Second Conference on Biotechnology for Asian Development

Regional Cooperation for Ensuring Access and Capacity Building

Organized by

RIS
Research and Information System for the Non-Aligned and Other Developing Countries

in collaboration with

CII
Confederation of Indian Industry

IUCN
Regional Biodiversity Programme-Asia

with Support from

UNESCO
United Nations Educational, Scientific and Cultural Organization, Paris

Government of India, New Delhi

7-8 April 2004 at India Habitat Centre, New Delhi
Policy and Development of Biotechnology: Bangladesh Perspective

N. Choudhury
Bangladesh Academy of Sciences
WCS Recommendation

National policies should be adopted that imply consistent and long term support to S&T, in order to ensure strengthening of human resource base, establishment of scientific institutions, improve and upgrading of science education, integration of science into national culture, development of infrastructure and promotion of technology and innovation capacities.
The broad recommendations in the policy document did not have the adequate analytical framework or implementation strategy for addressing the nature of problems faced by the S&T sector and the recommendations were not based on expenditure, benefits constraints etc. Science and technology enjoyed rhetorical support from all the successive governments. There were encouraging utterances for S&T development from time to time from political leaders but there were little or no follow up actions to match the words.
Major challenges for developing countries

- Capital intensiveness
- Specialized laboratory structure
- Commercialisation issues
- Private sector shyness
- Biosafety issues
- Bioethical issues
Genetic Engineering Products

- Transgenic Plants
- Food Ingredients
- Starter cultures
- Saccharomyces cerevisiae
- Peptide growth hormones
- Transgenic Animals
- Antisense Technology
- Cancer Imaging Agents
- Recombinant Dairy Products
- Autoimmune Therapeutics

- Immunoassays for Pesticide Residue Tests
- Diabetes Therapy
- New Products of Promise for Chicken Industry
- Growth/Healing Proteins
- Hazardous Waste Treatment
- Human Genome
- Golden Rice
- Biofarming
New Products Marketed

- Tissue Plasminogen activator (t-PA):
- Erythropoietin (EPO): Used for cancer.
- Interleukin-2 (IL-2): Used for cancer.
- Monoclonal antibodies for detecting and treating Cancer Cells.
- Protein engineering
- Monoclonal antibodies against septic shock
- AIDS treatment
- Genetically engineered bacteria for agriculture
- Recombinant products for health
- Broadening goals of plant genetic engineers
Advancements of Industrial biotechnology

- Protein Engineering
- Food Ingredients
- Starter Cultures for bakery Products
- Peptide growth Hormones
- Improvement of Auditioned quality
- Cancer Imaging agents
- Recombinant Dairy Products
- Autoimmune therapeutics
- Growth / Healing Protein
Some important developments of human drugs

- Human Insulin
- Human growth Hormone
- Interferon
- Inter Ieukins
- Tissue Plasmiagen activators.
- Hepatitis B vaccine
- Blood factor VIII: C
- Monoclonal antibodies
Present Status of Biotechnology in Bangladesh

- Plant Biotechnology
- Animal Biotechnology & Aquaculture
- Insect Biotechnology
- Industrial Biotechnology
- Bioenergy and Bioconversion Technology
- Environmental Biotechnology
- Genetic Engineering
R&D Priorities For Biotechnology And Genetic Engineering

- Health sector
- Industry Sector
- Agriculture Sector
- Energy sector
- Environment sector
- Manufacturing/Bioprocessing
- Marine Biotechnology and Aquaculture
National Institute of Biotechnology

- Estimated cost: 2768.24 lakh Taka (Revised)
- Total Area of Institute Building: 3700 sq. m.
- Total Floor space of the Laboratories: 2250 sq. m.
- No. Of Laboratory: 6
- Total No. Of Scientists to work: 100
- Expected year of completion: June 2004.
Proposed Laboratories / Divisions

- DNA Laboratory
- Plant Biotechnology
- Animal Biotechnology
- Fish Biotechnology
- Fermentation and Bioprocessing
- Bio-energy and Fertilization
Bio-safety guidelines

- Procedures and guidelines on the introduction, movement, and field release of regulated materials.
- Physico-chemical and biological containment procedures and facilities.
- Guidelines for classification of microorganisms according to their risk assessment.
Bio-safety guidelines (Cont.)

- Good laboratory Practices.
- Good Industrial large-scale practice.
- List of organisms according to different risk groups.
- The Universal Biohazard sign.
- Framework for risk assessment.
- Biosafety Committees.
Biotechnology Opportunities and Challenges

- Capital intensiveness
- Specialized laboratory structure
- Commercialisation issues
- Private sector shyness
- Biosafety issues
- Bioethical issues
National Capacity Building

- Infrastructure development
- Manpower development
- Equipments
- Fine chemicals
Infrastructure development

- Laboratory building
- Ancillary facilities
- Specialized laboratories etc.
Manpower development

Specialized expertise in the field of

- Molecular biology
- Genetic Engineering
- Protein Chemistry
- Chemical Engineering etc.
Equipments

- DNA synthesizers
- Protein Sequencers
- High-speed ultracentrifuge
- Pilot plant equipment for plant technology work etc.
Fine chemicals

A regular supply of

- costly chemicals
- enzymes
- radio labelled compounds
A 20-year perspective plan

- Manpower development
- Laboratory infrastructure development
- Building centre for excellence
- Identification of priority Research areas like
  - agriculture biotechnology
  - healthcare,
  - industrial biotechnology
  - bio-energy
  - bioremediation etc.
Related Issues

- Biosafety and bioethics
- Technology transfer and IPR
- Biodiversity
- Public awareness
The End

Thank you