Economic And Social Commission For Western Asia

THE INNOVATION LANDSCAPE IN THE ARAB COUNTRIES

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Expert Group Meeting on Mechanisms for Advancing Innovation for Inclusive Sustainable Development in the Arab Region

Beirut, 1-2 November 2016
The Innovation landscape

• A compilation project has been performed to make a first assessment of the innovation landscape in 13 Arab countries

• The Innovation Landscape of a country
  • A vision for an Innovation Policy ... it is about public policy and governance for development
    • What for? By which means? By whom? ➔ prioritization of NIS public policies, reaching SDGs
  • The National Innovation System (from a technical/market GII towards a developmental/inclusive approach)
    • A Core Engine: Education, Research, productive system
      • Public Research Infrastructure, Human Resources & skills, Innovation in firms, Learning & innovation trajectories, Industrial leapfrog, INNOVATION ECO-SYSTEM
    • A Framework: Institutions & regulatory environment
      • Role of Government,
    • An Infrastructure: ICT, energy, transportation, ...
    • An economic environment: markets, financial sectors, FDIs, incentives
    • A socio-economic environment: workers and knowledge, culture, incentives
  • A measurement / policy monitoring
The Innovation landscape

- The scheme
  - The Government should not be part of the Core Engine, but the one creating the Vision, and that this vision targets have Social and Economic Benefits, setting the Institutional and Regulatory Framework, insuring proper Infrastructures, and setting Monitoring and Measurement processes.
The Innovation landscape

• The compiled profile of the innovation landscape of the Arab countries
  • Policy, legislation and regulations ➔ is there a vision? The status of the framework
  • Education and training ➔ Pilar 1 of the core engine
  • Research & Development ➔ Pilar 2 of the core engine
  • Public & Private partnership ... Economic environment, policies?
  • ICT and infrastructure ➔ The infrastructure
  • Commercialization ➔ Demand and supply side?
  • Innovation eco-system ➔ fueling the Core Engine

• The question of measurements and policy monitoring
  • The globally developed indicators are only tools for comparison
  • Each country develop its own indicators and monitoring for its own vision
    • A good step: The Arab Innovation Scoreboard
    • Ex: do we need an indicator for Arab integration in innovation?

• A first step: what the Arab countries performance in light of GII Innovation indicators?
The global innovation index (GII)

- **7 pillars**
  1. Institutions
  2. Human capital & Research
  3. Infrastructure
  4. Market Sophistication
  5. Business Sophistication
  6. Knowledge and Tech. output
  7. Creative outputs

- **Global behaviour**
  - Tend to around 25 for low income
  - Accelerate with GDP/capita
  - China, Moldova champions

- **Arab countries**
  - Yemen and Sudan underperforming
  - GCC countries underperforming
  - Other countries on average
  - Yearly variations non significant
Innovation Pilar 1: Institutions

• 3 topics:
  1. Political environment
     1. Political stability
     2. Government effectiveness
  2. Regulatory environment
     1. Regulatory quality
     2. Rule of Law
  3. Business environment
     1. Ease of starting business
     2. Ease of resolving insolvency
     3. Ease of paying taxes

• Global behaviour
  • Tend to around 50 for low income
  • Almost linear with GDP/capita
  • Finland, Mauritius champions

• Arab countries
  • Yemen, Egypt, Algeria underperforming
  • Kuwait, SA, Qatar underperforming
  • Other countries on average
Innovation Pilar 2: Human Capital & Research

- 3 topics
  1. Education
  2. Tertiary education
  3. R&D

- Global behaviour
  - Tend to around 15 for low income
  - Accelerate with GDP/capita
  - Notable deviations
  - Finland, China, Ukraine champions

- Arab countries
  - Most Gulf underperforming
  - Other countries on average
  - Morocco has good performance
Innovation Pilar 2: Human Capital & Research

Education

- 5 topics
  1. Expenditure on education
  2. Gvt expenditure on education per pupil, secondary
  3. School live expectancy
  4. Assessment in reading, Mathematics and Sciences
  5. Pupil teacher ratio, secondary

- Global behaviour
  - Tend to around 40 for low income
  - Accelerate with GDP/capita
  - Notable deviations
  - Lithuania, Bosnia & Herzegovinia champions

- Arab countries
  - Most Gulf underperforming
  - Jordan, Lebanon underperforming
  - Other countries high on average
Innovation Pilar 2: Human Capital & Research

Tertiary Education

- 5 topics
  1. Tertiary enrollment
  2. Graduate in Sciences & Engineering
  3. Tertiary inbound mobility

- Global behaviour
  - Tend to around 10 for low income
  - Accelerate with GDP/capita
  - Large variations
  - Singapore, Austria, Iran champions

- Arab countries
  - Tunisia, Oman champions
  - Algeria underperforming

- Does that mean that the first pillar of the Core Engine is acceptable?
Innovation Pilar 2: Human Capital & Research

**R&D**

- 4 topics
  1. Researchers
  2. Gross expenditure on R&D (GERD)
  3. Global R&D companies, average expenditure top 3
  4. QS university ranking average score top 3 universities

- Global behaviour
  - Tend to around 0 for low income
  - Accelerate strongly with GDP/capita
  - Threshold to be reached
  - Korea, China, India champions

- Arab countries
  - Gulf countries underperforming
  - Egypt, Lebanon, Sudan high on average

- There is an issue concerning the second pillar of the Core engine!
Innovation Pilar 3: Infrastructure

- 3 topics
  1. Information and Communication Technologies (ICTS)
  2. General infrastructure
  3. Ecological Sustainability

- Global behaviour
  - Tend to around 25 for low income
  - Linear with GDP/capita
  - Low deviation with GDP growing

- Arab countries
  - Morocco champion
  - Most Gulf underperforming
  - Yemen underperforming
  - Other countries on average

- Does that mean that infrastructures are acceptable?
Innovation Pilar 3: Infrastructure

ICTS

- 4 issues
  1. ICT access
  2. ICT use
  3. Government’s online services
  4. Online e-participation

- Global behaviour
  - Tend to around 20 for low income
  - Linear with GDP/capita
  - Large deviations

- Arab countries
  - Morocco, Bahrain champions
  - Algeria, Kuwait, Qatar underperforming
  - Other countries on average

- Does that mean that ICTS infrastructure are acceptable in most Arab countries?
Innovation Pilar 4: Market Sophistication

3 issues

1. Credit
   1. Ease of getting credit
   2. Domestic credit to private sector
   3. Microfinance institutions’ gross loan portfolio

2. Investment
   1. Ease of protecting minority investors
   2. Market capitalization
   3. Total values of stocks traded
   4. Venture capital deals

3. Trade, competition, market scale
   1. Applied tariff rate, weighted mean
   2. Intensity of local competition
   3. Domestic market scale

Global behaviour
   • Tend to around 30 for low income
   • Accelerate with GDP/capita
   • Large deviations

Arab countries
   • Tunisia, Oman, Bahrain, Kuwait, Qatar underperforming
   • Other countries on average
   • Weak economic environment?
Innovation Pilar 5: Business Sophistication

- 3 topics
  1. **Knowledge workers**
     1. Employment in knowledge-intensive services
     2. Firms offering formal training
     3. GERD performed by Business enterprises
     4. GERD financed by business enterprises
     5. Females employed with advanced degrees
  2. **Innovation linkages**
     1. University/Industry research collaboration
     2. State of cluster development
     3. GERD financed by abroad
     4. Joint ventures/strategic alliances deals
     5. Patent families filed in at least two offices
  3. **Knowledge absorption**
     1. Intellectual property payment
     2. High tech imports
     3. FDI, net inflows
     4. Research talent in business enterprises

- Global behaviour
  - Tend to around 30 for low income
  - Accelerate with GDP/capita

- Arab countries
  - Underperformance, except Lebanon and UAE

- The 3rd Core engine (industry, and Ecosystem), supply side?
Innovation Pilar 6: Knowledge & Technology output

- 3 topics
  1. Knowledge creation
     1. Patent applications by origin
     2. PCT applications by origin
     3. Utility model application by origin
     4. Scientific & technical publications
     5. Citable documents in H index
  2. Knowledge impact
     1. Growth rate of GDP by person engaged
     2. New business density
     3. Total computer software spending
     4. ISO 9001 quality certificates
     5. High-tech & medium high-tech output
  3. Knowledge diffusion
     1. Intellectual property receipts
     2. High-tech exports
     3. ICT services export
     4. FDI, net outflows

- Global behaviour
  - Tend to around 20 for low income
  - Accelerate with GDP/capita
- Arab countries
  - GCC and Yemen underperforming
- The 3rd Core engine (industry, and Eco-system), supply side?
Innovation Pillar 6: Knowledge & Technology output

Growth rate of GDP by person engaged

- A measure of labor productivity

- It is all about creating jobs… decent and innovative

- My favorite indicators:
  - **Number of formal jobs created each year, % of new comers to the work force**
  - **Number of innovative jobs % ....**
Innovation Pilar 7: Creative outputs

3 topics

1. Intangible assets
   1. Trademark application class count by origin
   2. Industrial designs by origin
   3. ICTS and business model creation
   4. ICTS and organizational model creation

2. Creative goods and services
   1. Cultural and creative services exports
   2. National feature films produced
   3. Global entertainment and media market
   4. Printing and publishing output
   5. Creative goods exports

3. Online creativity
   1. Generic top level domains
   2. Country code top level domains
   3. Wikipedia monthly edits
   4. Video uploads on youtube

Global behaviour
- Tend to around 15 for low income
- Accelerate with GDP/capita

Arab countries
- Yemen, Algeria underperforming
- GCC underperforming
- Other countries on average
The Innovation landscape

• Next steps

• Reviewing/Assessing the compiled Innovation Landscape of the 13 Arab countries
  • Function of the clarity and consistency of the innovation policy vision
  • In light of new ESCWA fundamental report
  • Function of the relative position of the country on the GII index and pillars
  • Focusing on the Core engine pillars
  • Focusing on socio-economic and developmental targeting

• Recommendations for future efforts
THANK YOU!

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