

# How to promote innovation in developing countries

Jean-Eric Aubert and Aisling Quirke

World Bank Institute

PREM Week, 2005

# Structure of presentation

- Generalities on innovation and the innovation process
- Innovations and innovation support in developing countries
- Building innovation policies in developing countries
- Global issues: FDI, patents, diasporas

# What do we mean by innovation?

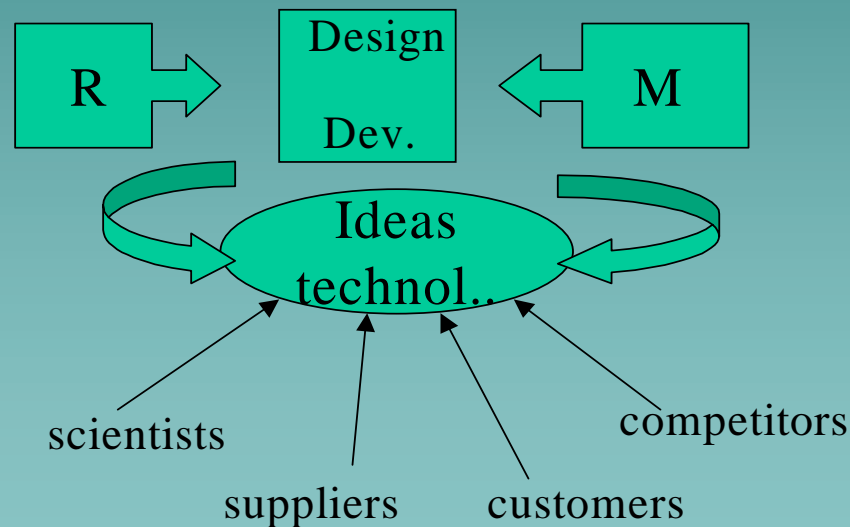
- The diffusion of a product, process or practice which is new in a given context (not in absolute terms):
  - use of available technology,
  - setting of a new industry (FDI), sometimes related to innovation of global significance (e.g. drug plant)
- Technological innovations go often hand in hand with organizational ones. Innovation promotion goes often with enterprise upgrading

# Getting rid of innovation myths

- About the innovation process: it is not a linear process from research to market
- About the source of innovation: key role of clients' needs, suppliers' ideas, etc
- About high tech: it is its use which matters (not its production); needs a technical culture
- About the innovator: it is not a single individual, but a group of people with complementary functions
- About the role of government: it is important (including in form of direct support)

# THE INNOVATION PROCESS

NOT LINEAR



R: research  
M: market

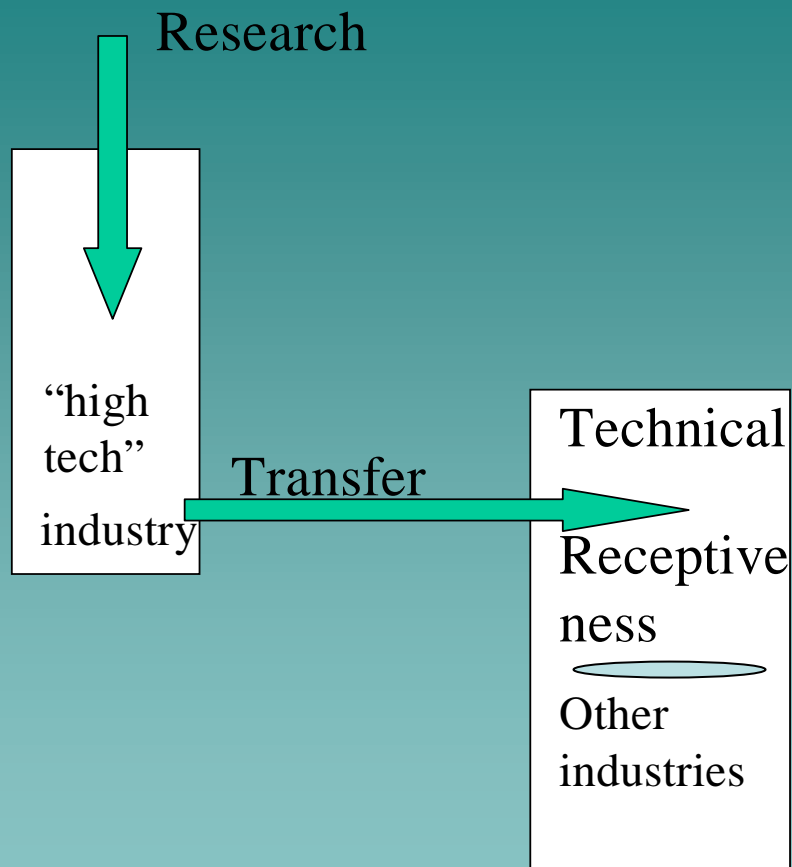
# How innovation develops

- Not a linear process coming from research for going to the market, but a design centered project with ideas coming from multiple sources (clients, suppliers, etc); innovation does not derive from research, but it is the reverse (particularly in developing countries)
- Innovation is a project brought about by group of people (not a single individual): the inventor, the entrepreneur, the godfather, the gatekeeper (Roberts, MIT)
- An organic not a mechanistic view; innovation is like a flower that needs gardening

# Importance of local “micro-climates” for innovation

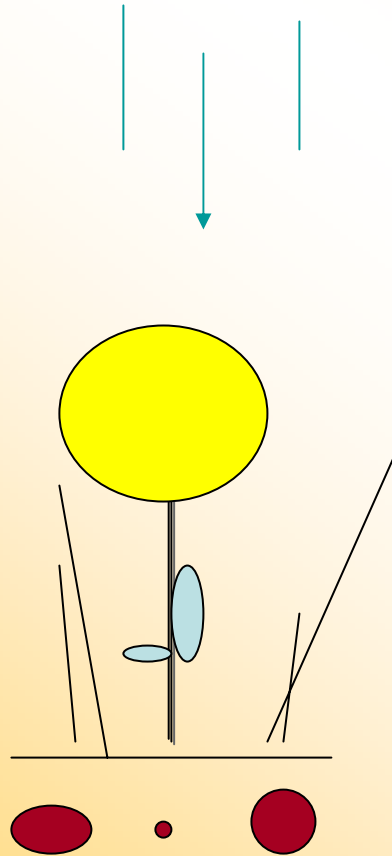
- Innovation develops in well identified places (Silicon Valley, Bangalore...)...
- Where there is a critical mass of talents, knowledge, etc
- Mobilizing a set of actors from various origins: entrepreneurs, educationists, politicians, etc
- A self-dynamizing process (“petri dish”), once having taken off

# THE INNOVATION PROCESS AT THE MACRO LEVEL





# GOVERNMENT ROLE GARDENING INNOVATION



Watering (finance,  
support to innovation  
projects)

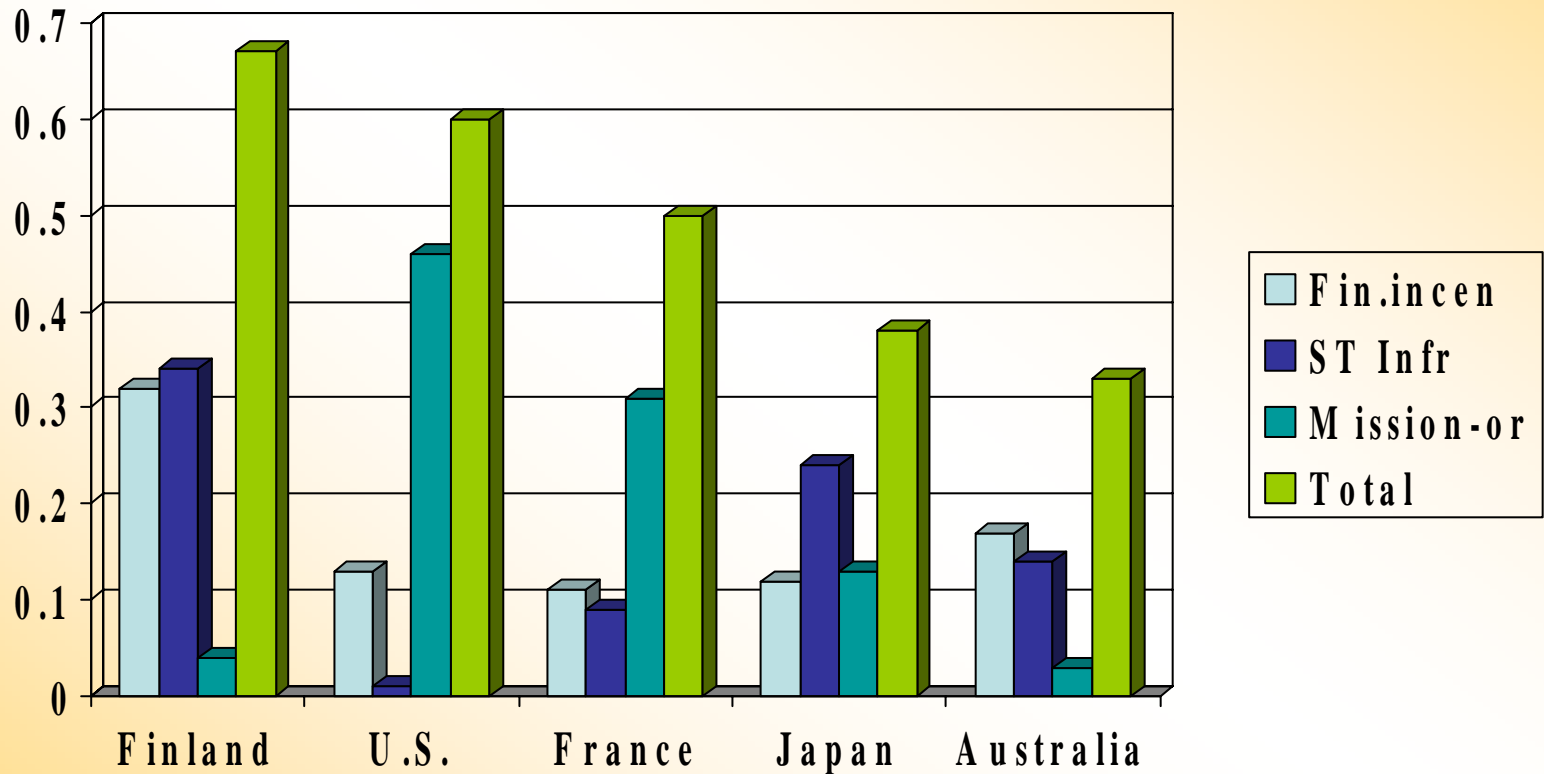
Removing weeds  
(competition,  
deregulation)

Nurturing soil (research,  
education, information)

# Governments have an essential role to play

- As providers of basic public goods (education)
- As appropriate regulators, competition keepers, etc
- And financial supporters of RD and innovation efforts ...see next slide showing government support to industrial RD in advanced countries in the mid nineties as percent of industrial GDP (more support in most performing countries)

# Government Support to Industrial R&D (by types, 1995) as % of industrial GDP



# Innovation systems and development levels

- Low income: Local and indigenous knowledge-based innovation systems (craft, agriculture)
- Low/medium income: FDI/foreign knowledge-based innovation systems (value chains)
- Medium/high income: domestic and international research-based innovation systems

# Innovation climates in developing countries

- Special challenges of developing countries
- Innovations in developing countries:  
African examples

# Special challenges of developing countries (I)

- Knowledge is largely indigenous, tacit...but not negligible
- Technology comes mostly from foreign sources and needs to be adapted to local conditions
- Key innovative groups include: the entrepreneur, local supporter, national godfather, foreign go-between
- The local dimension is even more essential than in advanced countries. But greater risk of isolation (cathedrals in desert)

# Special challenges of developing countries (II)

- Governance conditions are by nature problematic: bureaucracy, poor regulatory frameworks, no enforcement
- Infrastructure (transport, telecommunications) are lacking
- Resources are limited: particularly financial ones, but can be mobilized by appropriate incentives (micro-finance)

# Innovations in developing countries: African examples

- Wine industry in South Africa
- Tourism in Mauritania
- Innovation climate in Tanzania

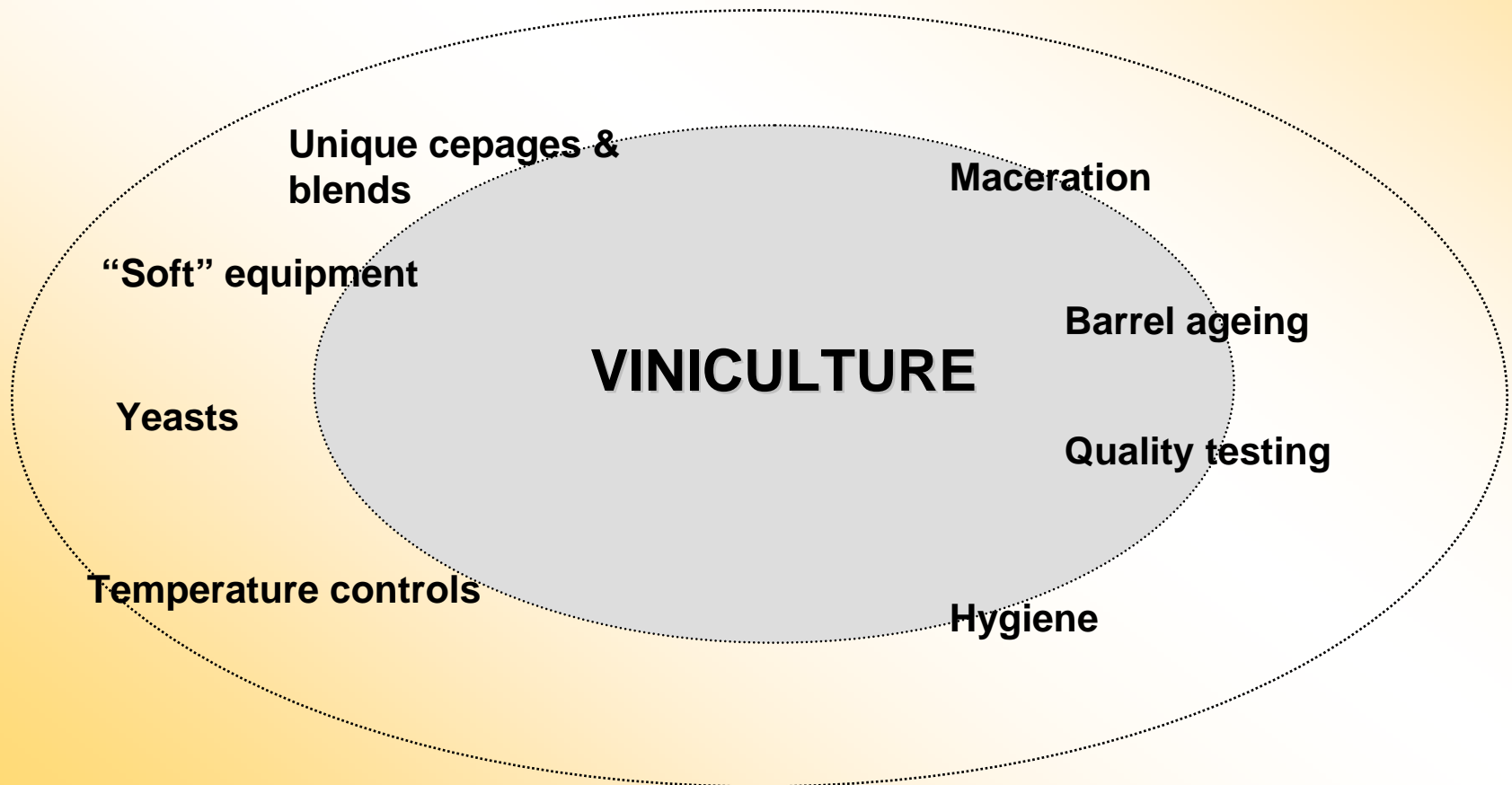


# Example 1: The Wine Industry in South Africa (1) (UNCTAD)

- An opportunity and a challenge in the immediate post apartheid era: trade opening, new ownership, etc
- A complex system involving knowledge (traditional and new), technology, marketing, logistics, tourism and other factors
- A success story because all these dimensions were integrated in a strategic manner.

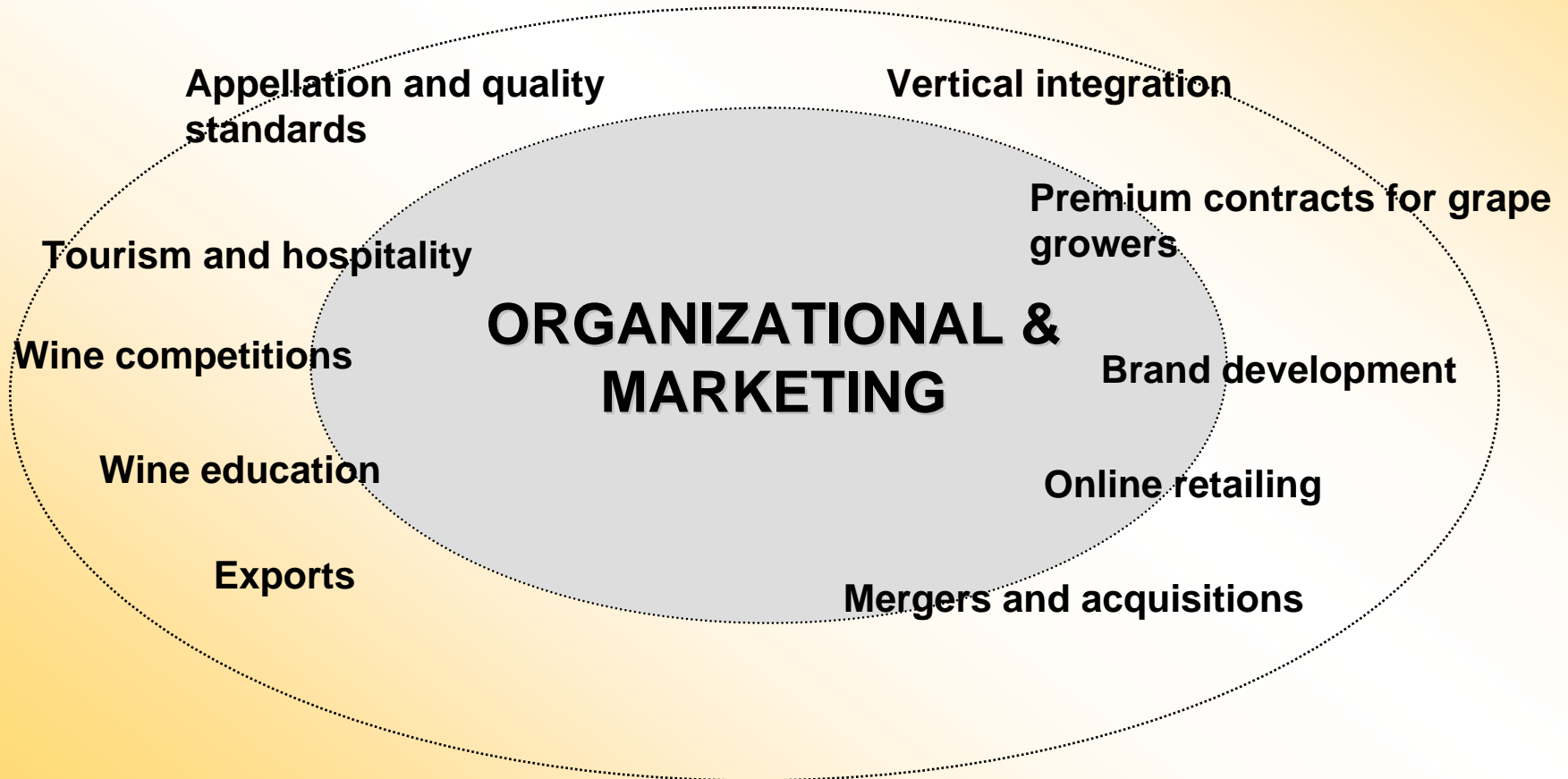
# Putting Knowledge to Work

## Example 1: The Wine Industry in South Africa (2)



# Putting Knowledge to Work

## Example 1: The Wine Industry in South Africa (3)



# Putting Knowledge to Work

## Example 2: Tourism in Mauritania

- Stimulated by a demand from Europe and North America at a time when other desert destinations appeared less safe
- A national context which was overall very favorable: a good business investment climate, telecom reforms, and development of air and road infrastructures.

# Putting Knowledge to Work

## Example 2: Tourism in Mauritania

- Stimulated by a demand from Europe and North America at a time when other desert destinations appeared less safe
- A national context which was overall very favorable: a good business investment climate, telecom reforms, and development of air and road infrastructures.

# Innovation climate in Tanzania

- 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?

# Innovation climate in Tanzania (II): policy recommendations

- Micro level: Create incentives for grass root demands of technology: matching grants for micro projects and community infrastructures
- Mezo level: Multi-target actions focused on a few promising sectors such as tourism and agro processing (quality, training, marketing, credit, logistics, etc)
- Macro level: Governance (local committees to assess and define projects) and education (OECD surveys, schemes to attract diaspora and foreign competences)

# Conclusions

- 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



# Building innovation policies in developing countries

- Initiating innovation policies: key steps
- Developing programs and institutions: main issues
- Strategic priorities: innovation systems and development levels
- Monitoring and evaluation

# Initiating innovation policies: key actions

- To ignite interest show cases abroad (study tours). To build self confidence, show local success stories; key role of media (radio/TV)
- Understanding issues and potentials by soft actions (cluster building)
- Competitive funding to stimulate local/regional interest and investment
- Building national and cross national innovation champion networks; getting entrepreneurs and citizens campaigning for improvement of business/governance climates

# Developing national programs and institutions: main issues

- There are already many programs for many different purposes (SMEs, FDI, RD...) which have a crowding out effect
- Agencies: need to have multi function-ones, private sector-like management (Fundacion Chile); but usually state agencies are constrained by bureaucratic rules and tend to capture or defend territories
- Councils (model is ST policy councils of Finland): they exist in numerous countries but they are not working; problem of motivation

# National priorities

- Priorities: build on strengths focused on use of available resources, generate income for further investment in education, research and key technology infrastructure, etc
- Climb up gradually the innovation system steps corresponding to development levels and related value chains

# Having long term strategies

- The time scale to get something off the ground (e.g. new products which are commercialized) is 5 to 6 years
- It takes 10 years to see tangible impact of a national innovation strategy (jobs, exports,...)
- Once you have trained innovation policy people with appropriate minds, disseminate them throughout the administration; they will become change agents.

# Monitoring and evaluation

- Monitoring project development aspects: not only expenses, innovations supported, etc. but also people involved, networks built, etc
- Measuring impact by appropriate indicators: self-sufficiency of local communities vs income per capita, cost of job created (e.g. compare local innovation based vs FDI-based).

# Global Issues and Innovation Climates

- FDI
- Patents
- Diasporas

# Global issues:

## FDI and domestic innovation

- Numerous disappointing experiences, some success stories (Malaysia, Ireland)
- Need to build skill and technology service infrastructure closely related to foreign factories
- Main impact of knowledge and technology transfer is in component suppliers.



# Global issues : Patents

- Current patent system rules (TRIPS) are problematic and costly for developing countries
- Problem with indigenous knowledge, which is not well protected
- Find ways and resources to help developing countries patenting in US/EUR/JAP patent offices

# Global issues: Diasporas

- A key resource; different involvements of diasporas depending on cultures
- Providers of venture capital, trade networks; the Indian experience
- Sources of knowledge: the Chinese approach to attract back high level migrants (specialized technology parks)
- Need to establish internationally funded schemes allowing researchers/teachers working in advanced countries and coming back home for limited, temporary stays

# Conclusions

- Get rid of myths about innovation
- Adjust ambitions and policies to local resources
- Be as close as possible to entrepreneurial groups
- Have long term strategies and investments in publicizing step by step success stories to build self confidence and pride.
- Act on global issues with motivated international networks

Policy Research Working Paper 0-3097  
“Promoting Innovation in Developing Countries  
A Conceptual Framework”

[Jaubert@worldbank.org](mailto:Jaubert@worldbank.org)

WBI Paris office