

INNOVATION & TECHNOLOGY IN ARAB SME'S FOR ACHIEVING THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

Economic And Social Commission For Western Asia



UNITED NATIONS

الأقصى

ESCWA

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Expert Group Meeting on Innovation and Technology for
Achieving the 2030 Sustainable Development Agenda

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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?



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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).**

Measuring Innovation and SMEs Within the SDGs framework

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**

Measuring Innovation and SMEs Within the SDGs framework: the SDG Index

The SDG Index and the Arab Countries:

- Highest ranks: Algeria 64, Tunisia 65, Morocco 73,...
- All Arab countries weak 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.*



A green rating on the SDG Dashboard denotes SDG achievement, and is assigned to a country on a given SDG only if all the indicators under the goal are rated green. Yellow, orange and red indicate increasing distance from SDG achievement.

For more information on the dashboard methodology, refer to part 2. Full metadata and methodology are available at www.sdgindex.org

Source: Authors' analysis

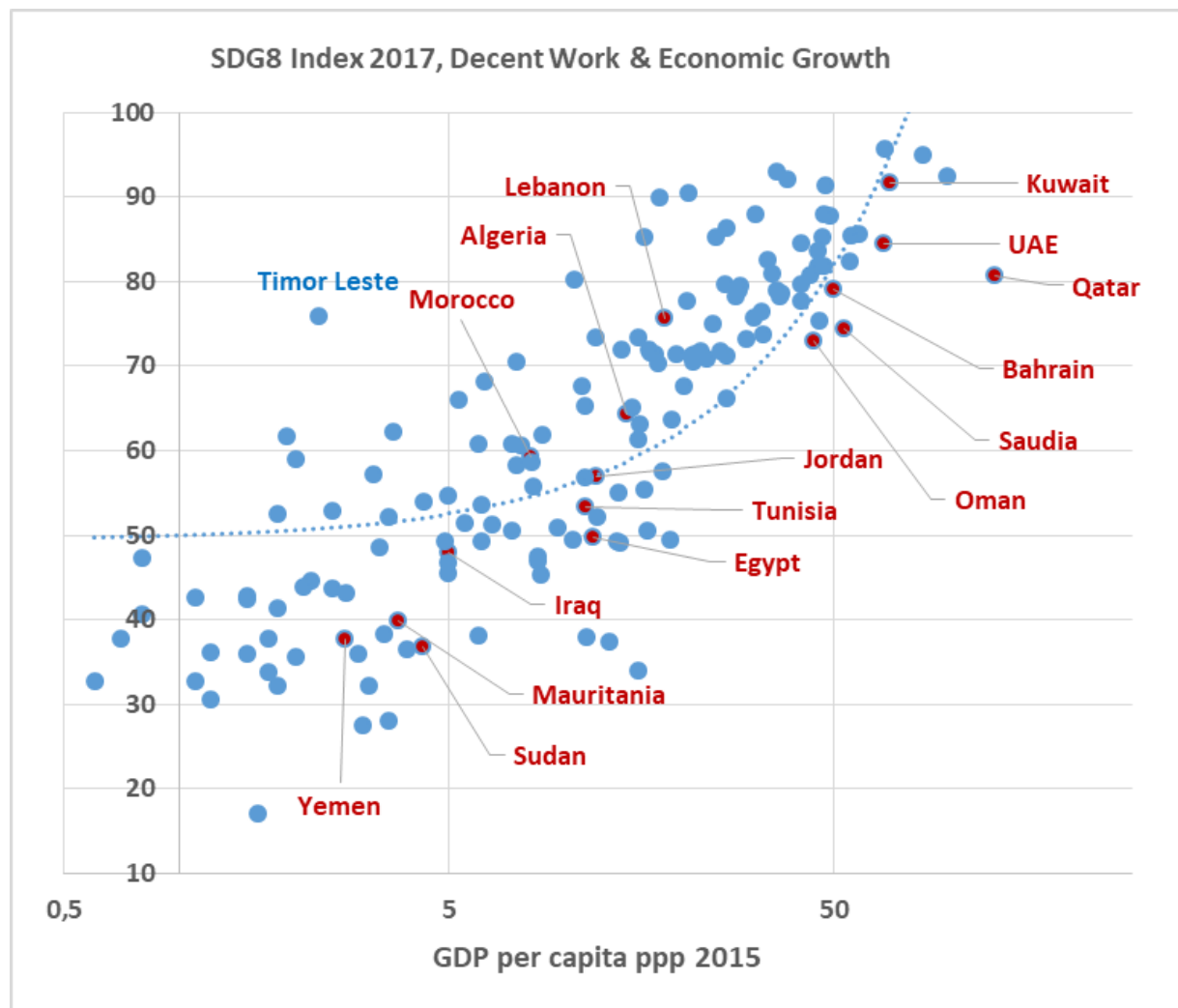
The SDG Index

• 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?!*

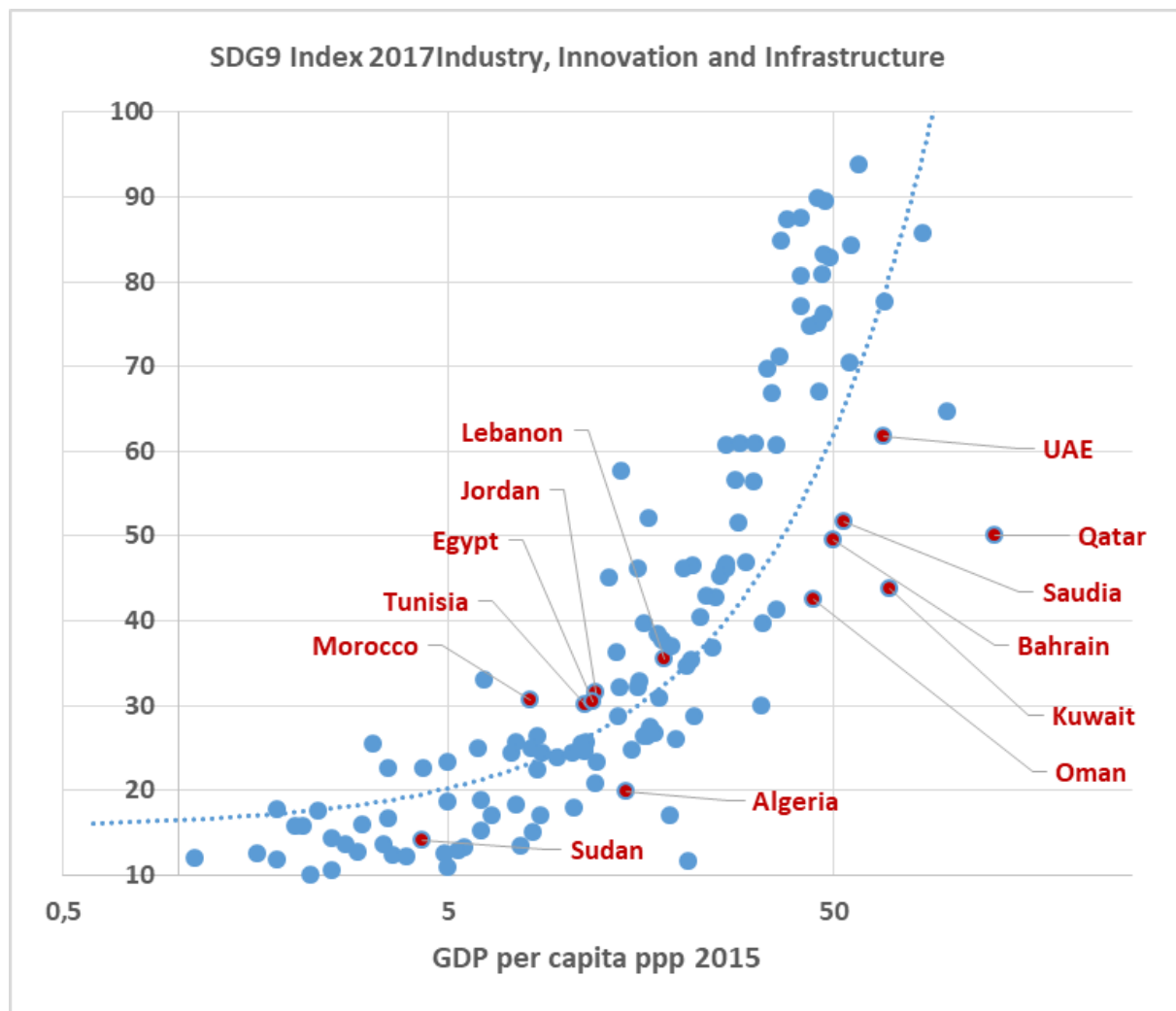


The SDG Index

• 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

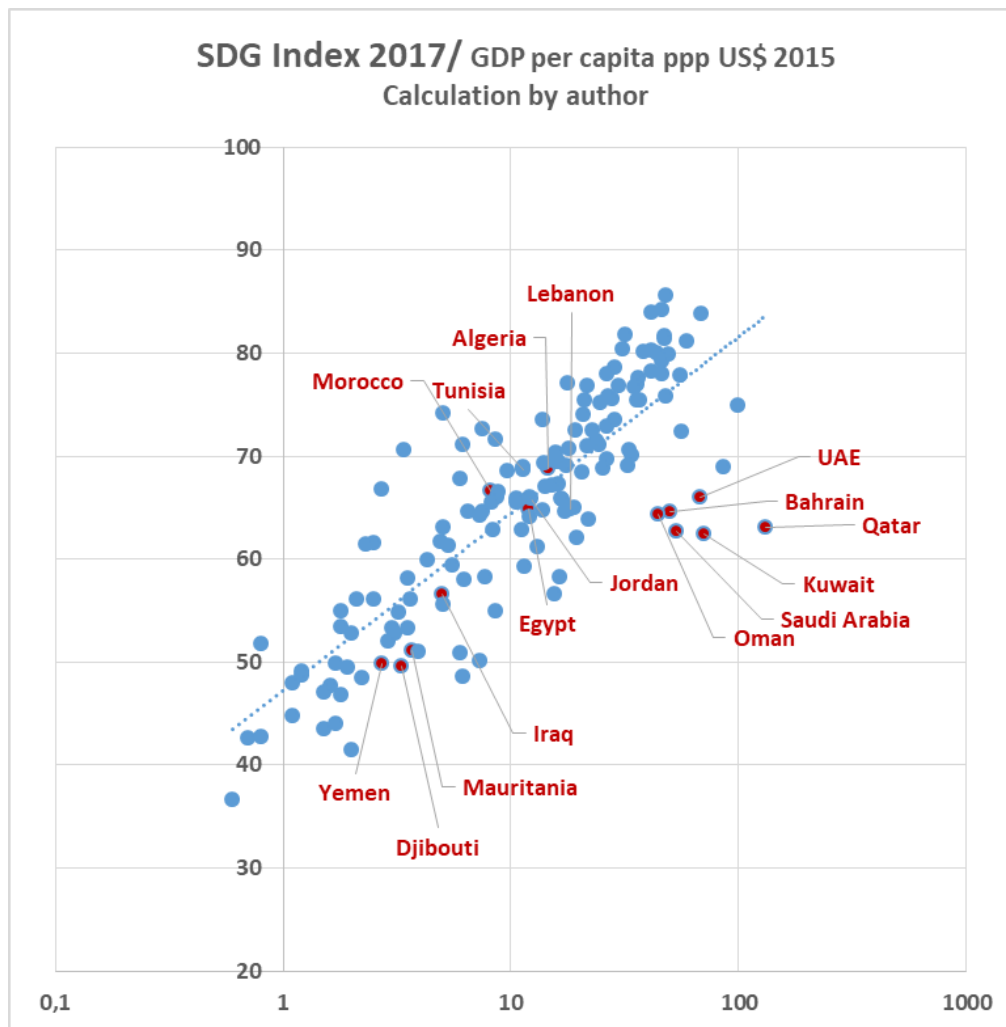
- *Note: not all the same as official indicators?!*



The SDG Index

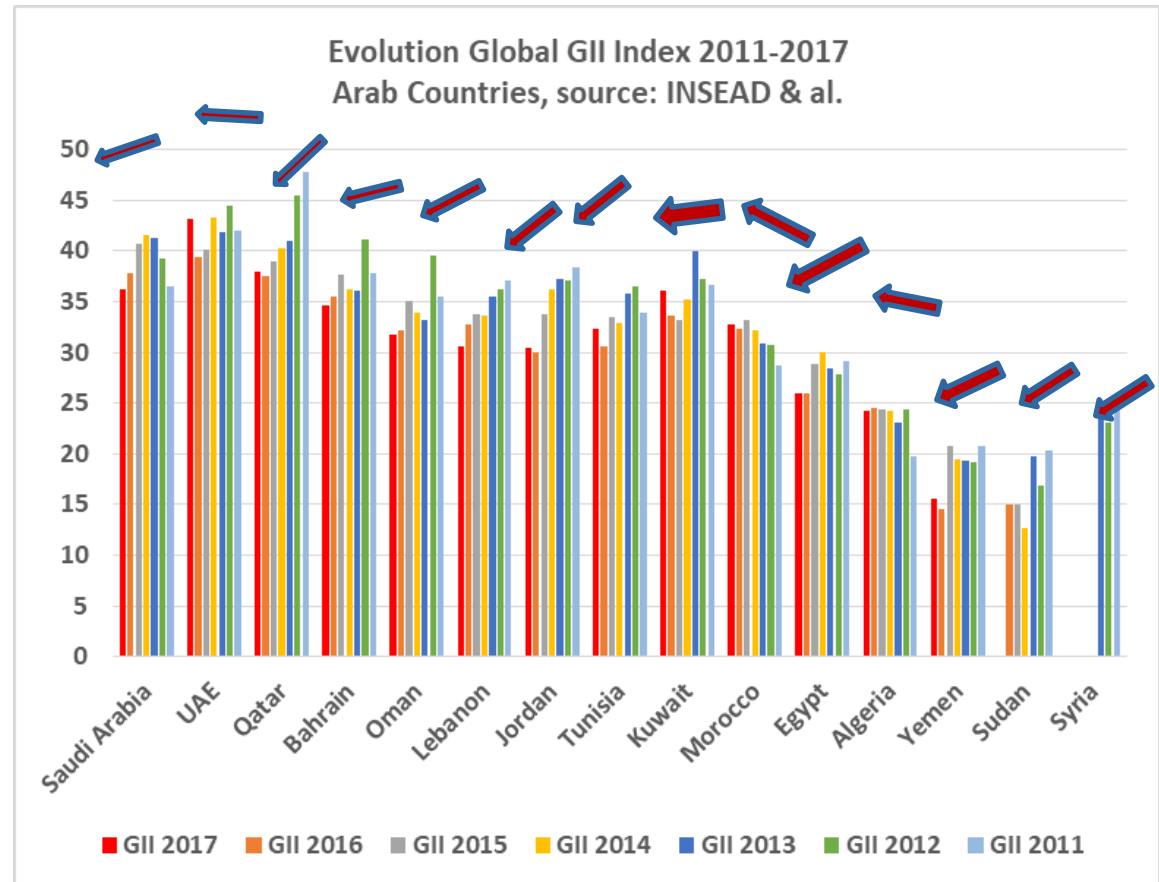
- **Global indicator**

- **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”...*

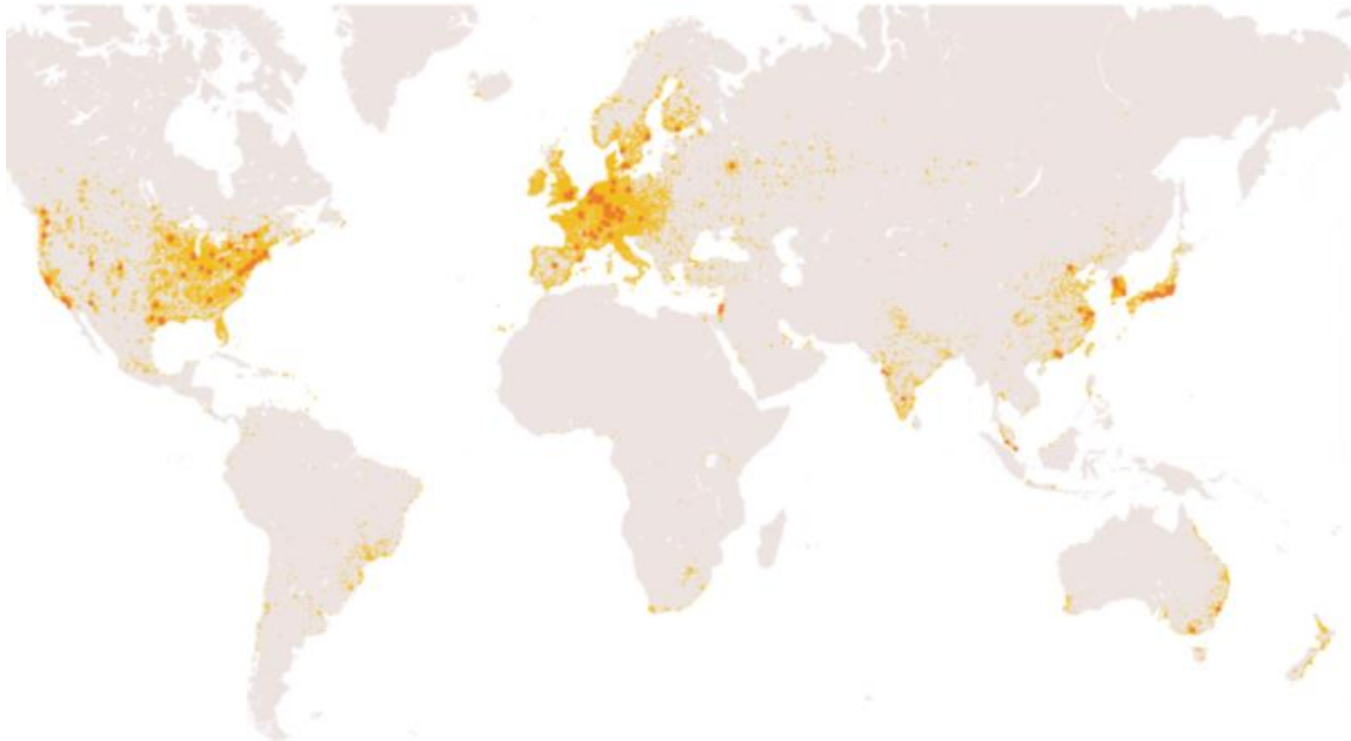


- **General tendency for Arab countries: decline**
- **Except: Morocco, Algeria**

The Global Innovation Index

- **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

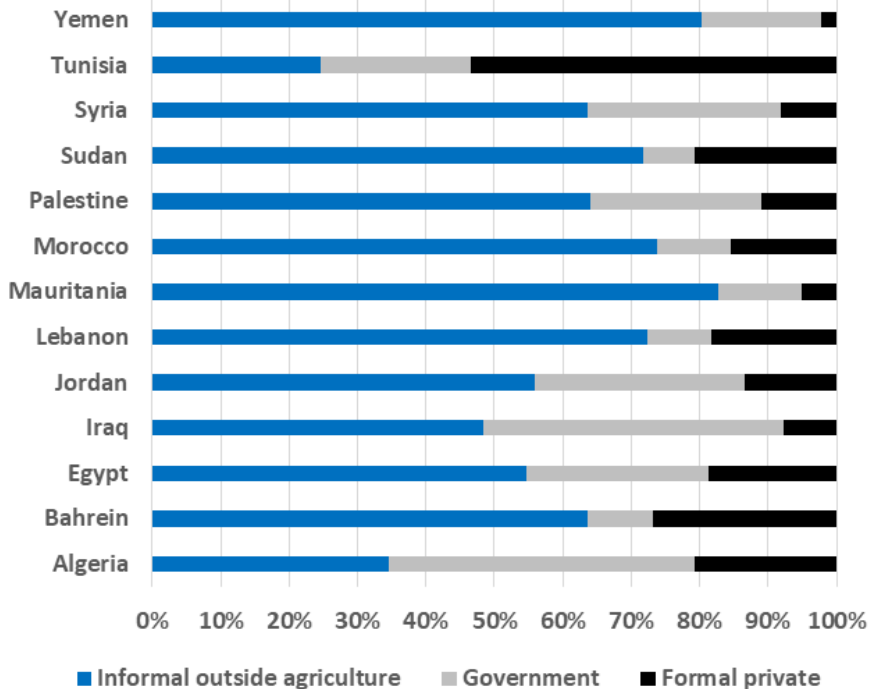


If one indicator is to be taken?

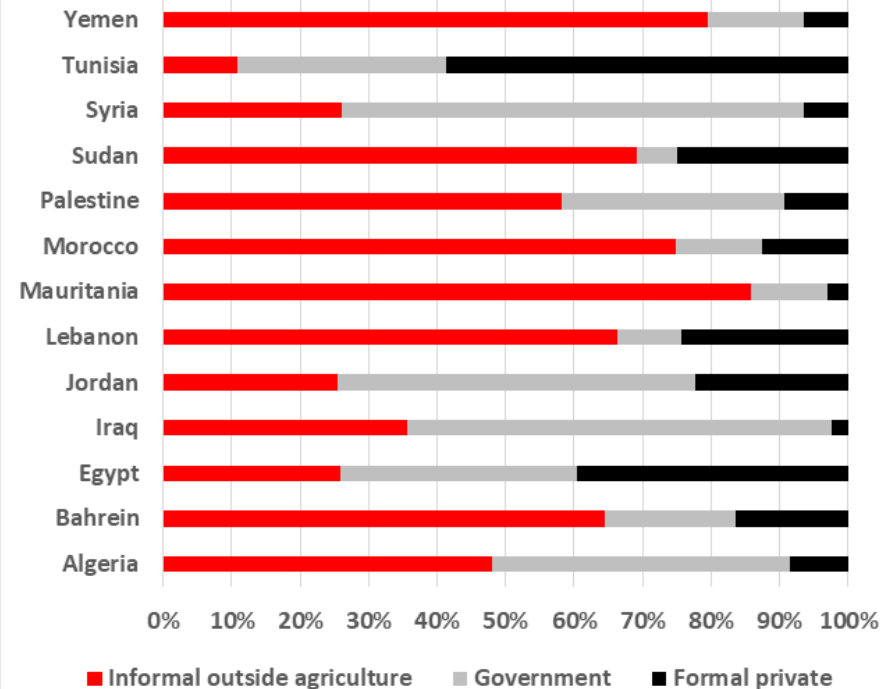
- **SDG 8. Target 8.3**
- **Indicator 8.3.1: Proportion of informal employment in non-agriculture employment, by sex**

*

Informal employment Outside agriculture in Arab countries (Men+Women)



Informal employment Outside agriculture in Arab countries (Women)



* 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?



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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 *

Enterprise category	Headcount	Turnover	or	Balance sheet total
Medium-sized	< 250	≤ EUR 50 million		≤ EUR 43 million
Small	< 50	≤ EUR 10 million		≤ EUR 10 million
Micro	< 10	≤ EUR 2 million		≤ EUR 2 million

- 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)*

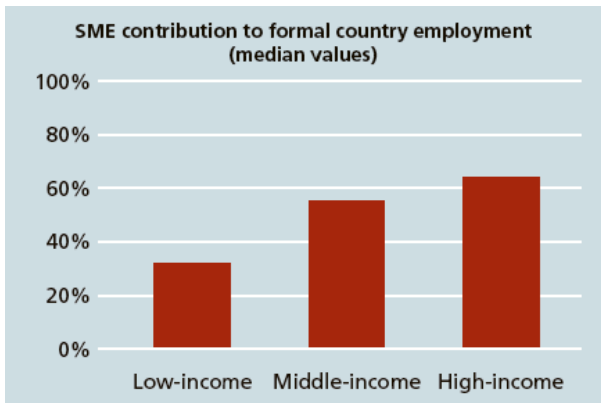
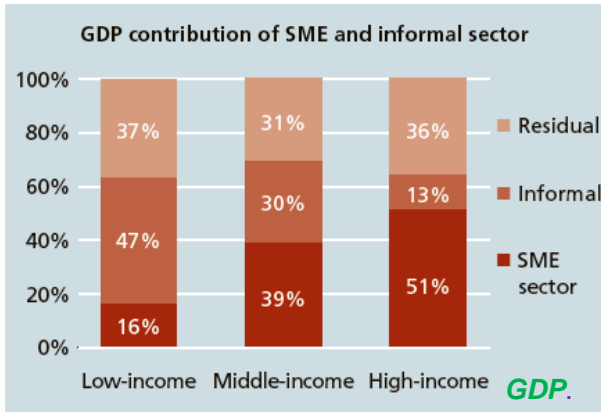
In this context, what is the validity of the analyses and world comparisons?

* OECD, EU and ETF (2014): *SME Policy Index: The Mediterranean Middle East and North Africa, Implementation of the Small Business Act for Europe*, OECD publication.

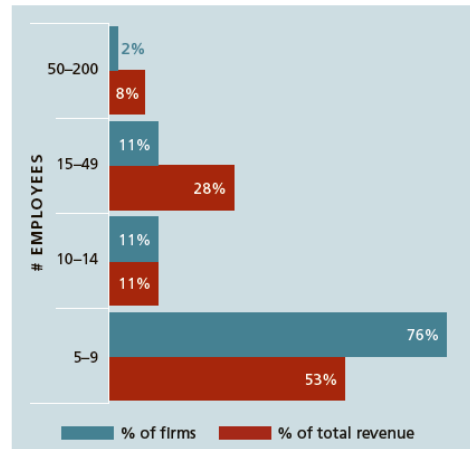
Formal SMEs in the Arab countries: the role

The contribution of SMEs and MSMEs, formal/informal:

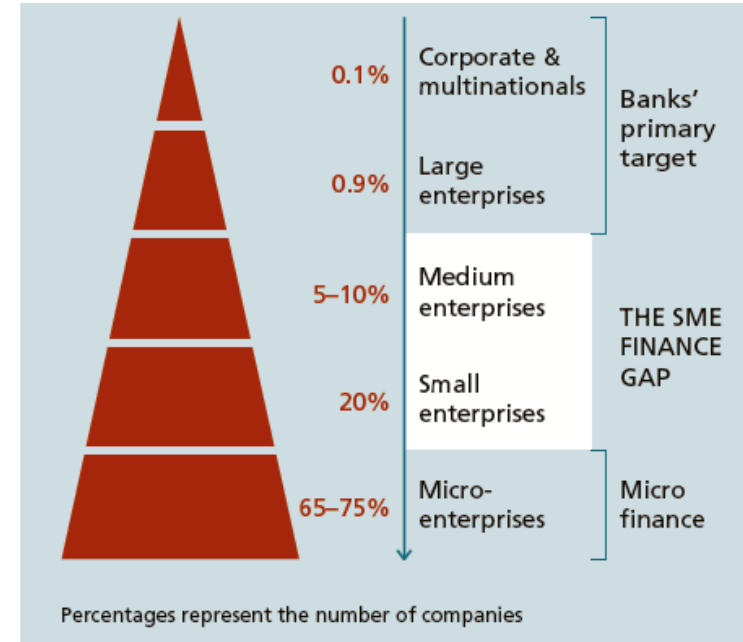
- In employment
- In revenues
- In GDP (added value)



The Case of Egypt (2004)



Typical Business landscape in Emerging Countries *



By numbers.

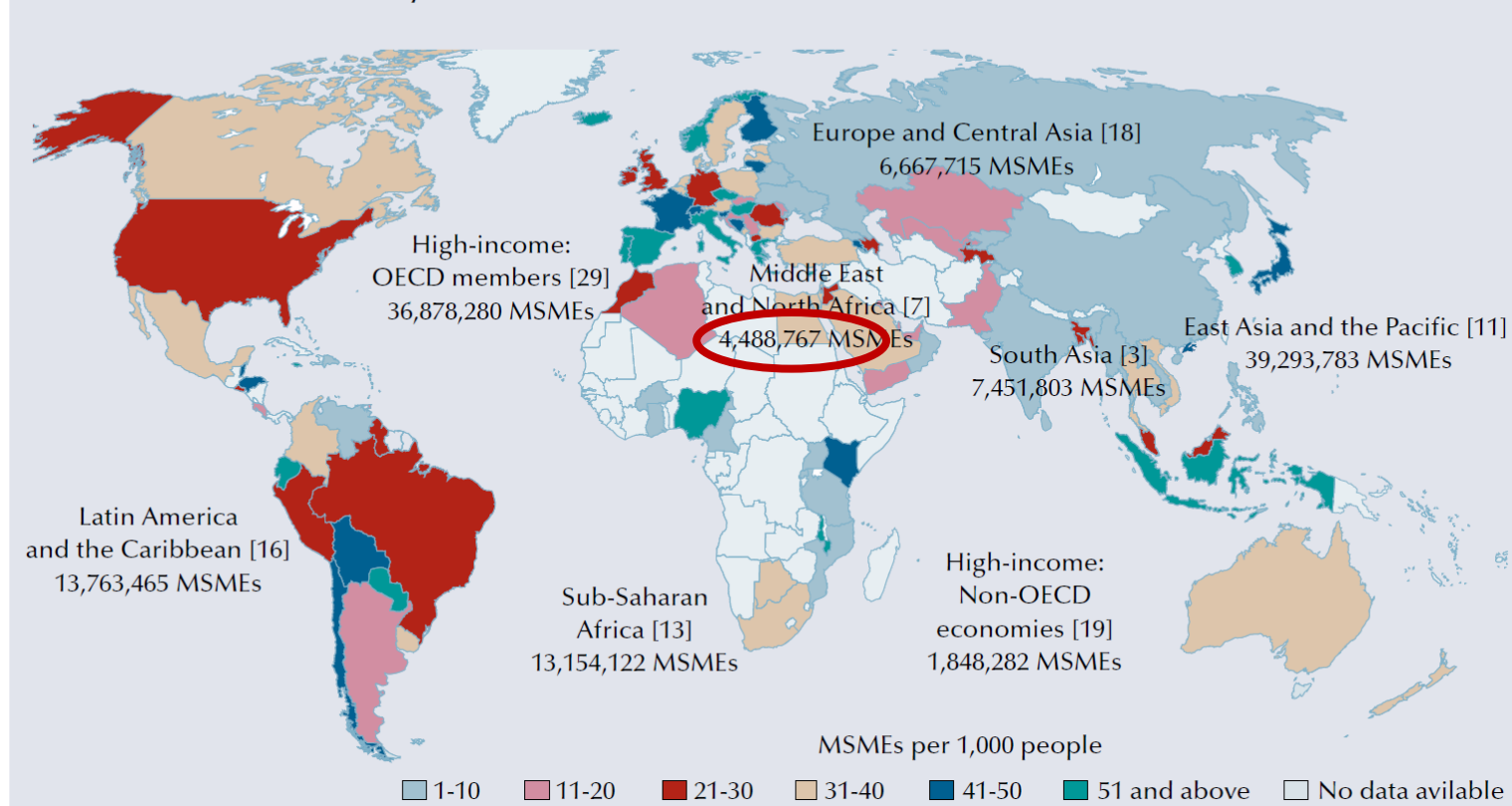
How to reach the level of contribution of SMEs to formal employment and to GDP?

* IFC: *The SME Banking Knowledge Guide*, 2010.

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?**

Figure 2 MSME Density Across the World



* Kushniir and al. (2010): *Micro, Small, and Medium Enterprises Around the World: How Many Are There, and What Affects the Count?*, MSME Country Indicators, IFC.

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

Figure 4 Median MSME Density by Region

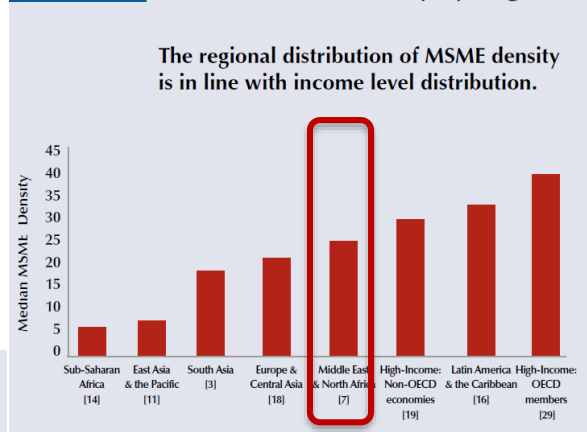


Figure 12 MSME Density and Shadow Economy

Where the shadow economy is larger, there are fewer MSMEs participating in the formal economy.

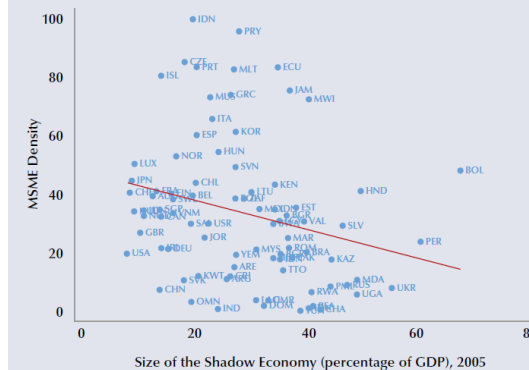
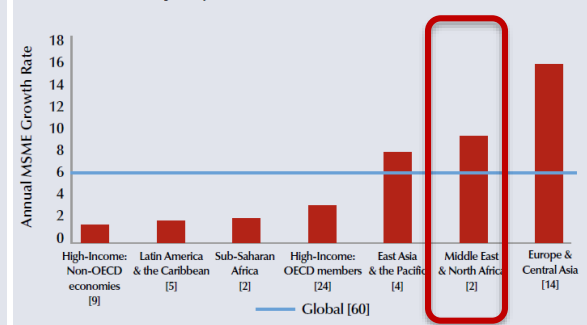


Figure 5 MSME Growth by Region, 2000-2009

Globally, MSMEs grew at a rate of 6 percent per year from 2000 to 2009.



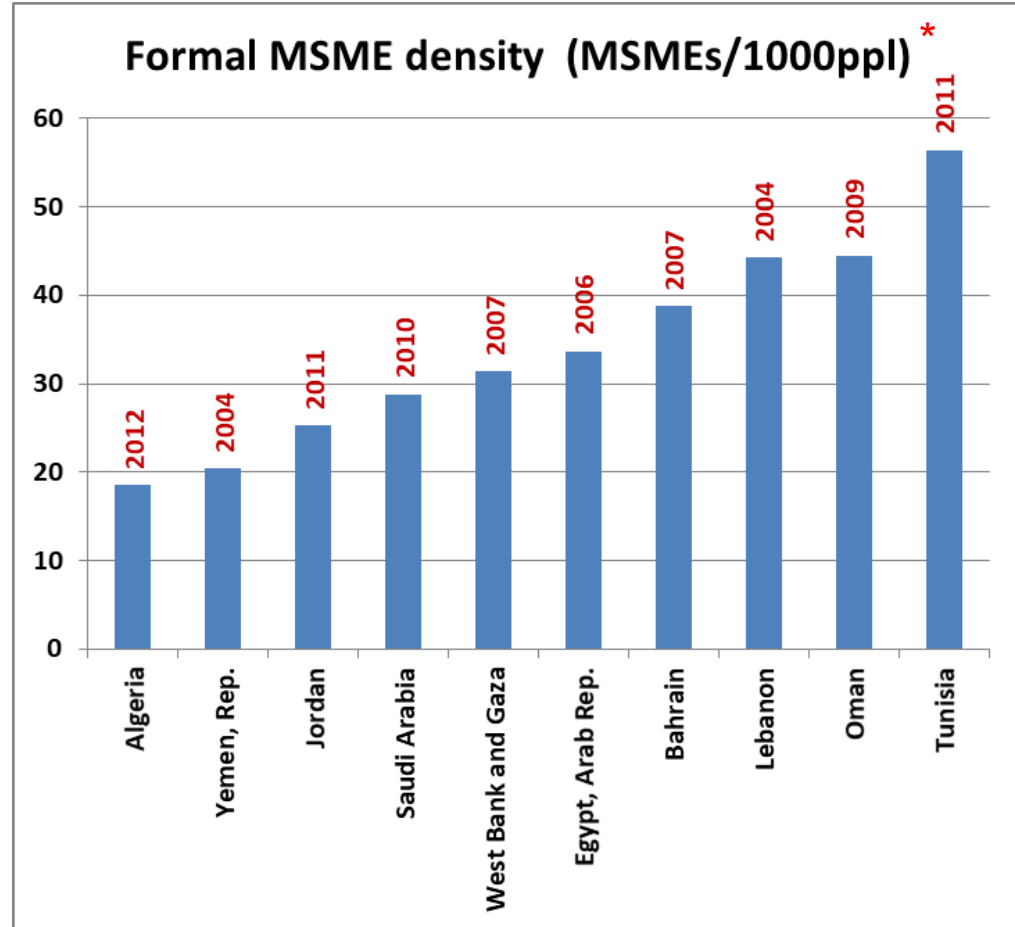
* Kushniir and al. (2010): *Micro, Small, and Medium Enterprises Around the World: How Many Are There, and What Affects the Count?*, MSME Country Indicators, IFC.

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?

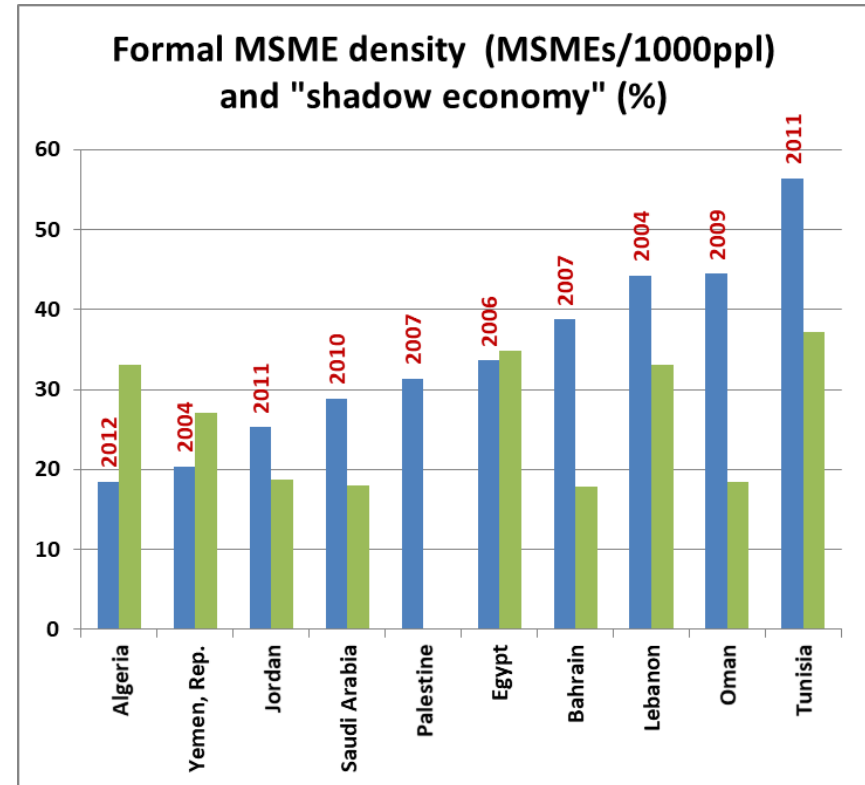
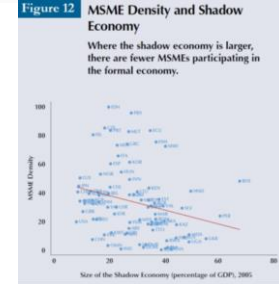


* Thanks to Timothy Litle, ESCWA, from IFC database

http://www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Financial+Markets/msme+finance/sme+banking/msme-countryindicators

SMEs in the Arab countries: contribution to GDP

- 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% ???

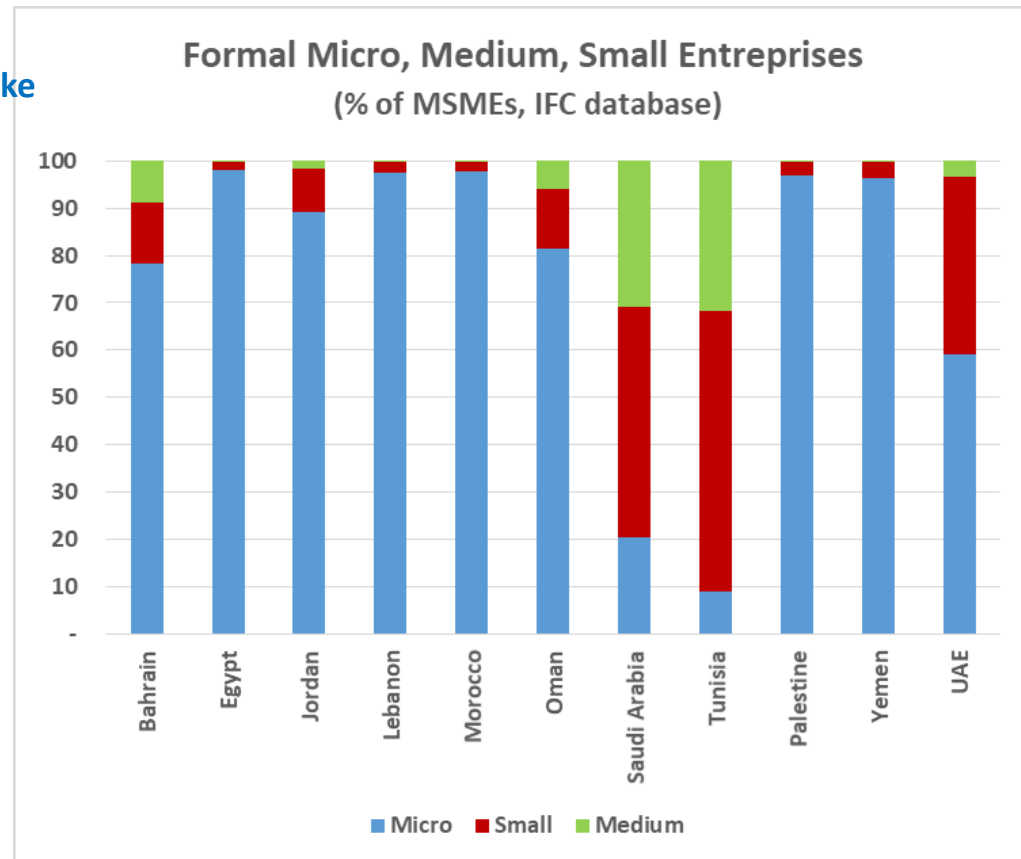
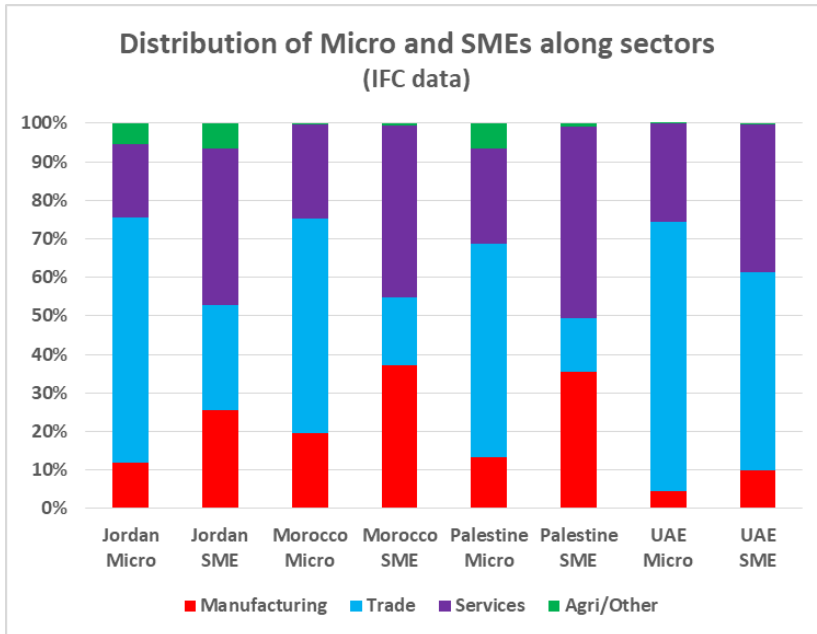


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SMEs in the Arab countries: the numbers

- **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
http://www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Financial+Markets/msme+finance/sme+banking/msme-countryindicators

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

*

	F Micro	Own Account	F SMEs	Employers	Total F MSMEs	OA+Employers
Algeria		2 649 000		424 000	624 478	3 073 000
Bahrain	14 667	24 000	4 070	32 000	18 737	56 000
Egypt	2 404 995	2 635 900	45 701	2 635 900	2 450 696	5 271 800
Jordan	130 516	102 000	15 837	54 000	146 443	156 000
Lebanon	13 749	464 000	353	111 000	14 102	575 000
Morocco	733 662	3 079 000	16 540	278 000	750 202	3 357 000
Sudan		2 864 000		414 000	22 460	3 278 000
Tunisia	533	591 499	5 288	248 387	5 821	839 886
Tunisia c	708 084	591 668	2 554	248 459	956 543	840 127
Palestine	99 472	170 856	3 139	57 856	102 611	228 712
Yemen	385 827	1 300 000	14 408	236 000	400 235	1 536 000

**

- Thanks to Timothy Litle, ESCWA, from IFC database
http://www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Financial+Markets/msme+finance/sme+banking/msme-countryindicators

** 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

http://www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Financial+Markets/msme+finance/sme+banking/msme-countryindicators

3. The SMEs environment and innovation

What foster growth and development of SMEs?



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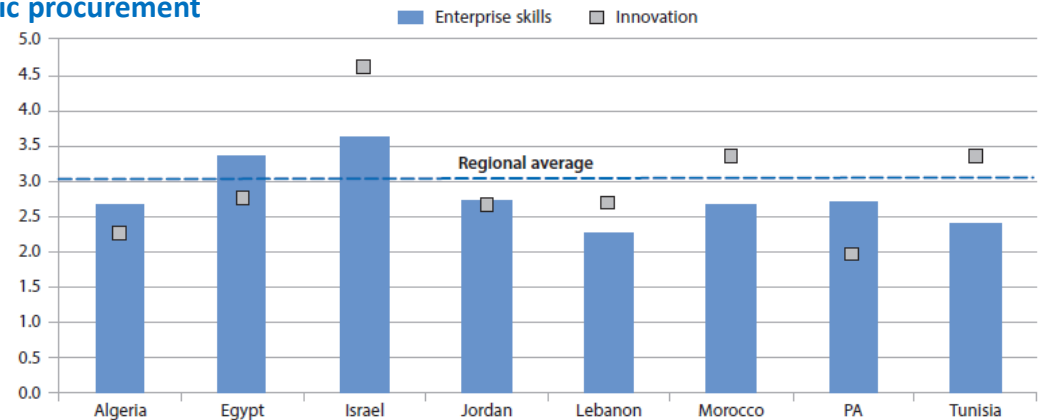
The SME Index

- 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

Skills and innovation

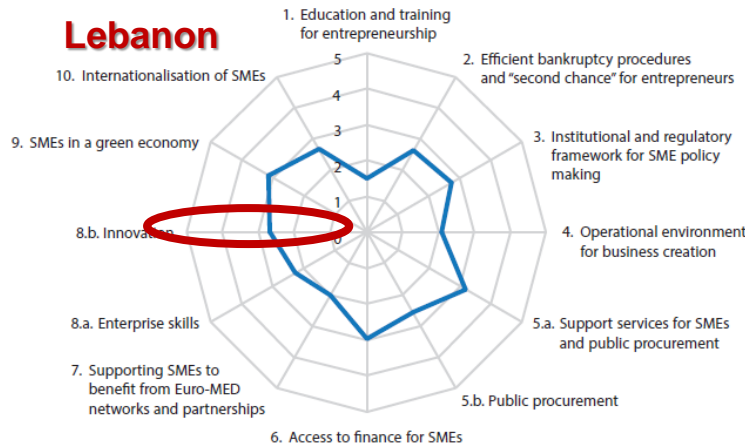
Sub-dimension 8.2:
Policy framework for SME innovation

- 8.2.1. Delegation of competencies and tasks
- 8.2.2. Strategic approach to innovation policy for SMEs
- 8.2.3. Budget provision for SME innovation
- 8.2.4. Establishment of innovation and technology centres
- 8.2.5. Information on innovation support services
- 8.2.6. Financial support services
- 8.2.7. Tools used to support co-operation between SMEs research institutes/universities
- 8.2.8. Public R&D grants
- 8.2.9. Incubators (serving innovative start-ups which are linked to technology content)
- 8.2.10. Science Parks/competitive clusters and facilities to promote networking among companies

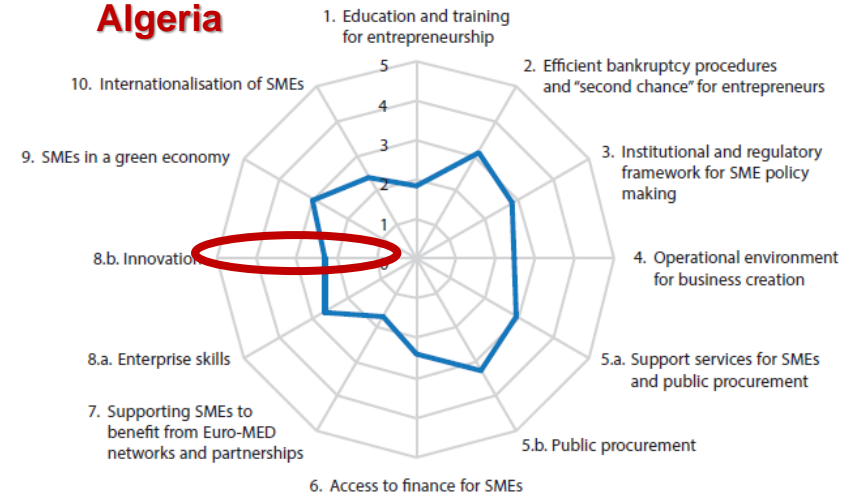


The SME Index for Arab countries

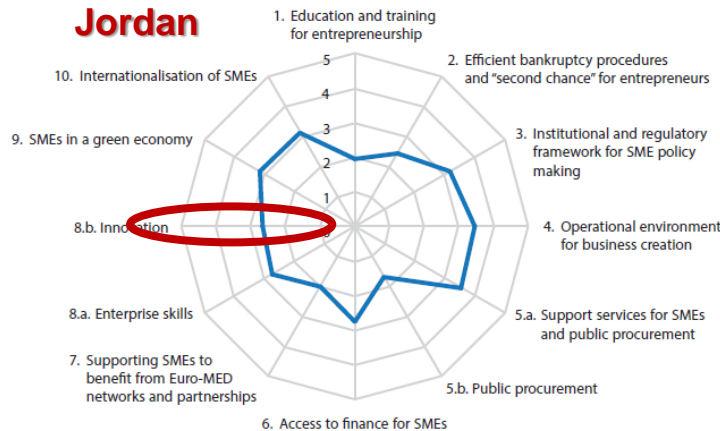
Lebanon



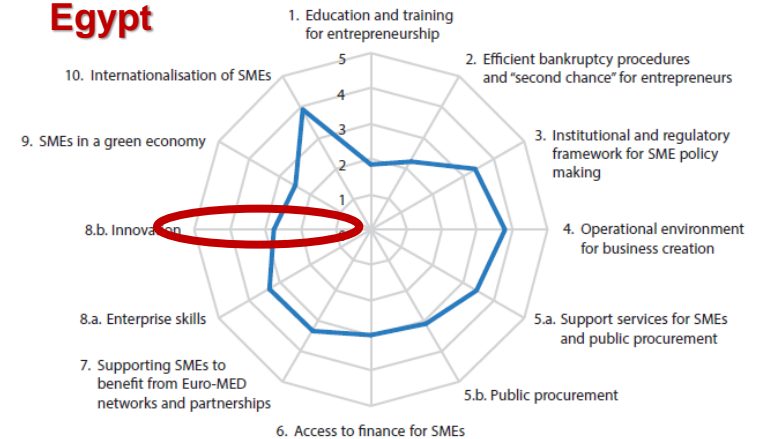
Algeria



Jordan

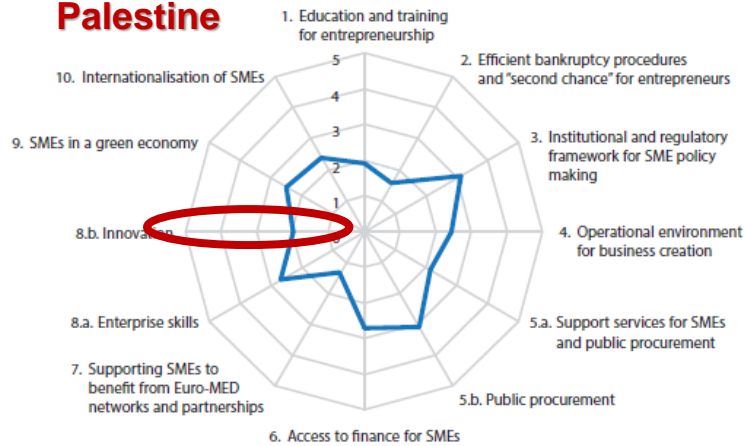


Egypt

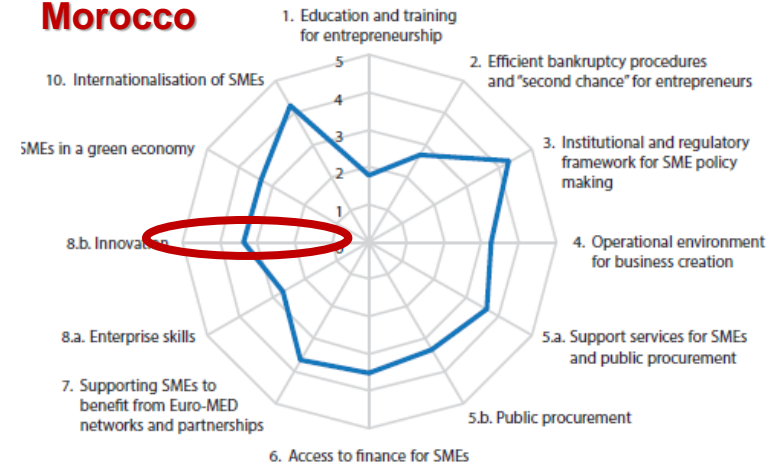


The SME Index for Arab countries

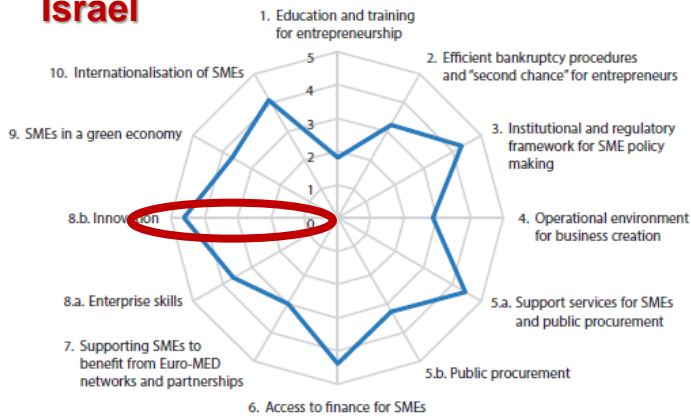
Palestine



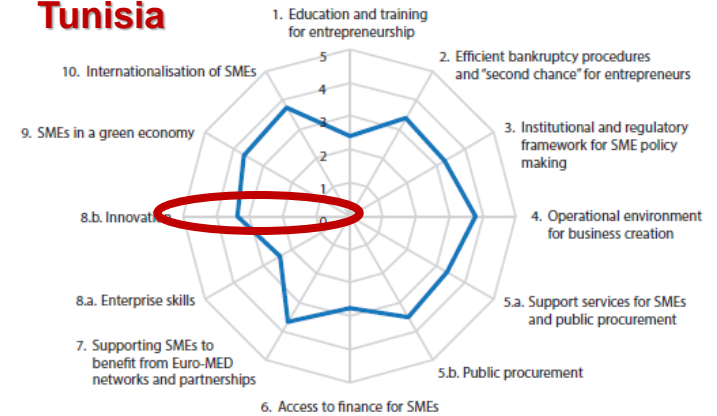
Morocco



Israel



Tunisia



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?



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A Rural vs Urban Approach

Rural MSMEs... Mostly traditional and Informal

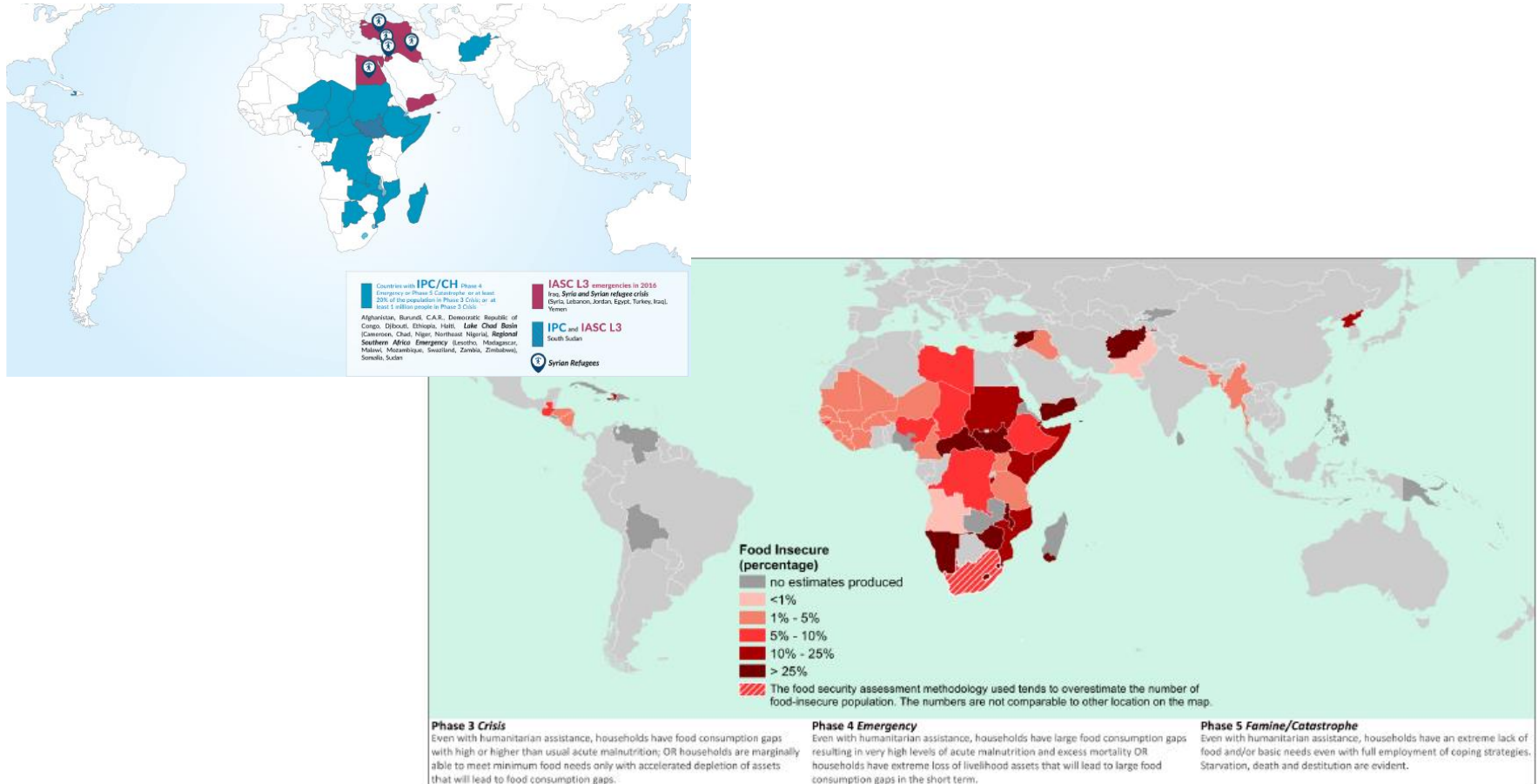
Urban SMEs... A more complex environment comprising modernized globalized innovative MSMEs (few) and numerous traditional and informal MSMEs (the majority)

**What Innovation could bring in each environment?
for each sector**

Clusters and Networking

Innovation in agriculture for food security

- Most producers in agriculture are MSMEs, most MSMEs are in agriculture

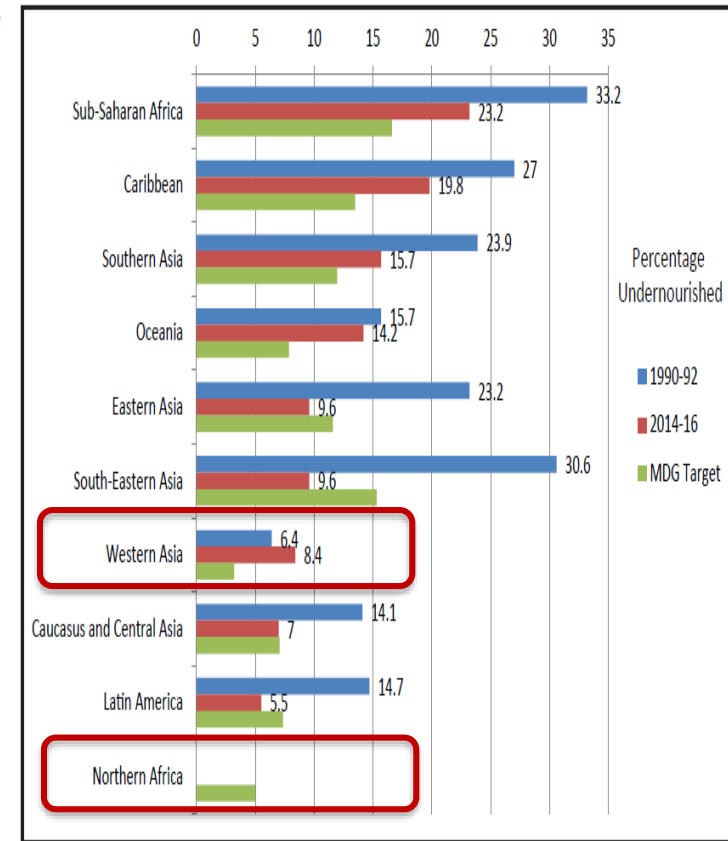
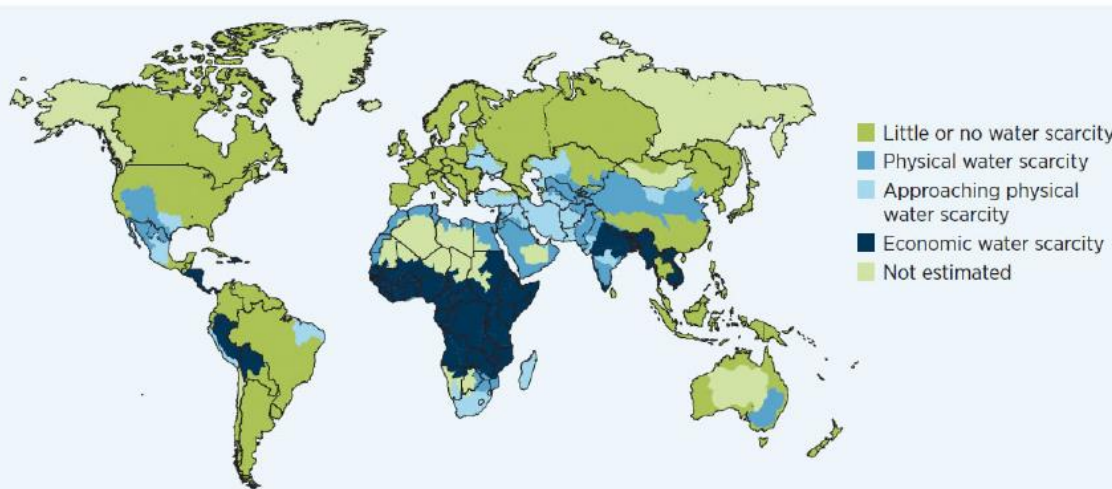


Innovation in agriculture for food security

- 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.

% *undernourished*

Global physical and economic water scarcity

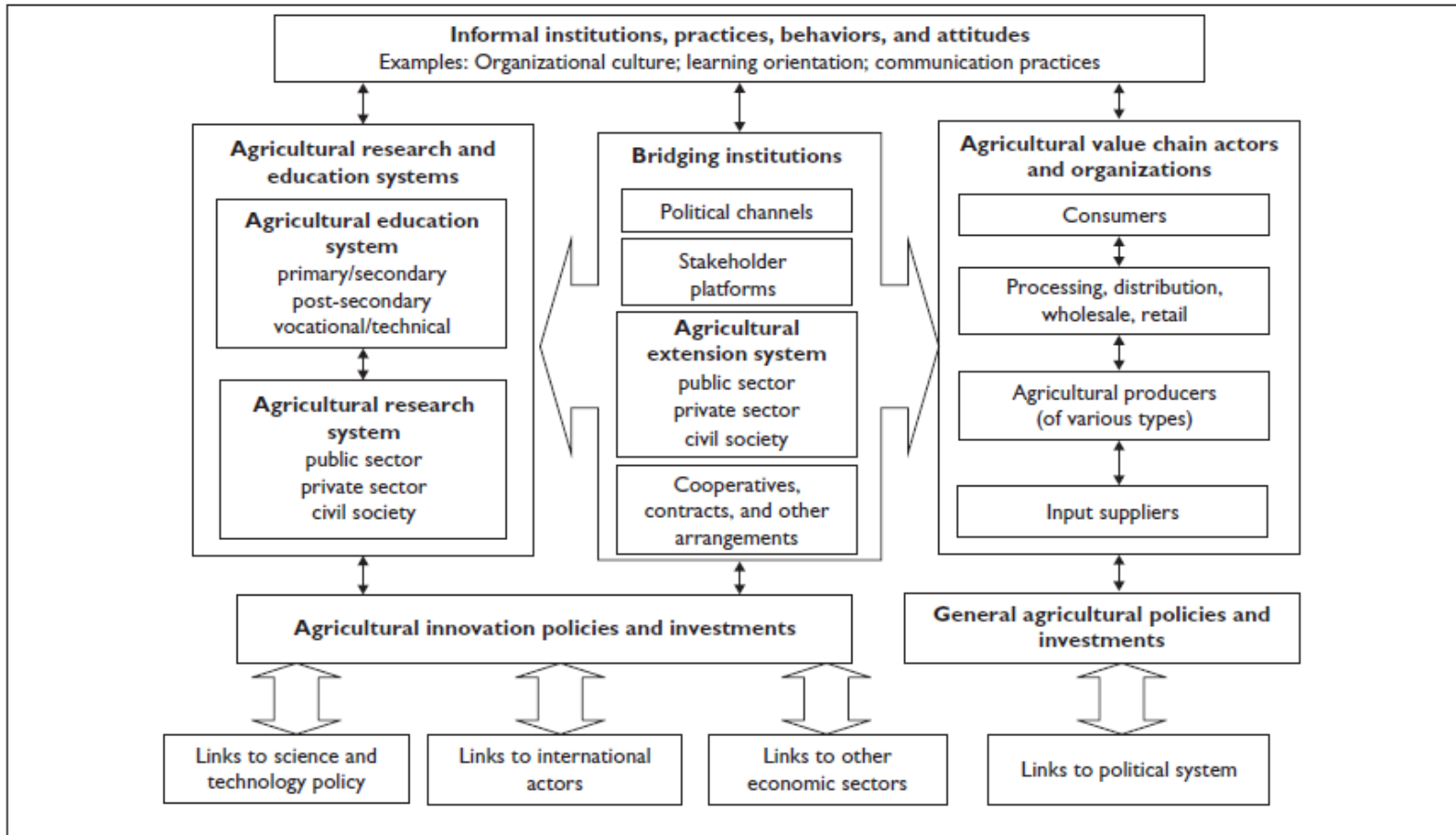


Innovation in agriculture for food security

- **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...

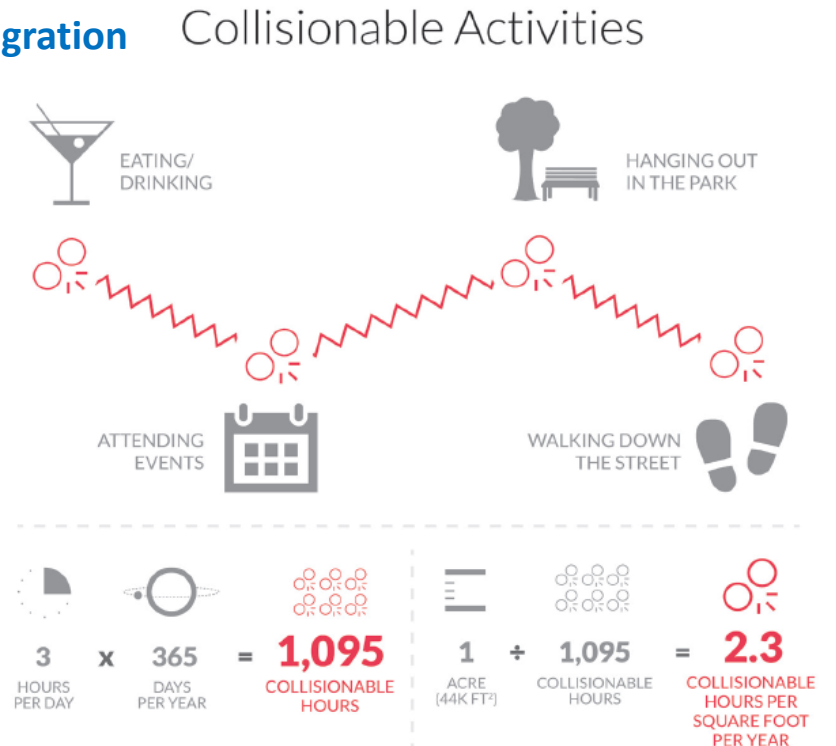
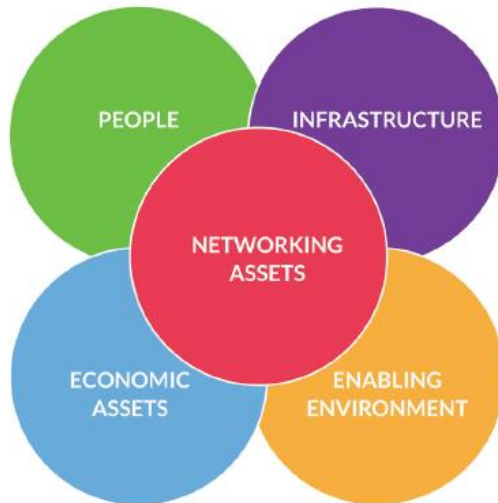
Innovation in agriculture for food security

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



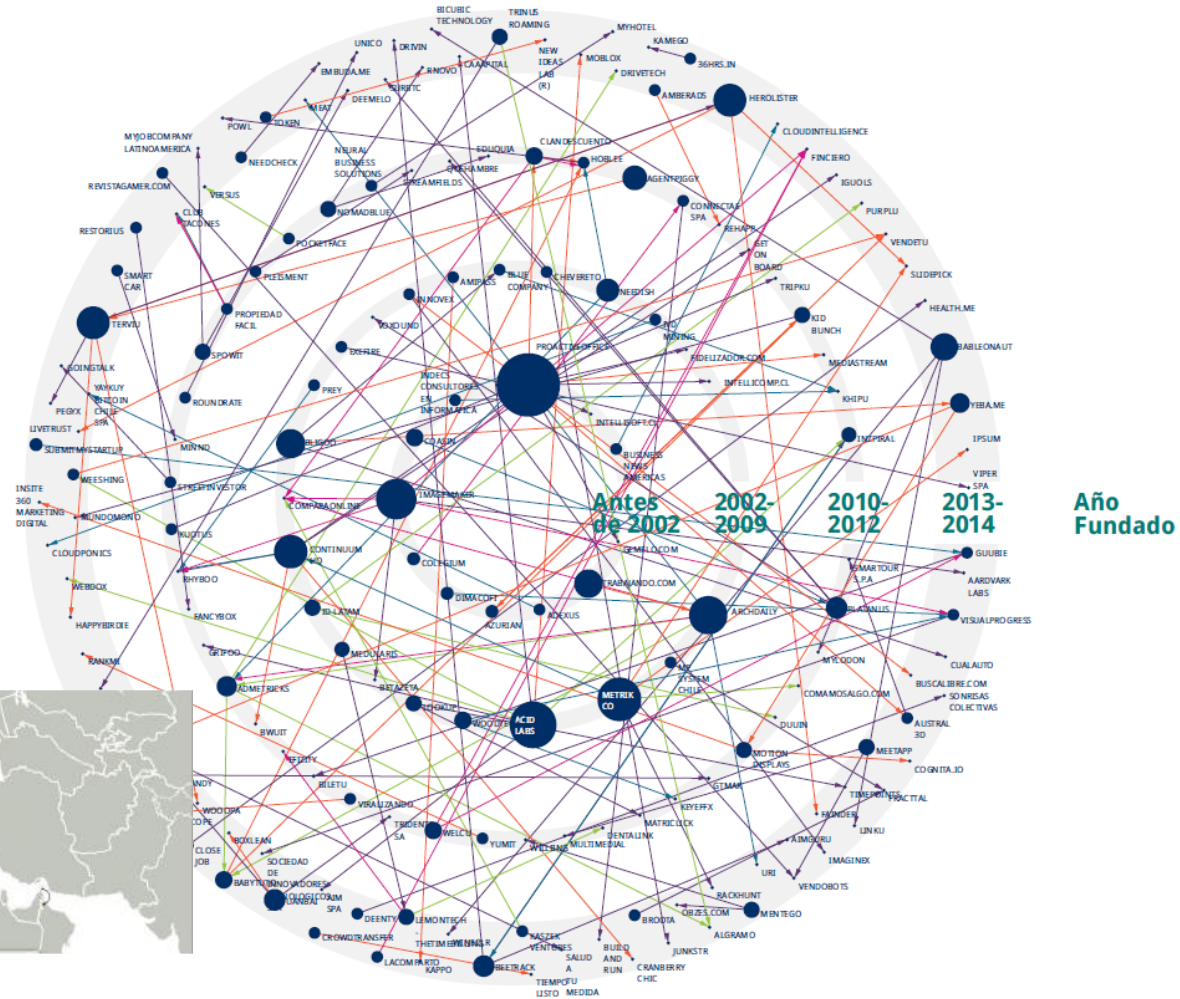
Innovation in Cities Ecosystems

- **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

- The example of Santiago

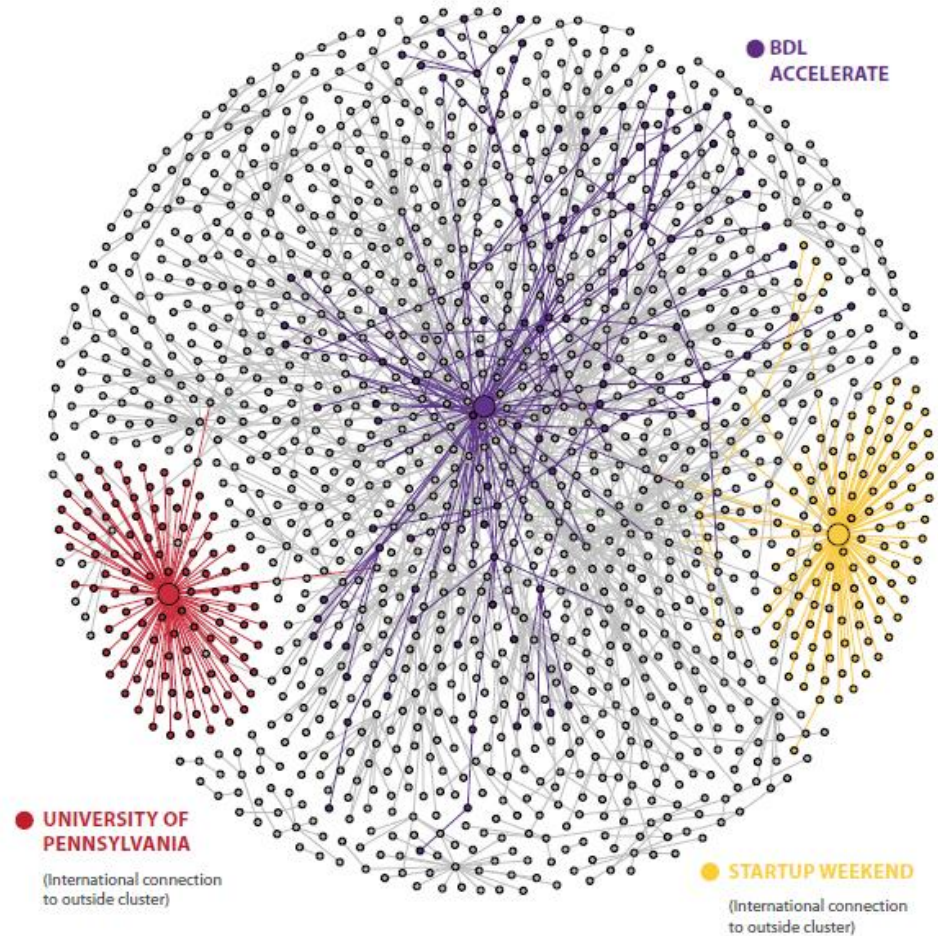
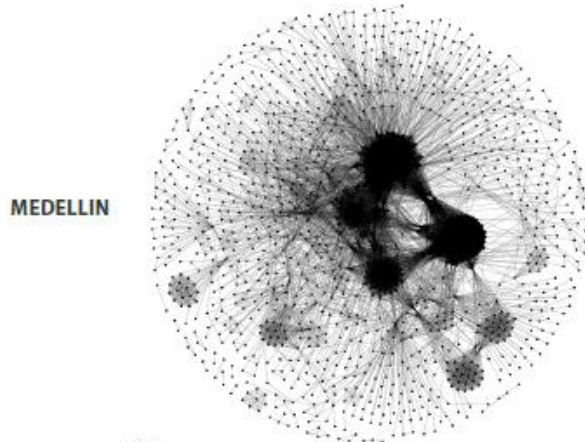
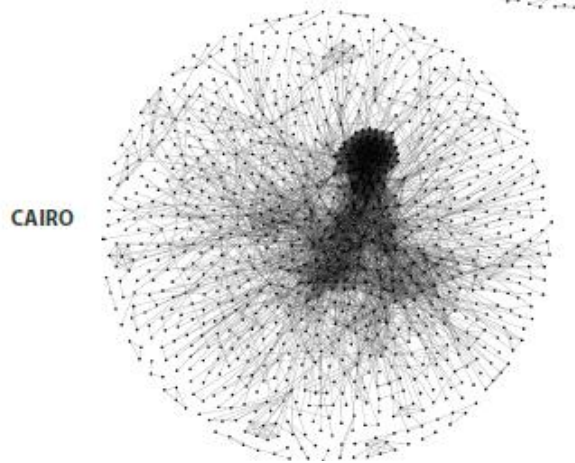


Año Fundado



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**

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?

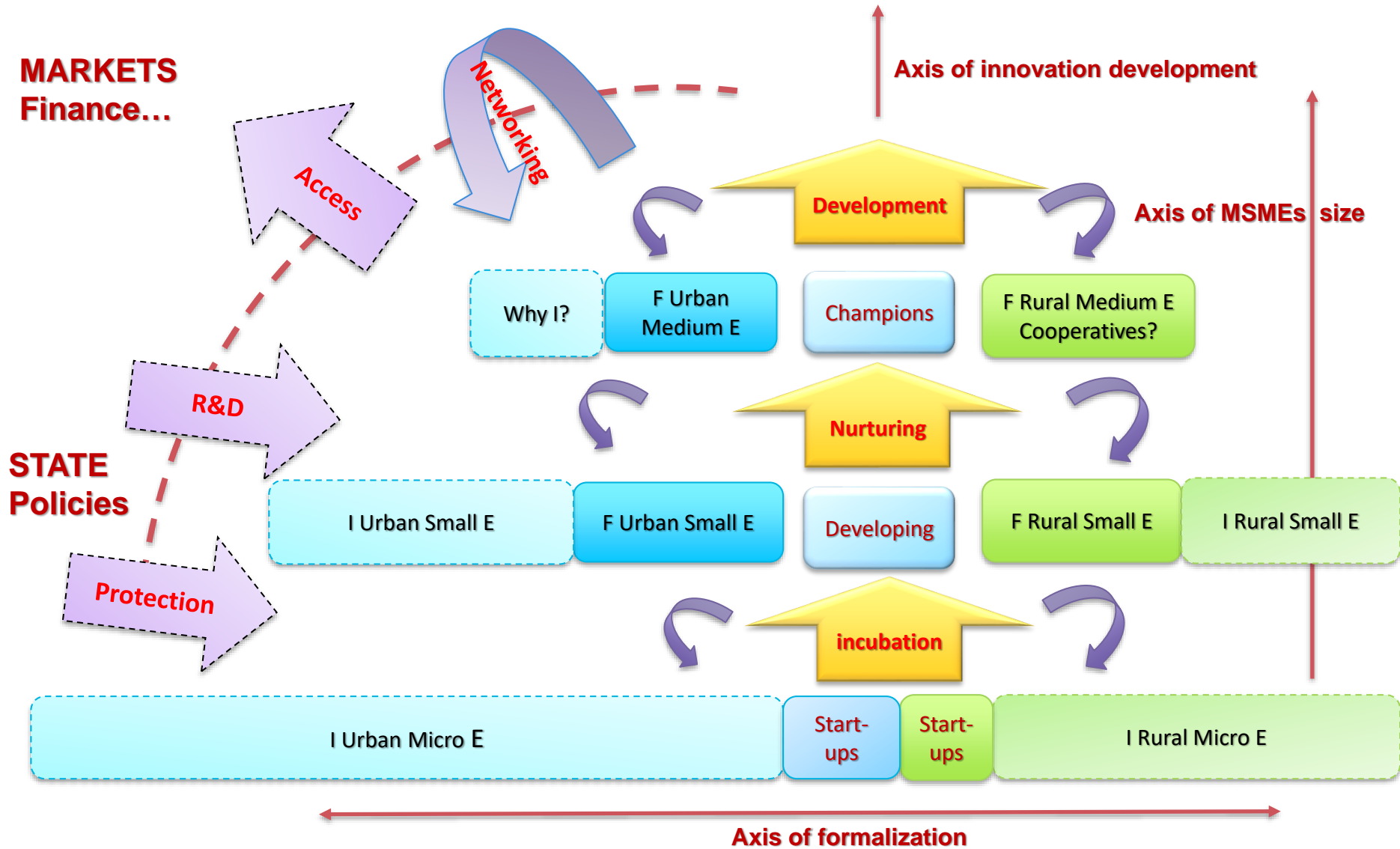


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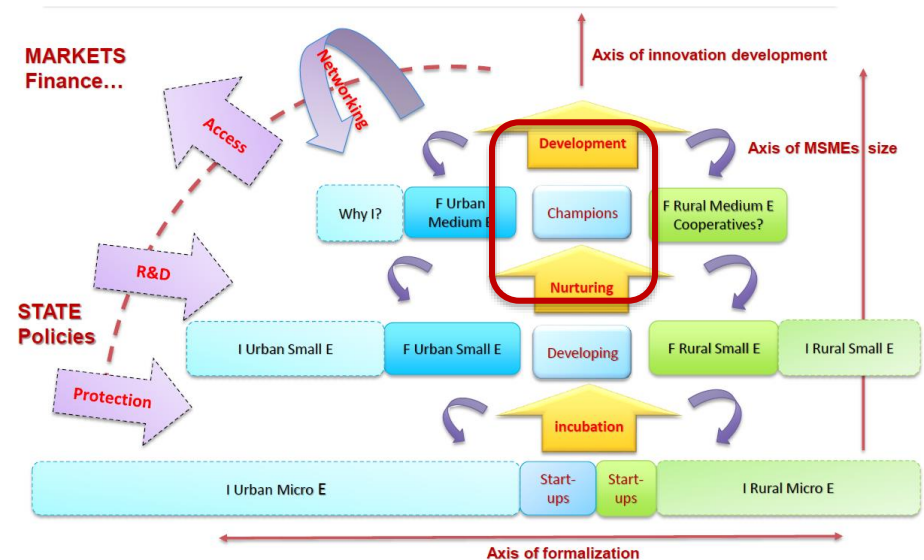
Innovation and the MSMEs environment



Key Innovation Issues for MSMEs

• Medium Innovation Enterprises (50-250):

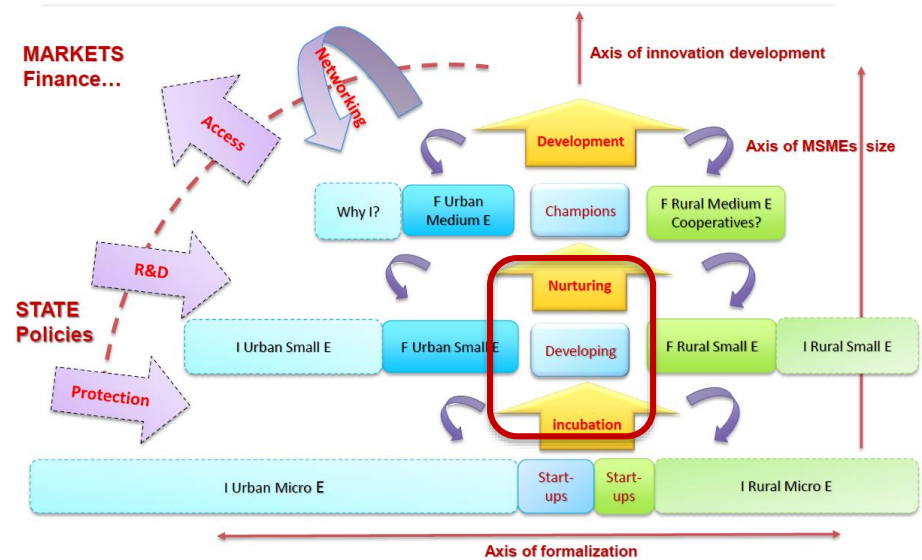
- Process innovation
- Product innovation
- Networking with R&D
- Access to markets
- Role of large companies
- Technological parks
- Access to finance
- Enabling environment
- State protection (patents, subsidies,...)



Key Innovation Issues for MSMEs

- **Small Innovation Enterprises (10-50):**

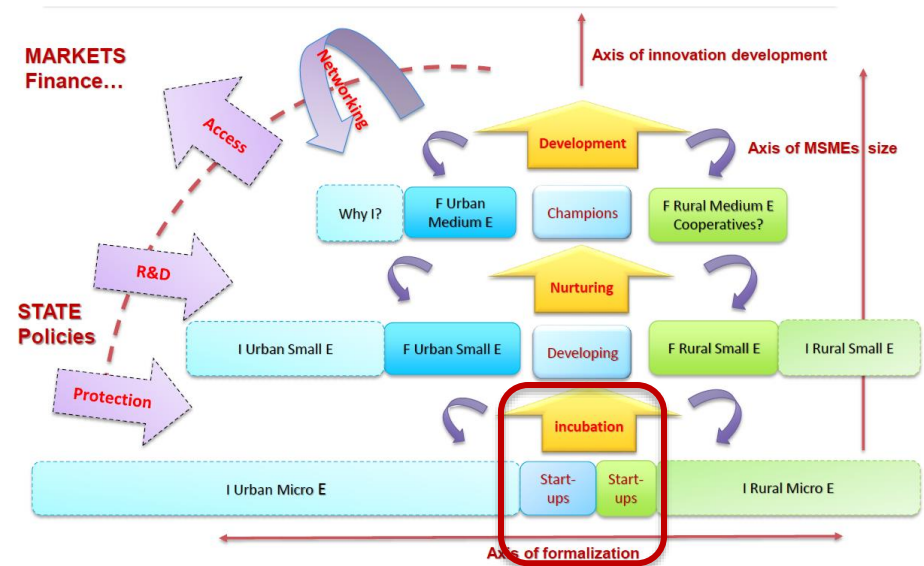
- Product innovation
- Networking with R&D
- Access to markets
- Business environment
- **Ease of bankruptcy**
- **Role of Networking**
- **City clusters**
- **Venture capital**
- Access to finance and capital markets
- State protection



Key Innovation Issues for MSMEs

• Micro Innovation Enterprises (10-50):

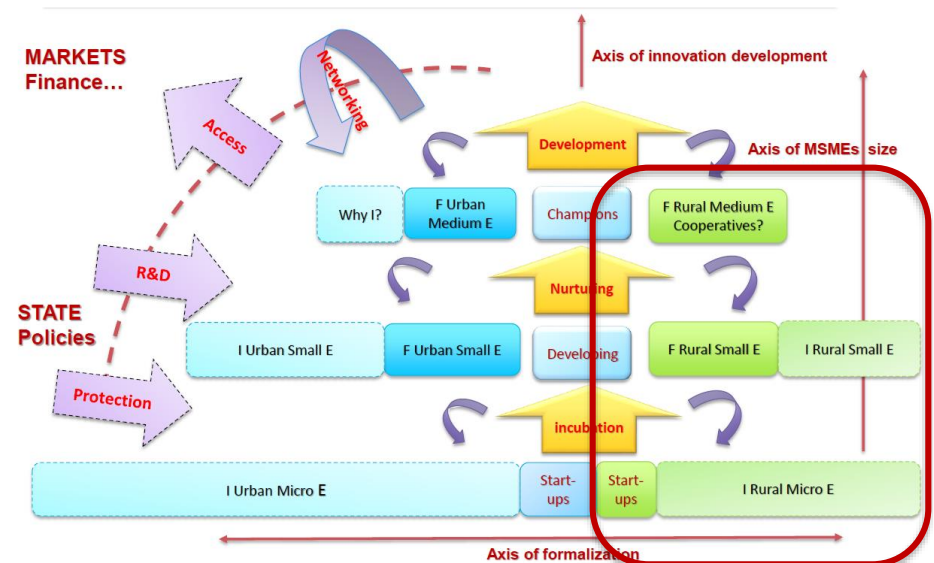
- Start-ups environment
- Incubators
- Networking with R&D and Universities
- Networking with other start-ups
- City clusters
- Business angels
- Access to markets
- Business environment
- Ease of bankruptcy



Key Innovation Issues for MSMEs

• Agricultural MSMEs:

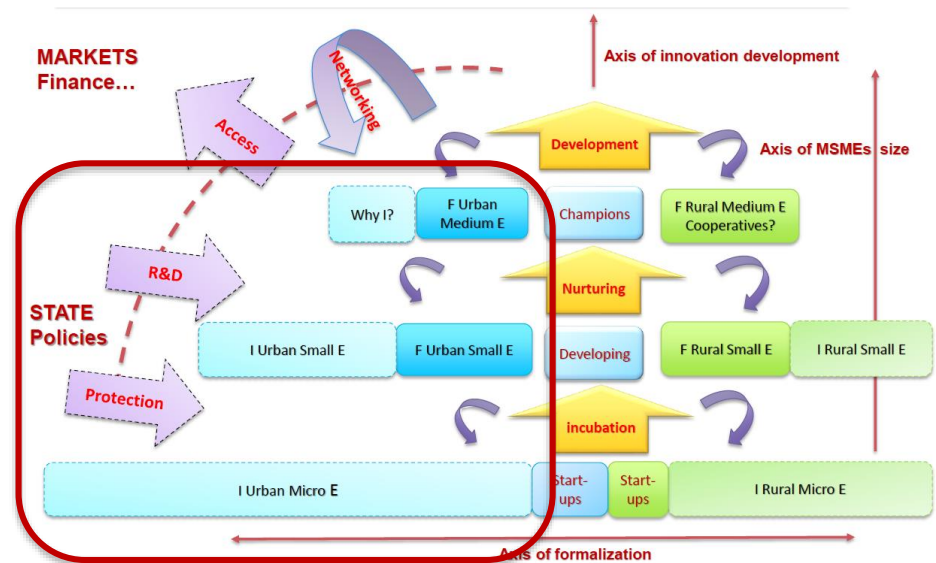
- State agricultural policies
- State incentives to adopt new technologies for food security and water scarcity
- State policies to promote cooperatives
- State policies towards formalization or to promote growth of traditional household enterprises
- Micro-credit
- Organization of markets
- Transport 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 Pillar 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

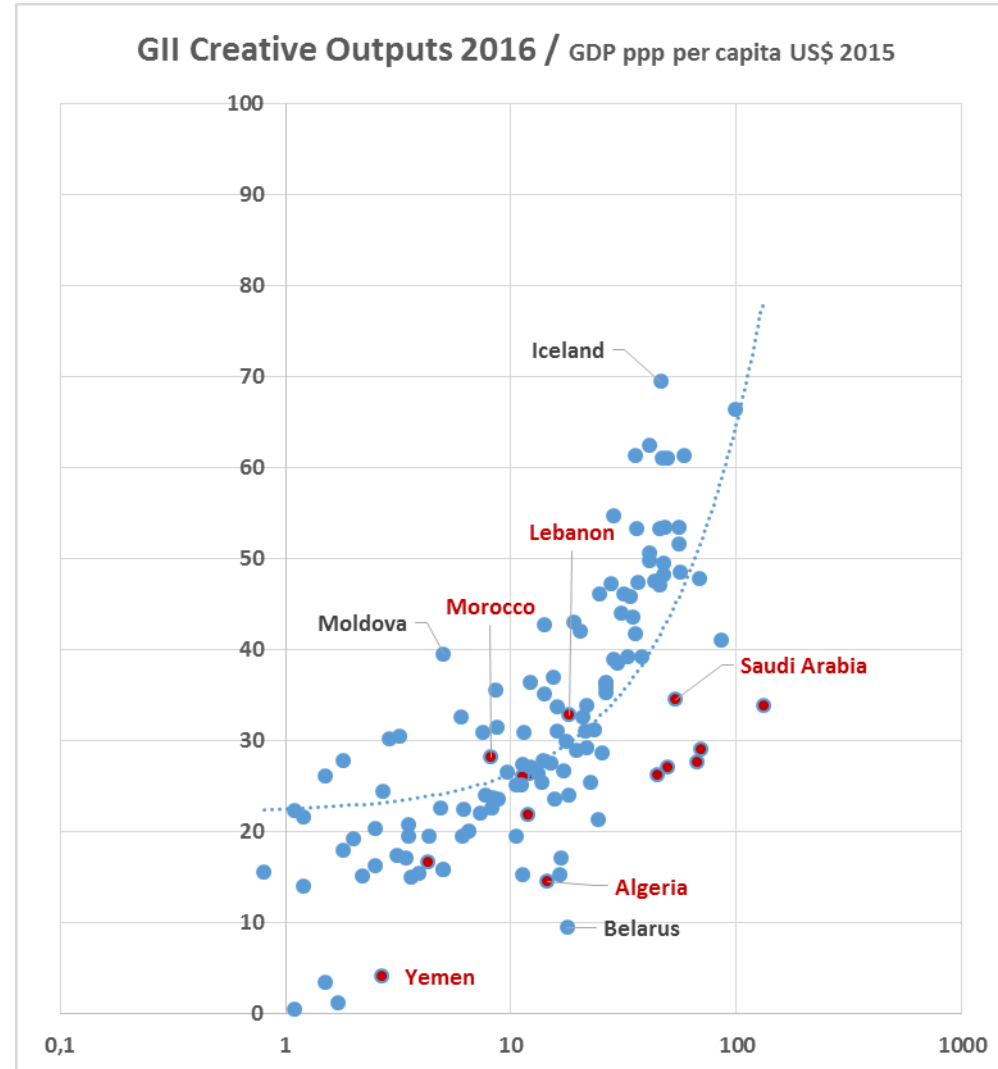
1. Generic top level domains
2. Country code top level domains
3. Wikipedia monthly edits
4. Video uploads on youtube

- 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

THANK YOU!

Economic And Social Commission For Western Asia



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