HIGHLIGHTS OF THE LATIN AMERICAN AND CARIBBEAN REGIONAL WORKSHOP ON SCIENCE AND TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT
(Santiago, Chile, 5-7 March 2002)

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Synthesis Workshop on Science and Technology for Sustainable Development
Mexico, D.F., 20-23 May 2002
PARTICIPANTS:

• 33 professionals from Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Mexico, Peru, Uruguay, Venezuela, the U.S., ECLAC and the IAI
BACKGROUND

- Natural scientists
- Social scientists
- Technologists
- Social Studies of Science
- S&T Policy Research
- Development
the role of S&T as a contribution to SD, from a Latin American and Caribbean perspective, focusing on the challenges (and opportunities) posed by sustainable development to S&T
FOUR MAIN LINES

• Core scientific questions
• Methodological and conceptual challenges
• Research strategies
• Institutional innovations
• Deliberations concentrated on those SD issues in which S&T may play an important role
• Role of S&T is directly upon “Knowledge and understanding” (one of ultimate drivers of the sustainability transitions) and indirectly through other ultimate and proximate drivers
SUSTAINABILITY TRANSITIONS

PROXIMATE DRIVERS

VALUES, DESIRES AND ASPIRATIONS

KNOWLEDGE AND UNDERSTANDING

STRUCTURE OF POWER

ULTIMATE DRIVERS

POPULATION

ECONOMY

TECHNOLOGY

GOVERNANCE
• workshop did not see science and technology for sustainable development (STSD) as a new science or a new technology, but as a reorientation of scientific and technological research towards the great challenges of sustainable development.
CONTENTS OF REPORT

• Critical Knowledge Required (Core Scientific Questions)
  ▪ Specific features of Latin America and the Caribbean
  ▪ Critical knowledge needs

• Methodological and Conceptual Challenges
  ▪ Epistemological challenges
  ▪ Interaction with other knowledges
  ▪ Methodologies for Conducting Scientific/Technological Activities in Relation to Sustainable Development
    • relating to supradisciplinary approaches
    • relating to prediction of events and situations
    • relating to monitoring and impact indicators
    • for the rigorous processing of qualitative variables
    • relating to kinds of knowledge
    • for establishing priorities, monitoring and evaluation of S&T

• Research Strategies
  ▪ Institutional Innovations
  ▪ Financing
  ▪ Rules and priorities
  ▪ Participation

• Concluding Remarks
CRITICAL KNOWLEDGE REQUIRED (CORE SCIENTIFIC QUESTIONS)

- The workshop analyzed the Friiberg core scientific questions
- It was concluded that they were legitimate and general, and applicable to LAC
- But not too operational
- They were also perceived to lean markedly towards the natural sciences
A Sample of Critical Knowledge Needs

- How to eradicate poverty in the region, and how to do it in a sustainable manner
- Identification of the obstacles to the application of the already available appropriate S&T knowledge for SD (political economy of unsustainability)
- How to induce positive individual and collective behavioral changes, including also the behavior of public and private decision-makers
• How can the subsistence agriculture practiced by millions of poor farmers in the region be transformed into sustainable rural agriculture?
• Determinants of ecological, economic and social vulnerability (and resilience) of the region’s socioecological systems
• Means to transform ecological heterogeneity – typical of many of the region’s ecosystems – from an obstacle to production into an opportunity
• Management of technological and productive pluralism, by combining, when appropriate, cutting-edge, modern and traditional technologies

• Sustainable and coordinated management of the major biogeochemical cycles in the region that cross political boundaries (the water cycle in the Amazon, supranational hydrographic basins, shared ecosystems, etc.).
Some concluding remarks of the workshop

- Clearly, not all the SD problems of LAC can be resolved by S&T
- However, S&T have much to contribute in many cases, and the ability to generate and use them is increasingly a key economic factor in today’s world.
• SD far transcends the environment and the challenge to S&T is therefore much greater than simply incorporating environmental considerations into development
• The socioecological system has to be approached in its totality, encompassing its social, economic, institutional and ecological dimensions
• Equally important and complex is the need for the design and implementation of comprehensive policies
The challenge that SD poses to S&T in the region is real and serious.

In LAC it is necessary not only to reinforce (and in some cases rebuild) scientific and technological capacity, but to do so while redirecting a large fraction of efforts towards the generation of a new scientific and technological capacity: STSD.
• There is no established STSD tradition in either north or south. It is therefore necessary to create it, which represents an opportunity for international cooperation
• STSD refers to a type of knowledge that must be **generated endogenously** in the region; it cannot be taken “out of the shelf” from other countries or from the stock of universal knowledge.
• However, there are serious **structural obstacles** in the region that hinder scientific and technological development.
Given the overlapping and complex nature of sustainable development problems, in many cases (though not all) it will be necessary to seek the participation of different sectors and coordinate different sources of knowledge in the science and technology endeavor.

(Not only different scientific disciplines, but also the perspectives of civil society, indigenous groups, business, politicians, etc.)
The participation of other social actors in S&T is required because of:

- **Ethical reasons.** The right of the sectors affected to participate in decisions that have a bearing on their wellbeing.
- **Political reasons.** The need to guarantee society's control over R&D outputs, particularly those that have an impact on health and the environment.
- **Pragmatic reasons.** In certain cases it is important to encourage the intended beneficiaries to develop a sense of ownership over the S&T knowledge. For this it may be essential to engage these groups at the R&D phases in order to incorporate their interests and perceptions into the process.
- **Epistemological reasons.** The complex nature of SD, in which biogeophysical and social processes overlap, often makes it necessary to consider the different perceptions and objectives of the social actors involved. Also, it is often important to combine empirical knowledge built up by traditional farmers, other cultures and ethnic groups, with modern S&T.
The need to include other knowledges and perspectives in the S&T enterprise poses important methodological challenges to STSD, as it requires the adoption of criteria of truth and quality that are broader than those accepted today by the S&T community, yet not less solid and rigorous.

Otherwise, S&T relevance and credibility could be gravely damaged, particularly the weak S&T system in LAC.
The STSD challenge, while not trivial, is doable for the region, unlike other S&T challenges which require very expensive and sophisticated equipment, or a large critical mass of researchers and resources.
In this respect, LAC already possess a substantial knowledge base.

Although there are crucial information gaps, in many cases the main obstacle is ignorance or neglect of existing knowledge and techniques.

Thus, in parallel with research to generate new knowledge, it is urgent and necessary to improve the availability, dissemination and integration of existing relevant knowledge.