

Fourth Asian Conference on Biotechnology and Development

12-13 February 2009

Kathmandu, Nepal

Conference Report

The Fourth Asian Conference on Biotechnology and Development, organised by RIS in collaboration with Nepal Agriculture Research Council (NARC) attracted about 90 participants from 19 countries and 7 international organisations. The Conference was supported by the UNESCO. This Conference was an effort to collectively explore how best Asia and other developing countries may strategise for optimum returns on their technological R&D investments. It was a part of the RIS initiative launched in collaboration with UNESCO and with the support from many other national agencies.

The first two meetings were organised in Delhi in February 2002 and in March 2004 while the third meeting was in Manila. During the Third Asian Conference on Biotechnology and Development at Manila on November 9-10, 2006, it was realized that Asian countries should launch an initiative to evolve an analytical framework for policy makers in the area of biotechnology. The idea was to collect policy relevant statistics for analyzing trends in investment, public allocation, and availability of manpower and activities of private sector. It was felt that this should be done in the context of the overall socio-economic requirements of the region. Consequently, a new initiative was launched as the Asian Biotechnology, Innovation and Development Initiative (ABIDI) in January 2007 at New Delhi. At the Fourth Asian Conference, an effort was made to combine the two initiatives so that the most optimum results could be achieved. In the programme two separate sessions were organized for ABIDI. Since, similar needs are also being felt in Africa, three presentations

were scheduled for bringing in Africa into this discussion as well. There was one full presentation on African Science, Technology and Innovation Indicators (ASTII).

Inaugural Session

This session was chaired by Mr. Tek Bahadur Thapa, Secretary for Ministry of Agriculture and Cooperatives, Nepal.

In his Welcome address Dr. Sachin Chaturvedi, RIS highlighted the trends in biotechnology in Asia and pointed out the new opportunities and challenges ahead in collaboration particularly in light of the global meltdown. He also traced the history of the Conference and the initiatives supported by agencies including UNESCO and OECD in fostering collaborative research in biotechnology as well as in measuring the impacts of biotechnology through policy relevant indicators. The encouragement from the Government of India and the Philippines was also acknowledged.

In his Inaugural Address, H.E. Mr. Jayaprakash P. Gupta, Minister for Agriculture and Cooperatives, Government of Nepal stressed the importance of using biotechnology for sustainable agricultural development in the biodiversity rich but economically poor Nepal and hoped that the Conference would come out with some recommendations on issues like building a national research capacity in biotechnology.

The key note address delivered by Prof. Govindan Parayil, Vice-Rector, United Nations University and Director Institute of Advanced Studies (UNU-IAS), Japan provided a framework to understand the innovation systems and technological trajectories. In his presentation, Prof. Parayil gave an excellent description of the growth of biotechnology and the forces and factors that enabled the biotechnology revolution. Speaking from an innovation systems perspective he stressed the need to understand the changes in the innovation dynamics and described the new dynamics in innovation and the implications for developing countries. He underscored the need for more South-South sharing of knowledge and development of Southern System of innovation. Blending philosophical perspectives with insights from different theoretical paradigms and illustrating the current issues with examples from Green Revolution and Gene Revolution, his talk opened up avenues to think about and explore South-South collaboration in the context of the current global crisis.

The vote of thanks was proposed by Prof. Parashuram Lal Karna, Executive Director, Nepal Agricultural Research Council (NARC), Kathmandu.

Technical Session I: Mechanisms, Modalities and Partners for Cooperation in Asia

The first technical session focused on, “Mechanisms, Modalities and Partners for Cooperation in Asia”. This session was chaired by Mr. Umesh P. Mainali, Secretary, Ministry of Environment, Science & Technology, Government of Nepal, Kathmandu.

Starting the panel discussion, Dr. S. R. Rao, Adviser Department of Biotechnology, Government of India traced the changes in the plans, foci and strategies in the biotech sector in Asia and highlighted the progress made so far. He gave examples like sharing of Rice Genome Sequencing, setting up of new institutions and initiatives supported by UNESCO, etc. and pointed out that biotech development in Asia has come a long way since the mid 1980s and the scope for collaboration and sharing is now expanding into new areas. Emphasizing the need for greater collaboration he discussed the options and modalities in collaboration that should be taken into account. While cautioning against the limitations and potential pitfalls in collaboration, he listed the options for future work in this area. Dr. Rao further identified key challenges being faced for expanding cooperation among Asian countries. He identified capacity and resource differences, lack of innovative mechanisms, tremendous procedural requirements as some of the major impediments. He suggested developing model MoUs and mapping stories so as to identify key drivers for successful collaborations. He further suggested having voluntary actions as a prime mover for advancing south-south cooperation.

Prof. Huanming Yang, President, Beijing Genomics Institute (BGI), China spoke on the Human Genome Sequencing and highlighted the importance of the Human Genome Sequencing for progress in Genomics. He gave facts and figures to drive home the point that sequencing is no longer unaffordable and the fall in costs of sequencing and availability of facilities in institutes like BGI opens up new opportunities in sequencing and for utilising the knowledge gained from that for solving practical problems in health and agriculture. He gave examples of the landmarks in sequencing efforts and the new discoveries that are shaping genomics and the life sciences of tomorrow. He was of the opinion that through working together we could do more and far better. He offered the support of BGI in this endeavour. He further suggested having mutual trust and friendship for expanding cooperation in Asia, which may begin with the setting up of platforms for transferring knowledge and technology.

Dr. Gerard Barry, Golden Rice Network Coordinator, International Rice Research Institute (IRRI), The Philippines spoke about the Golden Rice and the networking and collaborative efforts in making it a reality. He discussed the support offered by various agencies, donors and governments to the Golden Rice project and the lessons from the project for successful implementation of a collaborative project. He cautioned against factors like donor fatigue, and stressed the need to draw upon the skills and capabilities of various institutions in actualizing the potential of Golden Rice. He gave details of successful research endeavours with Golden Rice Research in Bangladesh, India, China and the Philippines.

Dr. Karim M. Mareida, Professor, Michigan State University, USA spoke about the role of MSU in fostering collaborations in biotechnology in Asia and shared the experiences of MSU in capacity building, technical assistance, enabling networking and linking. He explored the potential for more such work in the future in Asia and identified key areas including human resource development. Prof. Mareida emphasised the need for south-south cooperation, particularly in educational programmes, where countries with similar experience may share their knowledge with fellow developing countries. He explained the major shift in approach from Land Grant to the Global Grant System.

Technical Session II: Asian Biotechnology, Innovation and Development Initiative

The second technical session focused on “Asian Biotechnology, Innovation and Development Initiative”. This session was chaired by Prof. Govindan Parayil, Vice-Rector, United Nations University and Director, UNU – Institute of Advanced Studies, Japan

Ms. Brigitte Van Beuzekom, OECD, Paris spoke about the need for collecting and analyzing statistics and information for assessing the impacts of biotechnology and developmental implications of investments, innovations and trends in biotechnology. Lack of agreed definitions and differences in methodologies in collecting and analyzing statistics has been an issue in comparing and using the statistics from various sources. Beuzekom explained the OECD’s work on biotechnology indicators. She gave an overview of the work being done at various European countries in cooperation with OECD.

Dr. Ahmed Fahmi, Life Science Division, UNESCO, New Delhi spoke about UNESCO’s initiatives on biotechnology in Africa. He gave examples

of the UNESCO supported institutions in the biotechnology sector and explained how they fit well into the UNESCO work programme on biotechnology in Africa. He stressed that UNESCO-supported initiatives in Africa cut across regions and UNESCO actively promotes capacity building and networking and extends the much needed support to basic sciences also. He explained three flagship programmes of UNESCO, viz. capacity building in S&T and innovation policy; enhancing science and technology education and the African virtual campus. He also explained UNESCO's contribution to African Science and Technology Indicators and the role of UNESCO's PSD and Institute of Statistics.

Dr. Miltos Ladikas, International Development Officer, Centre for Professional Ethics, University of Central Lancashire, England in his presentation described the current status of biotechnology in Europe. Given the mixed response to biotechnology in Europe he talked about the policy challenges and cautioned against the assumption that stakeholders would in any case accept biotechnology. He gave a SWOT analysis of the biotechnology sector in Europe and explored the future options.

Prof. Aggrey John Douglas Ambali, Director, African Biosciences Initiative (ABI) and NEPAD S&T Adviser, South Africa spoke in detail of the various efforts in Africa in building up national level, and regional level initiatives and how these dovetailed into Africa's Science and Technology Consolidated Plan of Action (CPA) was adopted by the African Union Summit of Heads of State and Government in 2006. At the continent level, this is coordinated by the NEPAD Secretariat while at the regional level, there are five regional economic communities (RECs). At the national level, the respective national governments take a lead. The key focus is on three issues, viz. biotechnology, biodiversity and the indigenous knowledge system. He also explained the working of African Biosafety Network of Expertise (ABNE) and African Science, Technology and Innovation Indicators (ASTII) Initiative. At the ASTII, 19 African countries are participating in the first round of national surveys. The first mode of ABNE is established in Burkina Faso. He described the progress achieved so far in Africa in both capacity building and in support of basic research and training. He talked about the work being done on indicators and the need for collaboration with Asia. He also emphasised on establishing stronger ties between Africa and Asia for analysing the bioscience landscape in Africa and Asia.

Technical Session III: Asian Biotechnology, Innovation and Development Initiative (ABIDI)

The third technical session focused on “Asian Biotechnology, Innovation and Development Initiative (ABIDI)” with a focus on member countries in Asia. This session was chaired by Dr. S. R. Rao, Adviser, DBT and was co-chaired by Professor Dayananda Bjracharya, Former Vice-Chancellor, Nepal Academy of Science and Technology (NAST), Nepal.

The third session was like a stock taking session on the state of biotechnology in Asia. The detailed presentations from various countries like China, Philippines, Singapore and Thailand enabled the participants to understand and appreciate the progress so far and to think about the challenges ahead. The presentations highlighted that Asia has indeed come a long way in biotechnology development in the last decade and biotechnology is rapidly developing across sectors although there are problems and hiccups. The presentations also underscored the sheer diversity in the strategies and approaches to biotechnology and the challenges ahead. For example, Prof. Phua Kai Hong, Associate Professor, National University of Singapore chose medical biotechnology as the focus and how the strategy enabled Singapore to become a world class leader in that sector. This session also had a presentation by Prof. Li Zhe from the China Academy for Science and Technology for Development (CASTED) and Dr. Pichet Itkor, President, Thai Society of Biotechnology, Thailand. Dr. Li Zhe in his presentation explained the biotechnology definition followed by China and presented a profile of various activities in the S&T sector and China’s plans for the Eleventh Five Year period (2006-2010). Dr. Virginia G. Novenario-Enriquez explained the approach of Philippines and its Department of Science and Technology (DOST) for collecting biotechnology statistics. Philippines has adopted an ‘OECD plus’ definition of biotechnology so as to cover tissue culture and biofermentation related activities. DOST have identified six priority areas for funding in the Philippines.

The second session of ABIDI was chaired by Ms. Brigitte Van Beuzekom, OECD, Paris and co-chaired by Dr. D. B. Shakya, AEC, Federation of Nepal Chamber of Commerce and Industries (FNCCI). In this session, there were presentations from South Korea, Sri Lanka, Bangladesh and India. Despite controversies and other problems, Prof. Dongsoon Lim, Dong-EU University, South Korea outlined the remarkable progress and the emphasis on some specific areas has catapulted South Korea into a top ranking country with globally competitive biotechnology sector in some

applications. Dr. Giriagama provided an overview of biotechnology activities in Sri Lanka while Dr. Ferdousi Begum, Executive Director, Development of Biotechnology & Environmental Conservation Centre of Bangladesh explained various measures taken by Bangladesh in promoting biotechnology. Dr. S. R. Rao gave overview of Indian policy.

Technical Session IV: National Biotechnology Policies and Realism

The fourth technical session focused on “National Biotechnology Policies and Realism”. This session was chaired by Prof. Dilip Subba, Secretary, Nepal Academy of Science and Technology (NAST), Nepal and co-chaired by Prof. Dongsoo Lim, Dong-EUI University, South Korea

Dr. Benigno D. Peczon, Biotechnology Cluster Leader, Philippine Council for Agriculture, Natural Resources and Forestry Research & Development (PCARRD), Philippines spoke on the experiences in Philippines on formulating and implementing a biotechnology policy. In his presentation he gave examples of successful implementation as well as the obstacles that were faced in implementing biotechnology policy.

Dr. Kiran K. Sharma from International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad gave examples of agri-technology transfer initiatives at ICRISAT. He spoke about the initiatives in ICRISAT including the public-private partnerships and other arrangements in technology development and transfer. He stressed the need to find technologies that increase the yield and create opportunities for value creation. Further he explained how ICRISAT is trying to develop and transfer such technologies to private sector.

Professor Diran Makinde, Director, West African Biosciences Network (WABNet), Senegal spoke about the African Biosafety Network of Expertise (ABNE). He spoke on challenges in Africa on biotechnology and biosafety. Highlighting the contentious nature of biosafety and the need for expertise in this, he discussed the founding and functioning of African Biosafety Network of Experts and its current activities.

Technical Session V: Acquisition, Transfer, Adaption, Commercialisation and Biotechnology Management

The fifth technical session focused on “Acquisition, Transfer, Adaption, Commercialisation and Biotechnology Management”. This session was chaired by Dr. Karim M. Maredia, Professor, Michigan State University, USA and was co-chaired by Prof. Vishwanath P. Agrawal, Hon’ ble Member

of Constitution Assembly, Nepal and Academician, Nepal Academy of Science and Technology (NAST), Nepal.

In this session Dr. Decio M. Ripandelli, Secretary ICGEB Board of Governors, International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste, Italy spoke at length about the goals and objectives of ICGEB and how it is fostering research in biotechnology and in biosafety issues. ICGEB is a truly global institute with 3 centers and works with many institutions in many countries. ICGEB takes neither a pro GMO nor an anti-GMO stance and enables countries to acquire biosafety through training and capacity building. He also spoke about the new priorities identified by ICGEB and the new initiatives in collaboration including the ICGEB-TWAS joint programme in plant biotechnology.

Prof. Sudip K. Rakshit, Vice President Research, Asian Institute of Technology, Bangkok, Thailand spoke about Asian Institute of Technology (AIT) and highlighted its research and activities in many disciplines. He spoke about the need for sustainable development in the context of climate change and challenges in future on account of food security and threats like water scarcity. He discussed some of the current developments in biotechnology in Asia and gave an overview of biotechnology in Southeast Asian countries. He also dwelt on the two projects (Enabling Bio-Innovation for Poverty Alleviation in Asia and Modern Biotechnology Management Courses) which are based in AIT.

Dr. Cholani K. Weebadde, Assistant Professor, Michigan State University, USA provided a case study on Sri Lanka and described the growth and potential of biotechnology in that island state. She noted that not much is done in animal biotechnology applications.

Technical Session VI: Development, R&D Capacity, Regulation in Nepal

This technical session focused exclusively on Nepal from the point of view of its R&D capacity and status of regulatory mechanism. This session was chaired by Dr. Nanda Joshi, MSU.

There were three technical presentations by the leading scientists from Nepal. These presentations gave a good understanding of the state of biotechnology in Nepal and the challenges and opportunities ahead. It became clear that biotechnology in Nepal could benefit from initiatives in capacity building and networking. The presentation by Dr. Hari P. Bimb, Head, Biotechnology Unit, Nepal Agricultural Research Council (NARC), Nepal was very informative. He described the rich biodiversity of Nepal

and highlighted the various research initiatives in biotechnology in plant biotechnology and animal biotechnology. He described the relevant policy frameworks including the Seed Policy and the Biosafety Guidelines.

Dr. Banshidhar Sharma, Department of Livestock Services, Government of Nepal in his presentation described the application of molecular biotechnology in veterinary sector in Nepal and suggested some measures for effective utilization of biotechnology in timely diagnosis and treatment. The joint presentation by S P Neopane, D Pariyar and N A Gorkhali, Nepal Agricultural Research Council (NARC) described the successful application of biotechnology in animal biotechnology in Nepal including in conservation and utilization of animal biodiversity. He mentioned the constraints and the gaps and stressed the potential of biotech in animal biotech in Nepal.

Dr. Kamalesh Adhikari, South Asia Watch on Trade, Economics & Environment (SAWTEE), Nepal gave an overview of global IPR regime, biodiversity conservation and nuances of the debate on access and benefit sharing.

Session on Future Action Plan

This session was moderated by Dr. S. R. Rao and had Dr. Sudip K. Rakshit, Dr. Ahmed Fahmi, Prof. Rohan Rajapakse, Ms. Brigitte Van Beuzekom and Dr. K. Ravi Srinivasan, RIS as panelists. Dr. Rakshit suggested to identify key themes to be covered in the next conference. His suggestion was to include bioprocessing technology and he also warned to be away from the dangers of controversial issues (like GM debate). Prof. Rohan Rajapakse emphasised on Sri Lanka being the next destination for the Asian conference series. Dr. Fahmi called for greater engagement of national governments with such initiatives which would make UNESCO working far more easier. Ms. Brigitte Van Beuzekom identified methodology as the key area for putting biotechnology statistics together especially if 'OECD Plus' definition is being worked out. In this context, she called for greater cooperation between Africa and Asia. Dr. Ravi Srinivasan called for having advance arrangement for information sharing through mechanisms like Google group, etc. and to have a catalogue on social issues so that over-killing from biotechnology can be minimised. Prof. Huanming categorically said that we must continue to collaborate. He also offered one fellowship to a scientist from Nepal, to work at BGI. Prof. Ambali suggested that the group should remain small but should be dynamic. He exhibited NEPAD's interest in close working with ABIDI, particularly in light

of ASTII. Dr. Virginia G. Novenario-Enriquez suggested that the next meeting must focus on how to jump-start biotech industry and how best platforms for cooperation may be established. Prof. Govindan Parayil suggested focusing on sustainability and biotechnology applications. He also reminded the need for more work on ABS, particularly in the light of COP-10 which would be hosted in Japan next year. Prof. Karim Maredia emphasised the need of having field visits while Dr. Banshidhar suggested getting small technologies transferred to developing countries. These technologies may be like SARS detection kits, etc. Dr. Cholani volunteered to be part of the working group and suggested involving young scientists in this exercise. Dr. Ben Peczon suggested to focus on climate change and environmental issues and came up with the idea that we must launch position paper series. Dr. Milto Ladikas was of the idea that ABIDI initiative should get linked with various EU programmes for development cooperation; for instance, DFID was recently criticised for not covering science for development in its development cooperation agenda. He suggested that more work is required on science technology policy aspects in Asia.

To sum up, this Conference on Biotechnology and Development affirmed the fact that biotechnology in Asia is entering in a new phase which offers immense scope for collaborative activities and capacity building. It was evident that countries could learn from each other and can do more and do well, if they work together. Although these countries are in different stages of development and deployment of biotechnology, it was obvious that biotechnology would have a bright future.

One of the ideas that were discussed in the Panel discussion was the formation of a Working Group or Coordinating committee to take the process further and facilitate more interaction and contribute to the forthcoming conference. Dr. Rao suggested that such a group should be the initiative of individuals with no formal position like President or affiliation in institutional capacity. Various views were expressed on this. Through the discussions it became clear that the informal working arrangements and networking will continue even in the absence of a formal structure although having a formal structure would be desirable.

The forthcoming conference in Colombo next year will be yet another opportunity to take stock, analyze and understand the growth and future direction of biotech in Asia perhaps to create a Working Group or a similar body to take the process further.