Emerging challenges of Innovation Systems in Maghreb Countries

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Structure of presentation

- Innovation performances and ranking in Maghreb countries
- Innovation and innovation support in Maghreb countries: recent trends
- Innovation systems: major challenges
- Prospects: Innovation Climate in Maghreb countries
Characteristics: common features

- Algeria, Tunisia, Morocco, Mauritania & Libya
- Strong colonial legacy
- French speaking and culture dominant
- EU represents 67% of all imports
- Various industrial experiences: heavy to light industry
1. Innovation in Maghreb countries (MC): performances and ranking
Indicator issues:

- Still highly debatted and controversial issue
- Classical inputs: number of researchers, R&D spending as % GDP
- Classical outputs: patents, articles in scientific journals, share of high tech. Exports, royalties received,
R&D expenses as % of GDP
Patents (1995)
Global positioning on innovation of MC countries: individual ratings (WRI)
2. Innovation System supports in Maghreb countries:

Recent trends and current problems
Institutional support and several schemes: PNRI programme national de recherche et d’innovation (Tunisia) and grands programmes d’essaiage des grands groupes (Morocco), 1998 law (Algérie) and Commissions, research agencies (ANDRU, ANDRS, ANVREDET) and centres (10 research centres)

Special Programmes and incentive schemes:
- « Innovation entreprise compétitiveness (Morocco)
- programmes d’encouragement à la recherche et à l’innovation (Tunisia),
- Research grants (Algérie),
- Innovation grants programme (Mauritania)
- Incubators, technopoles, science et technological parks

Education reforms in 1999 oriented towards quality and S&T reinforcement in Mauritania, education commission (Algeria)
Increased spending on R&D

- Significant increase in R&D expenses as % of GDP since 2002: 0,79% (Morocco), 0,7% (Algeria) 1% (tunisie)
- Increased mobilisation of researchers through incentive schemes: (ex Morocco: financial support to researchers increased of 98%, and research grant 30% in the last 2 years,)
- Public spending increased 113% in the last 2 years (Morocco)
- Private spendings increased from de 6% en 1998/1999 à 17% en 2000/2001 (Morocco)
- 6026 projets mobilising 15994 researchers mobilised 145,38 milliards DA in Algeria following the 1998 law
Increased spending on education

- Education spending (% PIB): 5.9% in Mauritania (2003), 5.5% in Morocco (2002)
- Tertiary enrolment: 10.5% (Morocco), 14.9% (Algeria), 15% in Tunisia
Financing innovation

- Venture capital market slowly emerging:
  - Finalep (Algeria)
  - SICARS (Tunisia)
  - Moussahama (Morocco)
Problems and difficulties
Problems & difficulties in R&D

- The impact is not easily visible
- Difficult linkages: university-industry
- Difficulty felt by local enterprises to innovate: critical size, financing, competencies & know-how, etc.
- Research disconnected from domestic needs and national realities
- Contraintes administratives: lack of coordination
- Lack of monitoring and evaluation of research projects and programmes
- Difficult research environment: research laboratories
- 90% of research funding come from state budget against 30% only in OECD countries
- Export of high tech. as percentage of manufactured exports are still negligible: Algérie 4%, Tunisie 4%, Maroc 11%, (UNDP 2002)
- Familial & informal financing still dominant: up to 65% of the capital for small enterprise starting business; banking tradition has a long way to go.
Problems of education

- School drop out too high (500 000/yr in Algeria, 40% of a class age during the 9yrs of basic education in Tunisia)
- Unemployed graduates (8.7% of total in Tunisia in 2000):
- Stagnation of registered students in scientific and technical (23.% in Algeria against 60.7% in social sciences & humanities in 2004, 18% in Mauritania)
- Falling percentages in some countries: 15% between 1995 & 2001 in Morocco)
- Weak coopération between entreprises and the research sphere
- Too rigid curricula and edagogical methodes
- Oriented towards academic rather than professionnel and entrepreneurial performances (social passport)
- Other difficulties include (language, motivation of teachers, etc.)
3. Major Challenges to Innovation systems
Global Internal & external challenges specific to MCs

- Persistent level of high unemployment (youth and graduates)
- Creation of low skill jobs (low service & informal)
- Non sustainable growth,
- Poverty rural & urban etc.
- Desindustrialisation (bazar)
- High concern for the environment

- Static comparative advantages
- Numeric gap
- Innovation-based competition
- Free trade Zones
- WHO agreements
- Eviction from world strategic alliances (R&D, high tech.)
“Innovation climate” in Maghreb Countries

- Overall environment is problematic: poor transport infrastructure, governance and corruption issues, mediocre banking, high business costs.
- Relatively good RD and technology infrastructure: legacy of the socialist regime, but cutting of resources by liberalization/market ideology.
- No interest, money and services for technology diffusion, although crucial for poverty reduction.
- Some “success stories” such as fish industry: competitive, but at what social and environmental cost?
Challenges to the industrial and the innovation system

- structural below-capacity utilisation of existing equipment,
- limited forward and backwards linkages
- heavy cost burdens
- poor diversification of exports
- major imbalances between education and training and economic needs
- The organic relationship between science, technology, the economy and politics shows several weaknesses
- both accumulated know how and industrial capacity are under the threat of being massively obsolete
High potential

- Young population: higher aptitude to create, adopt, change more rapidly
- Important population of researchers, engineers (brain-drain)
- Strong orientation and sensitivity to ICT usage
- Relatively high domestic demand growing rapidly
4. Prospects: Innovation Climate in Maghreb Countries

- High potential
- Numerous success stories
- Importance of innovation climate
Sucess stories: pharmaceuticals (Public sector in Algeria)

- **PERFORMANCES**
  - New Products (10 en 2001)
  - Market need Satisfaction from 15% to 40%
  - Price reduction: 5%
  - Rate of growth: 30% (2002)
  - Position of Leader in the national market

- **IMPACT**
  - Exports: 10 Million USD en 2001
  - Reduced imports:
  - ISO Certification 9001/9002
  - Job creation 21000 (98)) to 35 000 (2001)
Internal & external elements

- R&D dept (120)
- Innovat. Incrément
- Massive Usage of ICT
- Close links with University
- Training & Management
- Active Partnership including R&D
- Competitive pressure
- Privatisation: 20% of capital
- Gov. Support
Importance of local “micro-climates” for innovation

- Innovation develops in well identified places (Silicon Valley, Bangalore…) where there is a critical mass of talents, knowledge, etc.
- A self-dynamising process, once having taken off mobilising a set of actors from various origins: entrepreneurs, educationists, politicians, etc.
- Could constitute a good alternative in MC where NSI are incomplete, imperfect and in the process of being built.
What conclusions?

- Innovation is within reach and feasible in MCs (breaking the psychological barrier)
- Importance of integrated support, delivered in package, at local and sector level,
- in building on comparative advantages and existing strengths,
- and making best use of both domestic and global knowledge
Thank you!

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