space, and then it must develop the Alger-Annaba axis in the second step in order to cultivate the coastal area in the Mediterranean as a core economic space in the MENA region.

Thirdly, the arrangement of all SOC's requested in the 21C economy must be executed first for the most efficient economic growth and national land development to be pursued. The spatial competitiveness of SOC's is high even though this could be an excellent sector. For example, international competitiveness may not be obtained due to an absence of SOC's. Thus, an arrangement must be made to offer a space with the preparation of all kinds of SOC's that the 21C economy requires, thus constructing a space to compete in the world markets. If so, the Algerian corporations that carry out economic activities in Algeria can gain competitiveness in the global market as well as induce foreign investments. Algeria must consider these points when developing its large cities such as Alger, Oran Annaba.

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