

Building Science, Technology and Innovation Capacity for Poverty Reduction, Wealth Creation, and Sustainable Development

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From Action Plans to Action

- Vision 2020
- Government Science and Technology Strategy
- Education Sector Review
- NEPAD S&T Action Plan
- EDPRS

Define the vision and broad strategic objectives

Next Step – specific programs and policies to convert policies into action plans and programs that can be financed and implemented by the Government, World Bank, the private sector, and donors



Questions

- What is Rwanda's current capacity?
- What capacity does Rwanda need to:
 - Reduce poverty and improve living standards for people in rural villages
 - Generate wealth and diversify the economy
- How do you build this capacity?
- Who does/should do capacity building?
- What programs can build capacity?



Reducing Poverty and Improving Living Standards

- Needs assessment and action plan – what does Rwanda have, what does Rwanda need, and how can Rwanda build capacity for:
 - Agriculture Productivity through Research and Extension
 - Food Processing
 - Biofuels and Biogas
 - Geothermal Energy for Electricity Generation
 - Appropriate Technology to deliver clean water and decentralized energy production to rural villages
 - Vocational and Technical Education and Training



Adding Value to Natural Resource Exports

- Generating wealth and diversifying the economy via:
 - Coffee
 - Silk
 - Horticulture (flowers, vegetables, fruits)
 - Pyrethrum
 - Herbs and Essential Oil
 - Institute for value chain management



Starting Point

- Per capita income of \$260/yr or \$0.71/day
- Must rise by 50% just to reach \$1/day
- No sustainable poverty reduction or sustainable social programs without generating additional wealth
- Rwanda must focus on low volume, high value, high quality production
 - Quality at every stage of the value chain

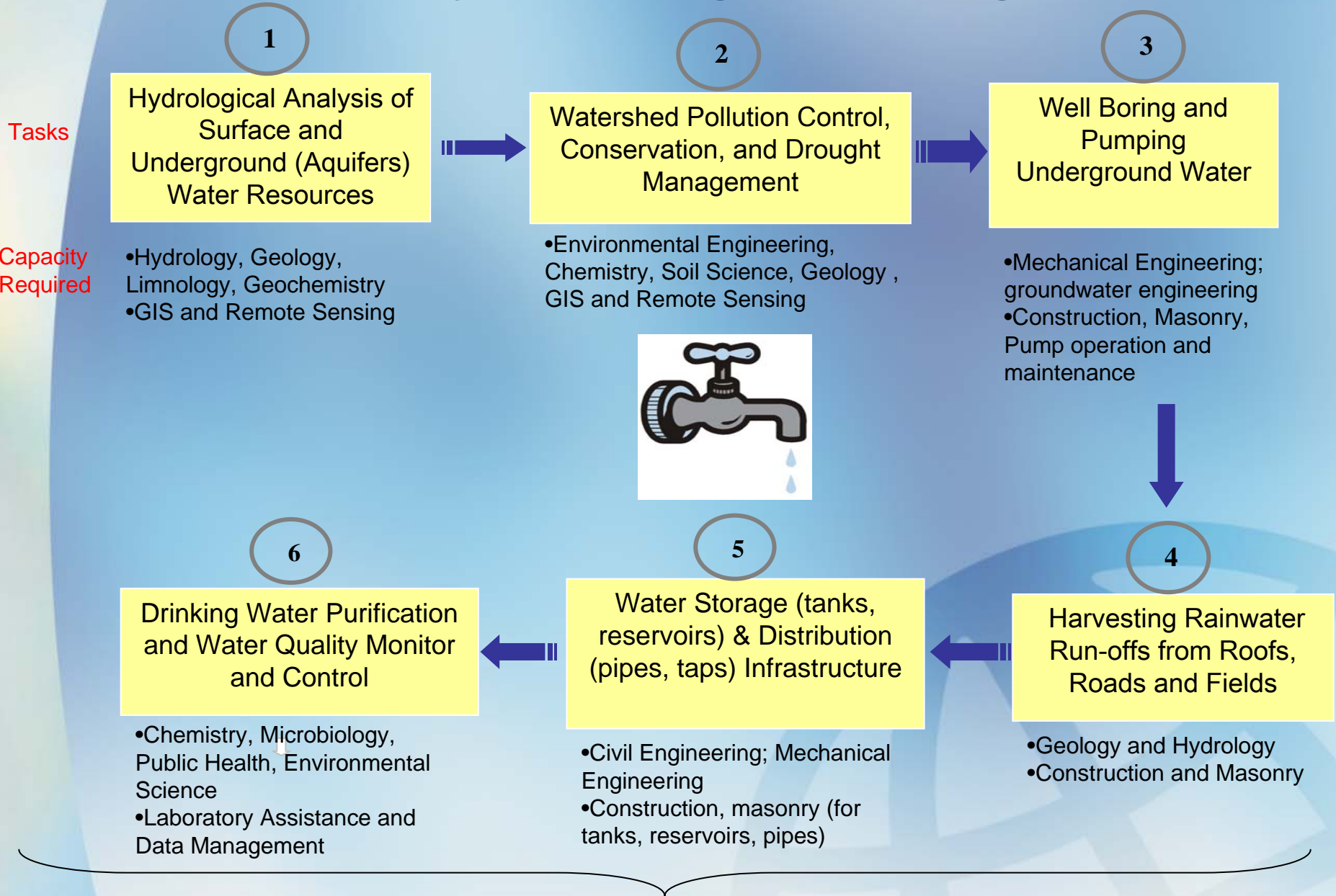


Challenges

- Find foreign, regional or local markets for Rwanda's premium quality, high value products
- Use S&T to boost production, productivity, and quality
- Develop public-private partnerships
- Generate cash income for subsistence farmers
- Energize village economies and local growth
- Start with market demand and reverse engineer the process to determine required inputs and capacity building programs



STI Capacity for Delivering Clean Drinking Water



Governance
Institution Building and Administrative Capacity

STI Capacity Building: A Cross-Cutting Perspective

Sector/Ministry

Tasks

Capacity Required

Environment and Natural Resources
(Environment Ministry/S&T Ministry)

Hydrological Analysis of Surface and Underground Water

Hydrology, Geology, Limnology, Geochemistry
GIS and Remote Sensing

Watershed Pollution Control and Conservation

Environmental Engineering, Chemistry, Soil Science, Geology, GIS and Remote Sensing

Infrastructure, Water
(Infrastructure Ministry, Water Ministry, Labor Ministry)

Well Boring and Pumping Underground Water

groundwater engineering, Construction, Masonry, Pump operation and maintenance

Rural Development
(Ministry of Rural Affairs)

Harvesting Rainwater Run-offs from Roofs and Fields

Geology and Hydrology
Construction and Masonry

Infrastructure, Water
(Infrastructure Ministry, Water Ministry, Labor Ministry)

Water Storage & Distribution Infrastructure

Civil Engineering; Mechanical Engineering
Construction, masonry (for tanks, reservoirs, pipes)

Public Health
(Health Ministry)

Water Purification and Water Quality Control

Chemistry, Microbiology, Public Health, Environmental Science, Laboratory Assistance

Investment and Business Climate
Administrative Reforms



STI Capacity for Silk Production and Competitiveness

Sector

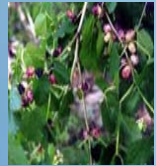
Tasks

Capacity Required

Agriculture

Cultivating high quality, disease-free mulberry crop

Agriculture Science and Agronomy: Crop Variety Improvement, Mulberry Pest Management, Soil Chemistry



Rural Development

Rearing disease-free, high quality silkworms

Sericulture Techniques: Drying, cooking, reeling, testing and grading cocoons

Reeling silk yarn from cocoon; Weaving yarn into raw silk

Sericulture Techniques: Silkworm Strains Management, Production of Quality Silkworm Eggs, testing and grading raw silk

Industry and Commerce

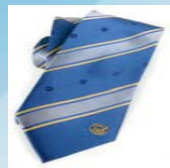
Designing/Manufacturing Silk Garments and Made-Ups

Textile Engineering, Garment Designing, Factory Operation and Maintenance

Trade and Exports

Meeting Market Demands and Standards of Quality and Style

Market Research, Quality Testing and Maintenance



Investment and Business Climate
Private Sector Reforms



World Bank Science & Technology Program

- The Science and Technology program was established to enable the Bank to develop a coordinated institutional response to the demand from clients for better use of S&T to alleviate poverty and contribute to economic growth
- What are the Questions?
 - How can a poor, resource-scarce country break the low-skills, low-quality, low-income cycle by building education, science, technology and innovation capacity?
 - Is it possible to extend S&T skills to entrepreneurs, workers and job-seekers outside of the formal education system? What role does informal and formal technical and vocational training (such as on-the-job training), play in all this?
 - How did the Bank tackle these problems when it was building STI capacity in Korea, China, and India in the 1970s and 1980s and what differences, if any, are there between earlier and more recent World Bank operational approaches?



The Quest for Answers

- Global Forum: Building STI Capacity for Sustainable Growth and Poverty Reduction
- Dates and Location:
 - When: February 13-15, 2007
 - Where: Preston Auditorium
- Bank doesn't have the answers, but we do have convening power, capacity to operationalize results, work with donors and private sector and government officials



Global Forum Participants

- World Bank, in cooperation with:
 - IDB, CIDA, UNESCO, UNCTAD, DFID, GRA, African Union
- Speakers:
 - Thoughtful doers from government, industry, NGOs
 - They will present STI capacity building case studies in which they were directly involved, to help Bank staff:
 - Learn from lessons of experience – what did you do, how did you do it, what would you do differently?
 - Develop new and improved operational approaches for building STI capacity grounded in successful lessons of experience
- Participants
 - Bank and Donor staff
 - Government policy makers and program managers
 - Industry representatives
 - NGOs, foundations, and think tanks dealing with STI capacity building



Global Forum: Clusters of Issues

- **Reducing poverty and achieving the MDGs: the role of STI capacity building**
- **Adding value to natural resource industries through STI capacity building**
- **Latecomer strategies for catching up -- linkage, leverage, learning, and STI capacity building**
- **The role of R&D in the development process**



THANK YOU

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