


# **Knowledge-Based Economies: Challenges and opportunities for Arab Countries**


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**“It is not the strongest of the species that survive, nor the most intelligent, but the ones most responsive to change”**

*(Charles Darwin)*



***“The basic economic resource is no longer capital, nor natural resource, nor labor, it is and will be knowledge”.***

***Peter Drucker***

# The Importance of Knowledge

**Wealth Creation**

**Global competition**

**Job creation and labor market flexibility**

**Enhancement of people capabilities**

**Creation of indigenous knowledge**

**Empowering the society with core skills for making sound decisions**

**Facilitate communication and exchange ideas**

**Eradicate poverty**

**Promote peace and understanding**

# ***Knowledge Economies defined:***

***“Are those whose citizens, communities, enterprises, and organizations have the ability to: access, assimilate, adapt, create, constantly renew, package, diffuse, advocate for the application of knowledge, and apply knowledge to facilitate economic and social development.”***

***WB Namibia Human Capital (P. 8)***

# Foundations of the Knowledge-based Economy

1. Well educated population including building a skilled labor force
2. National innovation system driven by research and development and science and technology
3. An economic and institutional regime driven by adequate regulatory environment
4. A dynamic ICT infrastructure including social networks capable of facilitating effective communication

# ***Main Features of the Knowledge-Based Economy***


- a. Innovation is a permanent feature.**
- b. It is an economy of networks.**
- c. It is accompanied by new forms of organization involving relations between public and private sectors**
- d. Human skills and competences are key drivers**
- e. Tacit knowledge need to be codified and used**
- f. Information is necessary in all sectors of the economy**
- g. It challenges traditional economic theories. Knowledge is unlimited and renewable resources**

**(World Bank 2003)**

# Variables selected for Knowledge-Economy benchmarking

- The education pillar: literacy rate, secondary school enrollment
- National innovation pillar: number of researcher's in R&D, Share of manufactured products trade in GDP, number of scientific and technical publications per million
- The institutional pillar: tariff and nontariff barriers, property rights government regulation
- The ICT pillar: telephone lines, computers, internet access





**“Arab countries in general are represented by weak institutions which impeded the progress of the Arabs, especially the youth, towards the renaissance and knowledge society.”**

**(Arab Knowledge Report 2010/2011)**

**“Arab countries require a new form of development to be globally competitive. In times of change and uncertainty, K-based development is capable of directing the growth model towards some of the problems in Arab countries, namely education, poverty and the restricted rights of women. The K-revolution offers a unique opportunity to evolve in a direction that is better suited to the current and the future socio-economic needs of Arab countries.”**

*United Nations, 2005*

# Status of Knowledge in Arab Countries

- Knowledge in Arab countries appears to be on the retreat
- Unless they have their knowledge base, the Arabs will become consumers of knowledge
- A climate of freedom is an essential prerequisite for knowledge sharing and creation
- The hijacking of science by politics is one of the reasons for the decline of the knowledge system in Arab countries
- The educational system needs to be restructured to meet the new economy
- Private sector education should be encouraged
- Arabs need to open up their culture.
- Arabs need to develop their own knowledge model and not to depend solely on the West
- Arabs must invest in science and technology to promote innovation.

# Main characteristics of Development in MENA

- Heavy dependence on oil with little manufacturing production
- Little diversification of export products. MENA has the lowest share of manufactured goods
- Weak integration into the global economy. The Arab world has the lowest FDI/GDP ratio
- Low private sector participation in the economy
- Low labor productivity. A study published recently showed that on average an Arab works 8 minute per day compared to 7 hours in Japan and Germany. The study also showed that 35 million workers in MENA are not productive.
- Low level of knowledge absorption, application and creation

# *The most problematic factors for doing business in the Arab World*

- Access to financing
- Restrictive labor regulations
- Inefficient government bureaucracy
- Inadequately educated work force
- Corruption
- Poor work ethic in national labor force
- Inadequate supply of infrastructure
- Policy instability
- Government instability

# *The most problematic factors for doing business in the Arab World*

- Inflation
- Tax rates
- Tax regulations
- Foreign currency regulations
- Poor public health
- Crime and theft

# Aspects of a National Knowledge Policy

(Shelda Debowski Knowledge Management)



# *Selected indicators for knowledge-based Economy in Arab Countries*

- Expenditure on Education is inadequate to promote science and technology and increase skills
- R&D expenditure is close to 0.4% GDP compared to about 2% in EU
- Average output of scientific papers per unit population is about 2% of an industrial country
- Number of scientists and engineers working in R&D is 50% of the world average
- Almost 90% of R&D funding by the public sector. The private sector contributes about 2% compared to 50% in OECD countries



# Policies for knowledge Creation in the Arab world

- Formulation of knowledge strategy
- Creating enabling environment for sharing and diffusing knowledge
- Human capital development
- Promoting R&D
- Gender equity
- Building adequate scientific and technology systems

# Arab Universities – Poor Capacity for Knowledge Creation

- Inadequate research policies
- Very limited graduate programs
- Weak culture for research
- Low quality of academic staff
- Lack of strategic guidance on the knowledge and innovation needs in key growth sectors
- Weak collaboration with other research institution both regionally and globally
- Low funding/incentive for research
- Private universities are underrepresented in the educational system

# Why Innovate?

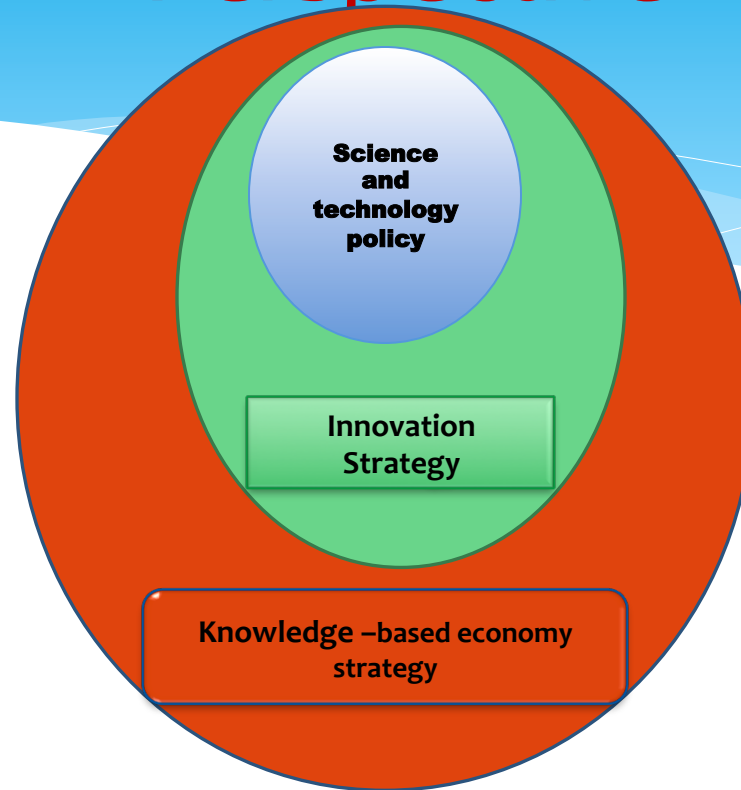
- **The strategic position: Innovate to maintain or improve the competitive position**
- **The financial reason: Innovate to capture additional value**
- **The commercial reason: innovate to maintain and grow markets**
- **The organizational reason: innovate to learn**
- **The human factor reason: innovate to attract and retain talent**

**(Daniel Oyon)**

**“Innovation fundamentally means coming up with new ideas about how to do things better or faster. It is about making a product or offering a service that no one had thought of before. And it is about putting new ideas to work in enterprise and having a skilled work force that can use those new ideas. Policies related to science and technology, industry and education will need a new emphasis on the role and importance of innovation systems, the requirements for infrastructure, and incentives which encourage investment in research and training to support those systems.”**

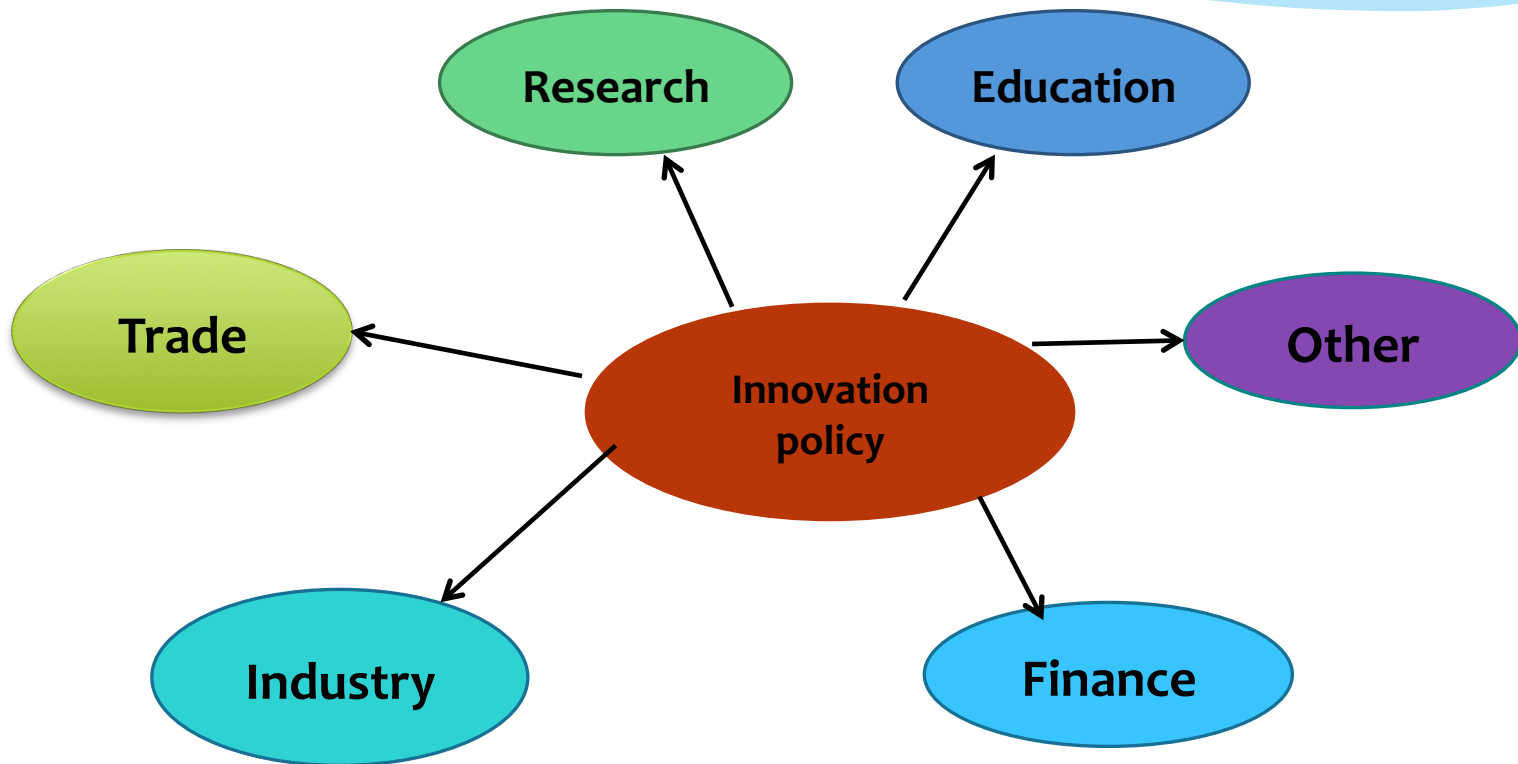
**( *Building the Knowledge Society, Ireland, P. 22* )**

# Innovation Policy in a Broad Perspective



**Source: Jean-Francois (personal communication)**

# Model for Innovation Policy



# ***Causes of knowledge creation in OECD countries***

- a. Investment in knowledge related industries**
- b. Education and Learning**
- c. Research and development (R&D)**
- d. Information and telecommunications technology.**
- e. Innovation**
- f. Productivity growth**

**(World Bank 2003)**

# *Features of Small Business*

- **Small business can be more efficient**
- **Small business can be more creative**
- **Small business can be more personal**
- **Small business can be more specialized**
- **Small business can be more flexible**
- **Small business can be more accountable**
- **Small business can be more resilient**



# Examples of Knowledge-based economy

Finland	Policies towards knowledge based economy
	<ol style="list-style-type: none"><li data-bbox="504 644 1180 682">1. Sufficient public funding for R&amp;D</li><li data-bbox="504 718 1286 908">2. Close cooperation and efficient networking among universities, public innovation centers, and firms</li><li data-bbox="504 943 1309 1062">3. Heavy competition and open markets to create pressure for innovation</li><li data-bbox="504 1098 1128 1136">4. Well-functioning labor market</li><li data-bbox="504 1172 1309 1290">5. An educated system that can respond to change</li></ol>

Singapore	Creative, innovative and dynamic society and economy driven by:
	<ol style="list-style-type: none"> <li>1. Singapore leadership believe strongly in investment in people because on an intelligent island, a pair of hands has to be a pair of thinking hands</li> <li>2. Collaboration between the ICT industry and schools has helped teaching and learning from childhood</li> <li>3. Singapore aimed at attracting global industry players and position itself as a living laboratory for innovation</li> <li>4. Private agencies rather than the government spearhead Singapore innovation</li> <li>5. The role played by the National Science and Technology Board to increase the number of high-tech start-ups</li> <li>6. Singapore is among the most developed in Asia of ICT and ranked 8 in the world</li> <li>7. Through the e-government Action Plan and the e-Citizen Portal a wide range of services is available to the public</li> <li>8. Continued support for ICT</li> </ol>

# Expenditures on R&D and high-tech exports

<b>Country/Region</b>	<b>Exp. On R&amp;D (%)</b>	<b>High-tech Export (%)</b>
<b>U.S.</b>	<b>33.5</b>	<b>13.1</b>
<b>EU</b>	<b>23.5</b>	<b>33.3</b>
<b>Japan</b>	<b>13.4</b>	<b>7.0</b>
<b>Other developed</b>	<b>10.1</b>	<b>10.5</b>
<b>Other developing</b>	<b>17.6</b>	<b>6.2</b>
<b>OIC</b>	<b>1.8</b>	<b>4.3</b>
<b>China</b>		<b>19.3</b>
		<b>6.3</b>

# Knowledge Economy Index Ranking

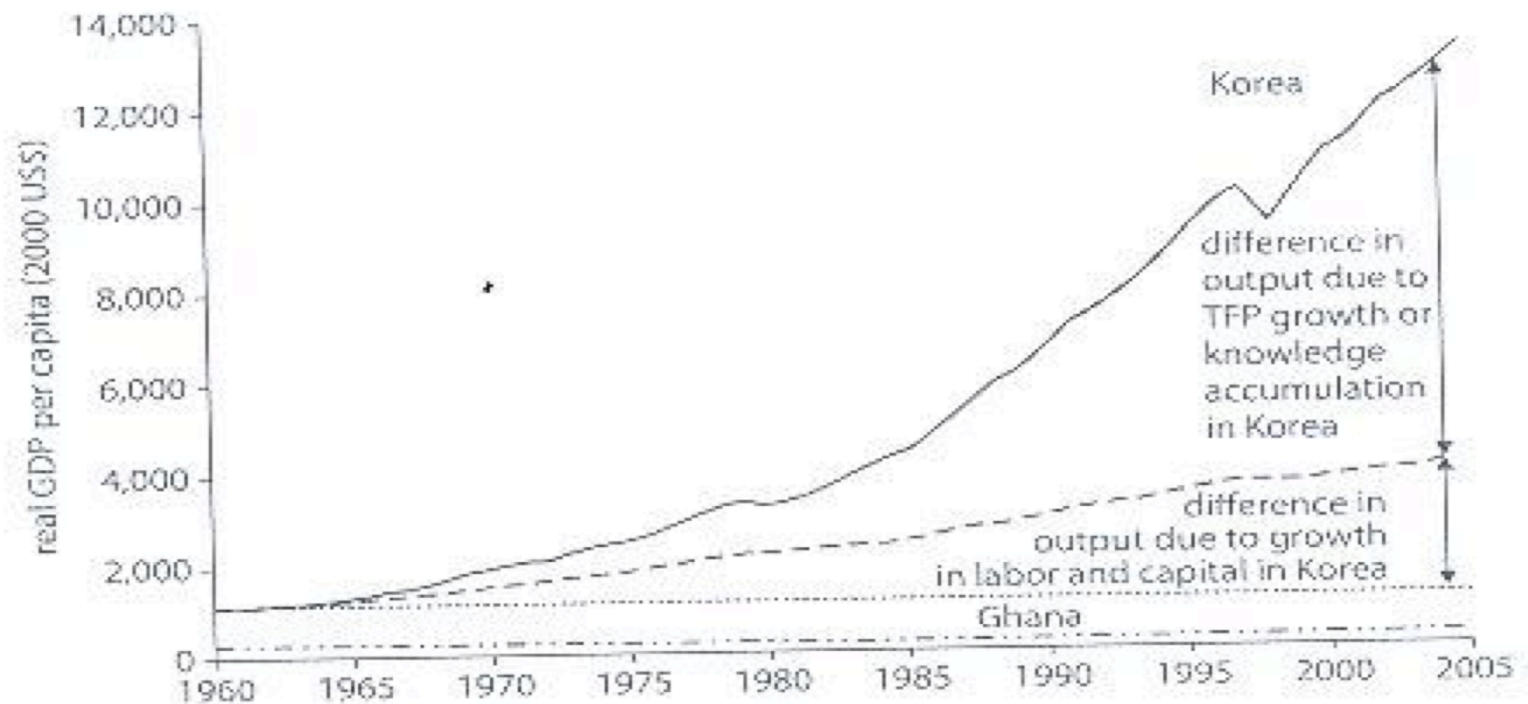
Country	Econ. Incentives and Institutional Regime	Innovation System	Education & Human Resources	ICT	Knowledge Economy Index	Difference between the highest & lowest Pillar
Algeria	109	91	94	99	96	18
Bahrain	48	76	53	38	48	38
Egypt	91	71	80	93	83	22
Iraq	135	78	106	89	108	57
Jordan	55	55	57	73	62	18
Kuwait	43	66	66	36	47	30
Lebanon	69	68	72	62	68	10
Libya	120	83	56	106	93	64
Mauritania	83	125	129	115	116	46
Morocco	87	88	109	78	92	31
Oman	37	65	87	66	63	50
Qatar	52	54	61	43	49	18
Saudi Arabia	61	80	71	57	67	23
Sudan	131	122	120	96	120	35
Syria	118	94	100	95	104	24
Tunisia	65	69	88	65	72	23
UAE	45	43	77	42	43	35
Yemen	116	126	114	116	122	12

Arab Knowledge Report 2009 (The Report states that without nurturing environment and supportive institutions, the Arab world cannot fully participate in a 21<sup>st</sup> century knowledge society)

# Knowledge-Based Economy: Selected Indicators 2012-2013 (Ranks out 148 countries)

Country	Institutions	Infrastructure	Higher Education & training	Technological readiness	Innovation
<b>Algeria</b>	84	91	108	133	141
<b>Bahrain</b>	21	29	34	39	72
<b>Egypt</b>	96	83	109	91	109
<b>Jordan</b>	42	60	55	69	57
<b>Kuwait</b>	51	52	82	74	108
<b>Lebanon</b>	125	127	48	93	119
<b>Libya</b>	81	82	103	110	129
<b>Morocco</b>	54	61	101	75	97
<b>Oman</b>	17	33	61	54	47
<b>Qatar</b>	4	31	33	27	19
<b>Saudi Arabia</b>	15	26	40	35	29
<b>UAE</b>	12	8	37	32	28
<b>Yemen</b>	139	139	139	139	148

**Figure 0.1 How Innovation Contributes to Growth: A Comparison of Ghana and the Republic of Korea, 1960–2005**



Source: World Bank 2007.  
 Note: TFP = total factor productivity.