THE UNITED NATIONS COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

15TH SESSION

21–25 May 2012
Geneva

Contribution by

UNCTAD

Science, Technology and Innovation Policy Review of El Salvador: Main Findings and Recommendations

Mr. Angel Gonzalez Sanz
Officer-in-Charge
Policy Review Section
Science, Technology, and ICT Branch

Main findings and Recommendations

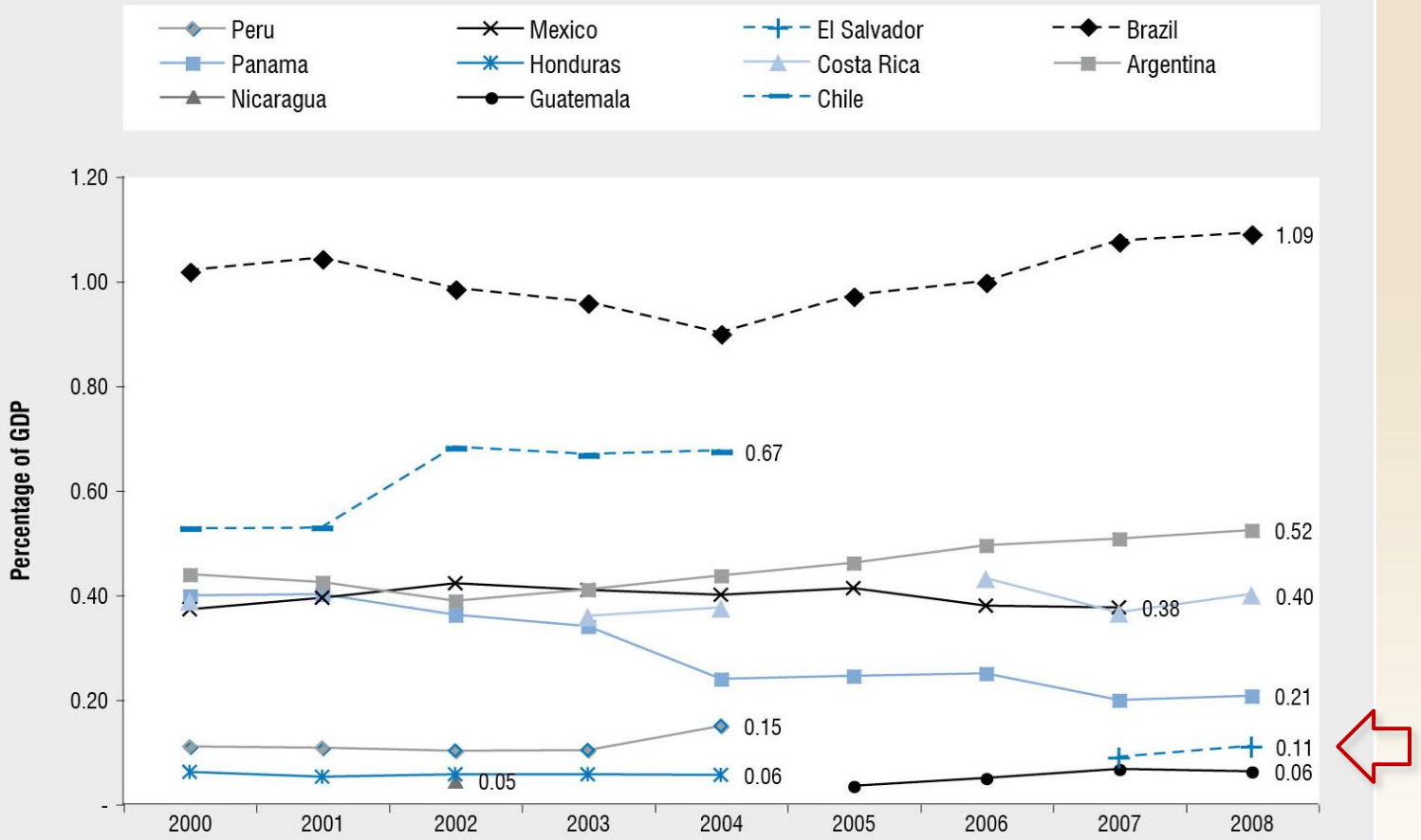
The process

- National counterparts:
  - Viceministry of Economy, Ministry of Economy
  - Viceministry of Trade and Industry, Ministry of Economy
  - Viceministry of Science and Technology, Ministry of Education
  - Secretaría Técnica de la Presidencia
- Team of international and national experts
- In collaboration with UN Economic Commission for Latin America and the Caribbean
- + 50 interviews, 2 round tables with wide range of stakeholders

Issues covered

- General background of STI activity
- Diagnosis of the national system of innovation
- Studies of STI activity in two sectors:
  - ICTs
  - Agroindustry
- Conclusions and recommendations.

Figure 12. Comparative trends in R&D expenditure, El Salvador and selected Latin American countries, 2000-2008 (as percentage of GDP)



Notes: Panama: includes expenditure by the Smithsonian Tropical Research Institute (STRI).
Guatemala: Investment in R&D by the public sector and higher education sector.
El Salvador: Expenditure by higher education sector and Government.

Source: RICYT.

Overall assessment

In spite of some isolated strong points in STI, El Salvador lacks adequate systemic conditions to generate, adapt and apply knowledge for productive innovation

- Fragmented STI strategy and policy-making mechanisms
- Limited policy coordination, foresight, monitoring and evaluation
- Scarce human and financial resources
- Little collaboration among STI actors

Weak NSI

- At the operational level, knowledge generation, diffusion and use in productive sectors remains limited
- STI capabilities in firms, research institutions and other players are weak
- Funding is scarce
- Collaboration is rare

Policy coherence

- Lack of mechanisms to set strategic direction of STI policy and to provide coherence
- Changes as the STIP Review was carried out could help address the problem
  - But a single, integrated vision remains elusive
  - Ministries promote well-meaning initiatives but without sufficient scale, coordination and strategic integration

Foresight

- Several documents spell out visions and strategies for the country's development, including a National Science and Technology Development Plan, but…
- …choices need to be made in STI: The S&T Development Plan lists 29 areas and 156 strategic lines

STI policy implementation

- Regulatory framework and management of policy instruments are adequate...
- …but the range of instruments is limited and fragmentation often results in lack of alignment
- Formal mechanisms for policy formulation, monitoring and evaluation could not be identified

Productive sectors

- SME dominate. Some industrial firms are competitive in the local environment, but few are competitive at the regional level or show a proactive innovative attitude

Knowledge generation/diffusion

- Education, particularly higher education underperforms compared to best practice in the region
- Research centres have weak human and financial resources.
- A culture of collaboration with firms is lacking in many universities

Overall recommendations

- Commitment about the role of STI at the highest level
- Will to overcome differences between State entities and economic agents
- Establish priorities
- Provide incentives to collaboration
- Five basic pillars:
  - Governance
  - Increased public and private STI investment
  - Education
  - Research
  - Entrepreneurship development

Establish an adequate institutional framework – to lead and coordinate STI development

- Establish a governing body for STI
- Policy implementation carried out by respective ministries

Draw up a coherent policy mix

- Identify 3 or 4 priority areas
- Establish a National Science, Technology and Innovation Plan
- Progressively increase public investment in STI
- Develop a STI information system

Table 1. STI policy mix matrix and approximation of its current use in El Salvador

		Deficiencies targeted [a]		
		Corrective or orthodox policies		Facilitating or systemic policies
Deployment mechanisms	Policy instruments	←	- - - - - - - - - -	→
Direct financing measures	Research in public bodies	■■■		□
	Funds for university research	■■		□
	Training of human resources (scholarships and mobility)			■■
	Support for STI infrastructure			■■
	Funds for entrepreneurial R&D		■■	□
	Support for R&D in collaboration			■■
	Public sector procurement			□
Indirect financing measures	Tax incentives for R&D by volume	□		□
	Progressive tax incentives for R&D	□		□
Catalytic financial measures	Seed and venture capital		□	
	Networks of investment "angels"			□
	Guarantee funds for credit to MSMEs			■■
	Guarantee funds on net capital of MSMEs			□
Other direct measures	Competitive-technological intelligence services	■■		
	Technology brokerage services (transfer)			□
	Dissemination of an entrepreneurial and innovation culture			■■
	Promotion of networks			■■
Indirect regulatory measures	Intellectual property rights	■■■		
	Competition policies	■■		
	Metrology and standardization			■■
Mixed measures	Technological Development Centres			□
	Incubation of enterprises			□
	Creation of clusters			■■
	National STI foresight exercises			□

Invest in human capital development

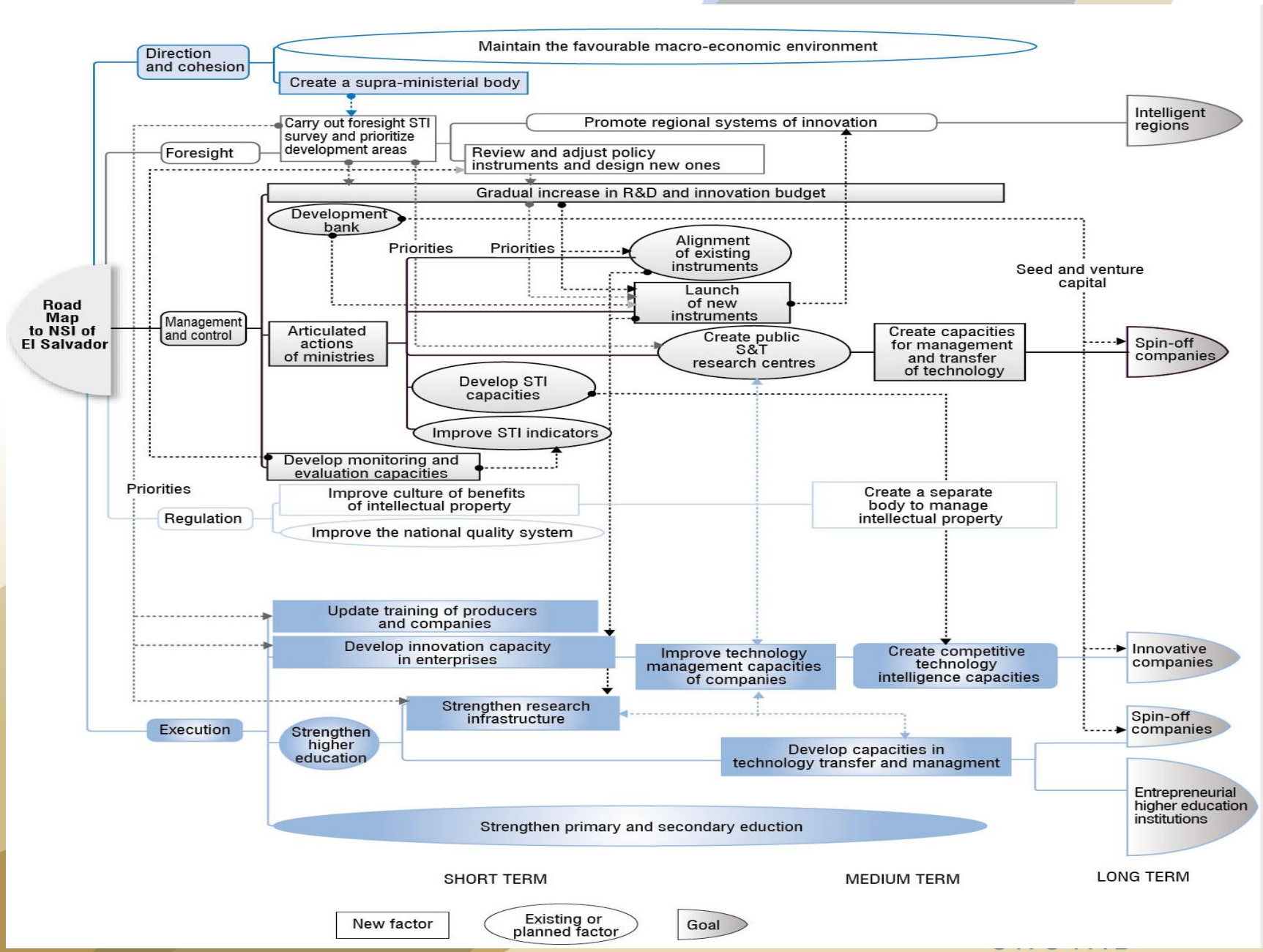
- Strengthen the national education system at all levels
- Increase offer and access to high quality postgraduate education
- Update the training offered by INSAFORP
- Leverage Salvadorian talent abroad

Strengthen entrepreneurial innovation

- Strengthen innovation and technology transfer programmes
- Develop technological intelligence capacities
- Support development of enterprise incubators & venture and seed capital
- Promote and train in the management of intellectual property
- Stimulate collaboration and technology transfer between universities and enterprises
- Ensure other productive development policies promote the development of technological and innovation capacities

Enhance research capacities

- Establish 4 or 5 research fellowships in the priority sectors
- Develop a national accreditation system for researchers
- Establish a plan to strengthen and expand the STI infrastructure.


Road Map to NSI of El Salvador
Direction and cohesion
Maintain the favourable macro-economic environment
Create a supra-ministerial body
Foresight
Carry out foresight STI survey and prioritize development areas
Review and adjust policy instruments and design new ones
Promote regional systems of innovation
Intelligent regions
Gradual increase in R&D and innovation budget
Development bank
Priorities
Priorities
Alignment of existing instruments
Launch of new instruments
Seed and venture capital
Management and control
Articulated actions of ministries
Create public S&T research centres
Create capacities for management and transfer of technology
Spin-off companies
Develop STI capacities
Improve STI indicators
Develop monitoring and evaluation capacities
Priorities
Regulation
Improve culture of benefits of intellectual property
Improve the national quality system
Create a separate body to manage intellectual property
Update training of producers and companies
Develop innovation capacity in enterprises
Improve technology management capacities of companies
Create competitive technology intelligence capacities
Innovative companies
Strengthen research infrastructure
Execution
Strengthen higher education
Spin-off companies
Develop capacities in technology transfer and managment
Entrepreneurial higher education institutions
Strengthen primary and secondary eduction
SHORT TERM
MEDIUM TERM
LONG TERM
New factor
Existing or planned factor
Goal

UNCTAD

PROSPERITY FOR ALL

www.unctad.org

UNITED NATIONS
UNCTAD