Morocco's efforts on the knowledge economy

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List of acronyms

ADA: Agence pour le Développement Agricole
AKR: Arab Knowledge Report
AMO: Assurance Maladie Obligatoire
ANAEPEC: Agence Nationale de Promotion de l’Emploi et des Compétences
ANOC: Association Nationale des Eleveurs Ovins et Caprins
ANRT: Agence Nationale de Règlementation des Télécommunications
APC: Approche par les Compétences
APEBI: Fédération des Technologies de l'Information, des Télécommunications et de l'Offshoring
BMCE: Banque Marocaine du Commerce Extérieur
BOT: Build-Operate-Transfer
Cedocs: Centres d'Etudes Doctorales
CCME: Conseil de la Communauté Marocaine à l'Ettranger
CCRC: Consultative Commission on Constitutional Reform
CDG: Caisse de dépôt et de gestion
CGEM: Confédération Générale des Entreprises du Maroc
CFG: Capital Finance Group
CM1: Centre Monétaire Interbancaire
CMI: Centre de Marseille pour l'Intégration en Méditerranée
CNAM: Conservatoire National des Arts et Métiers
CNRST: Centre National pour la Recherche Scientifique et Technique
COPAG: Coopératives Agricoles
CRI: Centre Régional d'Investissement
CSE: Casablanca Stock Exchange
CT: Casa-technopark
DIE: Diversification Index-Export
EACCE (Etablissement Autonome pour la Coordination et le Contrôle des Exportations)
EIR: Economic and Institutional Regime
EMI: Ecole Mohammedia d'ingénieurs
ENSIAS: École Nationale Supérieure d'Informatique et d'Analyse des Systèmes
ERC: Equity and Reconciliation Commission
EU: European Union
FDI: Foreign Direct Investment
FEMIP: Facility for Euro-Mediterranean Investment and Partnership (FEMIP)
FIT: finishing-dyeing-printing
GAFTA: Greater Arab Free Trade Agreement
GCC: Gulf Cooperation Council
GDP: Gross Domestic Product
GFCF: Gross Fixed Capital Formulation
GGGI: Global Gender Gap Index
GIP: Groupement d'Intérêt Public
GPBM: Moroccan Professional Association of Banks
HPS: High Powered Systems
IFC: International Finance Corporation
IIT: Intra industrial trade
IKED: International Organisation for Knowledge Economy and Enterprise Development
IMME: Industries Métallurgiques, Mécanique, Electronique
INDH: Initiative National pour le Développement Humain
IPR: Intellectual Property Rights
IT: Information Technology
ITU: International Telecommunication Union
IUR: International University of Rabat
KBE: Knowledge Based Economy
KEI: Knowledge Economy Index
KAM: Knowledge Assessment Methodology
KSA: Kingdom of Saudi Arabia
LTD: Lead Tech Design
MENA: Middle East and North Africa
MENESFCR: Ministère de l’Enseignement Supérieur, de la Recherche Scientifique et de la Formation des Cadres
MITC: Moroccan Information Technopark Company
MPV: Maroc Plan Vert
OFPPT: Office de la Formation Professionnelle et de la Promotion du Travail
OMPIC: Office Marocain de la Propriété Industrielle et Commerciale
ONAB: Omnium North Africa
PACTE: Programme d’Accès généralisé aux Télécommunications
PGI: Parity Gender Index
PI : Plateforme Industrielle Intégrée
ROSC: Report on the observance of Standards and Codes
SAU: Surface Agricole Utile
S&E: Science & Engineering
SME: Small and Medium Enterprises
SNRA: Système National de Recherche Agronomique
TFP: Tax on professional training
OPCVM
TIMSS: Trends in International Mathematics and Science Study
TNC: Transnational Corporations
TYLCV: Tomato Yellow Leaf Curl Virus
UAE: United Arab Emirates
USPTO: United States Patent and Trademark Office
VC: Venture Capital
WBI: World Bank Institute
WTO: World Trade Organization
WEF: World Economic Forum
Outline

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Introduction

In a global economy that is increasingly characterized by rapid, non-linear changes from unexpected sources, the success of individuals, firms, regions and national economies is based on their capability to learn by entering virtuous circles while rapidly extricating themselves from vicious circle ones. Knowledge does make a difference and the interface between the various institutions involved in knowledge and innovation (University, Government, Industry, and Diaspora) is central to this process.

The focus of the policy discussion is how to get the process of knowledge-based transformation going rather than listing the preconditions for the knowledge economy, with China, India and to certain extent Turkey as major paragons to follow. Morocco has embarked in the implementation of knowledge approach and principle before a full scale knowledge economy plan was figured out, unlike some other countries in the Mena region. The four pillars have nonetheless benefitted from long terms plans and programs.

Morocco has thus developed a vision Maroc Numeric following the national IT (Information Technology) policy (2009-2013). The education system has undergone important expansion and consecutive reforms to bring it to increase quality and give higher chances of graduate finding jobs. On the EIR, the mise à niveau du tissu économique national program added to privatization and liberalization has helped establish an institutional and governance environment more appropriate for knowledge intensive investments. While all these efforts are appreciable, they still need to be coordinated in a common knowledge economy vision initiated and monitored at the highest level.

Initially the goal of economic policy set by the Moroccan Government was to lift economic growth to an average of 6% per year in order to reduce unemployment, poverty and social exclusion and to lessen dependence on the unpredictable agricultural sector. Current forecast set real GDP growth to an average above 4% a year in 2012-16, but it will remain linked to the performance of the rain-fed agricultural sector. Demand in the euro zone, According to the Economic Intelligence Unit, The fiscal account will remain in deficit in 2012-16, as the government spends heavily on investment programmes, on subsidies and on raising public-sector pay, in an effort to boost job growth and reduce political discontent. Real GDP growth will weaken in 2012. It should strengthen thereafter, but it will remain linked to the performance of agriculture. The country is expected to record current-account deficits in 2012-16. However, lower commodity prices and rising inflows from remittances and services will help to narrow the deficit, especially after 2013.

The present report focuses on three dimensions: the first one is to look at work being done in the four pillars – economic institutional regime, education, innovation and ICTs. The second one is to review the various plans that have been developed in Morocco and what kinds of initiatives are taking place on the KE: the selected plans to be examined are the Plan Emergence, the Plan Vert, the Plan Halieutis, the Vision 2020 and the Plan Azur, the Plan d’Urgence 2009-12 for Education, Maroc Innovation and Maroc Numeric 2013. The third one is to make some recommendations by way of conclusion, bearing in mind that a separate note on the strategic plan for Morocco in the KBE is made available.

2 Economist Intelligence Unit, Morocco Country Report 2008
3 Economist Intelligence Unit, Morocco Country Profile 2012
4 Note Stratégique « Un nouveau modèle de développement pour le Maroc - Une feuille de route pour l’économie fondée sur la connaissance. » CMI produced for the Ministère de l’Economie et des Finances – March 2012
General Background

Morocco belongs to the resource-poor countries that are net importers of oil and gas. These countries include also Djibouti, Egypt, Jordan, Lebanon, Mauritania, Tunisia, and the Palestinian Authority (World Economic Reform and OECD 2011). The evolution of the structure of the Moroccan economy went through two stages: The first on (1995-2004) shows evidence of certain lack of dynamism. Average growth rate of 2.0% during the period, while being non negligible, compares less favourably to China, Finland or even to neighbouring Tunisia (figure 1).

Figure 1: GDP per capita in constant 2000 PPP adjusted dollars

The aggregate composition of output has changed during this period and in particular, low productivity agriculture seems to have accounted for almost one fifth of output. Similarly, while the openness of the economy has increased over time, it has done so at a relatively slow speed. In this respect, comparable developing countries like Tunisia and Malaysia had economic structures closer to those of industrial nations than Morocco, with agriculture holding a smaller importance, and with more open economies (figure 2). Moreover the KOF\(^5\) index of Globalization 2010 shows that Morocco is not amongst the first fifty countries like Bahrain, Qatar, Kuwait and Jordan. (World Bank report 2012).

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\(^{55}\) Name given to the globalization index
During the second stage (2005 – 2010), the economy seems to have picked up with an average growth rate of 4.9%. The commercial opening of the economy kept on strengthening, while the share of the agricultural sector kept decreasing and other new sectors emerged such as tertiary and IT.

Figure 3: Various trade agreements of Morocco

Various trade agreements have been passed with different parts with no less than 55 countries of the world, the three most important being with the European Union, with the USA and the Greater Arab Free Trade Agreement (GAFTA). Yet prevalence of trade barriers does not rank Morocco in a very

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6 Data supplied by the Ministère de l’économie et des Finances, Direction des Études et des Prévisions Financières – field investigation – Mission WBI 23-29 February 2012
favourable position when compared to countries in the Middle East (Kuwait or Qatar) according to the data of the World Competitiveness Report (2011-2012) (figure 4)

**Figure 4 : Level of openness: prevalence of trade barriers**

![Chart showing Level of openness: prevalence of trade barriers](image)

Source : World Competitiveness Report 2012-2013

The tertiary sector has known a remarkable growth during the last decade with a contribution to of 55% to GDP, 70% to employment, 59% to Gross Operating Profit during the 2000-2008 period. On the outsourcing capacity, Morocco, like many other Mena countries appear as a promising offshore location on the basis of the region’s proximity and pool of skilled talent for providing outsourcing activities (including IT services and support), contact centers and back-office support. This is measured by the A.T. Kearney's 2011 Global Services Location Index (GSLI) of the top 50 countries for outsourcing activities; it ranks in a relatively good position as 37th.

Many reforms and measures have not quite given the expected results such as removed regulatory barriers to entrepreneurship. Insufficient job creation constitutes nonetheless Morocco’s major mainstream economic and political challenge. Low growth has resulted in slow job creation. The demographic hump results in an unprecedented number of young people entering the labour market each year.

Employed population grew at an average rate of 2.23% per year in the 2000-2009 period (CMI 2012) and consequently, Morocco together with Algeria are the only two MENA countries that have experienced “employment miracles” in the last three decades, where large reductions in unemployment were accompanied by accelerating growth and more flexible regulation. This is more frequent in the rest of the world but is rare in the region. Following a considerable expansion of the educational system and making tertiary education increasingly available across the country, many of these individuals now have university education, and naturally high expectations for obtaining an opportunity to put their skills to use. But unemployment is high, especially in urban areas (13.4 percent in 2011). It is also particularly elevated for women, for the young, and for the better educated.

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7 Question asked : In your country, to what extent do tariff and non-tariff barriers limit the ability of imported goods to compete in the domestic market? [1 = strongly limit; 7 = do not limit]
8 Ministère de l’Économie et des Finances, Direction des Études et des Prévisions Financières, “Plan d’Action pour l’insertion dans l’Économie du Savoir” Décembre 2011 (Non publié)
In 2010, 62.8 percent of the unemployed are long-term unemployed and half of them have never been able to find a job in the first place (Haut Commissariat au Plan, 2011). While Morocco seems to have one of the lowest rate of unemployment amongst the youth (15-24 years) in 2005 in the region\textsuperscript{10}, it still faces this challenge as this rate of unemployed youth reached 17.9% in 2011 (against 8.9% in total). Of particular concern, is the unemployment of graduates rate of 16.7% and long-term unemployed (12 months and more) which reached 77.6% of the active population higher education graduates (62.8% for the others)\textsuperscript{11}. High youth unemployment and the ensuing disillusionment of an entire generation carries with it substantive negative social impact.

\textbf{Figure 5: Rate of unemployment and age group (2011)}

\begin{tikzpicture}
    \begin{axis}[
        title={Rate of unemployment and age group (2011)},
        ybar, bar width=10mm, xtick=data,
        symbolic x coords={F, M, 15 à 24 ans, 25 à 44 ans, Sans diplôme, Ayant un diplôme},
        xticklabels={F, M, 15 à 24 ans, 25 à 44 ans, Sans diplôme, Ayant un diplôme},
        ytick={0,2,4,6,8,10,12,14,16,18,20},
        ylabel={Percentage},
        enlarge x limits=0.5
    ]
        \addplot coordinates {(F,6) (M,4) (15 à 24 ans,16) (25 à 44 ans,14) (Sans diplôme,2) (Ayant un diplôme,6)};
    \end{axis}
\end{tikzpicture}

Source: Haut Commissariat au Plan (2011)

\textbf{Figure 6: Percentage of first-job seekers (2008)}

\begin{tikzpicture}
    \begin{axis}[
        title={Percentage of first-job seekers (2008)},
        ybar, bar width=10mm, xtick=data,
        symbolic x coords={Egypt, Kuwait, Bahrain, UAE, Jordan, Palestine, Qatar, Syria, Oman, Yemen, Morocco, Lebanon},
        xticklabels={Egypt, Kuwait, Bahrain, UAE, Jordan, Palestine, Qatar, Syria, Oman, Yemen, Morocco, Lebanon},
        ytick={0,2,4,6,8,10,12,14,16,18,20},
        ylabel={Percentage},
    ]
        \addplot coordinates {(Egypt,95.2) (Kuwait,79.5) (Bahrain,69.4) (UAE,63.8) (Jordan,53.4) (Palestine,45.2) (Qatar,80.5) (Syria,71.0) (Oman,64.2) (Yemen,63.8) (Morocco,48.9) (Lebanon,43.0)};
    \end{axis}
\end{tikzpicture}

Source: based on data of AOL, First Arab Report on Employment and Unemployment in the Arab Countries: Towards Effective Policies and Mechanisms, Table 3 p65

\textsuperscript{10} World Bank : cité by the Ministère de l’Économie et des finances ; \\
\textsuperscript{11} Ministère de l’Économie et des Finances, Direction des Études et des Prévisions Financières, “Plan d’Action pour l’insertion dans l’Économie du Savoir » Décembre 2011 (Document Interne)
The first-job seekers represent a fair proportion of unemployed showing the importance of insiders-structure and weight of segmentation. Morocco is a better position than many countries of the region, Egypt, Kuwait, Qatar and Syria (figure 6).

While constitutional reforms and social dialogue have to a large extent absorbed many of youth discontent, the relationship between the State and society has not yet been stabilized into a durable structure endowed with a social and institutional basis that will allow for orienting it toward social progress. Like many other countries in the Mena region, Morocco has established extensive social protection programs to aid vulnerable groups in society, such as the implementation of the Assurance Maladies Obligator (AMO), and the medical assistance program for the poorest and vulnerable (RAMED).

Budget deficits have averaged above 5 percent of GDP in 2001-2004 (World Bank, 2005a and b).12

This effectively limited room for a demand-driven expansion from the public sector to meet the growth-employment challenge. Recognizing the challenge, Morocco has made clear commitments to maintaining the stability of the economy by containing public expenditures, including by effectively capping civil service growth. The intensification of public investment boosted domestic demand. It doubled between 2007 and 2010: from 73.9 billion dirhams to 162.3 billion dirhams and increased at a rate of 39.8% during the 2009-2010 period. Moreover, Gross Fixed Capital Formulation (GFCF) seems to have registered an acceleration with an average annual growth of 9.4% between 2005 and 2009 to reach more than 39% of GDP in 2009 (5% in the 2000-2004 period). Its contribution to economic growth went from 1.3 to 2.7 (points) between the two period.14

As a consequence, the private sector will need to take the lead in growth and job creation. With the right supporting policies, SMEs are potentially more flexible and capable of introducing innovations than larger firms. According to Ministry of Industry data for 2003, firms with less than 200 employees account for 93 percent of all firms and half of industrial employment in Morocco. The services sector is likely to have an even higher representation of SMES.

Figures from late nineties show energy subsidies as a percentage of GDP in the first place (2%) followed by food subsidies (1.7%). Much less emphasis is put on cash transfer (0.1%) where it ranks respectively 7th in a group of seven MENA countries.15 This effort was upgraded more recently: compensation reached 6% of GDP in 2011.16 Figures show that poverty has been reduced from 14.5% in 1998 to 9% in 2009 meaning that the various mechanisms adopted have given some impact. On top of subsidies, micro project have helped a great deal. More than 18,700 projects have been launched under the INDH since 2005: more than 5,2 million vulnerable people benefited from the program aires leading to 3,700 income generating activities and a total investment of 14 billion dirhams. . The 2012 Loi de Finance makes out for the creation of a social solidarity fund for more targeted actions towards poor families to insure schooling to their children and giving them access to the health sytem.19

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12. Including Fonds Hassan II but excluding privatisation receipts.
13. billion
17. Initiative Nationale pour le Développement Humain
18. Déclaration of the Ministre délégué auprès du ministre de l’Intérieur, Charki Draiss – 2 minutes 02 April 2012
19. Les ressources de ce compte se composent essentiellement de : Une contribution pour l’appui à la cohésion sociale à la charge des sociétés soumises à l’impôt sur les sociétés ; Une contribution du Fonds de solidarité des assurances devant être versée au budget général afin d’être reversée au compte bénéficiaire; Un prélèvement sur le prix de vente public des cigarettes (hors TVA).
The Diversification Index-Exports (DIE) intends to reveal highly or lowly exports dependent on relatively few products\textsuperscript{20}. Available figures show that some countries are highly dependent on few products (figure 7). Not surprisingly, these are mineral exporting countries with a DIE higher than 0.8 (UAE, Bahrain, Algeria, Qatar and Kuwait). The other less dependent on fewer products are non oil exporting countries with DIE less than 0.8: Tunisia is in a leading position, followed by Lebanon, Jordan and Egypt. The high technology component of the DIE shows almost similar dependency exports of high tech products.

Figure 7 : Diversification Index (2008)


\textsuperscript{20} The DIE consists of the following criteria: Portion of the industry of the gross domestic product, Number of the employed persons in the industry, Current consumption per head and Export orientation of the economy
According to these data, Morocco belongs to the category of countries with a relatively diversified industrial structure together with Egypt, Tunisia, while Gulf economies belong to the Oil rich labor importers. In this respect, it is amongst the countries which have achieved its structural transformation in the manufacturing sector. Export of services (tourism, off shoring, services to enterprises etc.) developed relatively well these last few years. They grew from 9% to 15% of GDP between 2000 and 2006, which is higher than the average of Mena and Emerging Countries according to the World Bank. This is confirmed by the Herfindahl-Hirschman Index (HHI) which relates to concentration of exports (figure 9)

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21 Also such success might be exaggerated due to data measurement problems. For example using data from WDI, and UNIDO especially in the case of Tunisia, Morocco and Jordan the ratio of manufacturing exports to manufacturing output is consistently higher than one. Even if we consider the experience of the diversified group as successful in terms of export diversification and structural transformation, it is worth to note debt and unemployment are running high despite respectable economic growth.
Intra industrial trade (IIT) reveals the specialization degree in a given industry which allows the country to increase its integration into the world economy (Havrylyshyn and Kenzel 2000). This is verified by looking at the number of commodities not exported whose value does not exceed one million US$. The average number of commodities of this category is only 35 commodities for comparator countries and reached 132 for Arab diversified economies. In Morocco, it improved significantly from 0.191 to 0.216 in global terms, one of the largest improvements in the region.

Part 1: Morocco’s efforts in the knowledge Economy pillars

Morocco scores 3.61 in terms of KEI in 2012, a little improvement in relation to 2009 (3.54) but still below the average Mena (4.74) and ranks 102nd in the world. Meanwhile Jordan is ranked 75, Tunisia 80, Egypt 97 and Lebanon 81. It has gone back (-10) since 2000, showing that some of that other countries have moved faster in relative terms. A close look shows that the education pillar remains the most problematic with a low score 2.07 in spite of slight improvement in relation to 2009 (1.95) the third lowest in Mena ahead of Yemen and Mauritania only22. It can be categorized as resource-poor moderate KEI country with high level of unemployment and relatively abundant labor force unlike Gulf countries for example (table n°1).

Table n°1: Classification of Mena countries according to KEI level and level of unemployment

<table>
<thead>
<tr>
<th>Maghreb-Mashrek</th>
<th>Gulf countries</th>
<th>Southern countries of the Arab World</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEI : moderate</td>
<td>KEI : high</td>
<td>KEI : weak</td>
</tr>
<tr>
<td>-high unemployment rate</td>
<td>-Low unemployment rate</td>
<td>-high unemployment rate</td>
</tr>
<tr>
<td>-abundant labor force</td>
<td>-labor deficit</td>
<td>-abundant labor force</td>
</tr>
<tr>
<td>Morocco, Algeria, Tunisia, Libya, Egypt, Palestine, Jordan, Irak, Lebanon, Syria, Irak</td>
<td>Gulf countries</td>
<td>Mauritania, Soudan, Djibouti, Somalia, Yemen</td>
</tr>
</tbody>
</table>

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22 A. Djeflat Building Knowledge Economies for job creation, increased competitiveness, and balanced development: *Individual country overviews, Tunis December 2010*
If we compare the case of Morocco to some emerging countries such as Argentina and Turkey on the KEI in 2012 (figure 10), it compares favourably to Argentina on some aspects (internet users, tariff and non tariff barriers, regulatory quality and rule of law) while it is lagging behind other aspects such as computer per 1000 people, total telephone lines, gross tertiary and secondary, average years of schooling, number of S&E articles, number of patents granted by USPTO and royalty payments. Compared to Turkey, it is lagging behind on all the above components. The low score in patents granted by USPTO is common to many countries in the region and the Developing world in general, while having significant innovative activities not taken care of by the USPTO system. This may bias the results towards countries that have easy access to USPTO patent system.

Figure 10: Morocco compared to Argentina and Turkey through the KEI (KAM 2012)

Morocco ranks 70 out of -144 countries in the Global Competitiveness Index (GCI) for 2012-2013. Meanwhile Qatar ranks 11, Saudi Arabia 18, Oman 32, Kuwait 37 and Bahrain 35 showing that oil rich GCC countries are doing relatively better. - (figure 11). The rankings on institutions (54th) and infrastructures (61st) is where significant efforts were made by the authorities. The worse ranking in health and primary education (81st), which indicates that reforms undertaken may not be sufficient or more precisely reforms undertaken in other countries are producing better results.

Source: CMI document (unpublished)

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23 World Economic Forum, The Global Competitiveness report 2012-2013
This should not however, hide the remarkable progress made in both education and health. (table 2)

**Table n°2 : Progress made by Morocco in Health and Education**

<table>
<thead>
<tr>
<th>Health</th>
<th>Previous</th>
<th>Recent</th>
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<tbody>
<tr>
<td>Medical Care</td>
<td>1 doctor per 2 251 (2001)</td>
<td>1 doctor per 1 637 (2009)</td>
</tr>
<tr>
<td>Moratalite maternelle</td>
<td>227 pour 100 000 (2004)</td>
<td>132 100 000 (2009)</td>
</tr>
<tr>
<td>Mortalité infantile</td>
<td>42 pour 1000 naissances</td>
<td>32,2 pour 1000 naissances</td>
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<tr>
<td>Mortalité infanto-</td>
<td></td>
<td></td>
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<tr>
<td>juvénile (moins de 5</td>
<td>46,9 pour 1000 naissances</td>
<td>37,9 pour 1000 naissances</td>
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<tr>
<td>ans)</td>
<td>2004</td>
<td>vivantes</td>
</tr>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
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<tr>
<td>Taux d'analphabétisme</td>
<td>44,1% en 2004</td>
<td>30% en 2010</td>
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<td>10ans et plus</td>
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<td>Taux spécifique de</td>
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<td>scolarisation (6 – 11</td>
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</table>
On top of that there was the implementation of an integrated strategy of fight of illiteracy since 2002 and an emergency program for education (2009-2012). Total budget devoted to training and education has been growing at a rate of 7.8% since 2001. In 2011, the budget of the Ministry of higher education (MENESFCRC) reached 48 billion dirhams nearly 24.3% of total State budget (83% to the schooling system)\(^24\).

Nonetheless, insufficient job creation constitutes Morocco’s major economic and political challenge even if unemployment rate of 10% of total labour force seems reasonable compared to other Mena countries\(^25\).

1.1. Economic and institutional regime

On the EIR (economic and institutional regime) pillar, it scores 4.66 in 2012 a notable progress from 2009 (4.14) but still below average Mena (5.41) and ahead of only Syria (2.04) Mauritania (2.05), Algeria (2.33) and Egypt (4.50). The progress made in the EIR score results from a certain improvements in Macro-economic and political stability (in terms of inflation, non inflationist financing of budget deficit, public debt reduction and resilience in the face of the 2008 world financial crisis). The Chinese rating Agency: Dagong Global Credit Rating Co maintained the notation of sovereign credit in local money in foreign currency (BBB+) in 2011. According to this Agency, Moroccan economy will grow at a rate of 4.4% in the next two years and will keep growing lightly in the medium and long-term. Moreover, from an institutional point of view, it has created in 2009, the «Commission nationale pour l'environnement des affaires» in the framework of the "Pacte public-privé pour l'Emergence Industrielle" passed with the main enterprises of the country to coordinate the horizontal reforms of the investment climate\(^26\). However compared to the 2000 rating, it scored lower in 2012 together with Kuwait, Oman and the UAE (CMI 2012).

<table>
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<th>Table n°3: Doing business in Morocco</th>
<th>Ranking 2012</th>
<th>Ranking 2011</th>
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<td>82</td>
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<td>Dealing with Construction Permits</td>
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<td>Protecting Investors</td>
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\(^{24}\)Figures supplied by the Ministry of the Economy – field investigation – Mission WBI 23-29 February 2012

\(^{25}\)World Bank Education at a Glance July 2009

\(^{26}\)Business environment reform in MENA: setting up the right implementation framework, IMF, quick notes series, December 2009
In terms of doing business, Morocco is in the 115th position out of 183 countries in 2011 gaining thus 16 places in comparison to 2008, moving to the 94th position in 2012. Morocco is classified in the diversified economy group with the second largest GDP/population ratio (34.2%). This is due to relatively exceptional progress made in Protecting Investors (+56) and paying tax (+36). In spite of this notable advance, the three most problematic factors for doing business in 2012 remain starting a business, Getting electricity and Registering Property. Morocco is doing better relatively to the MENA region, when it comes to indicators like “days to start a business”, “cost to register a business”, domestic credit to the private sector”, and “gross capital formation as % of GDP”. It has also made good progress on improving administrative procedures, but has a relatively low score in the adequacy of the legal framework to the needs for economic development (figure 12).

**Figure 12: Doing Business Morocco ranking (2011-2012)**

![Figure 12: Doing Business Morocco ranking (2011-2012)](image)


This shows that certain ongoing reforms are not producing rapidly the desired result and that it could do a great deal more to acquire a higher readiness for knowledge economy. In terms of competitiveness, Morocco ranks 73 out of 142 countries in 2012 going back from the 75th place in the previous year. Nonetheless it is doing better than several countries in Mena region: Egypt (94), Algeria (87), Lebanon (89) and Syria (98). The best performers are mostly GCC countries.

The Moroccan financial sector includes 19 commercial banks end of 2010 and 83 financial companies (2010). This is playing an increasingly important role: a total amount of credit granted has been expanding by an average of 14% in the last five years. In addition to credit institutions, Morocco has 160 organizations for collective investment in securities and 20 insurance companies.

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28 The Arab Knowledge Report 2009, UNDP/Mohamed Bin Rashid Al Maktoum Foundation, 2009 Abu Dhabi p.10
29 The Doing Business 2012 report
30 The Doing Business 2012 report
32 Bank AlMaghrib
33 Moroccan Business News website
The number of OPCVM reached 330 at the end of January 2012. On top of that, the Casablanca Stock Exchange (CSE) is considered as one of the most advanced in the Arab World. Market capitalization reached US$29 billion in 2005 and 98% of GDP in 2007. In 2010, it reached 579 019 Million DH (about 69 Billion USD).

Regulatory Financial markets and Venture Capital: Lack of credit continues to be a major obstacle for SMEs, particularly so for smaller innovative firms: there appear to be weak instruments for channelling venture capital to them and to early stages of firm formation and commercialization. Regulatory financial markets role which is not commensurate with its volume. In July 2008, the Moroccan authorities announced several planned measures to strengthen financial sector supervision, including granting full independence to the capital market authority, in line with the recommendations of the 2008 FSSA Update. As noted in the Ministry of the Economy and finance the banking appears to be solid with a solvency ratio of the sector above the minimum legal requirements in FP, a decreasing performing loans and the alignment of banking rules on the international prudential rules.

However, new institutions have started to provide funding to SMEs such as R&D Maroc which funds innovation projects. Targeted sectors are IMME, chemical and para-chemical, agro-food and environment. Venture capital supply, on the whole, has reportedly grown almost ten-folded (not in real terms) since 1990 and, by 2002, amounted to nearly $132 million (0.3% of GDP). Other funds rest on local private equity such as the risk capital fund, the incubators support fund, the capital development fund and the fund for the support of the development of the ICT-sector. In addition, there are cooperation funds such as the European Union FEMIP which participate to Moussahama, the first investment company, Capital Morocco a Maghreb Private Equity Fund, CFG Development or Fonds Sindibad (1st dedicated seed-capital fund). This explains the relatively good ranking of the country in 2012 in financing through local equity market, ease of access to loans and venture capital availability compared to other MENA countries. Additional measures were taken to liberalize the capital account through in 2007. Morocco ranks 62 for financial market development in 2012 out of 142 countries with a score of 4.2. While it is doing better than Syria (124), Algeria (125), it is behind Tunisia (60), Qatar (48) and UAE in the MENA region. It seems to suffer mostly from restrictions on capital flows (117) strength of investor’s protection (122) soundness of banks (65) and legal right index (105). On the availability of venture capital, Morocco, scores less than most GCC countries and Egypt in 2010 , but improved its position in 2012 where it surpasses Lebanon, Jordan and Egypt (figure 13).

35 Ministère de l’économie et des Finances
36 www.opcvm.ma
37 Anima investment network website
38 Figures supplied by the Ministry of the Economy – field investigation – Mission WBI 23-29 February 2012
39 Rate of exchange of March 2012.
40 Financial System Stability Assessment
41 as reported in the IMF’s 2008 Article IV Consultation report,
42 According to the 2008 IMF FSSA
43 Application of the prudential rules of bale2 and preparation of the regulation authorities to bale3.
44 the German GTZ and ISF (World Bank) contribute 30 percent each to this fund.
46 It includes a broader set of financial transactions, including public finance mechanisms to attract FDI and associated technology transfers.
47 European Investment Bank (2005).
In 1997 the government launched the *mise à niveau* fiscal policy program to modernize Moroccan firms, followed by a new program in 2003, followed by many firms after initial reluctance. Overall take-up remains, however, modest especially when compared with Tunisia, for example. Improvements are noted, however, since 2005 at the level of the elasticity of tax revenues which went from 0.8 in 2001-2004 to 2.1 in 2005-2008 as a result in particular of tax reforms and reform of tax administration. Other changes include the mutation of tax revenues structure in the 2001-2010 period in favor of direct taxation (+5.1 points) and indirect taxes (2 points) at the expenses of customs tariffs (-8 points).

The government has also improved banking supervision and liberalized the telecommunications and energy sectors and concluded a four-year fishing agreement in 2006 and a recent signature of an agricultural agreement with the EU and ongoing negotiations of a new fishing agreement. Various cost-saving and productivity-enhancing measures in the industrial sector are taken as well as government plans to implement wide-ranging agricultural reforms. We will see these in more depth when looking at the various plans. Other plans and programmes include the open skies agreement liberalizing Air Transport, the free trade agreement with US, Turkey and other Arab countries. The government made significant improvements to the business environment by reforming labor regulations in 2004, leading to a sharp increase in new business starts. Morocco is member of WTO and belongs to the group of Arab countries that are also part of a number of additional agreements: with the European Union and the USA in this case. These agreements stipulate usually additional and

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50 Based on a survey: In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? [1 = very difficult; 7 = very easy]
51 Morocco: 2009 Doing Business Report; World Bank
52 Data supplied by the Ministère de l’Économie et des finances – field investigation – Mission WBI 23-29 February 2012
53 Notably through a new integrated strategy for the energy sector and creation of a new fund for energy development
54 Economist Intelligence Unit, Morocco Country Report 2008
more stringent restrictions. The government made significant improvements to the business environment by strengthening property rights; in 2001, Morocco ranked in the fourth position in terms IPR index ahead of most MENA countries, except Tunisia and Turkey. With regards to implementation of these rules, the authorities seem to show some tolerance while fighting against these phenomena: the rate of piracy reached 58% in 2002 higher than African average (48%) and world average (39%). The global illicit market index puts Morocco’s counterfeit market value at $226 million with music and software constituting the prime counterfeit markets. From 2003 to 2006 Morocco achieved a 7% drop in its piracy rate showing the authorities will to fight against this illness. Whereas a new IPR framework, which is up-to-date in most respects, was put in place in the last few years, important issues remain. The widespread problems with implementation of rule-of-law through the courts weaken the significance of the IPR-system as well. In this area, too, however, improvements are in sight as eight special commercial courts have been instituted, which will look after IPR among other things. This makes it possible for the patent authority to engage with judges and other court personnel in targeted training exercises for rapid improvement of relevant competencies in the juridical system. In some respects, however, clear-cut deficiencies remain in patent legislation. In 2012, Morocco ranks 38th out of 144 countries in availability of scientists and engineers, showing a reasonably good position, however it ranks 71st in terms of number of applications filed under the Patent Cooperation Treaty (PCT). This situation needs further improvements notably through clearer rules regarding the benefits of invention for researchers fully integrated in the knowledge economy.

55 The Arab Knowledge Report 2009, UNDP/Mohamed Bin Rashid Al Maktoum Foundation, 2009 Abu Dhabi
58 World Economic Forum, The Global Competitiveness report 2012-2013
Figure 14: The Most Problematic Factors for Doing Business

Source: WEF Global Competitiveness Report 2012-2013. (World ranking, evaluation based on a scale of 1 (most problematic) to 5 (less problematic) The bars in the figure show the responses weighted according to their rankings.

On the Heritage Foundation index of Economic Freedom (2012), Morocco ranks 87 in a better position than Lebanon (90), Tunisia (95) and Egypt (100) in 2012. Nonetheless, it lags behind Jordan (32), Qatar (25) and the leader of the Mena region Bahrain (12). This index rank a 179 countries in the world on 10 measures\(^5\) related to the rule of law, the intrusiveness of Government and the regulatory efficiency and the openness of markets. This indicates that Morocco needs to improve its position on this to have higher readiness for knowledge based economy. Knowledge economy requires the freedom of thought and creativity individually and collectively. The indicators of civil and political freedom developed by Freedom House reveal that no Arab country is considered as free (CMI 2012). Only Tunisia, Morocco and Lebanon are classified as partly free (Freedom House 2012).

Political reforms: Since the so called Arab Spring, reforms in the political arena have been accelerating. In his speech of 9 March 2011, the King Mohammed VI set out seven major axes of constitutional reform:
- The confirmation of the pluralist nature of Moroccan identity, in particular its Amazigh component, described by the King as the “common patrimony of all Moroccans, without exclusion”.

\(^5\)These 10 measures include business freedom, trade freedom, fiscal freedom, government spending, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption, and labor freedom. http://www.heritage.org/index
-The consolidation of the rule of law, the enlarging of freedoms and the guarantee for their exercise. This was to be done on the basis of the constitutionalization of the “judicious” recommendations of the Equity and Reconciliation Commission (ERC), a body set up in 2004 by Mohamed VI to investigate violations of human rights in Morocco since independence, and to compensate and rehabilitate the victims.

- The reinforcement of the independence of the judiciary and the expansion of the prerogatives of the Constitutional Council.

- The consolidation of the separation and balance of powers by the transfer of new competences to Parliament and by the extension of the rule of law. The reform must also confirm the principle of the appointment of a Prime Minister by the political party which wins the elections to the Chamber of Representatives, on the basis of election results. The status of Prime Minister must also be reinforced as head of the executive.

- The reinforcing the role of political parties as tools to involve citizens.

- The consolidation of mechanisms to boost moral integrity in public life and to encourage accountability during a public mandate.

- The confirmation of the constitutional of the authorities responsible for the protection of human rights and freedoms as well as good governance.

To implement this reform, an ad hoc commission, the Consultative Commission on Constitutional Reform (CCRC) was created: it is responsible for the revision of the Constitution. The process of developing a new constitution was intended as participative and based on the implication of various political and associational actors. In parallel to the CCRC, a political mechanism accompanying the Constitutional Reform (“Mécanisme politique de suivi de la réforme constitutionnelle”). Nonetheless, a close look shows that the education pillar remains the most problematic one with a relatively low score, the second lowest in MENA ahead of Yemen only. Nonetheless, some significant progress was made in the last two years moving from 1.95 in 2009 to 2.07 in 2012 (figure 15).

### 1.2. Education and training

The education pillar is one of the key pillars, it measures advances in the field of education through several measures including adult literacy and secondary and tertiary enrollment. The 2012 scores show that Morocco improved its performances since 2000 on this pillar together with Algeria, Bahrain, Djibouti, Oman, Saudi Arabia and the UAE. Nonetheless, a close look shows that the education pillar remains the most problematic one with a relatively low score, the second lowest in MENA ahead of Yemen only. Nonetheless, some significant progress was made in the last two years moving from 1.95 in 2009 to 2.07 in 2012 (figure 15).
- Primary and secondary education: In Morocco, the education system has undergone important expansion and consecutive reforms. Enrollment rates for ages 19-23 have doubled in the past 25 years, and the number of students enrolled in higher education now exceeds 350,000. There is evidence of various favourable impacts, such as achievement gains for individuals attaining a greater number of years of schooling. While Government spending on education is one of the highest in the Mena region and reached 24.3% of total public spending (around 5.8% of GDP) in 2011), specific primary enrolment rate of 97.5% dropped rapidly to 52.8% for specific secondary enrolment rate and 11.5% for gross tertiary enrolment in 2009. The primary dropout rate reached 22.5% and the repeat rate 12% in average a slight improvement from 2002. Morocco is an underperformer in the integrated index of access, equity, efficiency, and quality of education and scored particularly low on the 2007 TIMSS math tests: only 9% reached intermediate benchmarking and 26% low benchmarking in the 4th grade. The situation improve slightly for the eighth grade: 30% reach intermediate benchmarking and 41% low benchmarking. English skills are generally very low.

Knowledge economy requires that higher levels of literacy and tertiary enrollments are achieved; In fact both French and English have not been to some extent neglected. This is on top of the existence of two languages: classical and colloquial Arabic on top of the Amazigh language that concerns a relatively strong minority.

- Higher education: Less than 12 out 100 students who enroll in primary education reach the university and no more than five receive a diploma. The government underwent an education reform in 1999 emphasizing the leadership role that universities play in knowledge production; it is not clear how much independence Moroccan universities have in transforming to powerhouses that could lead knowledge production in their respective regions. Statistics for the academic year 2009/2010 show a total of 16 universities (of which 15 are public) and 339 institutions of higher education, of which

60 World Bank Education at a glance, 2009
61 World Bank Education at a glance 2009
63 World Bank Mena 2008 report on education
64 World Economic Forum, The Global Competitiveness report 2009-2010
67 Elmeski (2008); “Knowledge production in Morocco: Current realities and future prospects” University of Minnesota
were public and 170 private. These institutions had a total of 367,385 students, distributed as follows: 309,990 in public universities, and 35,118, i.e. 9.6% of the total, receiving private higher education and 22,277 in professional training (formation des cadres). Teaching and educational guidance was provided by 12,346 lecturer/researchers, which corresponds to an overall staff–student ratio of 1 teacher to 27.5 students. This ratio requires some refinement insofar as university departments with unrestricted access have far more students per member of staff than is the case in faculties of science, let alone in institutions with a limited number of places. In terms of percentage of relevant age group, Morocco ranks relatively low behind most Arab countries with the exception of Qatar and Yemen (figure 16). The support staff of Morocco’s higher-education institutions comprises a total of 9,399 administrators and technicians.

**Figure 16**: Gross Tertiary Enrolment (Per Cent of Relevant Age Group)

Morocco has embarked on an 856 million dirhams (US$105 million) national program to train 10,000 engineers a year by 2010 to meet market demands, especially in technology and industry. There are just 30,000 engineers, or nine per 10,000 inhabitants, a low figure compared with 40 in Jordan, 130 in France and 540 in Japan. The 10,000 engineers program covers engineering diplomas as well as masters and bachelor degrees in science and technology.

The reform of the system of higher education has given growing autonomy to the universities in terms of educational practice. The Ministry of Education, for its part, intervenes in matters of policy direction and coordination through the National Coordination Committee for Higher Education. Another element of the reform is the introduction in all universities of the principle of evaluation and a quality-based approach. The reform process has created a new distinction in the diploma system between national diplomas, in cases where course programmes are subject to national accreditation, and university diplomas, where the course program is accredited by the university.

As far as degree courses are concerned, the reforms have served to establish a generalized flexible semester-based modular system and have introduced continuous assessment, credit accumulation and credit for previous experience. They also provide scope for the creation of bridges between courses, give students more opportunities to change course and create greater mobility, not only within the

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68 European Commission Tempus, “Higher Education in Morocco”
institutions of a single university but also between universities in Morocco and between partner universities in different countries. The reforms are characterized by diversification of course options, greater flexibility and courses that are more effectively tailored to the needs of society and the economy. They therefore generate more synergy between the university and its environment.

Some tasks, however, are proving more pressing than others. There is a need to reduce graduate unemployment, to diversify funding sources and provide for regular access to additional financial resources. It is also necessary to establish a culture of internal and external evaluation, to involve learners in the management of higher education institutions and to ensure a good open link with the world of employment by taking account of regional conditions in programmes. Finally, it is necessary to build international relationships by improving the courses that are delivered in Morocco and by focusing particular attention on quality assurance and to assimilate more aspects of the Bologna process with a view to facilitating the national and international mobility of students.

The priorities in this context are as follows: (1) to achieve a coherent and visible educational architecture consistent with the three-cycle international system of higher-education degrees; (2) to organize the course structure into cycles, semesters and modules with the accumulation of credits for successfully completed modules; (3) to provide for the possibility of switching to another course while retaining accumulated credits. It is theoretically possible for students to return to university after having been in employment, provided that they satisfy the educational entrance requirements.

As regards good governance, the management structure of universities has undergone profound changes in recent years. Each university now has a general council, and each faculty has a faculty council. Moreover, Moroccan universities are now expected to extend their role beyond training and research to include tasks such as: (a) providing services in the form of training courses, consultancy, specialists’ reports, specific research commissions, etc.; (b) providing certificated courses of continuing training; (c) creating business incubators; (d) exploiting patents and licenses; (e) marketing products of university activity; (f) investing in companies; (g) setting up subsidiary companies. As far as human resources are concerned, the improvement of the staff/student ratio promised as part of the reform process requires a significant increase in the number of teaching staff.

The establishment of new teaching posts, however, is taking a long time to happen. A voluntary-departure scheme launched in 2005 by the Moroccan public authorities, whereby civil servants and teachers who wished to leave their posts were offered a lucrative package to do so, resulted in an exodus of staff from educational institutions at the very time when demand for teachers was at its height. Moreover, the differentials in staff-student ratios between university institutions, particularly between institutions with free access and those with regulated access, greatly impair the coherence of the system.

In terms of material and financial resources, the over equipment of certain institutions, generally those with highly restricted access, contrasts with the lack of equipment in others. It should also be noted that one of the weaknesses of the reform process is the continuing timid approach to the involvement of learners in the implementation of the reforms.

- Illiteracy in Morocco: The overall illiteracy rate measures the proportion of people who do not own basic reading and writing skills in the total population size. It is more related to intellectual knowledge than to industrial knowledge, which is learned by doing. It is calculated by dividing the number of illiterate people by the total population size. The more the illiteracy rate is close to 100, the higher the proportion of people not having access to basic forms of knowledge.
Figure 17: Illiteracy Rates (Per Cent of Adult Population, 15+)

Compared to other countries in Mena, it has one of highest illiteracy rates in the region (figure 17): 30% of the population aged 10 and above in 2010. Compared to 1994, there is marked progress in literacy; however, the rate remains still far below the world average of 20%. In the Mena region it remains impressively high relative to comparators: 5 times higher than Jordan’s and nearly 7 times higher than Kuwait’s. This constitutes one of the major obstacles to full-fledged Knowledge Economy. The immediate implications is that digital literacy is also lower, another obstacle to information society, a major component of KBE.

- Vocational and technical training: The World Bank ranked Morocco in 2006 amongst the countries where business offers the least training, which therefore affects the country’s capacity to compete and innovate. Morocco belongs to the Arab countries with medium enrollment rate (10% to 17%) (source). In 2005, vocational and technical training enrollment did not exceed 6% of gross secondary enrollment rate (source). As for most Mena countries, there are reasons for this low rate: low social status of vocational training and no doubt, the colonial heritage (source) in this case added to relatively inadequate policy to have proper incentives prevailing for years. Deficient professional training, in turn, raises questions about how proactive the Moroccan government is in providing incentives to foreign and local firms to incorporate advanced and continuing training for job-seekers especially in knowledge-intensive industries. To make vocational training a vehicle for knowledge economy, policy measures need taking to complete ongoing reforms. Skills shortages are an issue, with only around 17% of graduates in technical subjects, which is below the rates of several Mena countries such as Algeria (19%), Oman (20%), Tunisia (23%) and Djibouti (31%) (source). While the overall number of students has increased by 35 000 since 1994-95, the number involved in science has fallen by 22 000. However, there is also clearly a shortage of employment opportunities, causing many young Moroccans to migrate, legally or illegally, to Europe. Nonetheless many young graduates, when given the opportunity of additional training perform relatively well.

70 The National Department of Literacy and Non-formal Education (2007),
71 The Arab Knowledge Report 2009, UNDP/Mohamed Bin Rashid Al Maktoum Foundation, 2009 Abu Dhabi
72 World Bank Education at a glance, 2009
73 An inherited system which trained mostly for administrative and civil service or liberal professions such as law and medicine, rather than for entrepreneurship and self-employment.
74 Database of the UNESCO Institute for Statistics
In terms of professional training, it is important to note the experience of the Office de la Formation Professionnelle et de la Promotion du Travail (OFPPT) which constitutes an adequate answer to youth unemployment to a large extent\textsuperscript{75}. OFPPT works on a public-private partnership basis: 24% of the funding come from State subsidies, 37 are from OFPPT and 42% are from the Tax on professional training (TFP). Each year, nearly 400 000 leave the schooling system without any kind of qualification in Morocco. To cater for this population and meet the industry need, the OFPPT pursues three main objectives: to improve the competences of the young to allow them to integrate the labor market, to provide on the job training for enhancing the enterprises competitiveness and finally to develop employability of the young through the creation of own enterprises. Remarkable performances have been achieved since 2002/2003 when the office started: 800 000 youth have been trained between that date and 2010, a rate of growth of 416% during the period. More than 5800 trainers are mobilized and 250 kills are covered with 22% in the “alternance” mode while 18% are related to qualifying training. The rate of employment varies between 70% and 100% depending on the sector and the personal circumstances of the applicant. Of specific interest is the nature of the activities: while the traditional skills in building and construction, textile and tourism remain important, the new emerging skills and courses linked to knowledge economy such as ICT, Offshoring\textsuperscript{76}, Aeronautics and Space (considered as global skills) with relatively high knowledge content appear to grow at a very rapid pace. On top of training for the labor market needs, OFPPT helps young trainees to start their own business: in this respect, it has 60 guichets to help with the creation of own enterprises. Finally OFPPT has regional facilities (10 are operational). By 2015, OFPPT is expected to train one million young men and women. In spite of a relatively good governance of the OFPPT, there are some problems and difficulties which need some attention: the overlapping with the activities of ANAPEC, the difficulties to benefit from the international cooperation and tap into global knowledge and skills, the slow institutional pace which can constitute a handicap in a area where some the offer has to be put up in a relatively short-term.

- **Women in education**: 50.8% of the illiterate population in Morocco is female in 2009 and 69% of women living in rural areas are illiterate. In pre-primary schools, the proportion of girls remains slightly lower (85% of the age group) than the boys (100%)\textsuperscript{77}. Primary schools have less proportion of girls (81%) as against 97% for boys. The GPI (Parity Gender Index)\textsuperscript{78} indicates that Morocco score less than 0.95 for all levels of education which is less than many Mena countries as a whole with the exception of Djibouti, Egypt, Iraq, and Yemen. In relative terms, higher education benefits from higher GPI than primary and secondary levels in most Mena countries. While girls’ proportion in tertiary education surpasses boys, over time, the position of Morocco has deteriorated regarding gender parity. The Global Gender Gap Index (GGGI)\textsuperscript{79} has not improved much in the last four years, going from 0.5827 in 2006 to 0.5804 in 2011, while its ranking has deteriorated from 107\textsuperscript{th} (126\textsuperscript{th}) to 129\textsuperscript{th} between 2005 and 2011 with a sample of countries increasing from 115 to 135. This is primarily due to poor job opportunities and economic participation where Morocco registers low scores. Gender Parity index reaches 0.90 at primary and 0.86 at secondary in 2009, showing notable improvements. Morocco has not made great progress on the education pillar though\textsuperscript{80}.

- **Lifelong learning**: Morocco, through its National Charter for Education and training (elaborated in 1999) followed by the emergency plan 2009-2012 had already made ample room for continuous training. Current reforms put the development of continuous training as a priority within universities. E-learning is done in a fairly experimental way in some Ministries: Finances, Interior and Equipments. Its is still too early to have an assessment of the outcome in the field. Despite numerous technical and publishing challenges, distance learning or e-learning is gaining momentum in Morocco in the public and private sectors. Morocco is creating a Virtual Moroccan Campus aimed

\textsuperscript{75} field investigation – Mission WBI 23-29 February 2012
\textsuperscript{76} 80% of employees of Casa shore for example were trained by OFPPT
\textsuperscript{77} Data supplied by the Ministère de l’Economie et des finances – field investigation – Mission WBI 23-29 February 2012
\textsuperscript{78} The GPI is defined as the gross enrollment rate of girls divided by the gross enrollment rate of boys
\textsuperscript{79} Global Gender Gap Index (2011)
\textsuperscript{80} Zouhar, Y. (2005); “Human capital and economic growth in Morocco”
at pooling the resources of e-learning programmes throughout the university system. The ultimate goal is developing full remotely provided courses of study at the vocational, undergraduate, and graduate degree levels.

_Education through International cooperation:_ Cooperation with the EU universities is usually through the Tempus program which seems to have raised a great deal of interest on the part of Moroccan universities. Opening up real new vistas for Moroccan higher education, the program has been the subject of growing numbers of applications since it was launched in Morocco in 2002/2003. Some 30 million Euros have been allocate and more than 400 Moroccan teachers have benefited from rational and efficient cooperation in terms of the arrangement of projects, the equipping of laboratories and libraries and visits to Europe to attend training courses and program-coordination meetings. More than 500 Moroccan students have been able to attend European universities through this program. Likewise the program includes improvement in academic governance in Morocco. The principles of monitoring, auditing and internal and external evaluation have now become part and parcel of the academic environment.

**Conclusion:** The demographic hump and considerable expansion of the educational system, notably at tertiary level, means that many job seekers are young with university education, and high expectations. Consequently, graduate unemployment increased by 30% in the last two decades, while unemployment rate for non-graduates declined. Unemployment is high, especially in urban areas (13.4 percent in 2011), particularly elevated for women, the young, and the better educated. The exclusion of women in the labour market is mirroring lower enrolment rates and very low literacy rates. This kind of situation will be untenable over the medium run. In 2012, Morocco ranks 73th in GCI out of 142 countries and scores 4.16 out of 7. Underperforming educational system, and very limited investment in more knowledge-intensive activities, added to weak R&D of Morocco’s largely small and medium companies have created a supply and demand situation where the educational system is not adequately prepared to supply highly skilled knowledge workers, and where the labor-intensive market has not developed enough capacity to switch to knowledge intensive production. Distance working through ICT intensification in a knowledge economy era is expected to create valuable opportunities for women, where the social environment continues to restrict their participation in national labor markets, despite high school achievements.

### 1.3. National system of Innovation

While innovation is the key function in the process of wealth creation and one of the most important KE pillars, it rests often on a viable research system. Let us look first at the national research system in Morocco.

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82. It is important to observe here that the global data mask the difference between the graduates of university education (except medicine and engineering), for whom the unemployment rate increased from 6.5 percent in 1984 to 23.3 percent in 1990, and the graduates of non-university education (Schools, medicine, normal training, etc.) for whom unemployment remained stable at around 1.1 percent.

83 Haut Commissariat au Plan, 2011


86 The Arab Knowledge Report 2009, UNDP/Mohamed Bin Rashid Al Maktoum Foundation, 2009 Abu Dhabi
1.3.1. Research: In institutional terms, the system of scientific research in Morocco comprises six research institutes, 982 accredited research units and 49 centers of postgraduate studies. Morocco devotes 0.75% of its budget to scientific research, the bulk of which is used for the benefit of ‘hard’ science. Only 7% of the budget is spent on research in the humanities and social science. Before 1996, the budgets devoted to research were largely the responsibility of the universities, which used about 10% of their resources to fund research activities. Today there is a separate heading reserved for scientific research in the operating budget of both the Ministry of Education and each university. Since 1998, Morocco has had a Secretariat of State for Research to enable the Government to pursue a genuine research policy. The culture of scientific research, however, has not yet permeated the universities, which remain primarily places of instruction. Moroccan lecturers are not integrated to any great extent into national or international research networks. Currently, public and private funds assigned to the scientific and technical research sector represent 0.8% of GDP (0.64% in 2006) but there are plans to increase this figure to 1% by 2016.

To promote science and technology investment, Morocco is also planning to establish a new campus to provide knowledge-based services to strengthen research and training in clean technology. The ‘knowledge campus’, part of a US$3.2 billion five-year renewable energy investment plan, will help in developing the scientific workforce through training programmes, conferences and seminars, new masters courses in renewable energies and through research projects.

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In terms of scientific production, Morocco scores relatively low compared to the other countries of the region and in particular the Gulf countries. These scores are well below performances of advanced countries. Average EU reached 634 articles per million people in the same year (2005).

Nonetheless, when looking at co-authorship, Morocco is in a very favorable position, ranking first in a list of selected Mena countries (Fig. 13bis): 70 articles per million inhabitants in 2008 (KAM 2012) which presents a good potential for tapping in world knowledge.

In terms of total number of articles Morocco registered 1990-2008: however an important progress seems to have been made in a relatively short period as Morocco registered 3019 scientific article in 2012\textsuperscript{92}. Recent moves include the creation of Centres d’Etudes Doctorales (Cedocs) where all research is conducted (figure 21). As of 2008-2009, 51 Cedocs are created. Figure 14 shows that the highest proportion is created in science and technology.

Figure 21: Distribution of the Cedocs in universities (2008-2009)

\textsuperscript{92} Ministère de l’Économie et des Finances, Direction des Etudes et des Prévisions Financières, “Plan d’Action pour l’insertion dans l’Economie du Savoir” Décembre 2011 (Non publié)
Morocco’s research centers such as CNRST have been instrumental in informing national policy about strategic sectors such as agriculture, water management, and energy. Despite the considerable contributions of these research centers, the diffusion of innovation in Morocco is still constrained by inefficient coordination, shortage of funding, and a suboptimal system of innovation.

1.3.2. Innovation

Innovation remains one of the most important and the most problematic in the Mena region as shown by the scores and rankings of most Mena countries. In spite of efforts made over several years, Morocco is still below Mena average (6.14) in the innovation pillar scoring 3.67 in 2012 regressing 4 point from 1995. Consequently, it belongs to medium performers (between 3 and 4.99) where the bulk of Arab countries are (Kuwait, Oman, Tunisia, Iran, Lebanon, Egypt, Saudi Arabia, Morocco, Algeria, Syria and Bahrain). Nonetheless, some indicators show that Morocco has some strength in firm-level technology absorption and is about average (compared to the world) on availability of venture capital, technical journal articles, and university-company research collaboration. Main weaknesses lie in low FDI and total royalty payment and receipts.

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93 Centre National pour la Recherche Scientifique et Technique
The overall Global Innovation Index (GII) produced by INSEAD (2012) provides a composite picture of the state of a country's innovation performance. On this index, Morocco ranked 88 in 2012 below some other lower-middle-income countries of the region such as Tunisia (59) and better than others such as Egypt (103), Syria (132) and Yemen (139).

Examining input and outputs gives a more precise picture of the situation.

### 1.3.2.1. Innovation inputs

Innovation is set as one of the top priorities and the first source of competitiveness by the Moroccan Government. On top of the remarkable effort made in recent years and which upgraded the funding of R&D, the Moroccan officials felt that this public effort cannot bear results unless adequate support is given to entrepreneurship. We will look at the main inputs: R&D spending, number of researchers and public procurement,

#### R&D spending

*Public spending in R&D.* Currently the public sector funds 73% of research in Morocco, the private sector 22%\(^5\), the public-private partnership 1%, the public-public partnership 1% and cooperation 3%\(^6\).

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\(^6\) Data from the document on scientific research in Morocco: *État des lieux et perspectives de développement datant de Mars 2011, Département de l’Enseignement Supérieur, de la Formation des Cadres et de la Recherche Scientifique* (provided by the Ministry of finance and economy during field trip)
A new investment has been created which includes three funds: INTILAK for the support of start-ups (110 million dirhams for 200 projects during 2011-2014), a fund for technological networking (50 million dirhams for 500 projects during 2012-2014) and TATWIR geared towards supporting development (220 million dirhams for 105 projects during the same period). Morocco has also established the first fund in the country to support innovation in information technology, with an initial budget of 100 million dirhams. The fund is part of a plan to create more than 30,000 new job opportunities in ICT industries. The purpose is to provide up to 50% of the financing for innovative projects advanced by IT companies. Public research institutes and academic institutions account for 73% of all spending (figure 25).

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Source: World Bank (2012). Data are from 2009 or latest available.

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Private spending on R&D: Available data indicate the growing interest and/or capacity among Moroccan enterprises for allocating resources to R&D: private funding reached 22% while partnership funds (public-private and public-public) do not exceed 1% each (figure 25). These are also the results of funding from the private group Omnium North Africa (ONA) and companies in agro-food, textile, leather and industrial transformation (mechanical, electrical and electronics). Morocco’s investment fund has been used to successfully attract technology intensive TNCs (Transnational Corporations) for technology transfer projects that launched R&D activities. This is the case for example of ST-Microelectronics which established units for R&D to develop integrated circuits, of Matra automobile engineering to create an R&D centre for the automobile industry, of Lead Design for R&D in micro-processors and Teuchos for aero-space parts. This currently makes in fact Morocco the leader in the Mena region, in terms of private TNCs funding of R&D. It remains, nonetheless, relatively small compared to private sector share in total R&D-spending in the emerging and developed world. Key actor mentalities must evolve much more broadly, however, and become attuned to the needs of knowledge development and the emergence of new capabilities in absorbing continuously new technologies and in innovating constantly which requires a host of procedures and mechanisms.

Figure 26: Risk capital as a percentage of GDP, Morocco

In Morocco, VC supply has reportedly grown almost ten-folded (not in real terms) since 1990 and, by 2002, amounted to nearly 1.2 billion DH (about 132 million dollars), or the equivalent of 0.3 percent of GDP, which would place Morocco close amongst the highest Mena countries (Fig. n°19). The figures have, nonetheless to be taken with caution as it might include a broader set of financial transactions, including public finance mechanisms to attract FDI.

**Number of researchers:** Since the data is lacking for the case of Morocco, an estimation of the number of researchers in R&D is based on applying 25% to the total of personnel in universities and institutes. The data obtained show that Morocco is enjoying an increasing number of researchers in R&D. This number moved from 2428 in 1994 to 3000 in 2000. In 2010, about 10103 academics doing research, 2343 permanent teachers in the training institutions; In addition to that, 13123 doctoral students who contribute to research were registered in 2006-2007.

**Figure 27:** Distribution of researchers by sector of activity: 2000 and 2008


Data from the World Forum (figure. 28) show that availability of scientists and engineers can be quite a handicap to get innovation off the ground and propels it into a sustainable trajectory in Morocco. It scores 4.5 out of 7.

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99 DESFCRS (2010a), La formation des cadres en chiffres 2008-2009, Direction de la Formation des Cadres, Rabat
100 cited in Jamal Bouoiyour, Economie, Université de Pau, France
101 Question asked : To what extent are scientists and engineers available in your country? [1 = not at all; 7 = widely available]
Figure 28: Availability of scientists and engineers

<table>
<thead>
<tr>
<th>Country</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qatar</td>
<td>5.0</td>
</tr>
<tr>
<td>Jordan</td>
<td>4.5</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>4.0</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>3.5</td>
</tr>
<tr>
<td>Iran, Islamic Rep.</td>
<td>3.0</td>
</tr>
<tr>
<td>Lebanon</td>
<td>3.0</td>
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<tr>
<td>Morocco</td>
<td>4.5</td>
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<td>Turkey</td>
<td>4.0</td>
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<tr>
<td>Egypt</td>
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<tr>
<td>Bahrain</td>
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<td>Algeria</td>
<td>3.0</td>
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<tr>
<td>Kuwait</td>
<td>2.5</td>
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<tr>
<td>Oman</td>
<td>2.0</td>
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<tr>
<td>Mauritania</td>
<td>2.0</td>
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<tr>
<td>Yemen</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Source: data from the World Forum Report 2012-2013

Returning Moroccans from the Diaspora proved to be central to the success of some companies and start-ups. HPS (High Powered Systems) for example has successfully mobilized members from the Diaspora. It has collaborators from 60 different countries. It has rapidly realized that R&D personnel are a key element if it wants to achieve its ambitious development plans and hunts for it wherever it is the world.

**Public procurement**

Government procurement of advanced technology can be measured by its capacity to foster technological innovation through the acquisition of new technology products and services, as defined in the World Competitiveness Report. Morocco is a medium performer, ranking 72nd behind most GCC countries and Jordan and Turkey, but ahead of seven other Mena countries which is not a bad ranking (figure 29).

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102 Question asked: To what extent are scientists and engineers available in your country? [1 = not at all; 7 = widely available] |

University-enterprise collaboration.

Linkages between public research and industry are reflected through the 2000-2004 economic development plan which translated explicitly policy choices and decisions and also through a set of laws and regulations. These include the creation of link cells (cellules d’interface) between universities and enterprises whose role is to identify research needs in industry and research potential within universities. The other measures include the creation of a new type of partnership through the Groupements d’Intérêt Public (GIPs) between research and training institutions and public and private enterprises and the creation of incubators within enterprises located within universities or research institutions with the objective to promote innovation and technology transfer. Finally, there is also the encouragement of mobility of researchers between universities and public and private companies. The interface between research and industry is, however, as already noted, weakly developed. For instance, universities are poorly linked to the private sector. Some new policy initiatives aim at linking these two important domains, but they are still relatively fragmented and small-scale. A study conducted on a sample of institutions in 2000, showed that only 10% of the research projects initiated at the university are linked to enterprises. A recent study in Morocco (CMI 2012), singled out detrimental regulations of the Ministry of Finance that require prior review of research and training contracts between universities with external clients, notably business enterprises—a bureaucratic hurdle with very negative consequences. There is a “crisis of confidence” between the two parties. According to the CGEM (Confédération Générale des Entreprises Marocaines), the university should not look at the enterprise as a financer of its various activities (seminars and other meetings). It should be perceived as a true collaborator capable of enriching the teaching and syllabuses and of accompanying students in their various projects at university level in the same way it is practiced in the CNAM in France. Not only is there a need of upgrading research institutes and industry research facilities, but incentive structures must be diversified, e.g. by opening up alternative career paths for researchers, and improving conditions for spin-offs from both universities and private enterprises. There is a need to boost, outsourcing of R&D in the country and

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104 Groupement d’intérêt public
105 El hatimi, N “Coordination et structuration de la recherche scientifique au Maroc” Colloque Veille stratégique et compétitivité, Notes et Documents R&D Maroc 2005
106 Saad Belhazi, bdelmajid Caoui & Abdelali Bendekroun “enquête sur les possibilités et opportunités de développement des incubateurs d’entreprises” Notes et Documents, R&D Maroc 2000, pp. 61-66
107 field investigation – Mission WBI 23-29 february 2012
joint research and innovation projects with TNCs to realize this potential. The current innovate on policy is based on the creation of technological networks built around enterprises and universities. In this framework, an initiative has been launched by the Ministry of Education, namely the establishment of centers of excellence. Eighteen centers of excellence have been created. They cover various fields – arts, biology, the environment and quality – and bring together a number of partners.

The public instrument that was established to promote innovation, business start-ups and technological cooperation includes university enterprise interface structures, the Moroccan Incubation and Spin-off Network (Réseau Maroc Incubation et Essaimage), the Technology Dissemination Network (Réseau de diffusion technologique), the Industrial Engineering Network (Réseau de génie industriel) and the Moroccan Institute of Scientific and Technical Information (Institut Marocain d’Information Scientifique et Technique).

1.3.2.2. Innovation outputs.

Innovation is fundamentally incremental but also includes modified and adapted actions as shown by the Community Innovation Surveys (CIS) (figure 30).

![Figure 30: Community Innovation Survey: Most innovations are modified](image)

Source: Insead (date not specified)

Strategies are clearly “niche” in the face of high entry barriers and late-coming position and clear preferences of local to imported skills. Industrial organization seems to be central to this process including vertical disintegration, co-design by end makers and their suppliers, emergence of specialized design studios and assembling system of components from many sectors. Collaborations take on different shapes: intense local collaboration, search networks and codification of tacit knowledge.

In terms of outputs, we will look at patents granted to residents and to high tech exports.

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109 European Commission Tempus, “Higher Education in Morocco”
Patents Granted to Residents:

The number of patents granted to residents expresses the level of technology creation in the country because it encourages inventors to exploit and implement their ideas. It is l’Office Marocain de la Propriété Industrielle et Commerciale” (OMPIC) which provides the data about the number of patents granted\(^{110}\). Figure 31 shows that this number reached a peak in 1998 but kept decreasing since then showing possible problems which need examining. In comparative terms the number of patents is a great deal higher often to protect domestically their innovation.

\(^{110}\) Data for 2008-2012 are provided by Academy of Hassan II of Sciences et Techniques
Patents granted by USPTO (figure 32) are relatively low relative to other countries in the region. Morocco scores 0.08 while Kuwait reaches 3.55 for the same period. This is well below EU countries performances which reached 75.5.

**Figure 32: Patents Granted by USPTO / Million People, average 2005-2009**

*Source: World Bank Knowledge Assessment Methodology Data (2012).*

While numbers of patents are an important indicator showing dynamic R&D capabilities, it is implementation that matters, in other words, its transformation in successful products and services. This is the case of HPS which introduced PowerCard software.
Box n°1: The newly introduced PowerCARD by HPS in Morocco

Founded in 1995 by a group of Moroccan consultants and experts in Monetics or electronic banking in 2008, it managed to acquire the American Express account in the face of several international competitor and Acarda, a Swiss company in 2009. More than 90% of its products are exported to 60 different countries in Europe (26%), Middle East (36%) in Asia, in America and in Africa and well over 100 clients. Its total income reached 30 million US dollars in 2010. The domestic market represents less than 10% of the total. In 2010 The same year, it won the French Credit Agricole account, a leading bank with 350 thousand clients and over three billion transaction a year. It has also joint ventures in Bahrain (GPS) and in Mauritius (ICPS).

HPS recruits essentially from the Ecoles d'Ingénieurs in Morocco and certain from universities. Unlike a generally held view, these university graduates have satisfactory performances once they receive specific training related to the field of Monetics, which is nowhere taught in the country. Its number of employees grew rapidly from 179 in 2009 to 350 in 2011 essentially young. R&D personnel represents 35% of total number of employees and all of them are Moroccans: it feels little need to resort to foreign expertise.

HPS managed to introduce PowerCARD software in the Moroccan market for electronic payment system (finance telecommunication, distribution). Its R&D capabilities give it the possibility of designing and developing payment solutions but also providing a whole range of services: electronic payment solutions; consulting in payment systems, customizations to meet specific customer needs, integration with customer information systems; assistance to migration from existing electronic payment systems, assistance to pre-certification and certification with national, regional and international networks; maintenance, upgrading and outsourcing. PowerCard was ranked in 2010 as the 13th best electronic payment system in the world. It uses essentially market pull policy by a continuous market watch process and can be considered one of the very few to provide a front office and back office innovative solutions. Its innovative capability has been recognized world-wide: it proceeds twice a year to the release of new products and processes: it received in 2006 the Excellence Award for Innovation from the World Intellectual Property Organization (WIPO). To strengthen its competencies and constitute a pool of people for its future recruitments and in the face of limited training facilities in the field in Morocco, HPS started its own Academy. A significant effort has been deployed R&D: HPS yearly budget for R&D reached 10% of its income which compares favorably with its competitors.

Source: field work 2011

High Technologies Exports:

High tech exports are a recent phenomenon. While data analysis for the period 1960-2006 show that most Arab countries follow a primary production led industrialization strategy, Morocco belongs to the very few that are considered to have a manufacturing based industrialization and is in the process of achieving its structural transformation in the manufacturing sector.

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111 Laabas (2009)
In this respect, countries of the region can be classified in three categories when examining high tech exports as percentage of all manufactured exports (2005):  
- high performers: UAE (10.2%), Morocco (10.1%), Tunisia (4.9%), Jordan (5.2%),
- middle performers: Bahrain (2.0%), Oman (2.2%), Lebanon (2.4%)
- low performers: Algeria (1.0%), Qatar (1.2%), Kuwait (1%), KSA (1.3%) and Egypt (0.6%).

A quick assessment of exports of high tech products and services indicates that some specialization in long-term and medium-term commodities appear in Morocco, together with Tunisia and Egypt. With a percentage of 10.1% of high tech exports in total exports (figure 33), Morocco belongs to the first group of high performers:

**Box n°2: Professional associations**

Professional associations, while being new and relatively limited in number in Morocco can play an important role in pushing innovation and R&D activity in the practices of enterprises and particularly SMEs. The case of APEBI, a professional association in Morocco with currently 150 members, representing all fields of ICT (SSII, integration, distribution, software edition, telecom operators, off shoring IT et process etc.) illustrates very well how such an initiative can have the necessary leverage effect for support from Government, and funding from international organizations support policy to develop endogenous R&D. In Morocco, APEBI played, for example a key role in the development of monetics, a world known success story (see HPS case). The target is to reach 80 Billion DH by 2012 and create several hundred jobs. This kind of initiative meets necessarily obstacles and difficulties, the most important ones being the weak venture capital market (VC).

Source: Laabas

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112 Arab Knowledge Report (p. 210) -  
113 Arab Knowledge Report (p. 210) -  
114 www.apebi.org.ma/index-eng.php)
For Morocco\textsuperscript{115}, it appears that electrical equipment, telecommunications equipment, pharmaceutics, and medicaments are the leading products in high technology exports. Computer equipment, aircraft, and electronics equipment are showing low values. In 2000, the telecommunications equipment exports value represented 47\% from the total high technology exports signaling the big revolution in the telecommunications market in Morocco.

**Figure 34**: CNRST as operator and promoter of research, R&D and Innovation

![Diagram](image)

Source: A. BENJOUAD « Environnement propice à l'innovation Expérience Marocaine » CNRST\textsuperscript{116}, CODIST-I, Addis-Abeba, 28 avril-1 mai 2009

In general, Morocco has several weaknesses in its innovation system. Despite the considerable contributions of these research centers, the diffusion of innovation in Morocco is still constrained by inefficient coordination, shortage of funding, and a suboptimal system of innovation. In a country like Morocco where the formal R&D base is small, a very important part of an innovation system relates to how it can tap into the global knowledge stock and diffuse modern and more efficient practices to the greatest number of users. This applies both to domestic and foreign knowledge. Main weaknesses lie in low FDI and total royalty payment and receipts.

A major lesson emerging from existing experiences in developing technopoles is that concentration of training, research and enterprises in the same location is not enough to create innovation. If there is an “invisible hand” attracting the different players towards common objectives, it needs ongoing support, or at least seeding efforts. This support takes the form of services provided or proposed by the management of the technopoles. Individually, innovative enterprises and projects could be accompanied by and promoted to other partners, both within the pole and beyond. Collectively, common services and support should be developed to facilitate interactions between users within the category of stakeholders and between different categories.

1.4. Information and Communication Technologies (ICT)

The Telecom sector has grown to important proportions in Morocco, as its revenues account for about 4.6 percent of GDP (CMI 2012). The ICT pillar in the KAM measures the number of telephones per 1,000 people, computers per 1,000 people, and internet users per 10,000 people. Morocco made a notable effort in developing ICT usage both in terms of reforming the legal and regulatory framework and in investing substantial funds. Consequently, Morocco scores 4.02 in the ICT pillar in 2012 which is above the average Mena 3.92 and shows a real progress in like other

\textsuperscript{115} the International Trade Center,  
\textsuperscript{116} Centre National pour la Recherche Scientifique et Technique
countries such as Algeria, Bahrain, Oman, Saudi Arabia, Tunisia, and the United Arab Emirates. Morocco made the second best performance in 2008-2011 regarding the ICT development index of ITU, gaining 10 places ahead of Egypt Algeria and South Africa. As regard the Network readiness index of 2011 which is about ranking, figure 35 gives a slightly different picture: Morocco is in the 83rd rank out of 134 countries going backward of 9 rows in comparison to 2008/2009 well behind countries like Tunisia (35th), Saudi Arabia (33th), Jordan (50th), Oman (41th) and Egypt (74th)\(^\text{117}\).

**Figure 35 : Network readiness index : 2009-2011**

Source: The Global Information Technology Reports 2008-2012, WEF.

According to the World Economic Forum (2012) Morocco just like Lebanon, Algeria and Syria, suffers from important weaknesses in ICT development that hinder their capacity to take full advantage of the benefits accruing from the deployment and use of these and other technologies. Low levels of ICT infrastructure development, coupled with insufficient available skills, translate into low uptake of technology by all agents, especially the business community and individuals. Addressing these weaknesses will be crucial to start the national economy toward more knowledge rich and productive activities (CMI 2012).

Morocco has undertaken a serious of consistent reforms to pave the way for ICT infrastructure, which has improved markedly in the past 10 years. Morocco and Jordan were the first countries to issue second mobile licenses in the late 1990s; a national IT policy (1999-2003) was elaborated and approved by the government for implementation in line with several action plans. Funding for infrastructure development has traditionally been met through concessional loans and grants, but the Moroccan government is increasingly encouraging private participation. Favored mechanisms for attracting private capital are build-operate-transfer (BOT) terms or long-term operating concessions. As a result a significant progress has been achieved in ICT coverage: the number of phone subscribers (fixed and mobile) increased more than six-fold between 1995 and 2004. By the end of 2005, there were 4.6 million Internet users in Morocco and by the end of 2011, this number reached 15.7 million users according to ANRT\(^\text{118}\) making Morocco the third in Africa. This exceptional growth concerns also telephones: in 2011, the number of subscriptions to mobile reached 36.55 million and to fixed phone lines 3.57 million subscribers. Rate of penetration of fixed and mobile

\(^{117}\) Ministère de l'économie et des Finances, Direction des Etudes et des Prévisions Financières, « Positionnement Mondial et Régional du Marocen Matière de Technologies de l'Information et de la Communication » Septembre 2009

phones went from 36% in 2004 to 91% end of 2009\textsuperscript{119} reaching 113.6% for mobiles and 11.1% for fixed lines in 2011\textsuperscript{120}. The fixed-line penetration was pushed up as demand for Internet and television services revived interest in landlines. The number of internet subscribers reached nearly 3.2 million with a penetration rate of 9.89% according to ANRT\textsuperscript{121} which is still below performance in the emerging economies and some countries in the region. The completion of the Programme d’Accès généralisé aux Télécommunications (PACTE), end of 2011, should provide mobile and internet services to all populations in white zones (zones blanches) with a significant impact on these populations. Due to the international crisis, the rate of growth in 2009 slowed down. In 2009, available Internet bandwidth per capita was 18 to 20 times greater in Bulgaria than in Morocco and the price per megabit in Bulgaria was three times lower than in Morocco, (CMI 2012).

**Figure 36 : Secure Internet servers (per 1 million people)in 2011**

![Secure Internet servers (per 1 million people) in 2011](image)


While Morocco’s ICT expenditure as percentage of GDP is higher than the Mena average, many of the other ICT indicators are below. Morocco has to catch up in terms of internet users, computers per ownership and information infrastructure to keep up the global pace and progress made in comparator Mena countries. The telecommunications sector is being opened to competition and is expanding rapidly with new services and new platforms, such as fixed satellite Very Small Aperture Terminal (VSAT) digital data transmission, WIMAX etc. The authorities hope that the sector will lift GDP growth and create jobs throughout the economy, including Internet-based businesses and service firms\textsuperscript{122}. Growth potential is underlined by the fact that the middle class and business communities, though still small, are growing and the regulatory regime is light but effective\textsuperscript{123}. Various programs are in place to support diffusion of ICT, as part of the e-Morocco strategy replaced by Maroc Numerique 2013, which we will see in details later. Knowledge economy requires higher coverage in terms of usage but also in terms of production and exports of ICT products in which Morocco remains relatively weak like other Mena countries.

The action plan drawn up by the e-government committee for 2005-2008 under which 1.5 billion dirhams (around USD 166 million) were allocated to provide over 200 services online in relation to the public sector. The e-gov. programme IDARATI reached 120 services in 2008. The importance to

\textsuperscript{119} ANRT, « Note d’orientations générales pour le développement du secteur des télécommunications à l’horizon 2013 » Rabat, le 25 février 2010

\textsuperscript{120} ANRT

\textsuperscript{121} [http://www.anrt.net.ma/fr/admin/download/upload/file.fr2336.pdf](http://www.anrt.net.ma/fr/admin/download/upload/file.fr2336.pdf)

\textsuperscript{122} Economist Intelligence Unit, Morocco Country Report 2008

\textsuperscript{123} Economist Intelligence Unit, Morocco Country Report 2008
promote citizens' use of information technologies, noting that the government has approved a program aiming to establish 8500 multimedia rooms in schools in three years as of 2005, for a global budget of 1 billion dirhams (around USD 111 million)\(^\text{124}\). The nation has more than 200 tele-services aimed at individuals and businesses, as well as a national portal to promote e-government. Such as the SYSAG project to monitor government action\(^\text{125}\); Morocco online government also appears to be moving forward. In April 2006, Morocco started a national portal to promote the country and provide practical information in Arabic and French about more than 700 of the most-frequently used administrative procedures through its public service component. Morocco has set up an electronic administration committee attached to the prime minister to set up a secure virtual gateway for the public and which is also involved in two projects to boost the national strategy for electronic administration in 2007: the national secure biometric identity card and the ICT for education called the "Genius" program. Government departments have put several electronic services online, including those of the Moroccan Office for Industrial and Commercial Ownership, the Finance Ministry and the Justice Ministry. The e-gov. readiness index in 2008 shows a slight improvement from 2005, while its ranking deteriorated from 138\(^\text{th}\) to 140\(^\text{th}\)\(^\text{126}\). Morocco has to catch up on e-government services, and extent of business internet use, both very useful to leverage knowledge economy. Several administrations have made significant efforts to introduce e-services: the Direction Générale des Impôts, the Caisse Nationale de Sécurité Sociale, the Direction des Douanes et Impôts indirects and the Office Marocain de la Propriété Industrielle et Commerciale are amongst the few. In 2010, the E-gov development index shows a significant improvement as Morocco ranking went from 140 in 2008 to 126 in 2010\(^\text{127}\).

\textit{E-commerce} has also made some progress. There are several laws which regulate the functioning of this rapidly emerging sector in Morocco: law n°53-05 whose objective is to fix the regime applicable to legal data exchanged electronically, to the equivalence of documents established on paper and those on electronic supports and to the electronic signature. This law determines the legal framework applicable to operations made by services providers of electronic certification as well as the rules to be respected by those and the holders of electronic certificates. There is also a law 09-08 related to the protection of people regarding the treatment of their personal data. There are premises on the ground that e-commerce will take very rapidly once minimal conditions of security are fulfilled in Morocco. The Centre Monétique Interbancaire (CMI), an umbrella organization for Moroccan banks, deployed since 2007, a new platform certified by Visa (Verified by Visa) and MasterCard (MasterCard SecureCode) to provide full security in the processing of online payment operations, in accordance with international standards\(^\text{128}\). It is aimed at three millions customers holding bank cards. The provision of the electronic payment terminal are the responsibility of Maroc Télécommerce, the only e-commerce operator currently in the market and whose governing body is essentially made up of banks. Sustainability of the system is assured by the commissions paid for each transaction to CMI (2 to 3\%) and Maroc Telecom (1.5\%). In parallel, a legal instrument is being prepared to cater for the needs of security and digital signature. Morocco score 3 (scale 1 to 7)\(^\text{129}\). Further measures need taking to facilitate e-commerce notably security, protection of privacy and the application of a taxation system. Significant progress was made in the last few years in this area. Nonetheless, there are several weaknesses: according to the World Economic Forum: Morocco lags behind in terms of the availability of line information, interactive tools, and the range of services offered to users, the relatively high telecomm cost and in particular mobiles, the low level of collaboration between universities and enterprises.

Penetration of ICT (Internet and mobile namely) depends to a large extent on price levels. Figure 37 compares country scores, using a price index that weighs price levels for fixed telephony, mobile and Internet for 2010. As shown Morocco has the second highest price level in the region after Yemen.

\begin{itemize}
\item\(^\text{124}\) Morocco, Economics, 6/25/2005
\item\(^\text{125}\) Système de suivi de l’action gouvernementale.
\item\(^\text{126}\) United Nations e-government readiness survey, United Nation, New York 2008
\item\(^\text{127}\) United Nations E-government index 2010
\item\(^\text{128}\) Magharebia , 01/14/2008
\item\(^\text{129}\) WBI ICT pillar in the KAM (2008)
\end{itemize}
and therefore not very competitive compared to GCC countries for example. Europe average does not exceed 0.78 showing high level of competitiveness reached Bahrain and the UAE. It must be noted that the presence of higher prices in some countries generally has little to do with the difference in income level and hence quality of infrastructure development. In this case, the overwhelming determinant is the quality of policymaking, and the extent to which regulatory reforms have been undertaken to break the rigidity of state monopolies, thereby opening up for competition in the development and launch of new applications and services.

Figure 37 : ICT Price basket (2010)

![Figure 37: ICT Price basket (2010)](image)


In Morocco, the Casa-technopark (CT) considered as part of its support policy to innovative companies is the country's first technological park and the second most important in the Maghreb after El Gazala in Tunisia. The project is under the supervision of Ministry of Commerce, Industry and ICT. Its mission is dedicated to enhancing the development of ICT in Morocco. Its main specialities are software, engineering and IT ventures. The project is a joint venture between several institutions: the Government of Morocco, CDG. (Caisse de dépôts et de gestion) a pension fund, and a consortium of Moroccan private banks (BMCE, Banque Centrale Populaire, Banque Commerciale du Maroc and Attijari Wafa Bank) in the sense of public-private partnership.

Box n°3 : the Casa-technopark

The Casa-technopark (CT) is the result of genuine public-private cooperation: it is expected to bridge the gap between universities, telecom companies, engineering schools and IT start-ups. Successful start-ups emerged such as « Lead Tech Design » LTD combining both innovative activities and export performances. The park is run by a private company: "Moroccan Information Technopark Company» (MITC). Four sections compose the technopark: Incubation, enterprise nursing, SMEs centre and Training pole. Added to that, we also have financing institutions: banks, venture-capital. Several start-ups have been hosted by the technopark since its starting in 2001. As of 2006, CT is hosting 132 companies divided into 55 start-ups, 67 medium-sized companies, 4 big companies and 6 training centers. As of 2008, 140 companies were hosted.
employing 1500 people of which 34% are women and with a turnover of 700 millions dirhams. CT plays the role of catalyst between universities, enterprises and public authorities. It relied initially on the existing PROTARS/Competitiveness of enterprises programme and the “Mokawalati” (entrepreneurship) programme. In principle, all these programmes are dedicated to bring about the logic of clusters by using a set of universities, research centres and laboratories. A survey made by MTIC in 2008 involving 115 managers of the park indicate useful results: more than 50% of the companies have less than 5 employees with an average age of less than 30 years and a turnover of one to ten million DH. Major companies are also present in the park with an average turnover of 20 million DH: Bull Maroc, Logix, Casanet (Maroc Telecom), Archos Technologies, Atrait and M2T etc. The project is under the supervision of Ministry of Commerce, Industry and ICT. Its mission is dedicated to enhance the development of ICT in Morocco. Its main specialties are software, engineering and IT ventures.

To give the necessary support to a start up, Casa technopark relies on a pool of institutions: the University Hassan II Ain Chock, the Chamber of Commerce (CCIS) of Casablanca, the SMEs Federation, the Moroccan Federation of Franchising, the Direction Régionale de l'OFPPT as well as a number of very dynamic associations such as: R&D Maroc, AFEM, ESPOD et CJD. The park is contributing to the gradual rising of a knowledge city and playing really its role of bridge institution: to promote research it has networked a pool of training and research institutions namely: the Université Al Akhawayn, the INPT (télécoms), EMI (engineer’s school of Mohamadia) and ENSIAS (National School of information systems). The one is the improvement of the technological level of public municipal services. In Casablanca, the creation of the technopole helped introduce new technologies and innovations to improve the technological level of public services of the city. As an illustration, the technopark helped design a common system of Geographical Information System (GIS). With the help of the World Bank (infodev), the technopark started its first incubator in 2006. With the objective of promoting ICT development, entrepreneurship among the youth, to support innovation and R&D in private enterprises, and to introduce incubation practices for start-ups. According to a non official source, some limits are though felt by companies in the park: no real support services and lack of accompanying services are some of the difficulties. A survey made in 2008 shows that 45% of companies in the park only express full satisfaction with the park. Start-ups which seem performing well are those having partnership with big foreign concerns.

Box n°4: Arcos Technologies

Arcos Technologies was created in 1995 by members of the Moroccan Diaspora. Taken over par ONA, it ended up by integrating the Capital Consulting Group. Its major area of specialization is Community Portals providing financial solutions, info-gerance and cloud technology. As an illustration, Archos technology has been able to provide shared documents for 300 000 school teachers in Morocco. Sixty people are employed with the level of university graduates and with engineering degrees. Small innovative companies are also present: in 2006, the National Innovation Prize was won by “Lead Tech Design” (LTD) hosted by the park since 2004. This start up worked closely with the university of Alakhawayn University to develop a new process for compressing a high number of images JPEG2000 (joint photography expert group). The company benefited from a starting fund from the Sindibad VC fund run by CDG. LTD succeeded in winning foreign contracts.

130 Emarrakech, 11 June 2008 http://www.emarrakech.info/Le-Casablanca-Technopark-adopte-un-nouveau-plan-de-developpement_a14960.html
132 http://www.casablanca-technopark.ma/inpartners.asp
and has reached a turnover worth one million Euros for the first year. Its small team is composed of 27 qualified engineers. LTD has opened a subsidiary in Rennes in France and specializes more and more in the field of multimedia and telecom notably in the embarked software. Now LTD is in a position to mobilize venture capital on the international market. It has managed to established partnerships with foreign, groups such as Atmel, Cadence and Altera.

Source: Field Work

Diaspora: Currently, the CCME (Conseil de la Communauté Marocaine à l’Etranger) plays a key role in localizing and hiring competencies abroad: it proved to be highly useful for staffing IUR. In the case of Casa Technopark, for example, thirty IT companies were created by members of the Diaspora returning home. The main concern is how to acquire the alchemy which makes innovation happen and how Incubators can provide a clever transformation of an ‘alchemy’ to real chemistry i.e.: where combined ingredients lead effectively to expected results.

II - Initiatives that are taking place on the KE in the various plans

Morocco embarked in a very ambitious investment program: the planned investment for the five major sectors selected reaches 5.6 billion Euros for the period starting 2008 and up to 2020 when the agriculture plan is completed. Private investments amount to 4.5 billion Euros while public investments do not exceed 1.1 billion Euros.

Before examining the various plans, let us make few observations:

1/ Examining the sector using the KBE approach need identifying each one of the four components and assessing the strength of its ingredients : it is also one way to depict what can be missing and what will not contribute to hasten the Integration in the KBE approach. Each of the plans will thus be examined through: Infrastructures and ICT, Innovation and research, Training and human capital and incentives and governance framework.

2/ Often the knowledge approach is implicit and does not benefit from programs and clear strategies. Our analysis tries to highlight these implicit practices. A more in depth study is needed to analyze this phenomenon in depth.

3) There are three categories of plans:

- function specific plans: The Plan d’Urgences for Education: 2009-2012, the Maroc Innovation plan and Maroc Numeric 2013. These plans are clearly KE oriented in the sense that they address three of the main pillars of the KE.

- sector specific plans: the Emergence Plan, the Plan Vert, the Plan Halieutis and the Plan Azur aiming at developing sectors in this case respectively: industry, agriculture, fishing, and tourism.

- territory specific plans are more related to implementation of the plan in the regions and this concretely requires sometimes the combination of both function and sector based e.g: Plan Vert and Plan Halieutis for the Agadir region.

Notes de Mr Hanouf

134 http://www.itmaroc.com/Une-start-up-du-Technopark-primee.html Une start-up du Technopark primée aux intégrales de l’investissement le 22/12/06
137 Notes de Mr Hanouf
There are interconnected through a common scheme which is presented in figure 30.

**Figure 38 : The Moroccan KE implementation framework**

While this approach seems coherent in essence it does not seem to have been explicit in the various documents.

2.1. **Sector specific plans**


*Infrastructure:* Aware of the importance of this sector, the Moroccan government has decided to build a welcoming infrastructure, so as to offer companies work in the best possible work conditions (Casancarshore, Rabat technopolis TangerShore and MarrakechShore)\(^\text{138}\). This project is designed to serve the European Union, based on optimal logistic conditions and an integrated multimodal platform (airport, highway network, rail network, and seaport), offering attractive cost factors and cutting freight charges by up to 50\%. A big number of companies, including RENAULT, SAFRAN and CROUSET, VOLVO, SCANIA, IVECO, are already installed in the country, and many more are to follow suit.

*Legal and governance framework:* The new agreement has been signed by the government, the Confederation of Moroccan Enterprises (CGEM) and the Moroccan Professional Association of Banks (GPBM), to give a new impetus to the country's industrial sector. The National Pact for Industrial Emergence, designed in a contractual form, is composed of 111 measures: 56 concern Morocco's world professions (e.g. offshoring, outsourcing, etc.), 48 concern the competitiveness of Moroccan companies and seven relate to governance and implementation\(^\text{139}\). This pact is a real action plan, with clear governance framework: set objectives based on shared responsibilities and a concerted and participative work with mutual engagements between the state and the private sector. The public–private pact, which was signed by a number of ministries, aims mainly at creating up to 220,000 job opportunities, absorbing urban unemployment and boosting development through


raising the sector's contribution to the Gross Domestic Product (GDP) to 50 billion dirhams. It will generate an extra volume of exports of 95 billion dirhams and is expected to attract 50 billion dirhams of private capital in industrial activities.

*Training and human capital:* Spanning six years, 2009-2015, the strategy is allocated a budget of 12.4 billion dirhams, 34% of which will be dedicated to training and human resources and 24% to the encouragement of investments.

Six major sectors are covered by the Emergence Plan: 1) Offshoring, 2) Automobile 3) Aeronautics and Space 4) Electronics 5) Textile and leather and 6) Agro-food

**Offshoring and Nearshoring.**

The Offshoring sector is on a growth trajectory world wide of 25% per year on average. This is a favorable context for Morocco to develop its offshoring with a prospect of 100,000 jobs by 2015 and a sectorial turnover of more than 20 billion dirhams, in other words a net creation of 70,000 additional jobs and a additional GDP of 13 billion dirhams over the 2009-2015 period.

The sector has met a notable success: in one year, more than 50 companies expressed interest to locate their activities in offshoring zones of Casanearshore and Rabat Technopolis. As of 2009, 40 enterprises are installed in Casanearshore and 14 others at Rabat Technopolis. In 2011 employment in the sector reached 50,000 positions and turnover of 7.4 billion dirhams.

Morocco has become a leading destination for the French-speaking companies seeking to relocate their services, benefiting from the country’s geographical and cultural proximity, very competitive workforce and adequate infrastructures. The sector is already employing some 50,000 people, especially in call centers. This sector-based policy is also targeting 10 to 12 priority areas that are suited to strengthen Morocco’s offer (e.g. back-office for banking and insurance, accounting services, customer services, IT services, etc.).

**Economic and incentive regime:** A relatively attractive incentive framework including fiscal incentives (lighter taxes on labor income, and not exceeding 20%) tax exemption for up to 36 months on income, on vocational training and employers contribution (cotisations patronales et salariales): taxes exemption on companies for 5 years and not exceeding 17.5% beyond for exporting companies. The sector benefits from an offer of infrastructures and service of the best standards.

**Training:** a scheme for the development of human resources including direct subsidies for the first three years reaching 30,000 DH at the time of recruitment and during the training period is put up. The start of the forshore 3000 project for the training is also important to mention.

**Communication:** included the preparation of a promotion and marketing plan adapted to the French and Spanish markets and in several other international organized in Morocco e.g.: Eductour.

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indirect jobs and contribute to the massive and accelerated the automotive industry in Morocco. Tree components of KE are mobilized: EIR, Infrastructures and Training

Economic and Incentives Regime: an attractive incentive framework is put up. It includes the status of free zone offering a full exemption from corporate tax for the first 5 years followed by a cap at 8.75% and the installation aid of up to 10% of the total investment.

-Infrastructures: of high quality with a 300 hectares site dedicated to a major assembly line, high level logistics, and a competitive offer for sub-contractors (e.g. Maroc Equipementiers). There is also a diversified real estate offer of international standard within the so called dedicated industrial integrated platforms (P2I) with the status of free zones. Thus two P2I for automotive components for exports are programmed: the « Tanger Automotive City » in Tangiers (260 hectares land, 8 billion dirhams investment, 30,000 workers) and one in Kenitra, the « Kenitra Automotive City » (345 hectares land, 12 billion investment and employing 30,000 workers by 2015).

-Training: a training plan with a device for qualified human resources on top of the support given to companies in their efforts of recruitment and continuous training. Finally a training plan adapted to the needs of the automobile sector is put up.

- Aeronautics and Space.

The Aeronautics and Space Plan of Morocco targets in priority the development of eight businesses with high added value: building on comparative advantages of Morocco: composite materials, metal working, assembling, engineering and design, electrical and cable systems, engine and components repair, maintenance, transformation and modification of aeroplanes. The implementation of this strategy led to the increase of exports of the sector from 800 million dirhams in 2004 to 5.2 billion dirhams in 2011, while employment grew from 2500 to 7369142. The plan rests essentially on two pillars: EIR and infrastructures.

Economic and incentive regime: Strong PPP is sought to implement an ambitious program of communication to market Morocco’s offer for aerospace companies with important budgets. The attractive incentive framework included free zone provides a total exemption from corporate tax for the first 5 years followed by a cap at 8.75% and aid for the installation of up to 10% of the total investment.

Infrastructure: Morocco, tries to offer a complete and competitive of infra-structural package, concentrated around the Aeropole of Nouasser to become at term a P2I branded: « Nouasser Aerospace City », covering an area of 141 hectares in total.

- Electronics

The electronics plan aims at developing three main branches in cooperation with Moroccan private companies: mechatronics, industrial electronics, and embarked electronics for the automobile and aeronautics industries. The sector registered a significant growth of exports going from 1.2 billion dirhams in 2004 to 6.6 billion dirhams in 2011; Meanwhile, employment went from 6300 to 9000 in the same period143. The electronics plan rests on two pillars Infrastructures, EIR and mode of governance

Infrastructures: The State commits itself to build the necessary infrastructures to accompany the development of the sector. An aggressive promotion policy is put up using all possible channels. As well, Electronic cities were defined in the Industrial Integrates Platforms “P2I” at Kenitra Automotive City, of Tangier Automotive City. Similarly, a city-Mechatronics Industrial electronics is provided in the Casablanca region over an area of 40-50 ha. Similarly, the existing nearshore such as Rabat Technopolis facilities are being used.

142 Ministère de l’économie et des Finances, Direction des Etudes et des Prévisions Financières
143 Ministère de l’économie et des Finances, Direction des Etudes et des Prévisions Financières
**EIR and mode of governance:** The program is put together by the professionals of the sectors with assistance of partners in the existing networks. Here again communication campaign and marketing capacities essentially from State budget

- **Textile and leather**

This sector is basic for the success of the Emergence plan. Its development is based on better capacity for investment and operating capital, upgrading the range and technical components and the exploration of new markets through more competitive pricing and higher value-added finished products. Similarly the State commits itself to put together an attractive Offer Morocco Procurement (Maroc Approvisionnement) and an Offer Maroc FIT (finishing-dyeing-printing) and supports its competitiveness in a dynamic way. KE pillars include: Infrastructures, EIR, Innovation, Training and Communication.

**Infrastructures:** The State is committed to put together an Offer Morocco Sourcing to attract investors build the necessary infrastructures to accompany the development of the sector. Infrastructures and services to investors of the best international standards are provided through P2I platform.

**Economic and incentives regime includes:** Aids provided by the State for up to 20% of total investment, a diversified real estate of the best international standards in the Integrated Industrial Plateforms (P2I).

By the end of 2012, 9 platforms will be installed. At the request of the private sector, customs tariffs were implemented since 2009 on the finished articles, on inputs. A battery of incentive schemes includes notably a grant for successful exports involving Moroccan sub-contractors are implemented.

**Innovation:** Efforts are mobilized to restructure the industry. Two major axes are developed: 1) the parties involved agree on the need to develop an innovative approach to facilitate the emergence of new integrated business models throughout the whole value-chain in mastering in particular: procurement, design and commercialization. 2) The reconfiguration of the industrial base through new stock policy and the creation of key businesses upstream, notably in textile printing and dyeing. This is in order to help the emergence of five aggregated agents of sourcing.

**Training:** The availability of adequate competencies is essential for the success of this operations and the development of the sector. The objective set is the availability of 32,000 profiles (2009-2015) with qualifications adapted to the needs of the sector. In this respect, the State is committed to train the necessary human resources to accompany the development of the sector.

**Communication:** In order to help the emergence of national agents of sourcing, road shows are organized to big textile and leather companies to present opportunities in this activity and orient them to different support mechanisms. Similarly, the State commits itself to make the necessary efforts to canvass international agents of sourcing requesting Moroccan competences to sell Morocco Offer.

- **Agro food:**

While the sector is one of the key sectors in terms of employment and contribution to GDP; it has been stagnating due to fragile industrial basis and limited competitiveness. Two objectives were set in the 2009 plan: 1) the development of transformation capacities of the existing actors for the expansion of the cattle livestock and milk production 2) the support to the creation of additional big integrated projects.

The importance of agro-food is vital for Morocco, as it contributes for up to 23% to Industrial Added Value. A total of 299 industrial units work with abroad, i.e. 17% of the exporting firms in
Morocco selling for up to 42% of their production abroad 65% of which are made by the fishing industry. In 2009, the Centre Regional d’Investissement (CRI) Souss-Massa-Drâa of Agadir, accepted 206 new investment projects (26,747 million dirhams) expected to create 17,183 jobs. These projects were in industry, building and energy and mining, tourism, commerce and services, showing its relatively highly diversified range of activities. This sector is based on the development of some 8-10 food processing sub-sectors such as fruit and vegetables, besides emerging sub-sectors, such as bio, ready-to-eat dishes and sub-sectors with long-term potential (olive oil, citrus, etc.). The plan projects a concentration of these activities in areas with good agricultural potential (Agadir, Gharb, Meknès, Berkane, El Houz and Tadla). Regions like Agadir have been quite successful in becoming a thriving cluster as we will see in the last section.

With the “Programme Emergence” there is an increasingly proactive role of the governmental and entrepreneurial leadership in defining the vision and mission of knowledge producing systems. KE pillars include EIR and governance and innovation.

**Economic and incentive regime and governance:** This can be illustrated by the meat sector. The State is committed to put up a «meat plan» through two key actions: 1) liberalizing of the slaughter and the development of modern distribution of meat 2) the promotion and accompaniment of the implementation of the integrated projects. The State is also committed to the promotion of national and foreign investments in the channels with high growth potential (meat transformation and milk industries). Finally there is a commitment to participate to the funding of the promotion of companies with an export business plan. Agreement is reached between the parties to other actions include the need to improve the framework conditions around the following points: 1) the setting up of quotas on the inputs which are in competition with local products in order to maintain competitiveness of domestic production relative to finished products imported duty-free 2) the modernization of regulations and standards applied to agro-food products in order to guarantee the quality and safety of the products.

**Governance:** The second key element is industrial organization: export groups (consortium) formed themselves in “Boards” whose mission was to take care of questions related to logistics, insurance, and transport to foreign markets as well as the sharing available quotas allowed by the EU. These could also encourage informal and social relations, which proved to be an important vehicle of confidence and spontaneous cooperation and stressing the importance of “social capital” in such a context. Thus two consortium Boards were formed: the Fresh Fruit (FF) and Maroc Fresh Board (MFB). These structures contribute to reinforce the network and create a greater closeness amongst the members, helped to strengthen bargaining power both internally and with foreign partners and coordinate the activities and to set up dialog regarding management and production according to a set calendar. Quality control was made by an autonomous body, the EACCE (Etablissement Autonome pour la Coordination et le Controle des Exportations). The fourth element is the role played by intermediate associations (local authorities, chambers of commerce, and associations) which was not negligible in supporting these programs and projects, in the Public – private partnership spirit. In terms of communication, the State and the private sector are committed to set up road shows in direction to the enterprises of intermediary channels 1) to explicit the existing programmes and their operating procedures 2) to orient the enterprises towards programmes adapted to their needs.

**Innovation:** Innovative actions can be identified: in 1995, the first innovative action was the initiative taken to coordinate a network to fight tomatoes disease through chemical treatments and preserving the fauna and flora. In 1999, it took the form of mobilizing members to fight the “TYLCV” tomatoes virus and elaborate a guide. Subsequent action involved promoting innovative projects within enterprises to modernize their management. To promote the innovation “spirit”, the association of producers is establishing contacts with other key counterparts: national and international research institutes, suppliers of new technologies, private schools and the regional office for agricultural products valorization. Finally, professional associations are more and more aware of the need to mobilize their members for innovative projects and are getting them more sensitive to

http://www.cri-agadir.ma/
the need to take part to fairs and exhibitions and the modernizing of their management tools and practices.
The achievements and the difficulties met by the different associations and professional in putting up joint innovation projects stress the need to put the emphasis on changing both individual and collective mentalities and the restructuring of institutions which favor these changes. Governance problems of networks stress the need to favor all that facilitate coordination and promotes cooperation between private, public and other types of intermediate institutions in order to stimulate and to give the necessary support to research and innovation of enterprises and their competitiveness. The numerous limits of existing structures relate much less to human and material resources and more to organizing and mobilizing capacity.

2.1.2. The Maroc Plan Vert (MPV)

The Moroccan Green Plan called Maroc Plan Vert (MPV) includes a reorganizing of the agriculture producers within larger integrated structures to facilitate commercialization and exports. This new strategy must deal with several weaknesses and limitations145: 1) Insufficient use of production factors. For example, 4 times less fertilizer use per hectare compared to France, and 11 times less mechanization compared to Spain, 2) Inadequate participation of the banking system in terms of financing agricultural projects with only 18% of agriculturists benefiting from the allocation of loans, 3) Poorly developed agro-industrial infrastructure, which represents only 24% of the number of national industries, and that transforms only a third of the production, 4) A poorly subsidized agricultural sector: subsidies allocated to Moroccan agriculture attain only 8%, compared to other countries where subsidies attain 30 to 70%. Morocco benefits from only 60% and 28% of the tariff quota for fresh and processed products respectively. The other problems include: insufficient organization (The agricultural sector is very poorly organized and there is a near-absence of inter-professional interaction.), insufficient management and supervision (National agriculture is weakened by the traditional management of farms, with inadequate systems of supervision), limited water resources (drought is one of the most important obstacles to the development of national agriculture because of poor and irregular rainfall146. Excessive parceling of property (70% of farms are smaller than 5 hectares) the complex legal system and also a low rate of recording and registration of land titles. Finally Dominance of cereal crops which occupy 75% of usable agricultural surface areas (SAU) and yet, represent only 10 to 15% of agricultural revenues and only 5 to 10% of employment in the sector. Yet, the agricultural sector plays a substantial role in the macroeconomic balance of the country. It also plays an important social role as 80% of the rural employment operates in the agricultural sector. It is directly responsible for the food security of 30 million consumers, hence the critical role that agriculture plays in the economical and social stability of the country147.

In the face of these challenges, Moroccan agriculture has several advantages, the most important being 1) the geographical situation of Morocco and its proximity to the European market, with logistical means clearly improving 2) the presence of an often neglected dynamic domestic market that can constitute important opportunities due to population growth and an increase in the quality of life 3) the qualified and competitive agricultural workforce compared to the competition 4) the established competitive advantages for several products (fruits and vegetables, etc.) and 5) the presence, at a national level, of several models of successful agricultural businesses and agro-industries.

The new Green Morocco Plan Strategy is intended to implement an agricultural policy that will bring about: 1) a competitive upgrading of the agricultural sector in the prospect of modernization and

146 The under-valuing and overuse of surface and ground water is due to an inefficient irrigation system.
147 ADA op. cit.
integration into the world market and the creation of wealth for the whole value chain 2) the taking into account of the whole sector in its sociological and territorial components, with priority being given to human development objectives 3) a greater optimization and sustainable management of natural resources and 4) the definition of the support policies needed for sustainable growth. The Green Morocco Plan’s strategy concerns a sector which contributes 19% of the GNP, with 15% from agriculture and 4% from agro-industry. This sector employs more than 4 million rural inhabitants, and has created approximately 100,000 jobs in the agro-industry sector. The plan mobilizes two major KE pillars: EIR and governance.

**Governance and incentive regime:** A number of important projects and action plans have been retained for the implementation of the Green Morocco Plan for each region. There are now 16 Regional Agricultural Plans. A Regional Agricultural Plan consists of a road map for the agricultural development of a region, supported by the accompanying role of the central administration and the public powers, in terms of sectarian and institutional reforms. The Green Morocco Plan is built on the principal of “aggregation” as a tool for the development of the agricultural sector; its implementation requires the creation of win-win partnerships between the upstream of production and the downstream of the commercial and/or industrial phase. This is an appropriate solution to get around the issue of small farms and to face the challenges related to the lack of organization in the agricultural sector. Several national actors already play the role of aggregators. Examples include CONSUMAR in the sugar sector, ANOC in the sheep sector and COPAG in the dairy sector. Cooperatives and associations, from a legal point of view, are naturally potential aggregators, Economic Interest Groups (GIEs) can be specially trained to play the role of aggregators, large-scale farm can also aggregate a number of small farms in order to create a common operation that is beneficial for all participants.

**Incentive regime:** Aggregation, which is voluntary, is nonetheless encouraged and supervised by the Minister of Agriculture, the ADA and the regional supervisors. The putting into place of an adapted fiscal policy that takes into consideration the regional and economic specificities of the agricultural sector is planned for 2014. The supportive role played by the State consists of the preparation of an aggregation project idea bank (1,500 projects) that covers all of the regions and agricultural sectors. This project bank is made available to potential aggregators. In the case where several aggregators are interested in a same project, the ADA can launch an invitation to tender to choose the best candidate. Once chosen, the State helps the aggregator finalize his project. Next, the aggregator signs an agreement with the State, which can bring the following types of support: preferential support - aggregation Package, preferential access to property; preferential access to financing; and privileged access to advantages of the inter-professions.

For the successfully implementation of this strategy, the dismantling of segmented framework plays an essential role. This dismantling concentrates on the following cross-sector; the first, called Pillar I, focuses on projects that generally depend on private financing and develop highly-productive or high added value modern agriculture (milk, red and white meat, cereals in favorable, non-irrigated zones). The second called Pillar II projects are economically viable projects in marginal zones (unfavorable, non-irrigated zones, mountainous zones and oases), that essentially depend on direct aid from the State.

In terms of property, the new land policy is characterized by: 1) the privatization of public, collective and "habous" land 2) The setting up of frameworks that favor aggregation and public-private

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149 It is a form of organization based on the bringing together of agriculturists for the implementation of agricultural investment projects, also known as Aggregation Projects, and for the production, enhanced value and commercialization of agricultural products. This is voluntary partnership with an actor (aggregator) who has management, financial and technical expertise that permits the optimization of the production process.
partnerships and 3) The continued efforts for structural reforms (recording, registration) and the massive acceleration of land titling. Regarding the water sector, the new policies include the management of supply, the mobilization of new resources, the maintenance and extension of existing perimeters, the management of irrigation water by representatives, the incentive pricing, the coordination of the different parties, the management of demand, the generalization of modern irrigation technology and the use of water for high value added crops. Added to that, there is the modernization of distribution channels and improved access to the wholesale markets and slaughter houses, the accompaniment and the follow through and the final evaluation.

Training: Higher technical training is provided in the PMV. Certain strategic actions are planned: these include the reform of higher education in agriculture through notably increasing the number of engineers and veterinary specialists in the framework of the 10 000 engineers to 2010 horizon Program, and the adaptation and upgrading to international standards. It also includes the creation of agro polytechnic pole which includes all the agricultural institutions.

Vocational training: The PMV plans the adoption and generalization of the APC (Approche par les Compétences) to the whole system of vocational training in Agriculture, the improvement of employability and the creation of enterprises (Programme Massar and Guide Al moostahmir Al Filahi). It is expected also to promote learning to provide the agricultural sector with qualified labor capable of taking over 60000 rural youth by 2013, and the contribution of training in agro food planned in the Plan Emergence.

Research: a certain number of actions are planned. These include the mobilization of the National System of Agronomic Research (SNRA), the adaptation of national research programmes to PMV projects, the spatial reconfiguration of the regional structures of INRA (Institut National de Recherche Agronomique), the creation of six agro poles within the various agro-industry parks, the improvement of financial resources allocated to research (0.7% to 1% of agricultural GDP), the creation of New research Centers of Agronomic research (10 to 16) to cover all the regions of the Kingdom, the extension of the domains of agronomic research to all agricultural sectors of the PMV and the reinforcement of R&D.

Governance: it relates here to popularization, the institutionalization of the agricultural advisory job, the outsourcing of services, the reinforcement of R&D, the training of technicians, the monitoring and evaluation of the various actions undertaken.

ICT: The introduction and promotion of ICT usage is essentially related to operations for the transfer of technology.

The implementation of the Green Morocco Plan necessitates: the restructuring of the Ministry of Agriculture and Maritime Fisheries with the objective of reorganizing the State’s resources to align itself with a new wave of changes created by the arrival of private actors; the refocusing of regulatory functions; the increased transfer of functional operations towards the private sector; and, the creation of two new entities, the Agency for Agricultural Development (ADA) and the National Office for Food Safety (ONSSA), capable of attracting growth potential and of playing the role of renewal and leadership.

Table n°4 : the Building blocks of the Green Morocco Plan

<table>
<thead>
<tr>
<th>Building Block</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The First Building Block:</td>
<td>Make agriculture a lever for growth during the next 10 to 15 years.</td>
</tr>
<tr>
<td>Second Building Block –</td>
<td>Adopt aggregation as an organizing model for agriculture</td>
</tr>
<tr>
<td>Third building block:</td>
<td>Insure the global development of Moroccan</td>
</tr>
</tbody>
</table>
Fourth Building Block: Promote private investment

Fifth Building Block: Adopt a contractual approach to accomplish the Green Morocco Plan

The Sixth Building Block: Sustainable Moroccan Agriculture

Seventh Building Block: The dismantling of the segmented framework

Source: ADA

Regional Plans of agriculture: Key strategies of GMP are the regionalization of agriculture through 16 Regional Plans (PAR). These plans are geared toward increase of production in different branches, the improvement of quality and the conditions of commercialization of the production, the improvement of water valorization, etc. The aim is also to improve rural employment, fight against poverty and rural exodus.

2.1.3. The Plan Halieutis

The plan « Halieutis » intends to fulfill the implementation of a certain number of flagship projects for the transformation and valorisation of the sea product through creation of three pole de compétitivité (Tanger, Agadir, Laâyoune-Dakhla) with investments of 9 billion dirhams. The pole of Agadir, called Haliopolis, is a very ambitious program with a series of targeted actions to modernize the fishing industry. More than 6.6 billion DH (550 million euro) will be devoted to this project which will create 20000 jobs. The plan's aim is to double the GDP of the activity. Thus, 21 billion DH (1.9 billion euro) of additional GDP are expected. The Halieutis plan intends to capture over 1.6 million tons of fish by 2020. Employment is expected to increase from 61 650 currently to 115 000 in terms of direct employment and about 510 200 in terms of indirect employment. The share of Morocco in the global market is expected to rise from 3.3% currently to 5.4% in 10 years according to non official sources. The Moroccan project is to turn the fishing industry into a true economic growth factor. The Halieutis plan, set to attain its objectives by 2020 through a series of sixteen structural projects implemented throughout the kingdom structured around three strategic axes 1) sustainability, 2) performance and 3) competitiveness.

For sustainability, the first objective is to lift the fisheries sector to improve the living and working conditions of the fishermen and reach a better output for unloaded goods. Projects are underway to modernize the fisheries efforts and allow for the stock to be replenished. In terms of performances, the goal is to stabilize the fishing boats’ threshold of profitability, which, in time, will all be equipped with refrigerated cabins. The third project for sustainable management is to support and better share scientific knowledge. This requires developing actions on different levels: the setting up of specific resource inventories, the elaboration of a consistent listing for the different species and the development of an integrated information system for the fisheries sector. The fourth project for the sustainable management of resources wishes to develop the aquaculture sector considerably, turning it into a growth engine. This sector holds great potential in Morocco, with the capacity of

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increasing its turnover to more than 2 billion dirhams by 2020. The fifth objective is to stabilize the profitability at 10% minimum, which will help the reconstitution of the stocks.

Several projects aim to improve and increase the number of unloading infrastructures and equipment. The main objective is to guarantee control over seafood product traceability. Another priority is to reduce black market trading, ensuring that the consumer has a product that complies with all the standards of hygiene and security. With performance in mind and to make fish products more accessible, the Halieutis plan will allow more competition and transparency in the pricing, by structuring and energizing the domestic market. The objective is to boost fish consumption in Morocco, increasing it from its current rate of 10 to 12 kg up to 16 kilograms (kg) per inhabitant per year. It is also to triple the share of GDP of the halieutic sector by 2020.

Finally, Halieutis aims to promote seafood products by making the structure more competitive. Today’s on-going projects aim to facilitate access to raw materials for industrialists, by creating competitive centers all over the country, to help the promotion of fisheries products. The Halieutis strategy is to increase Morocco’s global seafood market share from its current rate of 3.3% to 5.4% by 2020. KE pillars mobilized include: EIR, governance, innovation and human resources development.

**Economic and Incentive Regime:** The on-going projects aim to support industrialists in their initial public offerings on the best growth markets by increasing the uses for production capacity and widening the range of products available on the Moroccan market is the key.

**Governance:** The plan also aims to implement strong public governance that will gradually transfer its power to the regions and the private sector. By organizing and encouraging inter-professionalism, Halieutis can federate the operators around key decision-making for the management and development of the fisheries industry. The new plan aims at reorganizing the sector throughout the cold chain. This would help to reduce to the half the weight of the informal sector, (to 15% of turnover of the sector by 2020) by improving the working conditions of the controllers. A more efficient management system of the port spaces allocated to fishing to improve the traceability of the product and reinforce the attractiveness of halls in tide. In this respect, more competition and transparency are introduced in the price mechanism. A broader grid of quality is also introduced. Another project is to restructure and revitalize the domestic market around both wholesale and retail markets.

To supervise the sector, five transverse actions are undertaken one of them being to clarify and complete the legal device in order to concretely define the roles and responsibilities of every operator. It is a question of setting up national fishing committee as well as adjustment and modernization fund. More specifically, **governance of knowledge sharing** is notable. The aim is to reinforce the sharing of scientific knowledge within the profession: this involves an updated inventory and monitoring of all halieutic resources. Similarly another task is to elaborate a homogeneous list of the different species and to develop an integrated halieutic information system using the network of partners working with the country. It is also a question of setting up a national agency of aquaculture as well as a centre of the valorization of sea products. Finally, it is a question of setting up of an observatory of employment in the halieutic sector.

In this respect, the plan intends to create regional fisheries transformation hubs to develop the pelagic fisheries industry and the high value-added frozen products sector. This will open up attractive opportunities for the players in the food industry, especially in the city of Agadir (main hub): canning, packaging, ready meals, etc. aimed at export.

**2.1.4. The “Vision 2020” and the Plan Azur**

The sustainable, integrated tourism policy known as "Vision 2010" the aim of which was to boost visitor numbers from 2 million to 10 million a year (7 million of which are international visitors)
reached to a large extent the objective set. A total of 9 million Euros were dedicated to the launching of the new sea tourist resorts and infrastructure. The sector reached 9.3 million tourists, of whom 4.9 millions are foreign visitors. The sector employs 550 000 and the share of tourism is 7.3% of GDP in 2010 according to HCP. On top of these performances, this vision contributed to the restructuring of the tourism sector and the comforting of the preeminent position which the Kingdom holds on the international scene.

In order to build on these achievements, a new strategy called “Vision 2020” was launched. The objectives set are to double the number of tourists to reach about 20 million visitors by the end of the period, which would place Morocco in the 20 first touristic destinations in the world. The number of beds is expected to reach 200 000, while income is expected to be about 140 billion dirhams. This vision rests on a powerful public-private partnership.

**Economic and incentive regime:** Funding is done through a public-private partnership. Three major channels can be identified 1) The State provides financing to the Fond Marocain pour le Développement Touristique (FMDT) which benefits also from the contribution of the Fond Hassan II. It also provides grants to support investments in the sector and orient it to less developed zones. In addition, other national and international sources can be mobilized. Public funds to FMDT are expected to reach 15 billion dirhams in the ten coming years. In this respect, the involvement of sovereign funds «Qatar Holding LLC», «Arab Investments PJS» and «Kuwait Investment Authority», is made through the creation of Wessal Capital, (3 billion euros) shared equally between the three funds and the FMDT. 2) Banks are engaged in mobilizing 24 billion dirhams destined to projects considered strategic in the “Vision 2020”. 3) Finally the private sector through equity is expected to contribute 50 billion dirhams (10 to 15 billion dirhams at the international level) over the 2011-2020 period.

**Training:** A school of excellence in hotel management is to be created in partnership with the Ecole Hôtelière de Lausanne, as well as the repositioning of the Institut Supérieur International du Tourisme de Tanger (ISITT) to consolidate its position both nationally and on the African continent as a referent.

**Innovation:** “Vision 2020” rests also on the orientation towards the design of more diversified, rich and innovative offer. The innovative dimension is through the positioning of Morocco on three new segments: 1) the ecological and sustainable tourism through the Programme «Eco/ Développement Durable» destined to valorize natural and rural resources while preserving them and in the respect of socio-cultural authenticity of host communities 2) the business tourism and 3/ the well being tourism through the Programme «Niches à forte valeur ajoutée» expected to make of Morocco a new international destination in this area, through the creation of appropriate infrastructures capable of hosting important international events. On more practical grounds a research and development in sustainable tourism (CRDTD) has been created through a partnership with the universities of Harvard and Toronto.

**Plan Azur**

The Plan Azur is an investment project initiated by the objective of creating six coastal resorts, five on the Atlantic coast and one on the Mediterranean coast. The project was started in order to achieve the "Vision 2010" strategy. Certain areas of the country have been granted special status and with this in mind six "Plan Azur" areas were identified. These six "Blue Zones" were all established on stretches of the coastline recognized for their outstanding natural beauty and untapped tourist potential. Each area would be given a designated theme such as culture, sustainability, or sport to act as a coherent strategy for development.

**Infrastructure:** The Six Plan Azur Areas 1) **Saidia** - The first to be launched and was awarded to the Spanish developer FADESA. Construction work here is underway with the Marina and many

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153 Figures supplied by the Ministry of the Economy – field investigation – Mission WBI23 - 29 February 2012
apartments and villas close to completion. It is the only Plan Azur area situated on the Mediterranean coast. Villas, apartments and penthouses are available for sale in Saidia now. 2) Larache - Situated on the Atlantic coast near to the town of Larache this development will feature a marina and golf course with health, well being and sports as its main focus. The project developer is a Belgian construction company. 3) Mogador - Near to the popular and fashionable destination of Essaouira the main feature of this Belgian backed development will be two signature Gary Player golf courses, the resort will also feature hotels, riads and villas all laid out around the spectacular courses. The facilities and location will make this the ideal beach resort of the large affluent Marrakech market. 4) Mazagan - Situated on the Atlantic coast, south of Casablanca, (near the business and financial axis of Casablanca-Rabat) this resort will feature a world class casino, two golf courses set along 15km of prime beachfront. The main developer is a South Africa company who were responsible for the world famous Sun City Resort. 5) Taghazout - Awarded to a major American real estate development company, this development near to the long-established resort of Agadir on the Atlantic coast of Morocco. This area has the advantage of an established international airport only 40km away in Agadir. Taghazout will offer a diverse range of leisure and sports pursuits, in particular two golf courses for a total of 27 holes, a Medina with local arts and crafts, a luxury Spa, a private clinic (Argano-Therapy) and a research facility dedicated to research and exploiting the products of the argan tree. 6) Plage Blanche - Yet to be awarded or launched, although it is looking increasingly likely that an English developer, together with FADESA will be awarded the zone. This area, the province of Guelmim, in the mountainous south of Morocco is famous for its stunning landscapes and golden beaches.

Property in these areas benefit from a number of tax advantages attractive to the overseas property investors. Property buyers benefit from the exemption from tax on rental income for five years, no inheritance tax and no capital gains if the property is sold after 10 years. Inheritance tax can also be greatly reduced if the property is left to a direct family member.

Table n°5: The six resorts benefiting from the Plan Azur (initial plan)

<table>
<thead>
<tr>
<th>Stations</th>
<th>Lixus</th>
<th>Saïdia</th>
<th>Mazagan</th>
<th>Mogador</th>
<th>Plage Blanche</th>
<th>Taghazout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aménageurs</td>
<td>Alliances, Fadesa</td>
<td>Somed</td>
<td>T.Capital Alliances</td>
<td>Pikalbatro s Groupe.</td>
<td>CDG SMIT Alliances Sud Partners</td>
<td></td>
</tr>
<tr>
<td>Superficie (en ha)</td>
<td>462</td>
<td>713</td>
<td>504</td>
<td>580</td>
<td>200 (50 pour la première tranche)</td>
<td>615</td>
</tr>
<tr>
<td>Lits hôteliers (additionnels sur la période 2011-2020)</td>
<td>4 300</td>
<td>10000</td>
<td>2100</td>
<td>5000</td>
<td>14000</td>
<td>6000</td>
</tr>
<tr>
<td>Emplois</td>
<td>12900</td>
<td>30000</td>
<td>6300</td>
<td>15000</td>
<td>42000</td>
<td>18000</td>
</tr>
<tr>
<td>Investissement (en Mrd DHS)</td>
<td>5,6</td>
<td>12</td>
<td>6,3</td>
<td>5</td>
<td>1,2 pour la première tranche</td>
<td>10 (Première tranche)</td>
</tr>
</tbody>
</table>
The new acceleration stage of the Plan Azur is part of the new tourism strategy of the country. It aims at repositioning and completing the resort already launched in a first step and launching new ones to reach rapidly the necessary critical size. In this respect three agreements are passed with the resorts of Saidia, Lixus and Taghazout putting up of a diversified financial package to get them to maturity in a relatively short period and creation of two companies for their development.

Table n°6: The five resorts planned in the Plan Azur 2020 (revised plan)

<table>
<thead>
<tr>
<th></th>
<th>Station à Aghroud</th>
<th>Resort balnéaire à Tafedna</th>
<th>Eco-resort sportif extrême</th>
<th>Extension Plage Blanche</th>
<th>Animation de la station Saidia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supérficie (ha)</td>
<td>594</td>
<td>500</td>
<td>200</td>
<td>700 (déjà assainis)</td>
<td>27</td>
</tr>
<tr>
<td>Capacité litière (Additionnelle sur la période 2011-2020)</td>
<td>8 000</td>
<td>5000</td>
<td>3000</td>
<td>Atteindre 35000 à travers l'extension de la Plage Blanche jusqu'au site Aoraora.</td>
<td>50</td>
</tr>
</tbody>
</table>

Source: SMIT

So far the program has been progressing with impressive efficiency and many of the new motorways, airport expansion programmes and marketing initiatives are well advanced. Indeed, it is a measure of its progress already achieved that the respected London agency Super brands identified Morocco as the second most desirable destination in the overseas travel market.

2.2. Function specific plans

2.2.1. Initiative Maroc Innovation

To developp a global vision of innovation in Morocco and give it a new impulse, the Ministère de l'Industrie, du Commerce et des Nouvelles Technologies and the Ministère de l'Enseignement Supérieur de la Formation des Cadres et de la Recherche Scientifique (MENSFCR) launched a

154 Les sociétés créées pour le développement de ces stations balnéaires, se caractérisent par la forte présence de deux actionnaires de référence à savoir, la Société marocaine d'ingénierie touristique (SMIT) et CDG Développement.
participative réflexion called « Initiative Maroc Innovation » in order to define a pragmatic action plan.

This initiative is part of a broader attempt to give a vision to the socio-economic players in Morocco. In this context the government has launched several sectoral plans and strategies, such as\(^\text{155}\): (Emergence, Azur, Halieutis etc.). Morocco Innovation Initiative is an intersection of these sectoral strategies and tries to build an innovation ecosystem that provides a horizontal framework to ensure a maximum impact of the mentioned plans\(^\text{156}\). The initiative was developed through a participative approach with representatives of the major components of the innovation ecosystem (administrations, universities, research centers, enterprises, civil society and financial sector). Gaps were identified along the innovation chain and a mix of actions and measures was conceived to address them\(^\text{157}\). The strategy document sets the following objectives to be achieved by 2014: 1000 patents /year, 200 innovative start-ups/year and. Policy priorities were set to meet four major challenges: 1) to reinforce Moroccan enterprises’ competitiveness through innovation 2) to enable Morocco to be a producer of technology 3) to exploit Moroccan universities R&D capacities 4) to make Morocco attractive for R&D talents and projects and to foster a real culture of innovation and entrepreneurship. Thirteen fields of action were derived from four main axes\(^\text{158}\).

Table n°7: The main components of the “Maroc Innovation Initiative”

<table>
<thead>
<tr>
<th>Axes</th>
<th>Fields of action</th>
<th>Instruments, bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Governance and framework</td>
<td>Public/private governance of initiatives</td>
<td>Setting up a National Innovation Committee; The Moroccan innovation Centre</td>
</tr>
<tr>
<td></td>
<td>A host and orientation structure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A legal and flexible framework</td>
<td></td>
</tr>
<tr>
<td>2. Infrastructures</td>
<td>Technological infrastructures</td>
<td>implementation of Innovation cities in some universities</td>
</tr>
<tr>
<td></td>
<td>Technology transfer (Valorisation) infrastructure</td>
<td>Cluster framework policies</td>
</tr>
<tr>
<td></td>
<td>Clusters</td>
<td></td>
</tr>
<tr>
<td>1. Funding &amp; support</td>
<td>Developing a portfolio of support products to innovation</td>
<td>Horizontal measures in support of financing</td>
</tr>
<tr>
<td></td>
<td>Stimulation of the capital risk system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development of the</td>
<td></td>
</tr>
</tbody>
</table>

\(^{155}\) Erawatch, Morocco Innovation Initiative

\(^{156}\) Erawatch Moroccan Innovation Initiative Authors/organisation responsible: Ministry of Industry, Trade and New Technologies


\(^{157}\) Website in original language


\(^{158}\) Ministère de l’industrie, du Commerce et des Nouvelles Technologies

<table>
<thead>
<tr>
<th>Intellectual Property market</th>
<th>Mobilization of International funding of innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2. Attracting talents</strong></td>
<td><strong>Creating the Moroccan Innovation Club (MIC)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Promoting the Innovation culture</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Positioning Moroccan R&amp;D and innovation offer</strong></td>
</tr>
</tbody>
</table>

Source: The consultant

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**Encadré : Bilan d’étape de la stratégie Maroc innovation effectué le 13 septembre 2012**

Le bilan d’étape de cette stratégie présenté par le Ministre de l’Industrie, du Commerce et des Nouvelles Technologies a fait ressortir dans l’axe financement, entre autres, la mise en place du Fonds de soutien à l’innovation doté de 380 millions de DH et du fonds d'appui aux clusters (62 millions de DH). Ce dernier a été mis en place en vue d’apporter un soutien à la constitution de clusters qui ont pour vocation de favoriser l’éclosion de projets innovants orientés marché, à travers, le regroupement en consortia. Le déblocage des financements pour les projets retenus dans le cadre du programme "Intilak" dédié au soutien du démarrage des start-up innovantes et au programme Tarwir réservé au soutien financier des entreprises porteuses de projets innovants en R&D a été effectué. 25 projets sont accompagnés dans le cadre de ces deux programmes pour une enveloppe de 20,4 millions de DH.

Dans l’axe des infrastructures, la politique de construction des Cités de l’innovation (Marrakech, Fès, Rabat et Casablanca) se poursuit 159. Concernant la promotion des clusters un premier appel à projets a permis de sélectionner et de labelliser quatre clusters pour bénéficier de l’appui de l’Etat dans le cadre de contrat-programmes. Il s’agit des clusters TIC (Maroc Numeric Cluster), microélectronique (Morocco Microelectronics Cluster), Electronique et Mécatronique du Maroc (CE3M) et du cluster Océanopôle de Tan Tan (valorisation des produits de la mer).

Les centres techniques industriels (CTI), bénéficient d’un soutien financier du Fonds d’Appui aux Centres Techniques (FACET) d’un montant de 45 millions de Dhs et qui a été attribué au mois de juillet 2012. L’Etat apporte également sa contribution, sous forme de subventions, à la mise en place et au fonctionnement des structures d’animation des clusters. Cette contribution est destinée, précisément, à soutenir la réalisation d’un certain nombre d’objectifs en termes de projets collaboratifs, de brevets déposés et de start-up créées.

Dans l’axe gouvernance, une panoplie de textes législatifs est en préparation pour renforcer le cadre juridique de cette stratégie notamment un projet de loi incitatif sur la jeune entreprise innovante (JEI), un projet de loi sur l’essaimage, un projet de loi relatif à la convention industrielle de la formation par la recherche incitative à l’insertion des doctorants dans l’entreprise marocaine et un projet de loi sur la définition de la R&D et l’Innovation (Référence : FRASCATI).

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159 Lancement des travaux de construction de la cité de Marrakech est en cours de préparation, lancement officiel de la cité de l’innovation de Fès en juillet 2011, un bâtiment de 1200 m², en cours de construction a été proposé par l’université Mohamed V Agdal pour abriter la cité de l’innovation de Rabat, le projet de la cité de l’innovation de Casablanca en standby.
L'axe sur la mobilisation des talents a connu la mise en place en mars 2011 de la plateforme "Clubs marocains de l'innovation", l'organisation des trophées de l'innovation dont la 2ème édition sera lancée prochainement et le lancement du module "Création d'Entreprises" qui concernera 5 universités et instituts supérieurs.

The innovation strategies set up a host of supports pertaining to the knowledge approach. The field of infrastructures includes support infrastructure (transfer offices, training of support staff). In the area of Economic and incentives, several horizontal measures in support of financing which in the field of innovation remains one of the most problematic. The other support mechanisms include the support to sectoral innovation in manufacturing, the support to innovative start-ups including Gazelles, the support to risk capital and finally the support to the creation of favorable “innovation climate” (ex. road shows, awareness campaigns) and the support to the innovative use of standards. Other measures include Fiscal incentives in support of the diffusion of innovative technologies, products and services, Innovation prizes incl. design prizes, Consultancy and financial incentives to the use of IPR. Measures to raise awareness and provide general information on IPR. Finally, another dimension the R&D cooperation (joint projects, PPP with research institutes) is highlighted as an important dimension and Knowledge Transfer (research contract, licenses, and IPR issues in public/academic/non-profit institutes).

This innovation approach Targeted four major research and technology fields deliberately oriented advanced technologies, Morocco to become one of the R&D competitive offerings in the region et in the medium in the world : Biotechnology, ICT, Materials , Nanosciences and nanotechnologies.

Expectations of the authorities\(^{160}\) are the realization of innovation cities (3 pilot cities launched in 2011 : Fes, Rabat and Marrakech and 10 at a later stage)\(^{161}\), the establishment of technical and financial expertise for the funding of research and innovation in Morocco, the facilitation of access of Moroccan enterprises and research bodies to European innovation programmes, the creation of a support fund to innovative projects by individuals in post creation of enterprises and more generally the support of entrepreneurship in the field of innovation. Consequently private funding is expected to increase drastically by 2025 above 25% of total funding of R&D;

<table>
<thead>
<tr>
<th>Table n°8: Expected growth and balance of public/private funding of R&amp;D by 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expected evolution of R&amp;D funding as % of GDP</strong></td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>1%</td>
</tr>
<tr>
<td><strong>Expected evolution of public and private funding</strong></td>
</tr>
<tr>
<td>Public funding &gt; 75%</td>
</tr>
<tr>
<td>Private funding &lt; 75%</td>
</tr>
</tbody>
</table>

Source : A. BENJOUAD « Environnement propice à l'innovation Expérience Marocaine » CNRST\(^{162}\), CODIST-I, Addis-Abeba, 28 avril- 1 mai- 2009

In agriculture, the case of agro-food industry in Sousse-Massa (Morocco) was recognized as such when Morocco adopted the “grapes strategy”. It is a multi-actors process where we find SMEs Networks, Governance and Intermediate institutions active in the innovation process as seen earlier.

\(^{160}\) Yassine ouardirhi « Financement de l'Innovation au Maroc» Ministère de l'Industrie, du Commerce et des Nouvelles Technologies , Rabat 05 juin 2011

\(^{161}\) According to the Ministry of Economy and Finance, these 3 cities will mobilise up to 200 Million dirhams

\(^{162}\) Centre National pour la Recherche Scientifique et Technique
Similarly, the ceramics industry in Safy in the Doukala-Abda region has been upgraded beginning of the twentieth century forming currently a thriving export-oriented sector.

As of today, several achievements\textsuperscript{163} can be listed: in terms of performances, the focus of Academy of Sci. & Tech initially on science has gradually shifted to Knowledge and Technology Transfer (K&TT) putting thus knowledge at the heart of the issues. Consequently Government research funding is made more available to promote K&TT (e.g., telecom operators fund, CNRST, R&D Maroc etc.). The Emergency plan of Ministry of Higher Education includes a nontrivial research component to strengthen university research structure and ramp up R&T support to infrastructure & service (UATRS, IMIST, MARWAN). More support is available to R&D for enterprises. And finally there is a growing contribution by Diaspora.

### Box n°5: Example of an emerging electronics payment cluster

As an Industrial and advanced technology clusters, Hightech Payment Systems (HPS), founded in 1995 by a group of Moroccan consultants and experts in Monetics or electronic banking. Its objectives are to conceive and produce complete payment solutions. Forty per cent of initial capital was brought by the founders. Certified since 2001, HPS has known a successful trajectory over the last ten years. HPS is proving gradually to be a leading payment solutions provider. The key component its success seems the development of a multichannel payment product, called PowerCARD introduced in 1996. Its position has been reinforced by continuous development of its expertise through strong partnerships and joint ventures. In 2003, the company is certified ISO 9001 for all its activities. HPS is closely allied with key players in the card industry as a member of Visa Vendor Program, MasterCard Vendor Program, Oracle Partner, Sun Partner Advantage, IBM Business Partner, and the IFX Forum. It closely cooperates with major international payment networks and all major suppliers of hardware and software platforms, payment equipments, and hardware security modules. It markets its solutions in all regions of the world, directly or through a wide network of partners: distributors, hardware and software platform providers, Kiosks etc. HPS has become now a global company with 3 regional offices and 2 joint ventures in Bahrain (GPS) and in Mauritius (ICPS). The PowerCARD software currently operates 100 electronic financial transactions sites, which manage a total of 300 financial institutions in 60 countries across Africa, Europe, Asia and the Americas.

Source: Field work

The effect of the development of innovation clusters (software, information technology, micro-electronics, and biotechnology) is creation of new role models for young generation and university professors of successful innovation-based start-ups and spin-offs. This issue is critical mass of such role models – self-sustained development of innovation clusters. The second one is on technology diffusion in service (high value-added tourism), agro-industrial (Agadir in Morocco, for instance) and industrial clusters. Development of such clusters is characterized by export and employment creation. The development of bridge institutions and the clusters is context-specific.

**Figure 39 : Orientation of the 2025 Research Strategy**

\textsuperscript{163} Amine Bensaid “Context and Initiatives for Technology Transfer and Innovation in Morocco” Project Exploring Knowledge and Tech Transfer Opportunities in the Euro-Mediterranean, Brussels, Feb. 25-26, 2010 Initiative
Insure a good quality of higher education through research

Valorisation of Moroccan Assets through the reinforcement of scientific research

Endowment of the country and the socio-economic sphere of a scientific and technological assistance

Contribution to the development of new knowledge and excellency niches by targeting themes in which Morocco could acquire a prominent role internationally


Figure 40: Contributing to closing the tech-based value-creation loop

Source: Field investigation – Bridge institutions project – World Bank – June 2011

164 Centre National pour la Recherche Scientifique et Technique
**Moroccan Association for Science, Innovation and Research (MAScIR):** Created in 2007, Mascir is the result of an initiative taken by three Moroccan universities to joint their efforts and put together their human and technical resources to create a common platform for R&D: the University of Al Akhawayn of Ifrane, the University of Moulay Ismaïl of Meknès and the University of Sidi Mohamed Benabdellah of Fès. Created on a regional basis, it became soon national in 2009 and part of the “Pacte National pour l’Emergence Industrielle” (called previously the Envol Plan) of the Moroccan Government and moved to the Technopolis of Rabat with the participation of MEDZ and the Caisse de Dépôt et de Gestion (CDG), the Academy Hassan II des Sciences, and the Ministry of Commerce, Industry and New Technologies. It regroups now three bodies: the Research and Innovation triangle of the valley of Moyen Atlas (MAVRIT), the Institute of Nanotechnologies and Nanoscience (INANOTECH) and the Association “Savoir et Development” (made of Moroccan researchers and firms both at home and from the Diaspora).

Mascir pursues the objective to promote and develop technological R&D poles oriented towards the satisfaction of the needs of the Moroccan economy in priority in the fields of: biotechnology, nanotechnology microelectronics, digital technology, energy and environment, health and water. The nano technology focus is part of the I3N initiative launched by the Moroccan Government in 2006, destined to create a network of national competences in laboratories and enterprises to promote international standards research in the field of nanosciences. To achieve this objective, Mascir was involved in three major projects: the creation of a centre for the technological development of microelectronics, the creation of a micro electronics cluster for the promotion of innovation and Industrial Property (IP), and the creation of Nemotek in the field of micro-cameras by helping the transfer of technology from TESSERA, a world leader and pioneer US firm in the field of micro-electronics.

Mascir benefited from a subsidy from Government for the 2008-2012 period essentially from the fund of the Academy Hassan II des sciences et des techniques with an initial allocation of 1500 millions DH. Part of the funding (64 Million MDH) was destined to the equipment, laboratory platforms and the launching of the first projects. Four platforms were thus launched: nanotechnology, biotechnology, microelectronics and photonics involving 60 full-time researchers and engineers and 32 doctoral students, both Moroccans and from abroad. Mascir objective is to get a gradual autonomy in terms of funding by generating the third of its financial needs, while the State contribution covers one third and the remaining third generated through external sources (private companies, European Union, Sponsors etc.). Mascir has an active policy towards: universities, research institutions and industry both at the national and the international level to create a micro-climate of innovation.

To date, five partnership agreements have been passed with industry and the academic world. Regarding IP, it is managed by Mascir Valor: patents are either registered individually or jointly when they are the result of collaborative efforts. Two patents have so far been registered and 20 scientific publications in reputable journal made, while membership has been growing to reach 100 members. A recent agreement in January 2011, was passed with Aircelle from the Safran Group, whereby R&D is conducted by Mascir for the development of new materials for the aeronautics industry, the first of its kind in the Maghreb and sub Saharan Africa. Mascir recruit researcher with engineering, masters or PhD degrees.

**Figure 41: Human Capital growing critical mass**

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165 Its Board is chaired by the Minister of Industry, Commerce and New Technologies. Its Scientific Board is made of prominent figures in their various research fields.

166 to be taken with caution as many figures from different sources are contradictory
Rabat Technopolis: Started in 2007, Rabat Technopolis (RT) is a technopole located in Rabat – Salé on a 294 hectares land. Its activity includes essentially advanced technologies activities. Its main projects are: Offshoring, University, Research, Development, Microelectronic, and Multimedia. Currently employing 4,000 people, its aim is to grow rapidly to 30,000 jobs by 2013. Its investment exceeds 400 Million Euros. RT is funded jointly by MEDZ and the CDG group. It is conceived as a “competitiveness pole” much the same as the French models where university, industry and research interact to create value. Three main types of activities are found: industrial (Offshoring (BPO, ITO, and KPO), high technology industries and applications and technological (technology transfer through MAScIR, TDC (Technology Development Center) creation, incubation and innovation promotion). In this respect, six poles compose RT: research valorization through incubators, academic pole through a regional university (the International university of Rabat), offshoring, medias, micro-electronics and Research and Development. The media pole is composed of Audiovisual and multimedia applications. The pole is expected to facilitate interaction between companies in the pole and the Technology Development Center (TDC) which has a partnership with the private university of Al-Akhawayn. TDC aims at promoting applied research to meet the needs of the market targeting high tech and high value added products and services. Rabat Technopolis (RT) uses various types of incentives to attract companies, namely lower income tax of 20% much below current rate, company tax exemption for five years, telecommunication costs 35% less than market rate, and allowances for training for up to 5800 Euros for every Moroccan recruited. Finally, rents of 95 DH per square meter are highly competitive compared to market rate. Hosted companies are expected to reach 70% exports of their products and services within three years of their admission in the pole destined essentially to the Francophone market.

The International University of Rabat (UIR): The International University of Rabat (UIR) is the first private university in Morocco. Started in 2006 in the framework of the new law 00-01, the campus is to be completed by the year 2015. It plans to have 280 faculty members and 5000 students

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by 2020. Using both English and French languages, its aim is to train students following international standards and thus make them in a position to enter more easily the world highly competitive labor market and in the face of difficulties for young people to pursue good quality higher studies. The aim is also to create an internationally oriented, R&D-driven university in Morocco. Various levels of training are programmed: preparatory classes in the French style, engineering and bachelor degrees, master’s and Doctorate following the recent introduction of the LMD system. It also aims at retraining and updating knowledge through its executive education program in the context of growing needs for long-life learning. Its first intake (in the current 2011-2012 academic year), is 174 of fee-paying students, 36 of whom have managed to obtain grants. Its aim is to be able to give academic scholarships, covering the approximately $7,500 yearly tuition, to a fifth of its students, as well as help them get bank loans to cover living expenses. UIR is under contract with the Government of Morocco, a public-private partnership which allows it to use academic personnel from the public sector and acquire recognition on the part of the Ministry of higher education of its degrees and diplomas, even though in practice, this is not always an easy task.

The curriculum conceived is expected to comply with government development plans and with emerging sectors in the Moroccan economy. Three types of sectors are targeted: 1) infrastructure development for transportation, tourism and affordable housing 2) renewable energy using local sources: plans are to have about 40 percent of the country’s energy be wind- and solar-generated by 2020 and 3) high and advanced technology: railway, naval, automobile, aerospace engineering (several airplane manufacturers have set up facilities in Morocco recently); and architecture and design. This is also to respond to the needs of the Moroccan economy for engineers: Morocco has only nine engineers per 10,000 people (compared with 40 in Jordan and 130 in France). In addition to that, business, political science, and information technology are also taught.

IUR pursues also ambitious goals in terms of innovation and in this respect, it is probably one of the very few in the Mena region to include R&D as one of its main objectives: it aims at “inexpensive innovations” to meet both the domestic and the African market, giving it thus a leading role in the future. It wants to focus on niche research using both government and corporate-backed research and development. Thus, the engineering department has already patented three alternative-energy devices to produce power for domestic use: a wind turbine that will function even with very weak breezes; a light panel that shuts off automatically when it detects other sources of light; and a solar-powered water heater. There is demand for such devices in Morocco and other African countries, where many rural areas remain off the electrical grid. In fact, Rabat is already negotiating their commercial mass production. In this respect, the Moroccan Ministry of energy will finance a five-million-euro project to increase the efficiency of solar cells: the university intends to make research on renewable energy "part of its identity." Two pension funds, one French-run, the other operated by the Moroccan government, are the two main IUR’s corporate research partners include the engineering giant Siemens AG; the media company Vivendi, and the aerospace company Thales Group. Investors, contribute over a third of the university’s planned five-year budget of 1.12 billion Moroccan dirham (about $130-million). One of the peculiarities of IUR is to draw extensively from the Moroccan Diaspora and also from the North African one, combining salaries (roughly double of that given in public universities), good working conditions and other intangibles. More than 90% of its current teaching staff is from Moroccans working in various parts of the world, the CCME (Conseil de la Communauté Marocains à l’Etranger) proved to be highly useful on top of personal contacts the academic staff has. This makes it a unique experience in the region and could have an important impact if it succeeds. It has several partnerships with major universities both from the Francophone and the Anglophone areas; In France, it has links with the University of Nantes where the current Chairman initially graduated and was working before joining IUR and Grenoble. From the USA, it has links with Georgia Institute of Technology, and Yale University. Members of the Diaspora seem quite happy joining the university both as a result of pay and conditions but also as a result of the satisfaction felt of helping home country make a decisive step towards innovation and world competitiveness. The ambitions of IUR are broader than Moroccan needs: it hopes to attract at least 20 percent of its student body from sub-Saharan Africa. It is also envisaged as a catalyst for regional development and innovation, “the center of a North African Silicon Valley” according to its Chairman, Mr. Mouaddib.
**NEMOTEK:** Nemotek benefits from a relatively favorable context. Morocco has a rich history in Semiconductors, dating back to 1974, where expertise in fields such as IC-Design, Assembly and Test existed already. NEMOTEK was established in 2008 by CDG, (Caisse de Dépôt ET de Gestion), via an outlay of 50 million dollars of investment and is located at the new Technopolis Park near Rabat. Its current capital is of 120 million dollars and it employs 350. The objectives of its founders were to create a company that would pioneer high-tech and contribute to the technological development in Morocco through highly qualified employees, state of the art plant, and portfolio of technologies. It plans to produce 144 million miniaturized cameras by 2012. Nemotek has a worldwide customer portfolio and can be considered as one of the leading manufacturer of Wafer-Level Cameras and a World leader in micro-camera manufacturing based on "Wafer Level" technologies. Playing the role of pioneer, Nemotek is the first company to buy MVP license from Tessera and the first to industrialize it in the world. It benefits from relatively high IP protection compared to the Far East where the risk is relatively high. Its offering includes packaging solutions (WLP), optical solutions (WLO) and complete cameras (WLC). In more details, it manufactures customized wafer-level cameras for portable applications with a capacity of 36 000 Wafers a year for MVP and provides customized design and manufacturing services of wafer-level packaging and wafer optics and lenses (40 million elements for lenses) and MVP packaged sensors. It has a potential of 2 million cameras a month. It has state of the art facilities with a 3200 square meter (39000 sq. feet) clean room and state of the art equipment. The year 2009 was very rich for Nemotek as it obtained class 10 certification of its clean room supposed to be the first one of its kind on the African continent, WLO qualification and WLP MSL1 qualification. A series of innovations have recently taken place in a relatively short span of time showing an unusually high rhythm of in a fully owned Moroccan company. - In July 2009, Nemotek Technologie announced a new WLP technology, which provides a true chip scale package with only 400om as the minimum thickness, providing customers with thin, reliable, and more sophisticated imaging components for applications including mobile camera phones, mobile computers and other mobile devices used in medical or automotive. - In October 2009, Nemotek announced the availability of its miniaturized Wafer-Level Camera (WLC) for portable applications. By producing thousands of lenses simultaneously on a single wafer, Nemotek Technologies streamlines the manufacturing process providing a more cost effective and miniaturized wafer level based on reflow compatible materials. - In November 2009, the company announced the availability of its WLC demonstration kit, which allows portable application vendors the ability to select the best WLC solution to fit their needs. This process has significantly reduced costs associated with additional testing equipment -In December 2009, it became the first company to offer WLC design, manufacturing and testing within a single facility. The capability to offer in-house testing for its WLC’s simplifies the supply chain process and reduces costs for the image sensor and camera module makers. In 2010, the company announced the development of a two-element VGA lens, opening the door to higher megapixel resolutions in wafer-level cameras. This was made possible by the lasting relations it has with foreign groups such as EV Group. Most recently, Nemotek announced a one-element wider field of view lens for portable applications. The lens provides a field of view up to 65 degrees while traditional lenses tend to be limited to 60 degrees. The announcement is already making waves in the mobile camera market. The new lens narrows the gap with standalone digital cameras a bit more. The development is considered a milestone for Nemotek. R&D is conducted in partnership with the MASCIR (Moroccan association for science, innovation and research) a public foundation specialized in nano materials, microelectronics and biotechnology. Nemotek can also rely on the Moroccan Diaspora: it has been able to attract back numerous highly qualified members of this Diaspora and contributes therefore efficiently to brain gain. It also counts on other foreign competencies: in this respect, it employs 50 engineers coming from all over the world. Its strategic objectives include: achieving worldwide market leadership through unique technological capabilities, the manufacturing of high margin products, and the creation of IP in new process technologies. This is on top of consolidating capital structure and ensuring shareholders remuneration. The number of clusters in 2008 of 5 in 2008 should be multiplied by 3 to reach 15 industrial clusters by 2013. }

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Maroc Numeric Clusters\(^\text{169}\) (MNC): Maroc Numeric Clusters was set up in the context of new innovation strategy. While the association achieved a great deal in few years, it still suffers some weaknesses according to an evaluation made in 2009\(^\text{170}\). Many projects rest on limited individual initiatives notably from the Diaspora community, problems of accurate quantitative data on nanotechnology, the relatively weak private funding of R&D, while this is dominant in successful countries in the world (Japan, USA), the lack of a critical mass of researchers and the old age of those currently working (two thirds are over 45). More and more, we see dynamic domestic companies emerging. Thus HPS, a home grown company has become a thriving company exporting for to 90% of its products and services in the electronic banking market in the face of tough competition from long established international firms. It bridged the gap by incorporating innovation and R&D as conventional functions in its structures and practices allocating a significant share of its turnover to this function. What is also significant in the region is the fact that it is a private domestic company, with a relatively small size investing, in R&D and taking the necessary risk. Put against the share of private funding in Morocco.

2.2.2. Maroc Numeric 2013,

The "Maroc Numeric 2013" (MN2013) is the new strategy the Moroccan Government adopted in 2008 that pursues certain of the objectives set by the previous strategy with regards to the rapidly growing importance of the IT sector: It represents 7% of GDP, 25% of growth and 60% of employment\(^\text{171}\). MN2013 aims at expanding the use of information and communications technology (ICT) by the public, the government and businesses by 2013 through an investment worth 5.2 billion DH (673 million dollars). The objective in terms of human capital is to reach 30000 trained profiles in the IT in the 2008-2013 period and 3000 trained profiles in the offshoring (IT) in the framework of the emergency operation up to 2013\(^\text{172}\).

*Intensification of ICT usage:* MN2013 is structured around four strategic priorities, the first three ones being: 1) providing citizens with high-speed Internet, 2) bringing the administration closer to the needs of the user through an ambitious e-government program, 3) encouraging the computerization of SMEs and develop the sector by giving support to local actors. Central to the strategy are efforts to ensure that one in every three Moroccan families, (rather than one in 10 - en 2008), will have a high-speed Internet connection by 2013 with the priority given to young people. To this end, some 400 computer centers will be built in low-income districts and remote areas and more than 80,000 engineering students at technical schools will be given laptops with Internet access.

*Knowledge for income and job creation:* The strategy aims also at generating an additional GDP of 7 billion DH and at creating 26,000 jobs\(^\text{173}\) by 2013 on top of the 90,000 forecast to arise from off-shore activities. According to the Ministry of Finance and Economy, the offshoring is expected to create an additional 70 000 jobs in the 2009-2015 period. Income is expected to double by 2012 to 60 billion DH, a small part of it (1.8%) coming from ICT exports excluding off-shoring activities. The number of start-ups is expected to increase by another 100 new ones. The fourth strategic priority of MN2013 is promoting the emergence of excellence poles with high potential in terms of exports.

\(^{169}\) Comité stratégique de Maroc NumericCluster, le 07 février 2011


\(^{171}\) Pour la société de l’information et de l’économie numérique

\(^{172}\) Figures provided by the Ministry of Finance and Economy

\(^{173}\) Magharebia 2009-07-24
Innovation: It is the first document which caters explicitly for innovation as one of the key components of the strategy. The Moroccan government established in 2009, a national fund for innovation in the ICT field with an initial outlay of 100 million DH managed by the CCG (Central Guarantee Fund) and created in partnership with a professional association called Apebi, the Association of Information Technology Professionals. Half of this funding is geared towards innovative projects carried out by Moroccan companies in the ICT field while the other 50% are expected to be paid by the companies themselves. Repayment period is six years with the possibility of deferring payments by up to three years, at an annual interest rate of 2% (excluding VAT). The Moroccan Government ambitions to set-up 15 ICT clusters by 2013 with a budget of 62 millions dirhams. This innovation dimension is reinforced by Maroc Numeric Cluster (MNC)

-MNC is a joint initiative of the Ministère de l’Industrie, du Commerce et des Nouvelles Technologies and several key players of the ICT field. These include telecommunications operators, enterprises, research and training institutions and associations. Its objective is to federate all these actors around a common vision to broadly facilitate and promote innovation in the ICT field in Morocco. In this respect it sets four main objectives within the framework of the “MNC 2013” vision: 1) gear ICT to Human Development through innovation and increased appropriation of ICT innovation by citizens, 2) make ICT a source of productivity and added value for the other economic sectors, both public and private through SAAS (Software as a service) and Cloud initiatives for companies and contribute to the Green IT projects, 3) Make ICT one of the pillars of the economy, essentially by contributing to innovation through off-shoring, and 4) position Morocco as a regional technological hub through connecting local innovation to the international one and acquiring regional leadership.

-MNC ambitions to become a referent cluster in the region through its various missions of promoting joint and collaborative projects with high content within identified excellence poles, creating an appropriate technological environment and synergy in favor of innovative project and the emergence of innovative start-ups, promote competitiveness of enterprises within the cluster to win foreign markets, promote support and advisory services to project holders, and strengthen visibility of Moroccan innovation on the international scene. MNC sets 5 major engagements: develop a cluster and its eco-system, develop innovative projects, mobilize in better way competences of the ICT sector, facilitate access to market of ICT innovations and connect Moroccan innovation to the international scene. Four programmes are set to this effect: resources mobilization, Innovative SME, International connect and Green IT. To this effect, four poles of excellence are identified: mobile services, security, monetics and digital law, multimedia and software package. For the “services mobile” program, priorities include developing mobile applications and federating all operators for the emergence of services and content with high added value and facilitate the development and diffusion of services and digital content. Strategic goals include the emergence of mobile services for all, develop mobile services and the diffusion of local content, promote entrepreneurship and research geared towards mobile and develop services with Arabic content. For the “security, monetics, and digital law”, program, priorities include orienting the development of solutions in line with latest technologies, develop appropriate technologies for e-banking and e-Payment and e-signature. Strategic goals include setting Morocco as world leader in the electronic payment industry, promote a global monetics offering both soft and hardware to cover the entire supply chain, propose advanced solutions for managing digital rights and security to accompany this market and launch innovative pilot projects to build on comparative advantages of the country. Regarding “multimedia” program, priorities include developing web design, and infography and all multimedia products and services while strategic goals include access to national and international research of international contractors, and benefit from the lobbying of -MNC and mobilize the necessary competencies. For the “local software packages”, program, priorities include e-government portals and information systems, Saas products for SMEs, develop products and services related to cloud computing and

174 www.apebi.org.ma/index-eng.php
open source software. Strategic goals include mobilizing competencies of industrial and academic world, ease access of SMEs to national and international markets and internationalize projects.

Science Parks/Technopoles/Clusters: Actors engaged include the Casablanca technopark, initiated by the ONA Group on a public private partnership basis and run by the Moroccan Information Technopark Company (MITC), and the Technopole of Bouznika. The Technopark of Casablanca is part of Morocco’s strategy to support entrepreneurship and innovation in the country through start ups and incubators. Since its creation, the Casa technopark has strongly encouraged the development of industry with high technology content. More than 160 enterprises have been attracted since its beginning in the 2001-2007 period, including service to industry, Start up’s, big companies and training centers. Thirty of these are by returning expatriates. It contributes to employment substantially with an average of 300 jobs on average per year. The prospects are the creation of 200,000 jobs per year 5% of which are of which are engineers and technicians. Other projects in the maturation phase include the Technopolis of Rabat sale, and the agropoles of Marrakech, Agadir, Oujda and Fez.


According to MENESFCRS projections, there will be nearly 2,046,330 pupils in primary education, 1,540,008 students in colleges in 2012, and 400,000 students in higher education in 2011. However, the progress made since 2000 has not been sufficient to achieve the universal goals set by the Charter. Pre-school remains limited and unevenly distributed in quantity and quality throughout the national territory. Thus, although at the national level only 65.4% of children aged 4-5 years attend preschool, 80% of them do so in Kouttabs, which forms the large majority in rural areas and whose educational content does not represent a truly modern pre-school; in rural areas, the enrolment rate is 28.5% for girls. In colleges, the situation is still far from satisfactory. In rural areas, only 46% of council areas have a college and hardly 1 teenager of 12-14 years out of 2 is enrolled, representing a specific enrolment rate of 79.1%, with an even more alarming situation for girls.

The weaknesses of the Moroccan education system are due to five key problems: (1) poor governance and accountability, (2) limited commitment of teachers owing to their difficult working conditions, (3) poor teaching methods, (4) inadequate allocation of financial resources compared to the numerous challenges to be met, and (5) inadequate mobilization in support of education.

Consequently, Morocco launched a four-year US$1.7 billion emergency plan (The application of all measures will require a budget of 43.7 billion dirhams) to overhaul its education system: Plan d’urgence 2009 – 2012 pour l’éducation. The Education Emergency Program (EEP) addresses the weaknesses of the system explicitly and aims at improving the performance, efficiency and quality of the education system as a whole. It focuses on structural reforms and improved governance in the education sector (revitalization of the decentralization/deconcentration process, definition of tasks and responsibilities of various institutions, stakeholder accountability, revitalization of boards of directors of regional academies of education and boards of trustees of schools, etc.). The specific

177. The Casa Technopark http://www.casablanca-technopark.ma/typologie.asp
178. Aderrafie Hanouf parle du technopark de Casablanca 08/10/2006
179. Moroccan information technopark company – MITC 2005
180. Le technoparc de Casablanca (dossier PDF)
183. The National Education Emergency Programme is consistent with the national education sector development strategy. The National Education and Training Charter (CNEF) forms the basis of the strategies, policies and programmes for the development of the education and training system for 2000-2009.
184. idem
The objective of the Emergency Program is to make education available to all and improve the quality of teaching and performance of the education system. The direct beneficiaries are pupils and students, the teaching, administrative and service staff, as well as the central and decentralized structures of the Ministry for National Education, Higher Education, Management Training and Scientific Research.

At higher education level, the objectives are: 1) to improve the internal output of higher education, 2) to enhance employability, 3) to encourage talent and innovation in the realm of scientific and technological research, 4) to derive benefit from the findings of scientific research, 5) to upgrade and motivate human resources by establishing a culture of monitoring and assessing progress, 6) to draw up a master plan for the provision of higher education, to increase the autonomy of universities and to establish a contractual system, involving multiannual contracts for academic staff.

The EEP comprises 23 projects aimed at addressing four strategic concerns: (1) implement compulsory schooling up to the age of 15 years, (2) encourage initiative and excellence in colleges and the university, (3) address the cross-cutting problems of the system, and (3) provide resources to ensure success.

Some of the ingredients are within the realm of the knowledge economy framework:

- The new round of reforms: this includes reforming universities in an effort to boost the country's science and technology workforce and promote knowledge-based sustainable development. The reforms aim to make significant headway in meeting some of Morocco's UN Millennium Development Goals by the target date of 2015. It focuses on enhancing the research capabilities of Moroccan universities, improving higher education quality and increasing the sector's capacity as the number of students in the science and engineering fields is expected to double by 2012 as the number of students passing the baccalaureate examination after high school increases.\(^{185}\)

- The Governance dimension: The plan commits universities to take the necessary steps to improve performance, promote high-quality teaching and develop scientific research, with a view to enabling Moroccan universities become internationally competitive. The government has targeted accrediting 92% of its universities as research institutions by 2012, compared with 69% in 2008. Universities will be made financially independent from the government to make them more responsive to research needs and better able to forge links with the private sector. Under the education plan, 17 agreements were signed between the government and universities to improve higher education. These ranged from hiring additional lecturers and raising teaching credentials to expanding infrastructure.\(^{186}\) Lastly, it involves several stakeholders and includes measures creating opportunities for the education system to self-renovate and adapt to the environment. The plan is financed by the Ministry of National Education, Higher Education, Professional Training and Scientific Research (now Ministry of National Education and Ministry of Higher Education, Professional Training and Scientific Research), along with partial support from grants and loans from international organizations\(^{187}\) and defines measures to overcome them, in particular: (i) decentralization of human resources management, (ii) empowerment of stakeholders through an adapted system of evaluation and remuneration, (iii) overhaul of the teacher training system, and (iv) prioritizing interventions in rural areas and for children with specific needs.

- The improvement of environment of the learner which we may call the “learning climate”: Accordingly, this new education policy places the learner at the centre of the Education and Training System and puts the other pillars of the system at its service, through: (1) teaching centered on basic knowledge and skills, which can foster the development of the student; (2) teachers working under the best conditions and mastering the necessary teaching methods and aids; (3) quality educational institutions

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\(^{187}\) These include the French Development Agency, African Development Bank, European Investment Bank, World Bank and European Commission.
providing students with a learning friendly environment; (4) empowering governance to ensure efficient management of the system and its continuous improvement; (5) completed decentralization, definition of responsibilities, and management tools put in place to ensure efficiency of the system.

**Innovation:** It presents six areas of renovation through four distinct components: the first component on the improvement of the quality and performance of qualifying secondary and university education seeks to foster success and increases enrolment after the age of 15 years in qualifying secondary and university education. The second component on access to education for all seeks to make school enrolment compulsory for children up to age 15 in accordance with the recommendations of the 2008 Report of the Higher Education Council. The third component on the resolution of cross-cutting problems concerns the immediate resolution of cross-cutting problems inherent in the education system and intends to carry out a series of actions such as upgrading of skills of teaching staff, and optimizing the human resources management. Finally, the fourth component on governance and financial resources seeks to improve the management of financial resources, ensure their sustainability, fight against excessive spending and put in place general and cost accounting.

The key expected outcomes of this operation are: (i) compulsory school enrolment for all children aged 6 to 15 years, (ii) increase in availability and improvement of the quality of qualifying secondary education, (iii) increased availability of higher education and guarantee of possibility of being employed, (iv) development of research, (v) strengthening of the skills of teaching and administrative staff, and (vi) rational management of human, financial and material resources allocated to the education sector.

**Impacts on Gender:** Despite the progress made, several challenges need to be met to promote gender equality in the education system, namely women's low representation in decision-making positions at the central and regional levels, among teaching staff, in boards of trustees of schools and in the various professional associations. In 2006-2007, even though 38% of the jobs in the education system were occupied by women, less than 10% of positions of responsibility were allocated to women at the central and regional levels. Over the same period, women held only 8% of senior positions, 9% of those of division heads and service heads at the central level, 5.7% are delegates, and 5% head teachers of schools. The Emergency Program provides an opportunity to consolidate the integration of an institutional approach of gender equality in the policies, programmes and practices of the education system. In this light, the program envisages concrete measures to fight against gender disparities, notably: (i) sensitization of members of the education system on gender equality during their initial and continuing training, (ii) strengthening of the status of women in textbooks by avoiding any sexist considerations, (iii) the fight against gender-based violence in all educational institutions, (iv) introduction of gender-specific indicators among education system performance indicators, (v) appointment, at the central and regional levels, of officers in charge of promoting gender equality activities, (vi) improvement of the quality of educational environments with the construction of gender-separated latrines in educational institutions, and (vii) facilitation of conditions of access to education through social support measures such as boarding schools for girls, school buses, etc.

### 2.3. Territory specific programmes

The regional approach in Moroccan KBE vision appears to take on a particular importance. This is materialized through the program of *régionalisation avancée* born by all regional and key players and in particular the CRIs as shown during the field visits. The clusters principles around dynamic innovative enterprises and production units, R&D pole and training centers can contribute greatly to the dissemination of KE to the territories. We will illustrate this approach through the successful Agadir agro-food cluster. This regional approach is also born by key institutions and players in the economy such as the CGEM.
The Agadir agri-food and fishing cluster:

The region of Agadir was selected as a vibrant grape to have both export performances and “induced effect” in agriculture and agro-food sector. In terms of agriculture, the region contributes for up to 48% of citrus, 20% of vegetables and 53% of bananas total productions. It also contributes significantly to cereals, olives, and milk and meat domestic productions. Population employed in agriculture and fishing represents 49%, while employment rate reaches 73.2% for graduates and the rate of unemployment 9.7% (2001) reaching 30% for women. Performances in terms of agro food and fisheries have been outstanding in the last decade. They can be assessed in terms of supplying local demand, but most importantly in terms of exports, in a field which is highly restricted with regards the European Countries, the CAP (Common Agricultural Policy). In the last twenty years, 237 industrial companies and 20180 jobs have been created, which represents about 6% of total domestic production. The city ranked fourth in 2000 in terms of income after Casablanca. The regional capital Agadir concentrates 85% of companies, 77% of industrial jobs and 98% are SMEs with less than 200 employees. In agriculture, it is surpassing all the other willayates in terms of surface cultivated, and production is expected to remain leader in Morocco in 2020. Production is the highest compared to the other regions of the country and is expected to grow by a rate of 47% by 2020. Agriculture under shelter, notably tomatoes and flowers, are now on 4000 hectares and the share of the region in total exports reached 55% of citrus, 95% of tomatoes and 70 of fruits and vegetables. In terms of value, exports reached 3.2 billion DH (8% of the value of total exports). Agro-food represents 92% of the exports of the region. Agro-food is the dominant activity (valorizing fishing and agricultural products) in the Willaya of Agadir and the province of Taroudante, even if other industries such as Chemicals and para-chemicals and building exist. Industrial units are mostly small in size. Agro-food constitutes 80% of industrial employment in the region, (5000 jobs) and handles 50% of national production i.e. 210 000 tons in 2000. It represents 2/3 of added value of the region and contributes to 65% of local industrial production. Agro-food represents 81% of investments of the region 68% of production, 92% of exports, 43% of the number of enterprises and 80% of employment. Employment has had a 20% rate of growth.

The pôle de compétitivité of Agadir, called « Parc Haliopolis » has recently been launched with the aim of dynamizing the industrial tissue and contributing to the economic development of the Souss-Massa-Darâa region. This modern plate-form which meets international standards for the valorization of the products of the sea has a potential of transformation de 500 000 tons and extends over 150 Hectares. It will contribute to the creation of more than 20 000 jobs while mobilizing investments of de 6,6 billion dirhams

The rise of the fishing industry in the region of Agadir: Export performances have been remarkable: this fishing example gives an idea of the dynamism of the region (70% of local production is exported) and quite interestingly nearly 50% of this to the European market. Knowing the high quality standards and strict regulation the EU imposes, this constitutes a rare success story of its kind in the region. The rest goes to Africa (40%) Middle East (13%) and USA (4.5%)191. Products include canned and frozen, oil and fish meal. With 242 high sea boats and 600 coastal boats, the fishing industry is one of the most important employment creator reaching 13 800 permanent jobs which contribute to other sectors in the region: it is estimated that one job create 3 others. In total, fishing created 21 954 jobs192. Globally, the canned food sector represents 4 billion DH of turnover (80% through exports), 25 000 direct jobs and 100 000 indirect employment193.

189 Ingomed
190 Canned and Frozen food, flour, oil and so on
191 Ministry of fishing
Examining the successful cluster, a trajectory of cumulative learning can be identified. Several factors have contributed:

- first the changing rules and regulations on the international market making it very stringent to export agro-food products have led the Moroccan enterprises to undertake a real process of upgrading, modernization of their equipment but also their techniques of surveillance. Standardization of production and processes, the establishment of auto-control processes and the development of quality insurance programs constitute important requirements. This modernization dynamics was extended to fish processing units but also fishing fleet with generalization of cool storage on board to preserve the quality of the captures. Regarding distribution channels, efforts were made to upgrade the halls and their certification, on top of the construction of wholesale markets in conformity with hygiene and sanitation of fishing products. This was completed by the surveillance of the cold chain storage throughout.

Innovation through quality improvement and infrastructure seem to have produced the desired effect (Peuckert and Gonçalves 2011). This has led gradually to the idea of creating the Morocco Label (of quality) internationally recognized and accepted such as the “pilchard” sardines for example. In 2005, 40 products benefited from the Morocco label and 300 were in the waiting list. Difficulties were met in establishing it firmly on the international market in the face of tough competitive and more widely known international standards such as ISO. Steps are taken to strengthen through international cooperation. The World Bank is giving 2.5 million DH to support a communication campaign to promote it internationally.

Nonetheless, the sector suffers several limits, notably the dominant place given to industry related to the sea at the expenses of the fishing activity per se, the difficulty and limits of the ONP (fishing office) to manage the sector and in particular control informal activities, according to non official sources:

Human resources: it is a question of reinforcing competencies and increasing the attractiveness of the jobs in order to guarantee the needs both upstream and downstream of the sector. This also involves improving the living conditions of fishermen.

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The Regional development and the role of CRIs

The Tanger - Tétouan region

Located in the North East of the country, the region has a unique geographical position at few miles only from Spain and the European continent. One of its specific advantages is transports and logistics infrastructures materialized by road (2000km), rail (122km), air (2 airports with approximately 650 000 passengers) and with direct flights to Paris, Madrid, Brussels, Kohn and London). This is reinforced by sea transportation with three main ports (Tangier, Larache and M’diq), several secondary ports and of course the Tanger Med I and II. Tanger Med 1 handles 3 million containers per year reaching 8 million containers with Tanger Med2 with the ambitious objectives of commanding nearly 20% of world traffic of containers. It benefitted from an investment of 22 billion dirhams while infrastructures have taken about 120 billion dirhams.

It benefits from diversified industrial and service activities: agro-food, industry, logistic services, tourism and open sky for air companies.

A particular needs to be given to the development of wind energy, through the installation of wind turbines of 140 Megawatts with an investment of 2.75 billion dirhams. It is expected to cover 14% of the energy needs of the country by 2020.

With only 9% of the population of the country, the region registers an annual growth rate of 9% (twice as high as the national rate of growth of 4.5%). This growth is driven by a relatively dynamic private sector with an average of 30 new demands for enterprise creation per day. It constitutes an important employment area. Part of the job are supplied by the informal sector.

Elements of knowledge economy can be found in two major dimensions:

EIR: Tangiers is considered as the second financial place of the country for its banks and financial institutional mostly affiliated to foreign outlets. Ease of access to credit constitutes one of its competitive advantages. The second incentive is the availability of land: 5000 hectares of land reserves are available for investors considering the land crisis that some other regions suffer from.

Education and training: a relatively important university pole: three universities (Tangiers, Tetouan and Larache) for a total of 36000 students, two engineering schools and covering a variety of disciplines

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in sciences, in social science and the humanities. It has gone through the new LMD system quite successfully unlike many Maghrebian universities and shows thus a relatively high capacity for change. Tangiers university appears to be quite open to foreign universities which allows it to tap into world knowledge: 220 travel grants have been given since 2003: it is also considered to be the first university in terms of partnership with foreign universities. Rate of employment of graduates appears relatively important considering the dynamic labor market. Private universities are considered as a necessary path for Morocco and get the full support, provided however that selection remains on merit-based and not capacity in meeting the fees.

**Research and innovation:** The University of Tétouan appears to take the lead in the fields of research with more than 70 papers published in referred journals and indexed and another 110 articles in national journals in 2010. Moreover representatives of local industry are members of the Board of the university which allows the Academic institution to be more sensitive to the requirements and problems of the university and be in a position to orient its research themes in that direction. The main problem met, however, is that local enterprises are not yet prepared to invest in research and development and in the support of projects undertaken within the university (80% are family businesses).

**The Chaouia – Ouardigha Region**

Located in the centre of the country, the region of Chaouia – Ouardigha is made up of the following provinces: of Ben Slimane, Khouribga and Settat. It has a population of 1.6 million inhabitants and ranks first in this respect. The region ambitions to become the 2nd industrial destination in several sectors of light industry: agro-food, building materials etc. The region participates up to 27% of national GDP and is of agricultural vocation: for example, it represents 90% of meat production.

**EIR:** At a regional level several ingredients can be found. Incentives include geographical proximity with the city of Casablanca, access to land, good infrastructures and local cheap labor. A dynamic territorial marketing and a certain competition with other territories are found. As an illustration, the Japanese company SUMITOMO has chosen the region of Kenitra rather than Chaouia-Ouardigha in spite of its many attractions, but this had the advantage of upgrading the potential of the region. An average of 200 demands for investment is introduced each year, part of the spillover from Casablanca. Tourism is also considered as a driving engine for growth (e.g.: rural tourism).

**Education and training:** Several measures are taken to improve the education and training system: 30 centers of vocational training have been created with relatively high quality level: they are graded among the first 1000 best vocational training in the world. In this respect, the rate of unemployment is the lowest in the country (6%) compared to average 30% for the country as a whole. Some of these schools and vocational training institutions were created by transnational corporations. They are taking advantage of international cooperation and taping into global knowledge. Thus

**Research and innovation:** The region is specializing in products sensitive to sustainable development and is proving to be highly inventive. An effort is made to involve the university in solving the problems of the economic sector of the region. Impact studies are systematically given to the university as an object of research. Even when foreign partners are requested, one of the conditions is to involve local competences.

**Conclusion**
Prior analysis indicates that the approach of KBE pre-figuration combines both traditional frameworks of “top down” and “bottom up” and might constitute yet another brand unique in the region worthy of interest. This is constituted essentially by the framework we have outlined: a combination of sector specific, function specific and territory (region specific). For that matter it must be noted that both “bottom up” and “top down” approaches used in the North African region have given limited results. Morocco managed to implement many aspects of KBE before complete and well defined vision in a pragmatic approach which has the advantage of higher chances to seize short-life opportunities. This implementation dimension lacking often weak of missing in the experiences of the region, constitutes an asset to be further strengthened. Several well defined strategic KBE plans are weakly, partially or not implemented at all in spite of public resources mobilization, seemingly political will and mobilization of key-players. There is a strong partnering element in the approach through notably offshoring and nearshoring with local labor element: this is a deepening of the knowledge sharing and a capability of tapping into global knowledge, often underplayed in the existing KBE plans prompted into that by hyper nationalistic attitudes.

The country benefits from relative stability of cadres in the administration and professional circles and particularly enthusiastic youth. It also benefits from “ready to help” dedicated Diaspora. Illustrative cases from the prior field investigation show that the building on these assets can give highly satisfactory results e.g.: HPS. While some pillars such as education and governance are clearly lagging behind when compared to peers in the region, notably GCC countries, the two engines could be innovation and ICT, while drastic progress are made in the two others. The cluster approach seems to provide useful grounds for overcoming the innovation barrier in its two aspects: innovating to meet economic and social needs and innovating for competitiveness and exports to world market. On both grounds, available success stories indicate that the traditional “psychological barrier” is being gradually overcome at cluster level. This is an important entry point needing strengthening and adequate diffusion strategy. The funding of Innovation pillar through conventional channels is also worth mentioning: Caisse des depots, dedicated funds and international loans seems to constitute a promising alternative to proper and full-fledged venture capital and proper take off of private equity funding. The question raised is the sustainability of the system.

While implementation and pragmatic approaches have a lot to say for them, a need for coordination and coherent framework is necessary. Similarly the need to more codified approach and referencing allow for better chances for pinpointing potentially problematic areas. In this respect it is worth noting that while several ingredients of the broad range of indicators in the four pillars are mobilized, many are missing and seem necessary to build a coherent and full-fledged KBE approach. In essence the linking of the three approaches is not clarified: the function specific plans, the sector specific and the territory based. The need for explicit coordination policy and mechanisms are needed. Few remarks need making: 1/ the emergence plan rests heavily on EIR, infrastructures and human resources in some cases but specifies very little on ICT and Innovation (both relatively vital in industrial sectors) with the exception of textile and leather sector, 2/ Agro food, while being relatively successful, mobilizes primarily EIR including innovation, while being relatively light on training of human element and ICT usage 3/ The MVP appear to rest heavily on EIR and governance, with relatively little codification of often largely implicit KE approach. The function based plans appear to mobilize several pillars. They lack each of them explicit policy regarding the missing pillar: Maroc innovation initiative lacks clear policy regarding ICT use. Maroc Numeric 2013 lacks explicit policy on human resources development in order to harness knowledge for ICT production and exports. Finally the EEP while being explicit on adopting a KBE approach remains relatively less explicit for ICT and Innovation. Function based plans while having a seemingly horizontal scope remain still heavily sector-based and not sufficiently broad and flexible to encompass the needs of the other sectors. Territory based plans and programmes, are implicitly mobilizing all four pillars with strong governance and incentive components. This approach while proving successful as shown by the thriving Agadir agro food sector, can easily meet its limits.

The new KBE approach to be adopted all four needs therefore a more complete and codified elements for integrating the missing components. It needs coordination between the various function based plans.
Summary of main results

General background

Morocco has made significant economic progress in recent years, reduced level of poverty, a relatively diversified industrial structure relative to many countries of the region, a fair intra industrial trade coefficient. Yet the economy suffers insufficient job creation, lack of dynamism in relative terms, productivity growth in agriculture still insufficient and most of all insufficient mobilization of knowledge relative to emerging economy to fully succeed in its transformation to a knowledge driven economy.

Unlike some other countries in the Mena region, Morocco has embarked in the implementation of knowledge approach and principle before a full scale knowledge economy plan was figured out. The four pillars have nonetheless benefitted from long terms plans and programs: an E-Maroc vision and national IT policy (1999-2003), important expansion and consecutive reforms of education for better quality and employability, a improved institutional and governance environment through accelerated privatization and liberalization and R&D and innovation initiative through key role played by various institution.

While all these efforts are appreciable, they still need to be coordinated in a common knowledge economy vision initiated and monitored at the highest level.

1. Morocco current stand in the knowledge economy

Morocco has been categorized as moderate KEI country with high level of unemployment and relatively abundant labor force unlike Gulf countries for example. While improving in absolute value, KEI has deteriorated since 1995, showing less improvement than comparators both in the region and worldwide.

The KB pillars

The four KB economy pillars show different rates of progress, the most problematic ones being education and training and innovation.

EIR

Reform undertaken seem to bear fruits through improved ranking in macro-economic environment, in infrastructure and institutions, yet health and education still lag behind relative to countries in the region and other international comparator such as Turkey and Argentina. Insufficient job creation remains one of the major economic, social and political challenges.

The relatively unfavourable ranking shows problems in financing, corruption, inadequate supply of infrastructure and tax rate and less than satisfactory progress in of the legal framework showing that the reforming of the business environment has not produced expected results. Nonetheless significant progress is made in improving administrative procedure.

Lack of credit continues to be a major obstacle for SMEs, particularly so for smaller innovative firms there appear to be weak instruments for channelling venture capital to them
Reforms in the political arena have been accelerating since the so called Arab Spring. A new constitution, a consultative commission on Constitutional reform gave a broad framework for participation of major political key players and active associations of civil society while the Monarchy remains the cornerstone. New pluralist Government, under the leadership of the Islamic PJD stemming from the election, provide bases for democratic expression and guarantee for fundamental liberties, with prospects of improving EIR components notably through the fight against corruption both at top and at grass-root levels.

Education and Training

Education and training index ranks Morocco the second lowest in the Mena region in spite of relatively high public spending in the sector, showing it remain an underperformer. While metrics show real progress in numbers in primary and secondary education, quality scores such as TIMSS show that level of literacy is still low for the requirements of a full-fledged KBE.

Tertiary education remains relatively weak and Morocco performance in gross tertiary education relative to age group ranks it behind most countries of the region with the exception of Yemen and Qatar. But most problematic of all is the quality of tertiary education. Yet significant progress has been made in reforming the system, with growing autonomy of universities, introduction of evaluation and quality based approach, and accreditation and many others.

Most problematic of all, graduate unemployment showing the inadequacy of the tertiary education relative to labor market needs. The relatively high growth of tertiary education is due to sheer demographic pressures but also to high expectation of family for their offspring to climb social ladder.

Vocational and technical training remains the poor parent of Morocco tertiary education and this, in spite of the skill shortages in various domains, another paradoxical situation: on top of the traditional low status of this kind of training in the culture of the region, enrollment did not exceed 6% of gross secondary enrollment rate with dwindling numbers of pupils and professional training remains largely insufficient. To make vocational training a vehicle for knowledge economy, policy measures need taking to complete ongoing reforms.

Women education has known relatively good progress in education as a whole and in particular in higher education when girls surpass boys. However they suffer more discrimination at lower level, in illiteracy, in pre-primary, primary and secondary education, hence the deteriorating Morocco’s ranking in the Gender Parity Index. Reduction of this gap, will give high chances of female being involved in KBE, knowing all the prospects of this economy to women.

Distant and e-learning, present tremendous opportunities for both, improving literacy, enabling men and women for jobs and improving quality at all stages of education and training. This potential is still not properly harnessed in spite of real progress made namely through Morocco Campus notably.

International cooperation presents interesting prospects for quality improvement of the education pillar both through equipment and training of teachers and also students mobility namely in EU programmes;

Research and Innovation

The culture of scientific research, however, has not yet permeated the universities, which remain primarily places of instruction; Moroccan lecturers are not integrated to any great extent into national or international research networks. To promote science and technology investment, Morocco is also
planning to establish a new campus to provide knowledge-based services to strengthen research and training in clean technology. Yet its ranking behind several countries of the region, namely the Gulf ones in terms of quality of research institutions, contributes its relatively low performances in the production of scientific articles in 2010. The recent creation of the Centres d’Etudes Doctorales (Cedocs) constitutes a right move and deserves strengthening and monitoring closely.

In terms of innovation, Morocco belongs to medium performers, while scoring less than the average Mena. For many years it suffered poor university-enterprises links and in particular to the private sector partly due to the “crisis of confidence” between the two parties. Recent moves show that it has built some strength in firm-level technology absorption and is about average (compared to the world) on availability of venture capital, technical journal articles, and university-company research collaboration.

Major innovation inputs need upgrading. R&D spending, in spite of notable progress, remains essentially public with marginal contribution of the private enterprise. Nonetheless, policy to attract foreign investors has successfully translated in TNCs effectively investing in R&D and conducting operations in a range of advanced technologies, giving Morocco the leadership in the Mena region. Private domestic sector is constrained by limited venture capital. In general, Morocco has several weaknesses in its innovation system: the diffusion of innovation in Morocco is still constrained by inefficient coordination, shortage of funding, and a suboptimal system of innovation. Public procurement is below expected level to constitute a real drive for innovation.

Innovation output metrics show still low patents weaknesses both domestically and in the USPTO system, but most of all it is the transformation of these into industrial products and services which remains of main concern. High technology exports, suffers like the rest of the region from low level relative to emerging countries and EU for example. Yet Morocco is in the leading position in this respect far ahead of countries that benefit from vast oil income. This asset needs to build upon to strengthen Morocco’s capabilities.

**ICTs**

Morocco made a notable progress in the ICT field as shown by major indicators, constrained as we have seen earlier by the relatively high rate of illiteracy with a dismal rate of internet subscribers. Network readiness index shows that it lags behind several peer countries of the region and regressing in ranking due to a comparatively higher speed of IT intensification. Morocco has to catch up in terms of internet users, computers per ownership and information infrastructure to keep up the global pace and progress made in comparator Mena countries.

The main challenges remain, like for many countries of the region, IT for productive usage and private investments in this sector, in view of its high potential for job creation. Knowledge economy requires higher coverage in terms of usage but also in terms of production and exports of ICT products in which Morocco remains relatively weak like other Mena countries. Morocco online government also appears to be moving forward with several electronic services online this does not reflect adequately in e-gov index, which is still low relative to peer countries in the region. While no specific law has yet been produced, there are premises on the ground that e-commerce will take very rapidly once minimal conditions of security are fulfilled in Morocco.

Morocco has the second highest price level in the region after Yemen and therefore not very competitive compared to GCC countries for example. This is to do largely with the quality of policymaking, and the extent to which regulatory reforms have been undertaken to break the rigidity of state monopolies, thereby opening up for competition in the development and launch of new applications and services.

Technopole strategy has been one of the main concerns of the Moroccan Government. They have started relatively early with the creation of the Casa Techno park in the ICT field. It is the result of genuine public-private cooperation: it is expected to bridge the gap between universities, (telecom
companies, engineering schools and IT start-ups. While attracting several companies namely from abroad and promoting start-ups, they have been rather weak in boosting innovation by domestic firms.

A major lesson emerging from existing experiences in developing technopoles is that concentration of training, research and enterprises in the same location is not enough to create innovation. If there is an “invisible hand” attracting the different players towards common objectives, it needs ongoing support, or at least seeding efforts. This support takes the form of services provided or proposed by the management of the technopoles.

2 - Initiatives that are taking place on the KE in the various plans

Morocco’s effort in boosting economic growth through new well focused plans and programmes is part of the new vision. From a knowledge based approach: these plans can be divided into three categories:

- sector specific plans which have KE ingredients imbedded (The Emergence Plan, The Plan Vert, The Plan Halieutis and the Vision 2020 and the Plan Azur)
- function specific plans which are clearly KE in the sense that they address directly the pillars (The Plan d’Urgence for Education: 2009-2012, the Maroc Innovation plan and Maroc Numeric 2013), and
- territory-specific (more related to the implementation of previous plans at a territorial level (e.g.: Plan vert and Plan Halieutis for the Agadir region)

This approach through focused plans constitutes a rather unique and original KBE implementation framework in the region: it needs, nonetheless to make more explicit the KE dimension on one hand and to be completed on the other, both being the ultimate aims of this report.

Sector specific

The “Programme Emergence” put up by the Government is translating in concrete terms the policy regarding innovation and the entrepreneurial leadership in defining the vision and mission of knowledge producing systems. The emergence plan rests on three important pillars: infrastructures, legal and governance framework and training of human resources. Six major sectors are covered by the Emergence Plan: 1) Offshoring 2) Automobile 3) Aeronautics and Space 4) Electronics 5) Textile and leather and 6) Agro-food

Offshoring rests on three important pillars: infrastructures, incentive regime, and training human resources. Both welcoming infrastructure and attractive incentive framework including fiscal incentives can be considered as key pillars. The automobile sector rests on two major KE pillars: EIR, infrastructures and training. The Aeronautics and Space Plan rests essentially on two pillars: EIR (PPP) and infrastructures, the same way as the electronics sector. Finally the textile and leather sector KE pillars include: Infrastructures, EIR, Innovation, Training and Communication.

Agro food remains one of the key sectors of the Emergence Plan, both in terms of employment and contribution to GDP. KE pillars include: EIR including good governance and Innovation. EIR includes liberalizing, promoting foreign investment, funding, and modernizing rules and regulations. More notable is governance with cooperative Boards, intermediate associations, strict quality control, active communication PPP throughout the channel. Innovation include novel mode for fighting diseases, modernizing of management, and collaboration with key partners in the research field.

The Moroccan Plan Vert (MPV) includes a reorganization of the agriculture producers within larger integrated structures to facilitate commercialization and exports due to the importance of the sector for the economy social stability of the country (It is directly responsible for the food security of 30 million consumers). The plan mobilizes two major KE pillars: EIR and governance. Governance is one of the key components, with aggregation, new land policy, management of water
resources and coordination. Incentives rest on appropriate fiscal, supportive role of the State throughout and incentive pricing.

**The Halieutis plan intends** to create regional fisheries transformation hubs to develop the pelagic fisheries industry and the high value-added frozen products sector and to turn the fishing industry into a true economic growth facto by 2020. KE pillars include EIR, governance, innovation and human resources development. Notable of this sector the governance of the sharing of knowledge which is part of the innovative policy pursued in the sector.

**The Vision 2020 and the Plan Azur** is an investment project initiated by the objective of creating six coastal resorts with aim of attracting 10 million tourists by 2010. It rests on three major KE pillars: EIR include new attractive property regime and major infrastructures. Nonetheless problems which occurred in implementation reduced to some extent the efficiency and viability of these choices.

**Function specific plans**

Function specific plans relate to the three main pillars of KBE: Innovation, ICT and Education. In this respect they contribute directly and indirectly to the breadth and deepening of Morocco entry into the knowledge economy. These plans are: the Plan d’Urgence for Education, Initiative Maroc Innovation (IMI) and Maroc Numeric 2013.

**The Plan d’Urgence for Education** addresses the weaknesses of the system explicitly and aims at improving the performance, efficiency and quality of the education system as a whole. Some of the ingredients are within the realm of the knowledge economy framework: -The new round of reforms and governance as part of the EIR, the improvement of environment of the learner and Innovation. This latter pillar takes on a specific importance based on four major components: extension of education and work to the economic environment, pedagogic organization, improvement of the quality of education and training, human resources and governance. Finally, the Emergency Program provides an opportunity to consolidate the integration of an institutional approach of gender equality in the policies, programmes and practices of the education system.

**Maroc Innovation Initiative** sets ambitious targets in terms of patents, number of innovative start-ups. Morocco to become one of the R&D competitive offerings in the region in the medium in the world: Biotechnology, ICT, Materials, Nanosciences and nanotechnologies. Policy priorities include innovation based competitiveness, production of technology, exploitation of universities R&D capacities and to attract talents to establish a real culture of innovation and entrepreneurship.

Four main axes and thirteen fields of action are retained. KE pillars are EIR through various incentive mechanisms, infrastructures and human resources mobilization. A four main axe linked to the means is funding and support. Other steps include creation of innovation cities, collaboration with EU innovation programmes, increasing funding to up 2% of GDP by 2020 with 25% private.

The emergence of thriving sectors/companies such as HPS in the field of electronic payment indicate a strong innovative clusters policy through new role models. It shows also a relatively strong entry point.

A strategy of knowledge mobilization which contributes to closing the tech-based value creation loop is used. It rests on three main components: market oriented research structures (e.g.: MASCIR), intelligent integrated technology parks (e.g.: Technopolis) and dedicated industrial clusters for high tech companies (e.g.: Nemotek) and Maroc Innovation Clusters (MCI).

**Maroc Numeric 2013** pursues and deepens the former e-Maroc 2010 strategy. Several ingredients of KBE can be depicted in the e-Maroc 2010: ICT reforms and initiatives, the explicit reference to
knowledge economy as a framework, the drive to develop a productive, competitive and export-oriented industry. The new MN2013 rests on three major pillars: Intensification of ICT usage, Knowledge for income and job creation, innovation and the development of Science Parks/Technopoles/Clusters.

**Territory specific plans**

Territory based plans and programmes, are implicitly mobilizing all four pillars with strong governance and incentive components.

The changing rules and regulations on the international market have led the Moroccan enterprises to undertake a real process of upgrading, modernization of their equipment but also their techniques of surveillance. Standardization of production processes, the establishment of auto-control processes and the development of quality insurance programs constitute important requirements. All these activities which require important knowledge assets are due to openness of the economy. Innovation through quality improvement appears to be a driving engine for the innovation through competition paradigm. This approach while proving successful as shown by the thriving Agadir agro food sector, can easily meet its limits.

At territorial level, the CRI proves to be a powerful driving engine into the knowledge economy. They mobilize implicitly major components of KBE. One of the more important pillars appears to be EIR sometimes through enhanced competition. The other pillars are a little lagging behind and in particular education and training: More effort needs to be made to build stronger relations between the university and the enterprises at territorial level. At lower level, vocational training is the one which has a tremendous potential for absorbing unemployment: it needs to be further oriented to more knowledge-based activities.

In Morocco, a series of successfully implemented sector development plans are parts of a vision for the country’s modernization, but their outcomes are not yet tangible enough to command the strong adhesion of the population to a new development model.
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