

**Challenges In International Science:
Effective, Innovative Collaborations with
Developing Countries**

2004 AAAS Annual Meeting
Seattle

The Millennium Science Initiative

Phillip A. Griffiths
Institute for Advanced Study

February 13, 2004

The Millennium Science Initiative

- Objective: Strengthen S&T capacity and its uses in developing countries
- Instrument: Form partnerships between the scientific communities of developing countries and aid organizations (World Bank, regional development banks, foundations, others)

Question: Given competing demands for resources, why build S&T capacity?

Data developed by economists

- General: In the aggregate, GDP growth proportionate to % of a country's budget spent on S&T/R&D
- Specific: William Easterly, former WB economist:
 - Since World War II, donors have spent nearly \$1 trillion
 - No dominant aid strategy has worked consistently (capital investment, population control, adjustment lending, debt forgiveness, educational investment)
 - Only factor consistently associated with economic progress: technical progress/knowledge (Solow, 1957)

Data from economists (cont'd)

- Evenson's 2x2 matrix

Innovation capacity

Tech transfer capacity

.2	.3	.5
.6	.9	1.7
.9	1.4	2.3

(Numbers are indicators of percentage of GDP growth.)

Additional support for thesis

- RAND study: “S&T Are Critical to Economic Growth”
 - S&T capacity gap linked to development gap
 - Developing countries need S&T capacity to sustain pursuit of innovation and development goals
- InterAcademy Council report, “A Strategy for Building Worldwide Capacities in Science and Technology”
 - Recommends strengthening excellence in S&T capacity in selected institutions in developing countries

Millennium Science Initiative (1)

- Instrument for building capacity
- Central themes
 - Partnership
 - ‘Policy by doing’
- Question: Why not strengthen overall science programs at selected universities and research institutes?
- Answer: A major undertaking under present conditions. Instead, choose key loci—centers within or related to universities

Millennium Science Initiative (2)

- Central program features
 - Programs selected competitively
 - Build capacity through integrated research & training programs
 - Build linkages: To each other, universities, governments, productive sector, K-12 education
 - Build capacity to respond to modern science: problem-driven, multidisciplinary, collaborative

MSI chronology

- Santiago convocation
- First initiative in Chile, 1999; then Mexico, Brazil
- Early discussions in Vietnam, Argentina, South Africa
- Now being implemented in Africa

MSI in Africa: A key study

- Requested by JDW; a work in progress
- Model: Bottom up -- from scientific community, with input from outside
- Africa Biotechnology, Bioinformatics, Natural Products MSI
 - Regional collaboration: Uganda, Cameroon, Botswana, Namibia
 - Biotechnology, bioinformatics
 - Applications across health care and agriculture
- Africa Mathematics MSI
 - Regional (5 centers)
 - Ongoing planning group
 - Education; applications

Global Science Corps: Extending impact of MSI

- New initiative to place scientists from developed world in MSI Institutes or equivalents
- Benefits for receiving institution:
Collaborative research, training in leading-edge science
- Benefits for GSC Fellows: collaborative research, access to clinical and biological materials, chance to address urgent local challenges such as HIV/AIDS, malaria, food security

Effectiveness and impact

- Excellence through quality control
- Selection and evaluation by national and international scientists
- Focus resources selectively

Four essential steps

- Involve scientific community in design and implementation
- Scientists are willing to learn from development professionals
- Integrate S&T into national budget
- Hard work on the ground

Conclusions

- Policy studies have been done
- Translate policy into action
- Successful models:
 - Small, even individual efforts in partnership with local scientific leadership
 - Effective communication with the relevant government ministries
 - The challenging and rewarding task of following their example.