



Asian and Pacific Centre for Transfer of Technology



Expert Group Meeting on Strengthening Regional Cooperation in Healthcare Biotechnology and Biomedical Sector

22 March 2022 (Virtual)

A. Summary of discussions

- The Expert Group Meeting on Strengthening Regional Cooperation in Healthcare Biotechnology and Biomedical Sector, organized by APCTT, brought together 43 participants from 10 member States of Economic and Social Commission for Asia and the Pacific (ESCAP), namely Bangladesh, India, Indonesia, Kazakhstan, Malaysia, Nepal, Pakistan, Republic of Korea, Sri Lanka, and Thailand. The participants included APCTT's national focal points, biomedical experts on research and development (R&D) strategy and management, innovation policymakers and other relevant stakeholders nominated by the participating member States.
- The EGM provided a platform for member States to identify opportunities of collaboration and explore modalities to share their resources, expertise and experiences. The experts shared their knowledge, experience and good practices from across the region, and suggested enabling strategies and modalities to address the critical issues being faced by the member States through cross-border and regional cooperation.

Opening remarks

- Welcoming the delegates, Ms. Preeti Soni, Head of APCTT emphasized on significance of biotechnology in developing advanced healthcare solutions, particularly during the pandemic. She stressed on strengthening collaborations to facilitate transfer of new and innovative technologies and knowledge exchange in healthcare biotechnology and biomedical sector, especially in exploring new avenues of vaccine development and treatments of emerging diseases. This involves promoting an enabling environment including appropriate regulatory frameworks and policies, business models for investments and partnerships, and technical support to enhance capacities of stakeholders.

- Delivering the special remarks, Ms. Rupa Chanda, Director of Trade Investment and Innovation Division (TIID) of ESCAP highlighted the need for skilled human resources, adequate finance, regulations, R&D investment, process and product innovation, and localization of healthcare products for the Asia-Pacific region. She noted that global collaboration efforts and regional cooperation would be essential for ensuring equitable and affordable access to healthcare products and services.
- Dr. Jean-Louis Excler of International Vaccine Institute gave a keynote presentation, on strengthening healthcare biotechnology R&D facilities, enabling resources, good practices, and regional cooperation, by citing the example of International Vaccine Institute's (IVI) work related to vaccine development. IVI provides translational and support services to accelerate vaccine development – for instance development of COVID-19 vaccine. He highlighted the example of building the vaccine manufacturing capacity supported by IVI.
- Country representatives presented the needs and priorities to develop and/or strengthen their healthcare biotechnology infrastructure such as R&D institutions, laboratories, testing and maintenance facilities, and incubators for commercializing biotechnology innovations.
- The deliberations revealed interest among member States in many areas for potential collaboration. Modalities of gainful collaboration based on the potential opportunities elicited from countries will be explored further by member States through bilateral engagements as may be necessary.

B. Country needs and opportunities for collaboration

- The representative from **Bangladesh** highlighted the existing facilities of molecular diagnosis [next generation sequencing (NGS) based] to facilitate research and diagnostic support. The needs expressed with respect to healthcare biotechnology were as follows: (1) shortage of human resources in the healthcare biotechnology and biomedical sector, especially for data analysis of NGS-based bioinformatics, (2) requirement of support and training on bioinformatics, (3) requirement of a vaccine development facility with funding for Reverse Transcription Polymerase Chain Reaction (RT-PCR) vaccine and development of diagnostic kits, (4) technical backstopping for biotech incubators for innovations and entrepreneurship, and (5) funding support for establishing a central laboratory facility to undertake a range of innovative initiatives in biomedical sector.
- The representative from **India** expressed specific needs and opportunities in the following areas: (1) creation of cutting edge biotechnology solutions that are affordable, accessible and state-of-the-art to invent drugs and vaccines locally, (2) need to address common R&D problems and bring down the costs for public health purposes, (3) precision health, treatment of genetic disorders or gene editing, (4) the requirement of co-funding mechanism for projects with international cooperation through international cooperation division of the Department of Science and

Technology, Department of Biotechnology, and Department of Scientific and Industrial Research of the government of India for academia-industry research collaboration, (5) opportunity of access to data and expertise for large companies willing to invest in R&D, (6) the need to facilitate movement of human resources within the region on co-funded projects where countries pay their own share, and (7) establish research centres to implement projects on healthcare biotechnology and the biomedical sector.

- The representative from **Indonesia** shared experience in COVID-19 vaccine development which entailed establishing research infrastructure for health and biotechnology, though those facilities were not found to be adequate. It was indicated that the human resources to develop vaccine was inadequate and the cost of developing vaccines and establishing of lab facilities were high. There was a suggestion from Indonesia for establishing a regional biomedical research collaboration hub, which will work based on sharing of facilities, infrastructure and funding.
- The representative from **Kazakhstan** informed about the introduction of modern biotechnology in the healthcare system in the country. The following steps were mentioned for the development of biotechnology R&D that would lead to production of new biomedical drugs such as (1) implementation of an investment project to build a production facility for the manufacturing of medical diagnostic test systems that meets Good Manufacturing Practice (GMP) standards, (2) production of biomedical cell and tissue engineering drugs according to the GMP standards for regenerative medicine, and (3) creating a scientific centre for accelerated high-performance cell-culture based screening of new drugs using robotic systems.
- The representative from **Malaysia** expressed the country's goal of becoming self-sufficient in vaccine manufacturing and R&D within 10 years. The current need is to develop the capacity to produce local human vaccine. The country launched the National Vaccine Development Roadmap (NVDR) and transformation of Malaysia Genome and Vaccine Institute (MGVI) in November 2021, with the following objectives: (1) to develop a national roadmap that will enable stakeholders and government to understand the as-is scenario and the gaps within the vaccine industry, and (2) to formulate a strategic plan from a short term, mid-term and long term perspective to develop Malaysia's capability towards becoming a vaccine producing country. This strategy will involve initiatives in terms of governance, manufacturing strategy, clinical trials, human capital development, vaccine platforms for relevant types of vaccines, and a specific communication strategy with the key players concerned.
- The representative from **Nepal** highlighted the current needs for healthcare biotechnology such as establishment of research institutions and industries for production, advanced instrumentation for upscaling of research output to industry, skilled human resources, public-private-partnership and academia-industry

collaboration, simple and doable projects like ELISA Kit Developments (HIV, Hepatitis, infectious diseases etc.) and its scale up for national need, national budgetary allocation, bilateral and multilateral cooperation among countries and partnership with external donor partners , international technology transfer and outcome-based long-term research plan (at least 5 years duration) given the easy availability of reagents in Nepal. Needs were also expressed to establish medical biotechnology course for M.Sc./PhD and research laboratories with R&D focus, technical capacity and sustainable business models.

- The representative from **Pakistan** expressed financial constraints, due to which apex bodies or consortiums have not been able to adequately fund some of the mega projects like large scale vaccine production and/or to arrange any buy back guarantee to attract the private sector industrial partners. The representative highlighted the need for international collaborations to execute mega projects like large scale vaccine production for indigenous and global supply, drug discovery, establishment of genetic testing and provision of cost-effective diagnostic services for disease prevention, improved treatment strategies and precision medicine.
- The representative from **Sri Lanka**, expressed the country's needs as follows: (1) international exposure for biotech graduates, as the local curriculum is not upto industry standards for vaccine development, (2) research and sequencing facilities having WHO standardization for biotech services and requirement of scientists to work in such facilities, (4) incubator facilities for commercialization of bio-tech products, (5) prioritizing R&D and biotech innovations, and (6) conducive policies to facilitate a biotech ecosystem that will enable triple helix model of public-private-university collaboration for innovation-led economy and expand research and servicing facilities to meet the demands in the biomedical sector.
- The representative from the **Republic of Korea** discussed on building core facilities for digital transformation to promote interdisciplinary and creative research. The country brought out the innovation trends in future labs and core facilities in terms of open lab systems as the norm. Each lab delivers its own ideas while accessing various state of the art technologies developing various types of researchers such as staff scientists and research specialists. To overcome key challenges for advancement of core facilities, the following steps are proposed: (1) building "core facility networks" to provide "one-stop solution", (2) supporting excellent core researchers, (3) establishing an outpost for building a big data platform, (4) serving as a hub for open innovation and international cooperation, and (5) supporting the local development of research equipment.

The representative also discussed about the R&D funding system for innovative drug development by the Korea Drug Development Fund (KDDF). The fund reaches biotechnology and pharmaceutical companies, research and academic institutes in the Republic of Korea. KDDF provides research funds to biopharmaceutical researchers in

the Republic of Korea, with an annual budget of 120 million USD. KDDF expressed its openness for joint R&D program, to speed up and expedite the development of current KDDF'S top priority projects.

- The representative from **Thailand** Informed that the National Science and Technology Development Agency (NSTDA) of Thailand supports research and development, design and engineering, technology transfer, infrastructure development, and human resource development. During the COVID-19 pandemic, the agency came up with 25 innovations, including monitoring application and management software, protective equipment, diagnostic kits, vaccine and API (active pharmaceutical ingredients). In order to sustain the institute's activity, there is a focus on increasing capability and adapting new technologies for API development for the dose manufacturers and enable harmonized registration for API and finished products.

C. Suggested strategies for cross-border collaboration

The experts deliberated on strategies for regional/international collaboration to address the challenges and support countries of special needs in healthcare biotechnology area. Key recommendations are:

- Developing affordable, accessible and state-of-the art healthcare biotech products, particularly drugs and vaccines through collaborative efforts
- Identifying gaps in the vaccine ecosystems in countries and across the region and develop interventions to address the challenges
- Identifying common R&D problems and collaborative R&D strategy to bring down the costs of developing drugs and vaccines
- Establishing Centres for common facilities for collaborative research in healthcare biotechnology
- Developing and implementing co-funded projects by multiple partners across the region for cost reduction
- Facilitating movement human resources (i.e., domestic and cross-border) for knowledge exchange and experience sharing
- Providing enabling platforms for the industry to operate and participate in collaborative R&D with research institutes to accelerate commercialization of new drugs and vaccines
- Facilitating adequate representation of Asia-Pacific countries in the genome database to accelerate biotechnology research in the region
- Building core facilities networks in countries to provide on-stop solution for faster development of drugs and vaccines
- Developing strong international R&D cooperation programmes of mutual interest to countries in healthcare biotechnology through regional cooperation
- Building capacity of researchers and sharing of knowledge through international collaborative platforms like that of International Vaccine Institute (IVI)

- Establishing regional R&D and testing facilities / platforms with funding support and resources from various countries for equitable access and benefit-sharing across the region
- Facilitating healthcare biotechnology related data integration through regional cooperation while ensuring the data privacy, and sharing of critical data across the region to catalyze research for faster development of drugs and vaccines
- Cross-border sharing of resources – technical support and finance

Group Photo

