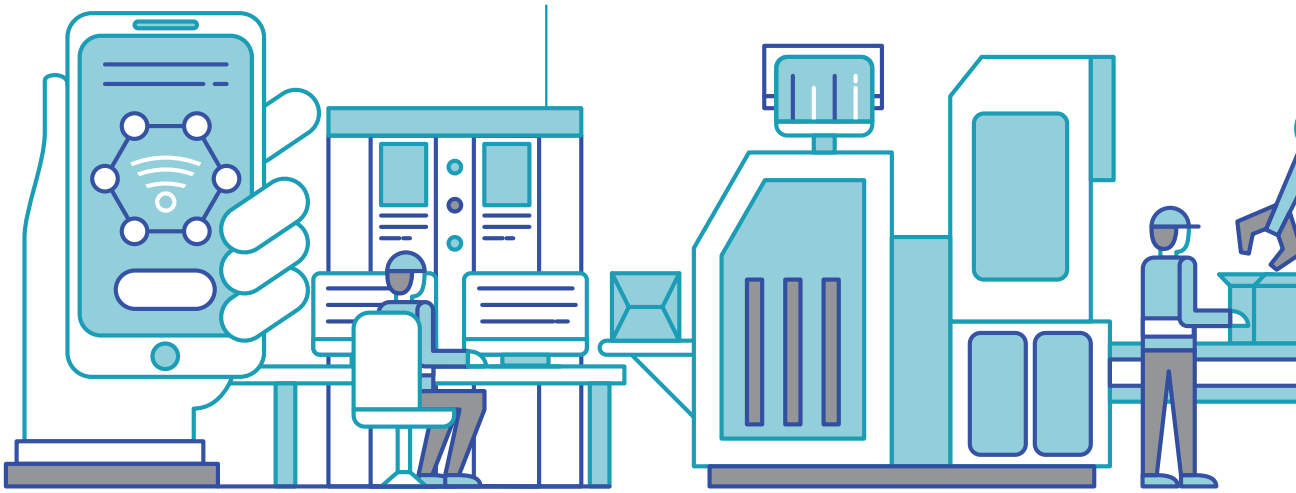
SMART INDUSTRY

Making industries smarter, more innovative, and more competitive by equipping them with the latest knowledge and techniques of Industry 4.0.



The manufacturing sector has been a major driving force of socioeconomic development in APO member countries, providing employment, developing human resources, fostering SMEs, and supporting exports, industrialization, and innovation. It is now evolving at an unprecedentedly rapid pace because of technological advances, the Internet, and more integrated value chains in the era of Industry 4.0.

APO members, which play critical roles in global supply chains, thus face great opportunities for higher productivity growth but also significant challenges resulting from widening technology and knowledge gaps and rising inequalities. The APO is attempting to prepare them for Industry 4.0 so that they can develop awareness, resilience, capabilities, and excellence at this critical turning point.

During 2017, one of the key focus areas of the Secretariat was making industries smarter, more innovative, and more competitive by equipping them with the latest knowledge and techniques of Industry 4.0, characterized by digitization and the interconnection of humans, machines, products, services, and value chains. Initiatives by the Secretariat during the year also involved upgrading technological capabilities and closing gaps while transforming the workforce. The ICT-led Fourth Industrial Revolution provides unique ways to level the playing field through leapfrogging to the front line of development with the benefits of increased productivity, reduced waste, and more sustainable patterns of production and consumption.

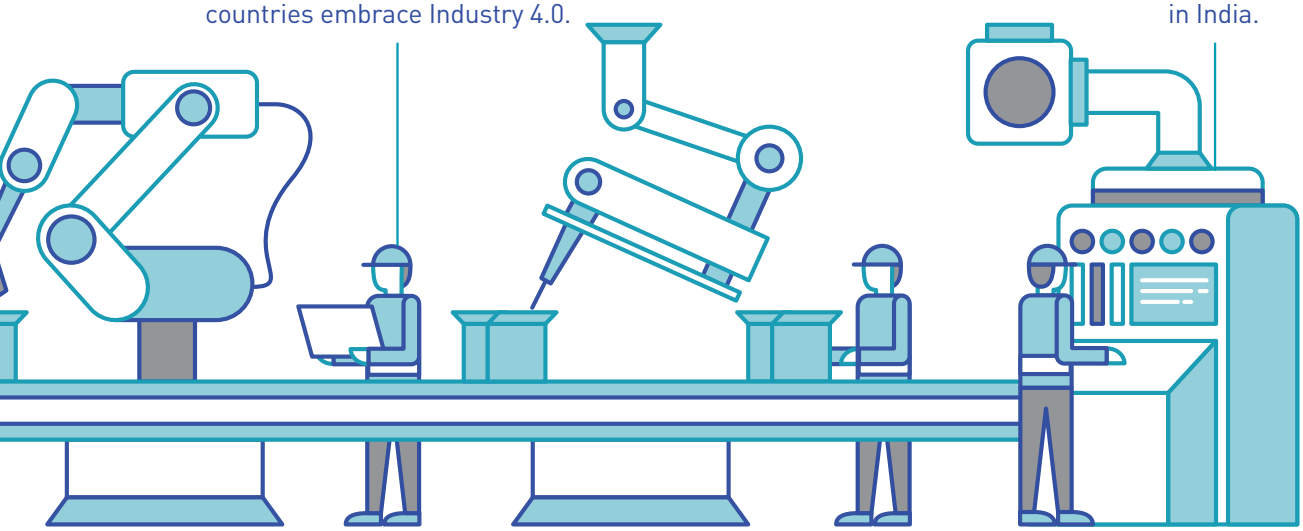
Driving Industry 4.0

With APO technical assistance, conferences on Industry 4.0 and new technologies were held in the ROC and Cambodia; customized expert services were provided to IR Iran and Thailand; a study mission on Industry 4.0 applications was conducted in Japan; and bilateral collaborations on Industry 4.0 policy study and benchmarking were organized in the ROK and Malaysia. The Secretariat also initiated research projects and workshops to assist all APO members to embrace Industry 4.0 through a step-by-step approach, for example, by developing a roadmap for Industry 4.0, evaluating the level of readiness, and providing hands-on experience in applying Industry 4.0 concepts and practices.

During the year, the NPC, India was designated as the Center of Excellence (COE) on

Initiated research projects and workshops to assist APO member countries embrace Industry 4.0.

Launched the Center of Excellence on Information Technology for Industry 4.0 in India.



Information Technology for Industry 4.0, which was launched in New Delhi in June. Through this COE, member countries joined forces with the NPC to conduct a workshop to develop a roadmap to reach the stage of Industry 4.0; a multicountry research project on digitization strategies for SMEs also commenced involving national experts from the ROC, India, Indonesia, Malaysia, and Vietnam. India's strengths in manufacturing and IT will be leveraged to disseminate the knowledge, strategies, and good practices of digitization, innovation, and entrepreneurship to all APO members, enabling them to pursue transformation and excellence in this revolution.

Excellence in Manufacturing

The Secretariat also worked during the year to enhance the resilience of SMEs, promote sustainable, environment-friendly productivity growth, and thus achieve sustainable development through multiple projects. Following the workshop on Material Flow Cost Accounting (MFCA) held in Dhaka in March 2017, a participant from Bangladesh proposed applying the concept and techniques to the leather sector in his country, a strategically important but traditionally highly polluting sector, with the objective of enhancing the value and productivity of the industry by reducing and making use of waste by-products. An MOU between the NPO of Bangladesh and SR Asia Bangladesh, an NGO dedicated to social responsibility and founded by APO alumni, was signed for collaboration on that project.

The NPO of Bangladesh also submitted a proposal for an APO demonstration company project, which was approved for implementation in ECM Footwear and Kushum Koli Footwear to localize the applications of MFCA. With the support of the APO expert, the NPO, and SR Asia, the two demonstration companies are expected to improve their manufacturing processes and waste management and disseminate their experience to other companies in Bangladesh to achieve sustainable leather production.

A participant from Trilogi Business Incubator, Indonesia, utilized the ideas and inspiration gained from the APO study mission on Innovation and Competitiveness in SMEs held in Seoul in June 2017 by initiating several activities to raise awareness of innovation and support Indonesian entrepreneurs, startups, and SMEs. His team published a book on incubation and innovation and promoted the importance of incubating potential startups in local media, including *Tech in*

Smart Industry



Driving the Fourth Industrial Revolution | **Excellence in Manufacturing** | **Energy Management and Efficiency**

Asia, *TeknoJurnal*, *JawaPos*, and *EduNews*. Incubation programs were offered for 20 new startups (up from nine from the previous year) targeting different phases of business development. In addition, he set up the creative hub Code Margonda in Depok, southern Jakarta, and collaborated with Hivos, a human development agency from the Netherlands, and the Bank of Indonesia to provide more incubation programs that support innovations in sustainable food, renewable energy, and financial technology.

With the assistance of the APO Technical Expert Service, the FTPI conducted a workshop on Industry 4.0 to familiarize Thai businesses and organizations with the essence of this new wave of industrialization. Following that workshop, Siriraj Hospital, the largest in Thailand, combined the learning with that from the APO study mission on Lean and Advanced Technology in Healthcare Services held in the USA in June 2017 and started its APO-sponsored demonstration company project on applying an integrated information system to healthcare services. This follow-up project is expected to improve healthcare information flows, hospital service quality, and the overall welfare of patients and medical service professionals.

Three Cambodian companies in food processing and chemical product manufacturing also started a quality improvement journey in 2017 with the assistance of the APO Development of Demonstration Companies Program. In close collaboration with the NPCC and an APO-assigned expert, they established quality management systems incorporating solutions for greater customer satisfaction, better product quality, and preparation for risks. After the year-long project, the three companies made additional efforts to meet the requirements of ISO 9001:2015 and all were certified. Some also went the extra mile to obtain HACCP and GMP certifications. With this successful experience, the NPCC is ready to disseminate the know-how developed from this project to other Cambodian businesses to enhance manufacturing capacity and quality.

Promoting Energy Management and Efficiency

The APO has been working to increase understanding of advanced energy technologies and promote energy management and efficiency. Under the Special Cash Grant Program on Energy Conservation funded by the Ministry of Economy, Trade and Industry of Japan, the APO has organized Development of Demonstration Companies on Energy Conservation projects to build the capacity for increased energy efficiency and conservation in Bangladesh, Mongolia, Nepal, Pakistan, and Sri Lanka since August 2015. The establishment of demonstration companies not only disseminates techniques for energy conservation to individual companies but also encourages similar efforts by SMEs and public- and private-sector organizations throughout the country so that the benefits can be shared nationwide.

The demonstration companies in Mongolia and Sri Lanka concluded their projects in February and April 2017, respectively. As a result, the three companies in Mongolia achieved an approximately 10% energy conservation rate; the demonstration company in Sri Lanka achieved 18% energy savings, significantly over its initial target of 5%.

Multiplier effects were seen at the national level. The Mongolian government enacted the Energy Conservation Law in December 2016, which requires designated large energy consumers to conduct energy audits and take appropriate conservation measures. The trainers trained through this project were appointed as energy managers and have acquired sufficient technical knowledge to conduct further activities on their own. In addition, Pakistan's government prepared a legal framework and announced the new Energy Conservation Law in July 2016, which sets energy conservation guidelines and calls for ecolabeling; it will come into force later.