Economic And Social Commission For Western Asia

INNOVATION & TECHNOLOGY IN ARAB SME’S
FOR ACHIEVING THE 20230 AGENDA FOR SUSTAINABLE DEVELOPMENT

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[Based on an ESCWA study under preparation]
1. Innovation, SMEs and the SDGs: a general perspective through global indicators

How SDGs address Innovation and SMEs?
Innovation, SMEs and the SDGs

- **Innovation** is tackled within **SDG 9**: *Build Resilient Infrastructure, Promote Inclusive and Sustainable Industrialization and foster Innovation*; in particular:
  - **Target 9.4**: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.
  - **Target 9.5**: Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.
  - **Target 9B**: Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.
  - And **Target 9C**: Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

- And in **SDG 8**: *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*; in particular:
  - **Target 8.2**: Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.
Innovation, SMEs and the SDGs

• The SMEs are also tackled with in SDG 9:
  • Target 9.3: Increase the access of small scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets.

• Both innovation and SMEs are tackled in SDG 8, Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.

• It is remarkable that both issues are addressed within the same SDG related to INCLUSIVE GROWTH and DECENT WORK (i.e. the opposite of Informal Employment).
The Official SDG indicators

• SDG8:
  • Target 8.2:
    • Indicator 8.2.1: Annual growth rate of real GDP per employed person
  • Target 8.3:
    • Indicator 8.3.1: Proportion of informal employment in non-agriculture employment, by sex

• SDG9:
  • Target 9.3:
    • Indicator 9.3.1: Proportion of small-scale industries in total industry value added
    • Indicator 9.3.2: Proportion of small-scale industries with a loan or line of credit
  • Target 9.4:
    • Indicator 9.4.1: CO2 emission per unit of value added
  • Target 9.5:
    • Indicator 9.5.1: Research and development expenditure as a proportion of GDP
    • Indicator 9.5.2: Researchers (in full-time equivalent) per million inhabitants
  • Target 9.B:
    • Indicator 9.B.1: Proportion of medium and high-tech industry value added in total value added
  • Target 9.C:
    • Indicator 9.C.1: Proportion of population covered by a mobile network, by technology
The SDG Index and the Arab Countries:

- Highest ranks: Algeria 64, Tunisia 65, Morocco 73,…
- All Arab countries week for SDG 8 and 9
- focus 2017: “high-income countries tend to generate negative SDG spillover effects for poorer developing countries”; UAE, Israel, Qatar mostly on environment and imported water depletion.

The SDG Index

- **SDG 8:**
  - Adjusted growth to income level
  - % of children 5-14 involved in Child Labor
  - % of adults (>15 years) with bank account
  - Unemployment rate

- **Best relative performance:** Middle Income Arab countries

- **Note:** not the same as official indicators?!

**The SDG Index**

- **SDG 9:**
  - Proportion of the population using internet
  - Mobile broadband subscriptions per 100 inhabitants
  - Quality of overall infrastructure
  - Logistics performance index
  - QS University ranking, average score of top 3 universities
  - Number of scientific and technical journal articles
  - R&D expenditure as % of GDP

- **Note: not all the same as official indicators?!**

The SDG Index

- Global indicator

- Best relative performance: Middle Income Arab countries

On Innovation: The Global Innovation Index

- **Evolution since 2011:** *focus:* “14 of the 20 most water-scarce countries in the world were located in the Middle East and North Africa (MENA) region”…

- **General tendency for Arab countries:** decline
- **Except:** Morocco, Algeria

Evolution since 2011: focus 1: “agricultural activities and related innovations often take place at the farm or household level (especially in case of subsistence farming), not in private-sector firms as captured by most data collections. Statistically, however, capturing activity in the informal sector or at the grassroots level is challenging”

Focus 2: the notion of clusters

Top 100 Innovation clusters in the World

If one indicator is to be taken?

- **SDG 8. Target 8.3**
- **Indicator 8.3.1: Proportion of informal employment in non-agriculture employment, by sex**

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*Samir Aita: *Informal Employment in the Arab Countries Facts and Rights*; Cercle des Economistes Arabes, ANND, 2017:*
2. SMEs in the Arab Countries
Assessing the size and role of SMEs in the economy

How to measure the size of SMEs/MSMEs and their contribution?
MSMEs in the Arab countries: the definitions

• The question of Definition:
  • Definition depends on country and not unified
  • Micro and Small enterprises < 50 employees, Medium < 250
  • EU definition

<table>
<thead>
<tr>
<th>Enterprise category</th>
<th>Headcount</th>
<th>Turnover or</th>
<th>Balance sheet total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium-sized</td>
<td>&lt; 250</td>
<td>≤ EUR 50 million</td>
<td>≤ EUR 43 million</td>
</tr>
<tr>
<td>Small</td>
<td>&lt; 50</td>
<td>≤ EUR 10 million</td>
<td>≤ EUR 10 million</td>
</tr>
<tr>
<td>Micro</td>
<td>&lt; 10</td>
<td>≤ EUR 2 million</td>
<td>≤ EUR 2 million</td>
</tr>
</tbody>
</table>

• The measurement:
  • Enterprises Surveys (MSEs)... very rare, last 2004-2012 on some countries!
  • Labor Force Surveys (LFS, HLFS, LMPS)... more common, not systemic or to standards
  • Household Income and Expenditure Surveys (HIES, HHIES)... rare

➔ these surveys are not performed systematically and according to international standards or published in the Arab countries !!! (Political and ideological reasons)

In this context, what is the validity of the analyses and world comparisons?

The contribution of SMEs and MSMEs, formal/informal:

- In employment
- In revenues
- In GDP (added value)

Formal SMEs in the Arab countries: the role


Typical Business landscape in Emerging Countries

The Case of Egypt (2004)

How to reach the level of contribution of SMEs to formal employment and to GDP?

MSMEs in the Arab countries: the numbers

- **The question of Numbers**: MSMEs density (number of Formal MSMEs per 1000 ppl)
- **The IFC analyses**: 4.5 million formal MSMEs in MENA?

SMEs in the Arab countries: the numbers

- The IFC analyses and database: Formal MSME density
  - Statement 1: density increase with income level?
  - Statement 2: MSMEs density is growing fast?
  - Statement 3: MENA: Low contribution of MSMEs in employment
  - Statement 4: The larger the shadow economy (informal sector), the lower the formal MSME density?!
  - The main mechanism is access to credit!!!

- Problems:
  - How IFC counted formal MSMEs
  - Why using the notion of shadow economy instead of informal economy
  - What causes the growth in formal MSMEs?
    Formalization
    Or economic growth

SMEs in the Arab countries: the numbers

- The IFC analyses and database

  - What makes median formal MSME growth in the Arab countries second to OECD and High-income?
  - How things have evolved since the year of measurement if the growth rate is rapid?
  - What determine MSME density in a single Arab country?

Formal MSMEs density is not much a criteria as MSMEs contribution to GDP and Employment?

* Thanks to Timothy Little, ESCWA, from IFC database
The World Bank/IFC confusing notion of “Shadow economy” (Schneider)

Definition: Activities
- Avoiding taxes
- Avoiding social security registration
- Avoiding labor market regulations
- Avoiding administration and statistics

Terminology used = criminalization contrary to informal economy

It is not a measure... It is an arguable model depending on the variables used
- Example: what does unemployment means in the Arab countries?

No correlation could be found in Arab countries between “shadow economy” and Formal MSMEs density:
- UAE: shadow = 26% ???

* Thanks to Timothy Little, ESCWA, from IFC database
SMEs in the Arab countries: the numbers

- The IFC analyses and database
  - Data inconsistencies for distribution of size
  - What makes formal Micro enterprises so numerous?
  - Distribution along sector could make sense...

* Thanks to Timothy Litle, ESCWA, from IFC database
SMEs in the Arab countries: the numbers

- The IFC analyses and database Data inconsistencies of MSMEs (enterprises) and labor
  - Comparison with Labor Force surveys (2015): formal + informal
  - M and SMEs formal

<table>
<thead>
<tr>
<th>Country</th>
<th>F Micro</th>
<th>Own Account</th>
<th>F SMEs</th>
<th>Employers</th>
<th>Total F MSMEs</th>
<th>OA+Employers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>2,649,000</td>
<td>424,000</td>
<td>624,478</td>
<td>3,073,000</td>
<td></td>
<td></td>
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<tr>
<td>Bahrain</td>
<td>14,667</td>
<td>24,000</td>
<td>4,070</td>
<td>32,000</td>
<td>18,737</td>
<td>56,000</td>
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<td>Egypt</td>
<td>2,404,995</td>
<td>2,635,900</td>
<td>45,701</td>
<td>2,635,900</td>
<td>2,450,696</td>
<td>5,271,800</td>
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<tr>
<td>Jordan</td>
<td>130,516</td>
<td>102,000</td>
<td>15,837</td>
<td>54,000</td>
<td>146,443</td>
<td>156,000</td>
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<tr>
<td>Lebanon</td>
<td>13,749</td>
<td>464,000</td>
<td>353</td>
<td>111,000</td>
<td>14,102</td>
<td>575,000</td>
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<tr>
<td>Morocco</td>
<td>733,662</td>
<td>3,079,000</td>
<td>16,540</td>
<td>278,000</td>
<td>750,202</td>
<td>3,357,000</td>
</tr>
<tr>
<td>Sudan</td>
<td>2,864,000</td>
<td>414,000</td>
<td>2,000</td>
<td>2,246,000</td>
<td>3,278,000</td>
<td></td>
</tr>
<tr>
<td>Tunisia</td>
<td>533</td>
<td>591,499</td>
<td>5,288</td>
<td>248,387</td>
<td>5,821</td>
<td>839,888</td>
</tr>
<tr>
<td>Tunisia c</td>
<td>708,084</td>
<td>591,668</td>
<td>2,554</td>
<td>248,459</td>
<td>956,543</td>
<td>840,127</td>
</tr>
<tr>
<td>Palestine</td>
<td>99,472</td>
<td>170,856</td>
<td>3,139</td>
<td>57,856</td>
<td>102,611</td>
<td>228,712</td>
</tr>
<tr>
<td>Yemen</td>
<td>385,827</td>
<td>1,300,000</td>
<td>14,408</td>
<td>236,000</td>
<td>400,235</td>
<td>1,536,000</td>
</tr>
</tbody>
</table>

- Thanks to Timothy Litle, ESCWA, from IFC database
  ** Statistiques Tunisie: Statistiques Issues du Répertoire National des Entreprises; 2016.**
How to solve the issue of measuring MSMEs?

**SURVEYS SHOULD BE PERFORMED AND PUBLISHED IN ARAB COUNTRIES**

- **Basic surveys**
  - Enterprises Surveys (MSEs)... very rare, last 2004-2012 on some countries!
  - Labor Force Surveys (LFS, HLFS, LMPS)... more common, not systemic and to standards
  - Household Income and Expenditure Surveys (HIES, HHIES)... rare

- **1-2-3 Survey of informal employment... only Morocco**
  1. Employment, socio-economic and demographic characteristics
  2. Informal production Units
  3. Household spending

- Add questions on Innovation in MSMEs surveys

* Thanks to Timothy Litle, ESCWA, from IFC database
3. The SMEs environment and innovation

What foster growth and development of SMEs?
The SME Index

- EU, OECD approach
  - The Small Business Act: 99% of European enterprises
  - The Think Small First Principle: for legislations
- SME Index:
  - 10 dimensions: Quantitative and qualitative
    1. Education for entrepreneurship
    2. Efficient bankruptcy procedures
    3. Institution & regulatory framework for SMEs
    4. Operational environment for business creation
    5. Support services for SMEs and public procurement
    6. SME access to finance
    7. SMEs and EuroMed network
    8. Enterprise skills and innovation
    9. SMEs in green economy
    10. Internationalization of SMEs

The SME Index for Arab countries

The SME Index for Arab countries

The SME Index for Arab countries

• Key findings (2013):

• Skills
  • Greater commitments and responsibility are needed to have national coordination
  • Data and information are lacking to assess
  • Evidence on needs for skills not collected

• Innovation
  • Weak innovation policies or at their early stages
  • All studied countries developed innovation strategy, except Algeria and Palestine
  • However... implementation?

Is access to finance really the major issue?

4. The different Approaches to Foster Innovation within MSMEs

What innovations should be fostered for MSMEs? And How?
A Rural vs Urban Approach

Rural MSMEs… Mostly traditional and Informal

Urban SMEs… A more complex environment comprising modernized globalized innovative MSMEs (few) and numerous traditional and informal MSMEs (the majority)

What Innovation could bring in each environment? for each sector

Clusters and Networking
Most producers in agriculture are MSMEs, most MSMEs are in agriculture.
Innovation in agriculture for food security

- Major challenges (FAO, UNCTAD):
  - Enhancing productivity and income of smallholders family farmers, investment and social protection in front of globalization and liberalization.
  - Water scarcity
  - Climate change.

Innovation in agriculture for food security

- 4 dimensions of food security ➔ the role of innovation

- Food Availability ➔ Improve agriculture productivity
  - Cross breeding, transgenic, soil management; irrigation technologies

- Food Access ➔ Improve accessibility
  - Minimizing food losses, storage, transport, waste

- Food Stability ➔ Combat insecurity
  - Adaptation to climate change, big data and internet of things for precision agriculture, early warning systems,

- Food Use/Utilization ➔ Nutrition
  - New and emerging technologies:
    - Synthetic biology, artificial intelligence, tissue engineering, 3D printing, drones, robotics...

Innovation in agriculture for food security

- Agriculture Innovation systems: It is all about government policies! Towards an informal traditionally structured sector: households, cooperatives, ...

Innovation in Cities Ecosystems

- Toda cities are the hubs of technological Innovation... more than technological parks
  - Human resources is the most important asset for innovation
  - Moving towards inside the cities: the “3rd Industrial Revolution”... services and knowledge economy.
  - An opportunity following rapid rural-urban migration
  - Networking is the major asset

→ City Innovation Ecosystem Framework

Innovation in Cities Ecosystems

- **Networking and Clusters:** The circles of innovative growth
  
  ➔ City Innovation Ecosystem Framework (New York)
  
  DoubleClick

Innovation in Cities Ecosystems

- The example of Santiago

Innovation in Cities Ecosystems

- The case of Beirut

Sectorial Approaches

Business to Business B2B Innovative MSMEs

The cluster center role of large companies
The technology parks
Link to R&D centers is a key issue
Formalization is not an issue

Business to consumer B2C Innovative MSMEs

The networking factor
The role of incubators
Venture capital and business angels are crucial
Formalization is an issue
Approaches for Innovation within SMEs

• Example from India: SMEs for Auto, electronics and Machine Tools industry

• SMEs are flexible, what could facilitate them to be innovative.
• Higher growth of SMEs is correlated with higher shares of innovative products.
• Drivers to innovation: technological push and demand push
  • Internal factors: innovative ideas of entrepreneurs, technical qualification, knowledge, experience
  • External factors: customer requirement and demand, information provided by supplier of equipment and materials, market opportunities, competition.
• Focus of innovation: both products and processes
• Difficulties of innovation within SMEs: patent registration, ...

► These are Business to Business, Large industries operate as center of clusters

Subrahmanya and al.: Importance of Technological Innovation for SME Growth, Evidence from India; WP 2010/03, United Nations University, WIDER, January 2010.
Approaches for Innovation within SMEs

• Analysis of Innovation in MENA MSMEs

• 19-23 million MSMEs (F and IF); 80-90% of total businesses; contribution to GDP 80-90% non Gulf, < 60% Gulf; largest employer : 70%?; MSMEs are concentrated into Labour intensive and traditional activities (x developed).

• 4 key perspectives on management of innovation: institutional, fashion, cultural and rational.

• 3 building blocks: human capital, financial capital and technological capital.

• 2 concepts: radical or incremental (most MENA cases).

• However, failure rate is 90%... Numerous barriers to innovation...

• Solution: Specific government policies

➡ Are globalization and liberalization of markets the main propellers of innovation?

5. A Methodology for assessing Innovation needs and for establishing policies towards MSMEs

What are the key impediments for each situation? And how to solve?
Innovation and the MSMEs environment

MARKETS
Finance...

STATE
Policies

Why I?

F Urban Medium E

Champions

F Rural Medium E Cooperatives?

F Urban Small E

Developing

F Rural Small E

I Rural Small E

F Urban Micro E

Start-ups

Start-ups

I Rural Micro E

Axis of innovation development

Axis of MSMEs size

Axis of formalization

Access

Networking

R&D

Protection

Developing

Nurturing

incubation

State Policies

Markets

Finance
Key Innovation Issues for MSMEs

- **Medium Innovation Enterprises (50-250):**
  - Process innovation
  - Product innovation
  - Networking with R&D
  - Access to markets
  - Role of large companies
  - Technological parks
  - Access to finance
  - Enabling environment
  - State protection (patents, subsidies,...)
Key Innovation Issues for MSMEs

- **Small Innovation Enterprises (10-50):**
  - Product innovation
  - Networking with R&D
  - Access to markets
  - Business environment
  - Ease of bankruptcy
  - Role of Networking
  - City clusters
  - Venture capital
  - Access to finance and capital markets
  - State protection
Key Innovation Issues for MSMEs

- **Micro Innovation Enterprises (10-50):**
  - Start-ups environment
  - Incubators
  - Networking with R&D and Universities
  - Networking with other start-ups
  - City clusters
  - Business angels
  - Access to markets
  - Business environment
  - Ease of bankruptcy
Key Innovation Issues for MSMEs

- **Agricultural MSMEs:**
  - State agricultural policies
  - State incentives to adopt new technologies for food security and water scarcity
  - State policies to promote cooperatives
  - State policies towards formalization or to promote growth of traditional household enterprises
  - Micro-credit
  - Organization of markets
  - Transport infrastructure
Key Innovation Issues for MSMEs

• **Other sectors MSMEs:**
  - Depend on sector and its priority
  - State industrial and services policies
  - State incentives to adopt new technologies
  - State policies to promote innovation, especially for processes
  - State policies towards formalization
  - Micro-credit
  - bancarization
  - Organization of markets
  - Transport infrastructure
  - ICT infrastructure
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
Conclusion and main recommendations

• **STATISTICS:**
  • There is a need to assess the MSMEs size and contribution in the Arab countries
  • There is a need to assess the impact of current innovation policies on MSMEs

• **POLICIES:**
  • There is a need in the Arab countries to develop Innovation strategies along sectors
  • There is a need in the Arab countries to develop an approach towards SMEs, including the balance between formalization and promoting growth

Subrahmanya and al.: *Importance of Technological Innovation for SME Growth, Evidence from India*; WP 2010/03, United Nations University, WIDER, January 2010.
THANK YOU!