Frontier technologies and impact on Asian economies

New technologies can impact society tremendously. The adoption and diffusion of a frontier technology can create entirely new industries. However, a frontier technology can also mean the end of enterprises employing obsolete technologies, thereby causing job losses. Thus frontier technologies can change daily life significantly, sometimes beyond recognition.

Recognizing the need to understand frontier technologies and their impact more fully, the APO organized a study meeting in Seoul, Republic of Korea, 9–12 September, as a platform where member countries could share experiences and learn from each other about the various approaches, strategies, and best practices in adopting frontier technologies for greater competitiveness. "There is no one common definition of frontier technologies that satisfies all APO nations," said APO Secretariat Research & Planning Department Senior Program Officer Lee Kia Yoke, who attributes the different perspectives to different economic development stages. "However, there was a reasonable understanding at this meeting that frontier technologies allude to technologies that are new and advanced relative to what is prevailing in one's current landscape," added Lee.

The APO invited four eminent experts from the Republic of China, Japan, Republic of Korea, and Singapore to introduce the current status and trends of frontier technologies in their countries. Local Chief Facilitator Dr. Key-Hyup Kim, Seoul National University, cited frontier technologies as new growth engines for his country, and introduced R&D initiatives conducted by government research institutes (GRIs), universities, and the private sector. Dr. Kim stated that, "Korea's R&D efforts now focus on becoming an innovation leader rather than a fast follower, moving from 'catching-up with new products by copying' to 'creating front runners.'"

The other resource speakers and participants from the 10 countries presented actual examples of frontier technologies such as micro electromechanical systems, biotechnology applications, life science industries, etc., along with various R&D efforts for new technology development and industrial commercialization. Three sessions were allocated for group discussions that examined issues, strategies and processes, and key success factors in adopting frontier technologies. The discussions identified those key factors as consistent government policy, adequate human resources, the availability of science and technology organizations, R&D investment, and systems of national innovation, including culture. There were some differences between nations, depending on their prevailing level of technology. However, all agreed that more effective cooperation among APO members and fostering inter-GRI cooperation could represent the way forward. All the groups therefore recommended the APO's proactive involvement, particularly in spearheading member collaboration on common global issues such as energy and the environment to ensure future generations' survival on earth.