The Millennium Science Initiative

Promoting Science and Technology Capacity for Development

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Structure of Presentation

- Science in Economic Development
- The Knowledge and Technology Divide
- Previous World Bank Experience with Support to Science and Technology
- The Goals and Characteristics of the Millennium Science Initiative
- The Achievements of the MSI in Chile
- Uganda: The MSI in an IDA Context
- Working with Partners for S&T Capacity Building
Differences in Physical and Human Capital do not Explain all of Growth...

Thousands of constant 1995 US dollars

Rep. of Korea

Ghana

S&T Capacity part of the residual
Difference due to physical and human capital
Global Agricultural Yields Increase Due to Science Power

Wheat Yields in Argentina and India 1885-1995

Average annual yields in 1,000 Kilogram/Hectare
Global Distribution of Population & GDP

2001 (Population)

- Low income: 41%
- Lower middle income: 35%
- Upper middle income: 8%
- High income: 16%

2001 (GDP)

- Low income: 3%
- Lower middle income: 9%
- Upper middle income: 7%
- High income: 81%

Global Distribution of Telephone Mainlines

Source: Calculated based on World Bank SIMA database.
Global Distribution of Mobile Phones

Source: Calculated based on World Bank SIMA database.
Global Distribution of Personal Computers

Source: Calculated based on World Bank SIMA database.
Higher Education Enrollment Ratio (1997)
Source: calculated based on data from the World Bank SIMA database 2002
Scientific & Technological Journal Articles (x1000)

Royalty and license fees, payments & receipts (BoP, current US$, Millions)

Agriculture Accounts for More than Half of World Bank S&T Lending

$4.8 Billion in 447 projects or components for S&T in Agriculture, 1980-99
Outside of Agriculture, Most S&T Lending Has Gone to East Asia and LAC

Lending Volume by Region, 1992-1998
1997: The Idea for the MSI

- Develop S&T Capacity through support of international-level quality research;
- Increase Ph.D, Master’s, Post-doc training opportunities;
- Create alternatives to brain drain, incentives for brain gain;
- Involve researchers in “social marketing” of science in secondary schools;
- Consolidate transparent, peer reviewed resource allocation for research funding;
- Valorize research relevance;
- Create linkages to the private sector;
Competitive Grants: A Basic Feature of the MSI

- Fluctuation and Fragmentation of Research Resources a Perennial Problem in Middle Income Countries;
- The MSI in Chile Funded 3 “Institutes” at US$ 1 million per year for 5 years;
- 10 MSI “Nuclei” were funded at US$ 300,000 per year for 3 years. Nuclei grants are renewable.
- Grant Selection Committee composed of top rank Chilean and International scientists;
- Initial project in Chile sparked regional interest in the MSI
LAC Region is an Early Adopter

- 1998: Chile MSI Project Approved (2.5 year, $15m project/$5 million loan)
- 1999: Venezuela MSI Project Approved (2.5 year, $15m project/$5 million loan)
- 2000 Mexico adds MSI Component to an Existing S&T Infrastructure Loan;
- 2000 Brazil provides grants for 17 MSI Institutes with WB Support
Chile: Achievements of the MSI

- MSI Closed in 2002:
- Given highest ICR ratings in all categories:
- Government increased attention to S&T and Innovation Policy as a result of the Project;
- A larger, follow on program for Support to S&T Capacity approved;
- S&T Institutions strengthened, international linkages improved
Chile MSI: Impact on the S&T System

- Prior to the MSI, Chile produced 50 Ph.Ds per year domestically;
- New advanced training opportunities: 28 Ph.D positions, 5 post-docs, and 6 new M.Sc.; 6 foreign graduate students supported;
- Research productivity increased (publications and patents);
- International collaborations up by 50%;
- Monitoring, evaluation, and accountability increased;
- Higher confidence in transparent, merit-based selection processes reported
Uganda: The MSI in an IDA Context

- IDA Country with annual GDP per capita of US $300;
- 5% have access to electricity;
- Agriculture is 40% of GDP, employs over 70% of the labor force;
- Poor health and disease are the top reported cause of poverty;
Uganda: Progress in Key Related Areas

- A decade of macro-economic stability
- HIV incidence down to 6% from high of 15%
- Overall policy coherence high
- Commitment to reform of higher education over the past three years
- Decentralization creating need for technical skills for service delivery outside central government
The MSI Process in Uganda: Focus on Sector-wide Coherence

- Pre-university science education
- Promotion of research in new universities, outside of the capital
- Coherence with health, agriculture, environment policies
- Building on the gains at Makerere
- Not only research focused: engineering and strengthening undergraduate departments key
- NETF providing critical support for a participatory diagnosis of the state of the sector
Expanding the MSI

- In Africa: Cameroon, Tanzania talks
- South Asia: Bangladesh
- Eastern Europe/Central Asia: Kazakhstan, Russia, and Latvia
- Joining forces with capacity building efforts from the Inter-Academy Council
Thank You

Additional information available in
The Millennium Science Initiative
Status Report