ANNUAL REPORT 2018

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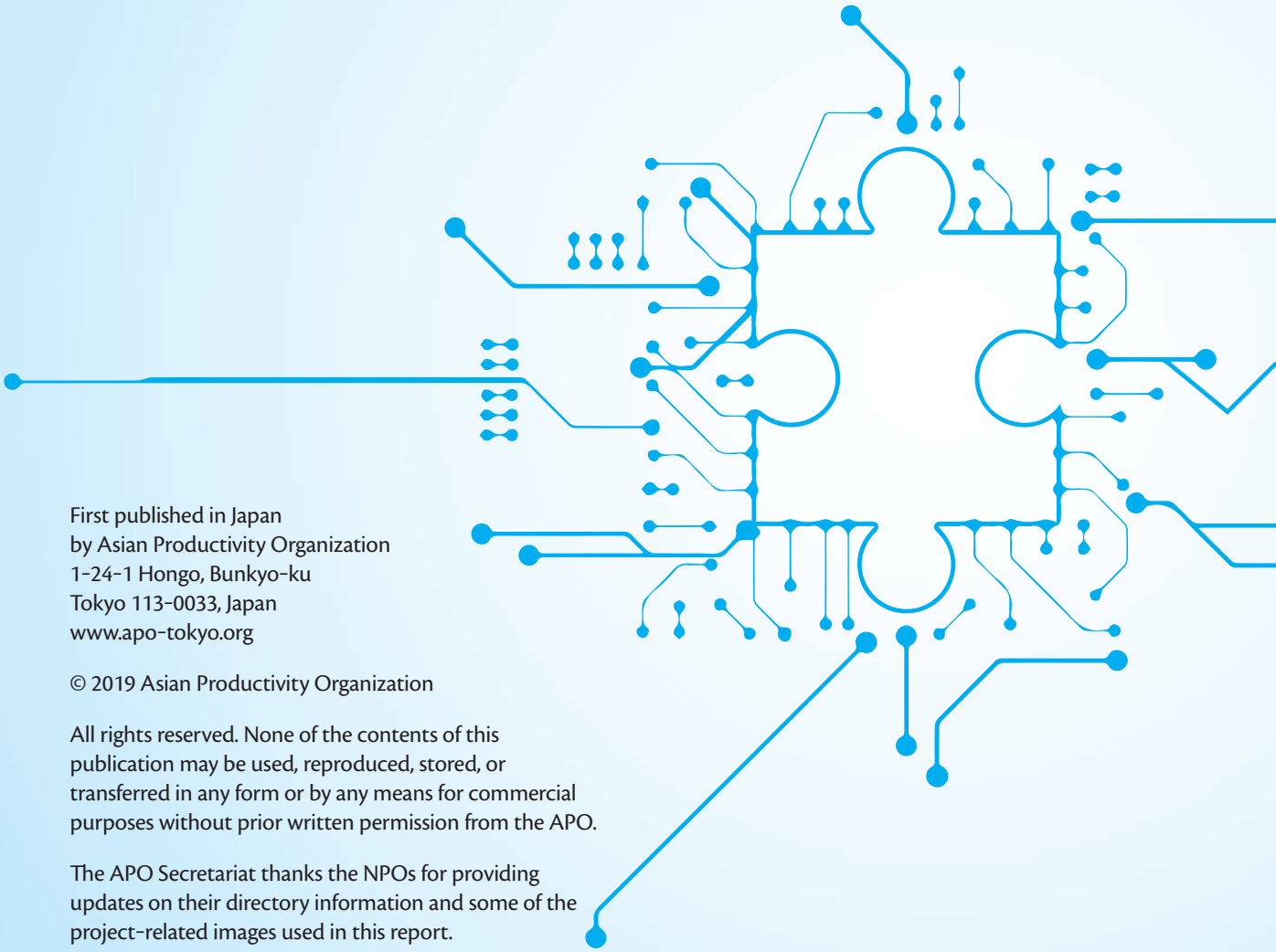

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Foreword

> The Secretariat adopted the rethink-refocus-reskill process to analyze the internal, transactional, and contextual environments of APO members and prepare the organization for the long-term future.

Henry Ford once said that, "Coming together is a beginning; keeping together is progress; and working together is success." Like productivity, success itself is not a destination but a journey. For the APO to continue to flourish as a dynamic organization in a future dominated by artificial intelligence, we must take a holistic and proactive approach to solve sustainability issues and ensure that the benefits of productivity gains are shared fairly with our people. High productivity growth is also important to sustain socioeconomic development and ultimately to allow current and future generations to prosper.

In our transformation journey, the Secretariat has adopted the rethink-refocus-reskill process to analyze the internal, transactional, and contextual environments of member countries and reskilled our staff members, national productivity organizations (NPOs), and all productivity stakeholders for meeting long-term requirements.

In 2017, we envisaged the need for changes to pave the way for adoption of the Fourth Industrial Revolution and prepare member countries to deal with the new era of volatility, uncertainty, complexity, and ambiguity. During this rethink phase, we stepped up engagement with NPOs and introduced policy advisory and consultancy services to achieve more significant impacts and outcomes. We also built up strategic foresight capability within the Secretariat, enabling us to do strategic intelligence scanning and trend analysis for business continuity management and future-readiness.

During 2018, we continued to build upon the foundation of the future-ready APO and refocused on productivity leadership by enabling, pioneering, and providing future-oriented expertise to meet the needs and expectations of member countries by adopting the APO Spearhead Model. This was essential to ensure that the Secretariat stayed true to the spirit of the APO Convention, which states that the APO should perform the roles of think tank, regional adviser, institution builder, catalyst, and clearinghouse for productivity-related information.

At the last Governing Body Meeting (GBM) held in Lao PDR, the Review of the Roadmap to Achieve the APO Vision 2020 and a new business model were first presented to Directors. The new business model and its transformation strategy were further deliberated on by member countries at the Strategic Planning Workshop last July before being translated into program plans for 2019 and 2020. Those program plans were then discussed and endorsed by the Workshop Meeting of Heads of NPOs held in Indonesia. To recap, the six key transformations required to pivot to the new business model are: policy advisory services; digital business ecosystem; comprehensive national productivity master plans; industry transformation centers; the APO Accreditation Body; and co-branded research.

With the strong support of member countries, we have reached the final but most challenging phase in our transformational journey: strategy execution. While the Secretariat worked toward strengthening the processes, infrastructure, and core technology components in 2018, we hope to reap the benefits from 2019 onward.

The Secretariat also revamped the budget format to better reflect the new business model. In the revised budget for 2019/2020 presented to the GBM, existing and transformational programs were reclassified into the three broad categories of the Smart Transformation, Capability Development, and Individual-country Programs.

Smart Transformation is spearheaded by the Industry Transformation and Agriculture Transformation Initiatives. Industry Transformation aims to upgrade the sector in response to paradigm shifts caused by Industry 4.0, while Agriculture Transformation aims to improve productivity through policy advisory services and the adoption of digital applications in the agrifood sector.

To support the move to a platform-based model for both industry and agriculture, a new digital business platform program was included in the budget. That platform will leverage technologies to help connect the APO with its stakeholders in industry and agriculture. Another program introduced at the 2018 APO Sustainable Productivity Summit was the Future Food Initiative, which will contribute to the sustainable food security of member countries.

The Capability Development Program is underpinned by the three subprograms of Strategic Foresight, the Accreditation Body, and Sustainable Productivity. Strategic Foresight is a completely new program aimed at helping member governments enhance the future-readiness of strategic planning by embedding foresight capabilities into the long-term planning process.

Under the Accreditation Body Program, the APO will assist NPOs in developing new productivity courses to increase the pool of certified experts in member countries. This will not only strengthen the capacity of member countries in productivity fields but also enhance the brand recognition of the APO and NPOs throughout the Asia-Pacific.

The Sustainable Productivity Program deepens the APO's current productivity measurement capability and expands its research into the development of new measures that more accurately capture the contributions of technology through collaborations with leading global institutions.

The Individual-country Program is not a new category. It includes core programs such as Technical Expert Services, Bilateral Cooperation Between NPOs, and Establishment of Demonstration Companies, which are familiar to member countries. The new Specific National Program (SNP) introduced in 2018 can potentially become the single most impactful program offered by the APO, although initially, we faced a steep learning curve in working with member governments on the concept and to develop comprehensive national productivity plans.

The critical success factor for this approach to succeed is strong leadership and the political will to champion national productivity drives, as the initiative entails integrating efforts across key stakeholders in each country. Through sustained efforts supported by NPOs, we gained the confidence of key officials and worked with relevant government agencies to deliver a national productivity blueprint for Cambodia in 2018. Similar blueprints for other member governments will be completed in 2019 under the SNP.

The new programs and approach are at the heart of the transformation journey that we have embarked on. When successfully implemented in the next two years, they will move the APO completely into the new business model. This is important to meet the targets under the current Roadmap to Achieve the APO Vision 2020.

Prior to the revision, APO member economies as a group had made good progress, with an improvement of 3.3 points in the Global Comptetitiveness Index (GCI) compared with the targeted 5 points by 2020. Besides, a closer examination of the 12 pillars that form the GCI reveals that most APO member economies need to substantially improve in three major areas to make further progress up the GCI. These include the need for improvements in the labor market, in skill sets to meet the requirements of the future economy, and in the ease of doing business by enabling the future orientation of governments, as well as making legal frameworks more efficient in enforcing regulations fighting corruption, protecting intellectual property rights, and speeding up the pace of ICT adoption.

We have addressed some of these weaknesses through our new programs and initiatives, including the reskilling of internal and external stakeholders. I am confident that together with member countries, the Secretariat will continue to drive and lead with these strategic change initiatives to strengthen the APO as a regional catalyst to help countries in the Asia-Pacific not just to meet global challenges but also to emerge as powerhouses that can steer the global economy.

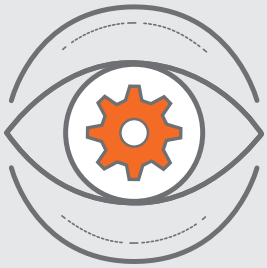
DR. SANTHI KANOKTANAPORN
APO Secretary-General
Tokyo, June 2019

Organization

The Asian Productivity Organization (APO) was established on 11 May 1961 as a regional intergovernmental organization. The APO is nonpolitical, nonprofit, and nondiscriminatory.

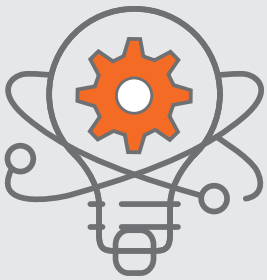
Mission

Contribute to the sustainable socioeconomic development of Asia and the Pacific through enhancing productivity



Vision

To be the leading international organization on productivity enhancement, enabling APO economies to be more productive and competitive by 2020



Strategic Directions

Strengthen NPOs and promote the development of SMEs and communities
Catalyze innovation-led productivity growth
Promote Green Productivity

From 1990 to 2010, APO programs and projects were based on the five thrust areas of knowledge management, Green Productivity, strengthening of SMEs, integrated community development, and development of NPOs. Three strategic directions replaced them for the 2011 to 2020 decade:

1. Strengthen NPOs and promote the development of SMEs and communities

NPOs need to be strengthened to lead national productivity initiatives, and SMEs play a crucial role in all economies. The APO aims to support NPOs to develop competency centers and improve the productivity of targeted segments of SMEs and communities.

2. Catalyze innovation-led productivity growth

Productivity improvement includes both increased efficiency and innovation-led gains that increase the quality of products and delivery of services. The APO aims to strengthen management skills through proven knowledge

management tools, improve productivity in the service and public sectors, and promote business collaboration among member economies.

3. Promote Green Productivity

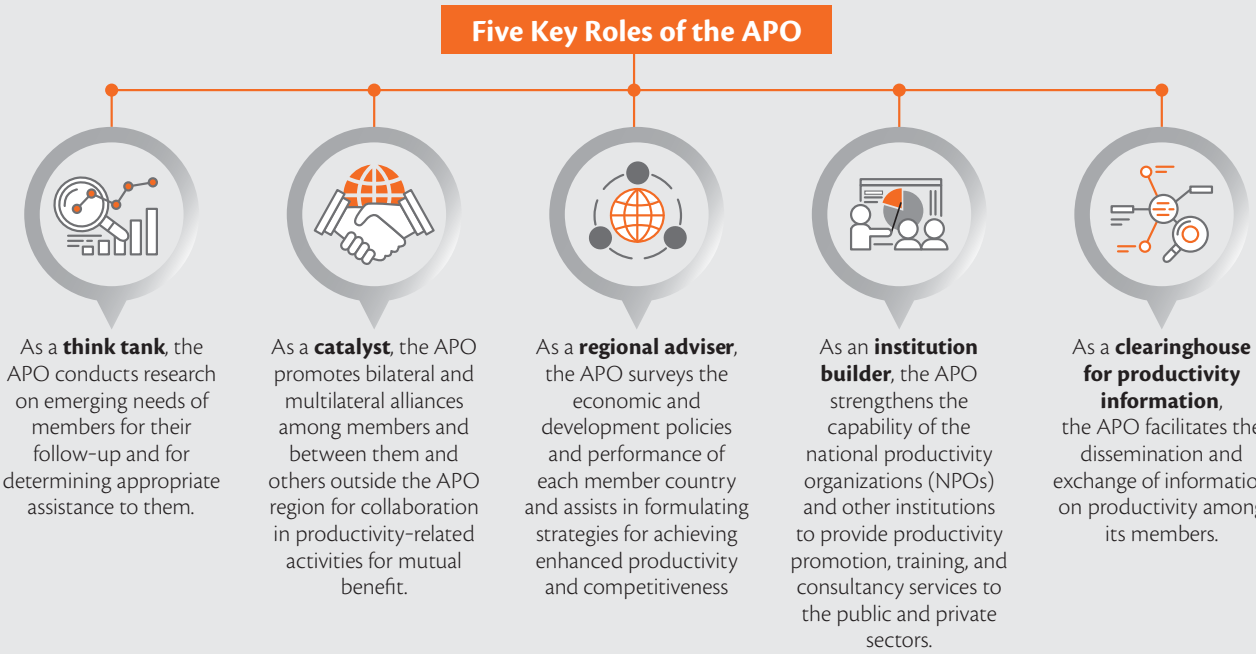
The APO will work with member countries to promote green technologies, create demand for green products and services, green manufacturing and service sector supply chains, and promote sustainable practices in agriculture.

MEMBERSHIP

APO membership is open to countries in Asia and the Pacific which are members of the United Nations Economic and Social Commission for Asia and the Pacific. Current membership comprises Bangladesh, Cambodia, the Republic of China, Fiji, Hong Kong, India, Indonesia, the Islamic Republic of Iran, Japan, the Republic of Korea, Lao PDR, Malaysia, Mongolia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, and Vietnam. These countries pledge to assist each other in their productivity drives in a spirit of mutual cooperation by sharing knowledge, information, and experience.

KEY ROLES

In serving its members, the APO performs five key roles: Think Tank, Catalyst, Regional Adviser, Institution Builder, and Clearinghouse for Productivity Information.

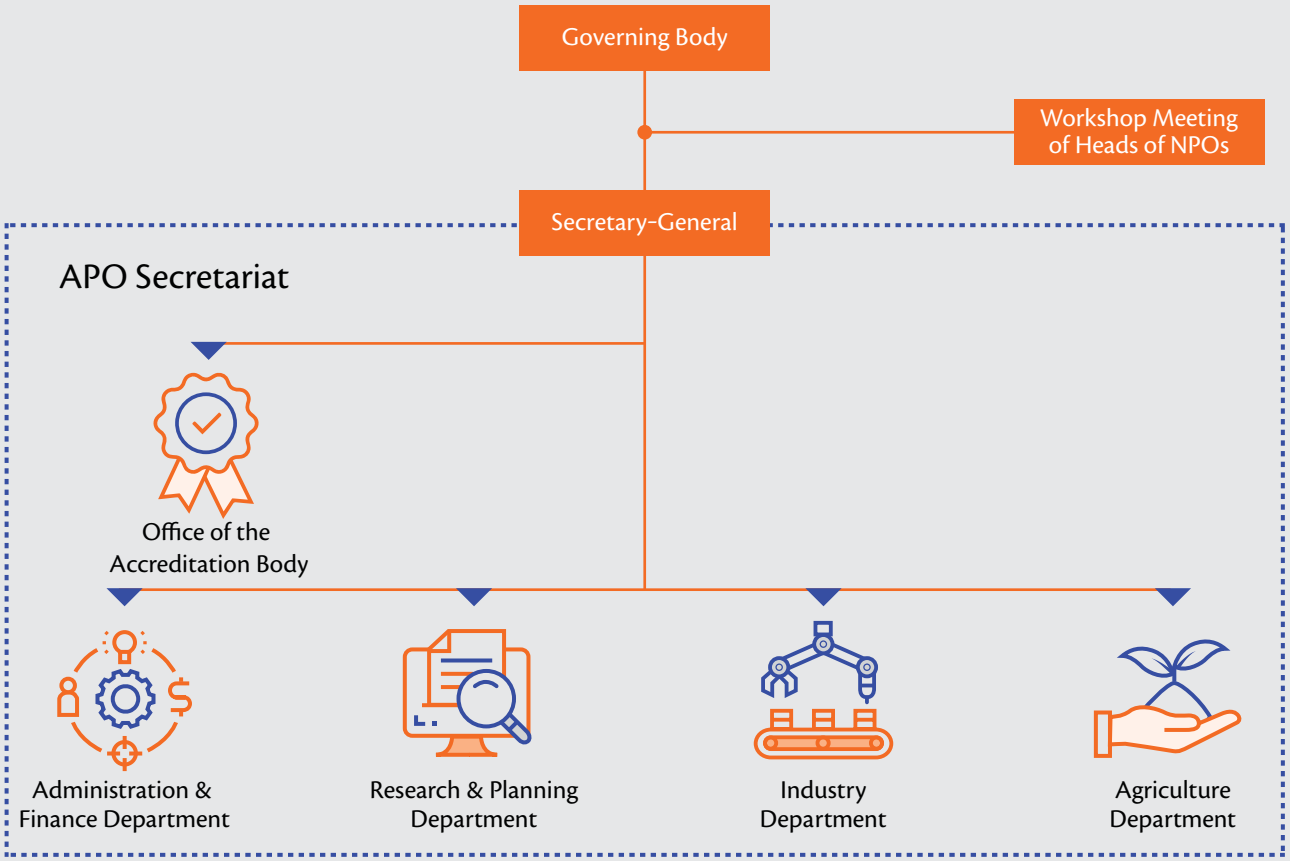


STRUCTURE

The APO structure comprises the Governing Body, NPOs, and the Secretariat headquartered in Tokyo.

Governing Body

The Governing Body is the supreme organ of the APO. It comprises one government-appointed Director from each member. The Governing Body meets annually to receive the Secretary-General's annual report and the auditor's financial report; determine the APO budget, policies, strategies, directions, and membership; approve the two-year



plan and annual programs; lay down guidelines for the ensuing fiscal year's program; and approve the budget and financial guidelines.

NPOs and Workshop Meeting of Heads of NPOs

Each member government designates a national body to be its NPO. NPOs are usually entrusted with spearheading the productivity movement in each country. They also serve as the official liaison bodies with the Secretariat and coordinate APO projects hosted by their governments. Each year, the APO organizes a Workshop Meeting of Heads of NPOs (WSM) to evaluate the previous year's projects, undertake strategic planning, and formulate the two-year plan and detailed program for the next year. The WSM assumes the role of program planning for two years and presents the plans to the Governing Body Meeting (GBM) for the decision on budget size. It also deliberates on productivity issues, guidelines for future programs, and emerging needs of member countries.

Secretariat

The Secretariat is the executive arm of the APO. Headed by the Secretary-General, four departments, comprised of Administration and Finance, Research and Planning, Industry, and Agriculture, work side by side in carrying out the decisions and policy directives of the Governing Body. In collaboration with NPOs and other partners, it plans the biennial program and implements projects. The Secretariat also undertakes joint programs with other international organizations, governments, and private institutions for the benefit of its members. The APO Accreditation Body (APO-AB) is a separate, impartial entity within the APO Secretariat which acts as the focal point of activities under the Accreditation and Certification Program.

TYPES OF ACTIVITIES

The general feature of APO activities is to provide practical training through a combination of: 1) lectures by experts; 2) field visits to factories, farms, and facilities for observation of actual applications; and 3) country reports by participants for the sharing of experiences. APO projects are intended to be as immediately useful and applicable to participants as possible. The participants are expected to create multiplier effects by disseminating their newly acquired knowledge and understanding to others in their home countries.

APO activities target a diverse group of productivity stakeholders. The various types of approach or methodology employed in organizing them are:

- **Specific National Program (SNP):** Improve the macroeconomic environment of productivity enhancement in member countries through policy consultancy and advisory services.
- **Training course:** Impart information and practical skills based on an established body of knowledge following a structured curriculum to improve competency and performance.
- **Research:** In-depth study requiring the collection and analysis of data to address specific productivity-related issues.
- **Conference:** Share or disseminate new knowledge, best practices, and research findings in a field, subject, or topic.
- **Forum:** Share views and knowledge on current and emerging productivity-related issues, their implications, and potential solutions.
- **Observational Study Mission:** Provide opportunities to learn based on direct observations of applications of best practices, innovations, and advanced technologies.
- **Workshop:** Discuss, share knowledge on, and explore emerging topics related to productivity tools, techniques, methodologies, and issues for making relevant recommendations and/or developing action plans to energize the productivity community.
- **Technical Expert Services:** Consultation services to member countries by assigning experts to cater to the specific needs of NPOs. Experts conduct training, consultancy, or national programs.
- **Development of Demonstration Companies/Organizations:** A program to establish model projects to improve productivity in factories, companies, and organizations and then disseminate best practices to others.
- **Bilateral Cooperation Between NPOs:** Provides opportunities for productivity professionals, high-level officials, or policymakers from NPOs or related organizations in one member country to visit one or more other NPOs, organizations, or enterprises for mutual learning and collaboration.
- **Institutional Strengthening of NPOs:** Consists of two mutually dependent components: DON Strategy to determine the needs of member countries; and DON Implementation to translate the results of DON Strategy into training programs that meet those specific needs.
- **e-Learning Program:** Courses carried out using web-based or videoconferencing facilities.

60TH GBM
59TH WSM

60th Session of the APO Governing Body

The 60th Session of the APO Governing Body (GBM) was held 8–10 May 2018 in Vientiane, Lao PDR. This was the first time for the country to host the APO's highest-level meeting since becoming a member in 2002.

The meeting was attended by APO Directors, Alternate Directors, and Advisers from its 18 member economies, as well as by observers from three partner organizations, the Asian Development Bank (ADB), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and Pan African Productivity Association (PAPA). Deputy Minister of Industry and Commerce Somchith Inthamith of Lao PDR presided over the Inaugural Session as the guest of honor.

APO Director for Lao PDR Somdy Inmyxai delivered the welcome remarks, while APO Chair Chew Mok Lee presented the opening address. The inaugural session of the GBM concluded with the conferring of Certificates of Recognition on the ROC, India, the Philippines, and Singapore for their contributions to improving productivity in member countries by setting up APO Centers of Excellence (COE). The APO COE Program allows the best practices of an NPO in a specialized area to be emulated by others. Each COE shares its knowledge and methods through training, workshops, and study missions.

The APO Chair is assigned on rotational basis by member economy in alphabetical order as decided by the GBM in 2002 and practiced since 2003, beginning with Bangladesh. Thus, under this system, the 60th GBM elected APO Director for Sri Lanka Javigodage Jayadewa Rathnasiri as APO Chair for 2018–2019, with APO Director for Thailand Pasu Loharjun and Acting APO Director for Vietnam Nguyen Hoang Linh assuming the position of First and Second Vice Chair, respectively.

Annual Report of the Secretary-General

Secretary-General Santhi Kanoktanaporn welcomed APO Directors, Advisers, and observers to the 60th Session of the APO Governing Body in Vientiane and expressed his appreciation to the Government of Lao PDR for hosting it.

The Secretary-General stated that APO Directors were to determine the total membership contributions for the 2019–2020 biennium. In anticipation of Turkey's APO membership, the Secretariat had earlier proposed an increase in the total membership contributions. However, the amount of membership contributions had reverted to the same as for the current biennium after Turkey reported that its internal procedures would not be completed in time for this GBM. He mentioned that the annual budget and program plan would be adjusted accordingly once Turkey's membership had been finalized.

Secretary-General Santhi expressed sincere gratitude to the Governments of Japan and the ROC for providing cash grants that had enabled the APO to implement additional projects, especially the generous grants from the Government of Japan that had increased the APO's revenue by some 25% annually.

Regarding the membership contribution formula for the 2021–2022 biennium, Secretary-General Santhi stated that the Secretariat would seek the views of member countries on a proposed revised formula later this year. If APO Directors could reach a consensus, the proposed formula would be submitted for approval at the next GBM in 2019.

The Secretary-General reported that he continued to interact with APO Directors, Heads of NPOs, and other stakeholders. He believed that those interactions had provided excellent opportunities to understand the needs and expectations of member countries. Since member economies were facing similar disruptions caused by the unprecedented speed, breadth, and depth of the new waves of digital technologies, there had been intense discussions on how the APO needed to transform to stay relevant to them.

Secretary-General Santhi noted that the Secretariat had reviewed the Roadmap to Achieve the APO Vision 2020. The roadmap and its strategies should continue to evolve along with the global environment and explicitly recognize possible areas for improvement. The Secretariat had engaged Accenture to assist in the review of the roadmap to focus on external trends and the new technologies that were changing the economic landscape both now and moving forward. He emphasized that the time had come for a new model of member country engagement, one that strengthened and deepened communication among member governments, NPOs, the Secretariat, and the sectors targeted for productivity improvement.

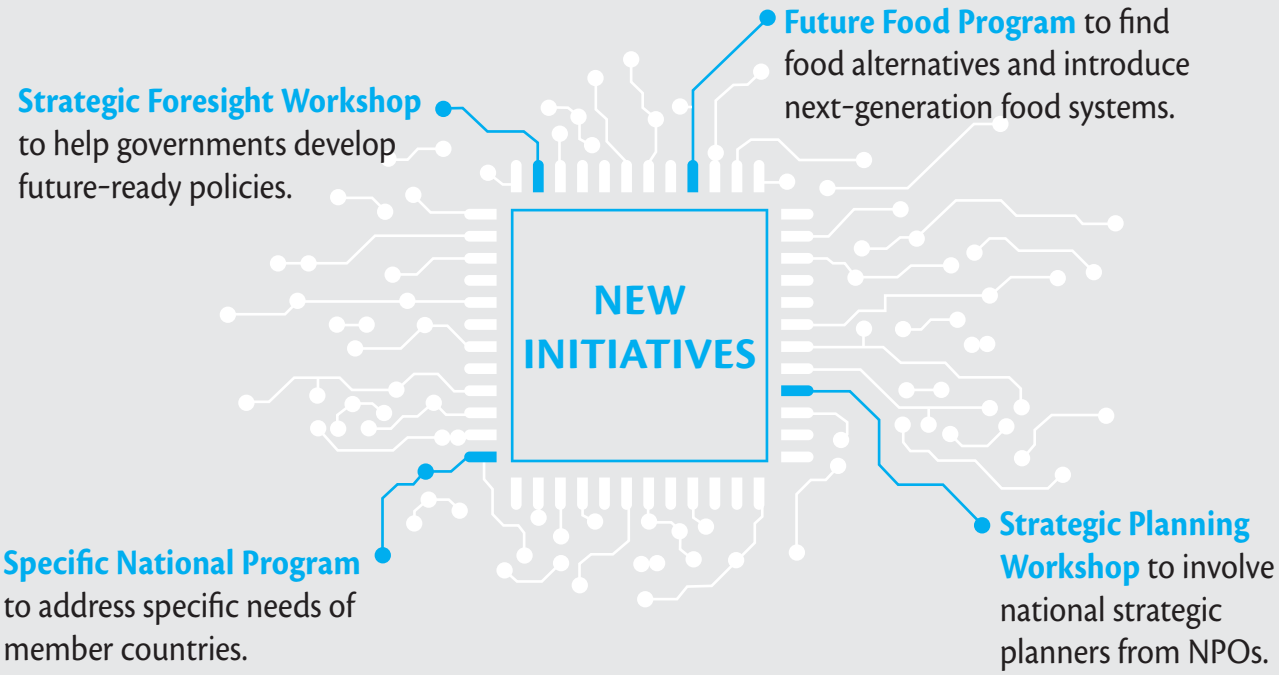
Secretary-General Santhi's report included various new initiatives such as the Strategic Planning Workshop (SPW) organized between the GBM and Workshop Meeting of Heads of NPOs (WSM) to involve national strategic planners on a more informal basis. The Strategic Foresight Workshop had also been organized involving a small group of APO Directors and NPO Heads to kick off the program to help member countries build capabilities in foresight, which would be critical to shaping future-ready national policies. He mentioned the Specific National Program (SNP) that had been introduced at last year's WSM and stressed the importance of working with individual members to address their more specific needs through the SNP. The Secretariat would reexamine how to transform multicountry projects in consultation with NPOs and the assistance of external consultants, he continued.

The Secretary-General emphasized that the Secretariat needed to be reorganized. The Secretariat had engaged external expertise to implement many projects in the past and must identify emerging policy challenges and reinforce the APO's ability to address them. He mentioned that a review of the current approach would be made to sustain the types of activities which would create effective national impacts on productivity.

He briefly highlighted some of the APO's key achievements from the previous year. Under the Industry 4.0 Program, research had been initiated to develop a roadmap to prepare member countries to embrace Industry 4.0 through a

step-by-step approach by evaluating the level of readiness and providing hands-on experience. A new COE on IT for Industry 4.0 had been launched in India in June 2017. Under the Special Cash Grant Program on Energy Conservation funded by the Ministry of Economy, Trade and Industry of Japan, the APO had supported demonstration projects in Bangladesh, Mongolia, Nepal, Pakistan, and Sri Lanka. All the projects had been highly successful and achieved double-digit percentage reductions in energy usage.

Secretary-General Santhi introduced a successful approach implemented in 2017 in Pakistan, under which the APO had advised the Pakistani government on the design of a national framework for productivity, quality, and innovation. Given the volatile, complex environment that member countries faced, the APO launched its Strategic Future Platform to build their foresight and scenario-planning capabilities to navigate the uncertain global environment and sustain productivity growth. The APO had also unveiled the eAPO, which marked a new phase in the e-learning initiative, to provide professionals with state-of-the-art productivity knowledge on a mobile-learning platform.



The Secretary-General elaborated on initiatives in the agriculture sector. In 2017, the APO had implemented almost 50 projects aimed at boosting agricultural productivity through capital deepening by introducing future-proof smart technologies in farming, food processing, and food safety and quality management systems. He stressed that tackling agricultural productivity alone was not enough, citing the UN data that the current world population of 7.6 billion would reach 8.6 billion in 2030 and almost 10 billion in 2050. To address those issues, technological solutions would have to be tested and introduced to enable the production of more food from fewer resources. In this connection, the APO had started a new Future Food Program aimed at finding food alternatives as well as introducing the next generation of food systems to Asia.

The Secretary-General announced that the membership of Turkey was expected to be completed soon. The APO was starting to adjust its course, adapt, and shape its role as the productivity champion of the Asia-Pacific with a foothold in Europe. He mentioned that the APO of the future must act as a spearhead to blaze a path

for NPOs to adopt new knowledge and capabilities to improve the productivity of member economies. Concluding his report, Secretary-General Santhi expressed his deep gratitude to member countries for their support and for the flexibility, understanding, and cooperation extended to him.

GBM Activities

Following the usual practice of previous GBMs, APO Directors were invited to present their countries' productivity master plans and/or national productivity initiatives for the next three to five years. This included the progress of the master plans and initiatives as well as the support required by member countries to develop them. APO Directors also shared their views on sustainable productivity.

In delivering the closing remarks, Secretary-General Santhi thanked all Directors and delegates for their cooperation in making the GBM successful. The Secretary-General stated that the Secretariat would look forward to receiving feedback from member countries on the Roadmap to Achieve the APO Vision 2020 and further discussion on the topic with delegates at the SPW to be held in July this year. He pledged that the Secretariat would aim to refine the new approach to address emerging challenges in achieving the goals of the vision through this consultative process.

Summing up the proceedings of the GBM, APO Chair Rathnasiri said that the meeting had concluded on a very fruitful note because it had handled the agenda items and arrived at most decisions amicably without delays. He highlighted that the GBM had approved the review of the Roadmap to Achieve the APO Vision 2020, which would have a material impact on how the APO was to be positioned in the future. He stated that the APO acted as the spearhead of all NPOs in the community and its role to enable, empower, and pioneer new initiatives could not be overstated.

The Chair recognized that the APO had responded to the hyperchanging environment to ensure its relevance in the future, while it sought to reinforce its role as a regional adviser, institution builder, catalyst among NPOs, think tank, and thought-leader in all productivity-related matters. Acknowledging that change was never easy, Chair Rathnasiri said that member countries lived in a volatile, uncertain, complex, ambiguous world and would have to accept changes and transformations to meet the challenges and opportunities that might come along with them. He urged fellow Directors and NPOs to provide their fullest support to the Secretary-General so that he could effectively and efficiently discharge his duties and lead the Secretariat in implementing all decisions made in this meeting.

APO Director for Lao PDR Somdy Inmyxai giving the welcome address.

APO Secretary-General Dr. Santhi Kanoktanaporn presenting the APO's achievements in 2018.

APO Director for Singapore Chew Mok Lee presenting the opening address.

59th Workshop Meeting of Heads of NPOs and Strategic Planning Workshop

The 59th Workshop Meeting of Heads of NPOs (WSM) was held in in Yogyakarta, Indonesia, 2–4 October 2018. It was attended by 35 NPO and Agriculture Delegates and 26 Advisers representing APO members along with observers from the Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP) and International Rice Research Institute (IRRI). Indonesia's Minister of Manpower delivered the inaugural address, while APO Director for Indonesia Bambang Satrio Lelono presented the welcome remarks. NPO Head for the ROC Pao-Cheng Chang presented the vote of thanks.

Statement by the APO Secretary-General

Secretary-General Dr. Santhi Kanoktanaporn stated that it was a great honor for him to attend the distinguished gathering of Heads of NPOs and Agriculture Delegates. He expressed gratitude to the Government of Indonesia for hosting the 59th WSM in Yogyakarta and thanked the Guest of Honor, Minister of Manpower M. Hanif Dhakiri. The Secretary-General also expressed appreciation to APO Director for Indonesia Bambang Satrio Lelono for hosting the meeting and the warm hospitality extended to delegates.

Secretary-General Santhi mentioned that the need to accelerate the transformation of the APO's approaches to improving the productivity of member economies had never been greater in the 57 years of its history, as noted at the previous WSM in the ROK. The Governing Body had endorsed the key business transformations after deliberations at the Strategic Planning Workshop (SPW) involving APO Directors and NPO Heads in July 2018 in Tokyo. Dr. Santhi stated that they had played a crucial role in obtaining the Governing Body's endorsement after a lively debate that concluded that the objectives of the APO Convention had not yet been fully met in fulfilling its productivity mission.

Dr. Santhi emphasized that the transformation was a journey and that the key transformations would not all be achieved overnight but would occur progressively in collaboration with member governments, which also needed to play their parts to ensure success. He reiterated that the major objective of the WSM was therefore to discuss how the APO could translate recommendations into action plans while balancing the commitments already made by member governments to the 2019/2020 Program Plans.

The Secretary-General explained the major change in the format of discussions at the WSM. The Secretariat would provide an overview of every major program to describe the objectives, expected outcomes, and detailed implementation plans to focus more on the actual action plans that were more strategic and relevant to delegates rather than confirming the hosting of projects. He mentioned that the Secretariat would explain the implications of the six key transformations that the Governing Body had endorsed for the 2019/2020 Program Plans.

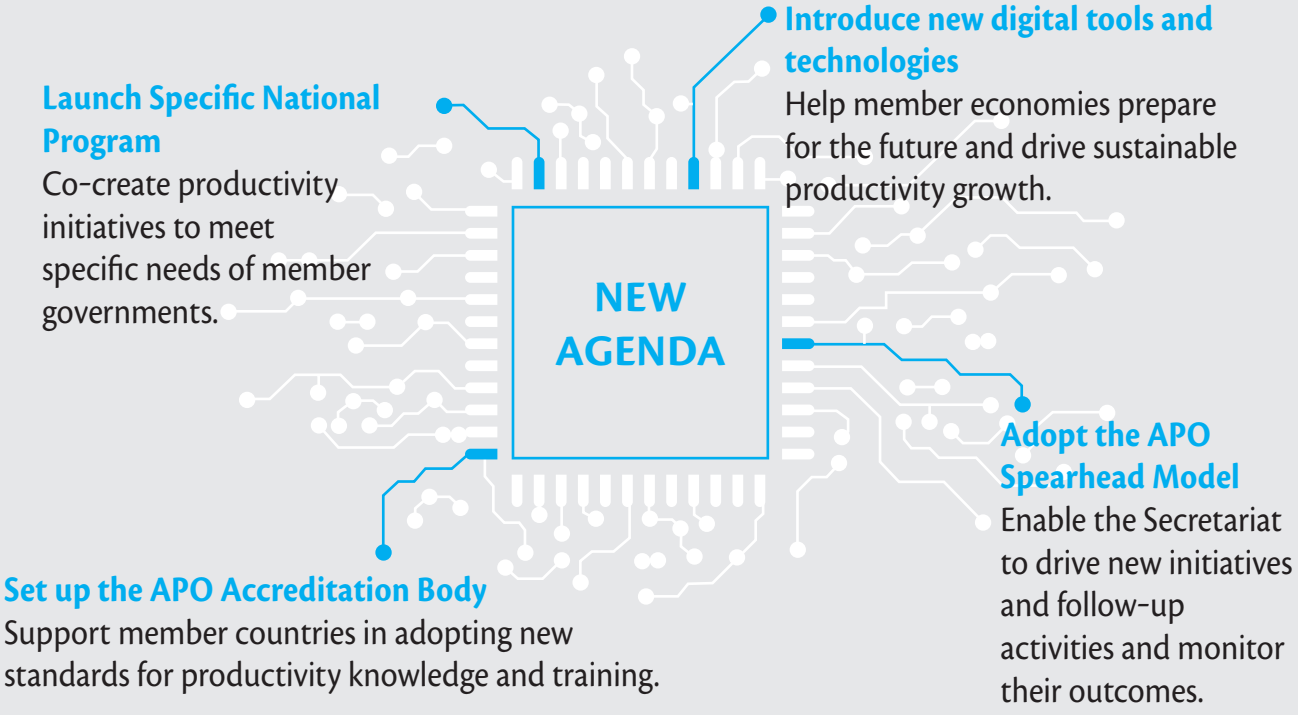
Implementation of the Specific National Program (SNP) was already in progress after receiving member countries' endorsement last year. He stressed that the SNP would become the primary vehicle for the APO to co-create

59th WSM delegates

national productivity initiatives aligned with the specific needs of member governments. Such initiatives would focus on national-level impacts with advice from experienced international experts. He reported that the Secretariat had engaged in in-depth discussions with several member governments and expected to announce the official launches of national initiatives in the coming months.

Dr. Santhi stated that by the end of 2018, the APO aimed to establish an Accreditation Body Advisory Council comprising representatives from member governments, academic institutions, and industry bodies. This initiative would support member governments in developing new productivity knowledge and enhancing the APO's standing as a leading productivity organization worldwide.

The Secretary-General explained that the six key business transformations were intended to steer the organization back to the original objectives stated in the APO Convention and that the Secretariat required the strong cooperation and collaboration of member governments. Acknowledging the suggestions made by SPW delegates on trade-offs, the Secretariat would recommend the discontinuation of some projects that might have become less relevant to current needs for the consideration of the WSM while proposing new projects and activities in line with the smart transformations and capability development initiatives.



Indonesia's Minister of Manpower M. Hanif Dhakiri delivering the inaugural address at the WSM.

59th WSM in progress.

APO Director for Indonesia Bambang Satrio Lelono delivering welcome remarks.

Dr. Santhi continued that there were three additional key business transformations that were internal to the Secretariat, i.e., introduction of new digital tools and technologies, development of future-ready skills for Secretariat staff, and improvement of all critical procedures within the APO. All three were intertwined and vital to ensure that the transformation of the APO was supported by technological advances, productivity improvement, and new skills and competencies.

He reiterated the roles that NPOs and the Secretariat were to play, with the Secretariat spearheading new initiatives and NPOs conducting national follow-up activities. As suggested in the impact evaluation study of 2016/2017 projects conducted by a third-party expert, NPOs and the Secretariat needed to forge stronger collaborative partnerships to undertake projects and follow-up activities and monitor their outcomes. He said that the Secretariat would introduce new technology to facilitate the monitoring and evaluation process.

Secretary-General Santhi introduced a proposed pilot training program at the Secretariat called the Executive Development Program aimed at accelerating the development of selected staff from NPOs or relevant government agencies to address new challenges. He emphasized that the primary responsibility of providing resources for NPOs would lie with member governments.

Dr. Santhi noted that next year the WSM would begin discussions on new programs for the 2021/2022 biennium. Since the term of the APO's current vision and roadmap would conclude in 2020, the roadmap needed to be revised with a new implementation plan developed up to 2025. Good execution of the plan in collaboration with NPOs would be key to whether the business transformations would succeed in delivering the outcomes expected by member governments. He proposed forming a small task force comprising a few NPO Heads and external experts to assist in revising the roadmap. Finally, the Secretary-General thanked all NPO and Agriculture Delegates for their continuous support. He expressed appreciation to the Government of Indonesia for its hospitality and generosity in hosting the 2018 WSM.

WSM Activities

The WSM agenda included adoption of the impact evaluation study of the 2016 and 2017 programs, presentation of reports on 2017 project evaluation and the SPW, and a review of the APO Center of Excellence Program. During the Plenary Session, the Secretariat also introduced the Executive Development Program and updates on the enterprise resource planning roll-out at the Secretariat.

Presentations were given in the Plenary Session by representatives from Japan, Malaysia, and Mongolia on different productivity initiatives taken. The 59th WSM concluded with the adoption of new initiatives and programs focusing on making the industry, agriculture, service, and public sectors in APO member countries more responsive, smarter, and future-ready.

ACTIVITY REPORT

Smart Industry

For APO member countries, the manufacturing sector remains the strongest driving force for socioeconomic growth as the Asia-Pacific region plays a more important role in global value chains. Rapidly emerging technologies and intricate division of work in value chains provide tremendous opportunities for productivity growth but also unprecedented challenges that require manufacturers, industries, and economies to upgrade or reinvent themselves.

Countries and enterprises have been investing resources in attempts to capitalize on the benefits of digitization and advanced technologies. However, the complexity of Industry 4.0 often puzzles these actors, and a common difficulty is in understanding their current status, determining their strategic positions in the new landscape, and identifying starting points. The APO's Smart Industry Initiative assists member countries in developing a fundamental understanding of Industry 4.0 and evaluating their readiness for digitization.

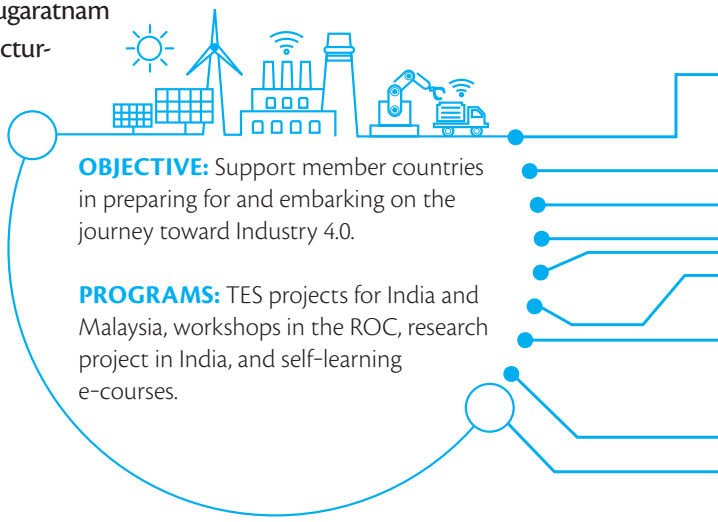
Understanding Readiness

In 2018, the APO organized various activities to support member countries in preparing for and embarking on the journey toward Industry 4.0, including Technical Expert Services (TES) projects for India and Malaysia, workshops in the ROC, research in India, and self-learning e-courses.

The APO conducted a workshop on Readiness for Industry 4.0: Assessment and Steps for Manufacturers to assist member countries in preparing their industries for Industry 4.0. The workshop introduced a number of assessment tools, including the Smart Industry Readiness Index developed by Singapore's Economic Development Board (EDB), which was the first readiness assessment tool developed by a government to catalyze the transformation of industrial sectors. The concepts and assessment tools introduced in the workshop were appreciated as useful references by the government representatives attending.

In recognition of efforts to prepare the Asia-Pacific for the Fourth Industrial Revolution, the EDB invited the APO to become one of the founding partners of its International Outreach Community to raise awareness. Secretary-General Dr. Santhi Kanoktanaporn was invited to the Industrial Transformation Asia Pacific exhibition, the first Hannover Messe event in Asia, to join Singapore's Deputy Prime Minister Tharman Shanmugaratnam in launching Singapore's Index Partner Network to enhance manufacturers' capacities in upgrading for the Fourth Industrial Revolution.

A six-month research project was initiated to evaluate the current status of Industry 4.0 readiness and capacity development needs of selected member countries. National experts are scheduled to review member countries' policies on industrialization, innovation, digital infrastructure, and talent cultivation and upskilling to help APO members develop long-term strategies to adapt to Industry 4.0.



OBJECTIVE: Support member countries in preparing for and embarking on the journey toward Industry 4.0.

PROGRAMS: TES projects for India and Malaysia, workshops in the ROC, research project in India, and self-learning e-courses.

Initiating Upgrading

To assist member countries in initiating the process of digital upgrading, support for pilot cases of digitization was provided. Under the APO Development of Demonstration Companies Program, an automotive parts manufacturer in India started to digitize its production line, where software solutions for production monitoring, material requirement tracking, quality and material loss tracking, and production scheduling were developed and applied in the factory to streamline production flows and optimize the use of materials as well as supplies to customers. The Indian company also collaborated with the NPC, India and local engineering schools and students to develop and fine-tune software and upgrade systems, providing opportunities for students to apply their skills to practical cases of digitization, thus demonstrating the value of private–public–academia partnerships.

Similarly supported by the Development of Demonstration Companies Program, a hospital in Thailand began digitizing its health information system to provide better-quality services and more efficient utilization of medical resources. The hospital examined workflows among physicians, nurses, and pharmacists and pilot tested the digitization of a department based on a prototype system developed by its IT team with the use of mobile devices allowing the provision of more timely, efficient services.

Connecting Classic Productivity Concepts and Industry 4.0

Having promoted classic productivity concepts over the last decades, the APO continued assisting SMEs in pursuing excellence in manufacturing. Workshops and training courses were held to showcase how classic productivity concepts, such as total quality management, total productive maintenance, and lean management, could be incorporated in the new wave of digital transformation. Practical examples in SMEs were also demonstrated during those activities to show how technologies are powerful productivity tools to optimize resources, improve performance, and sustain productivity growth.

Sustainable Productivity Summit

Technologies are combining new ways of improving business performance and productivity, offering benefits as well as challenges to which the public and private sectors must respond. Business leaders must update organizational strategies in the face of continual evolution, ensure that their organizations always look ahead, and use technologies to improve performance. They must also plan for a range of scenarios, abandon assumptions about where

competition and risk could arise, and look beyond long-established models. All organizations should be able to act fast, make informed decisions now, and fine-tune strategies or policies as necessary. It is therefore critical for leaders to understand which technologies will alter their circumstances and prepare accordingly. The APO Sustainable Productivity Summit (SPS) oriented member countries on "the next big thing" and technologies shaping the future of productivity while creating maximum benefits for their economies.

To provide insights on future strategies for productivity enhancement while introducing new trends and innovative technologies to policymakers and private-sector representatives, the APO organized the SPS, 10 July 2018, at the Imperial Hotel in Tokyo. Six international organizations and 11 Japanese organizations and ministries supported the event. Six speakers were invited. William. D. Eggers of the USA spoke on Government 2025 and explained how governments and citizens could prepare for the coming changes brought about by technology. Ryan Janzen of Canada introduced future transportation with its features and its effects on the lives of citizens. Dr. Niklas Arvidsson of Sweden shared the cashless practices in that country and ways to tackle the associated risks. Andrew. W. Brentano of the USA gave a presentation on the increasing population and food demand, along with environmental problems and how future food might solve those issues. Japanese speaker Takeshi Arakawa introduced the Panasonic project on smart towns and how industry–academia–government collaboration works in them. Moderator Devadas Krishnadas of Singapore led the panel discussion. The SPS attracted nearly 250 attendees, including 39 government officials from APO member countries and 15 guests from the embassies of both member and nonmember countries.

Smart Agriculture

Smart technologies such as robotics, artificial intelligence (AI), the Internet of Things (IoT), and drones can dramatically increase agricultural productivity. ICT is widely applied in various subsectors of agriculture, with sensors and big data analysis optimizing the management of crop production. AI standardizes experienced farmers' know-how for new ones, and robotics technology lightens heavy labor. Food value chains are adding value through data integration.

In APO member countries' agriculture sectors, labor saving is an important challenge. Automation with smart technologies such as self-driving tractors and smartphone control of paddy field water decreases the need for human labor. Transfer of know-how from experienced farmers to younger ones is made easier with ICT. The use and analysis of sensing data can precisely predict crop growth and plant diseases, making agricultural management more effective and efficient.

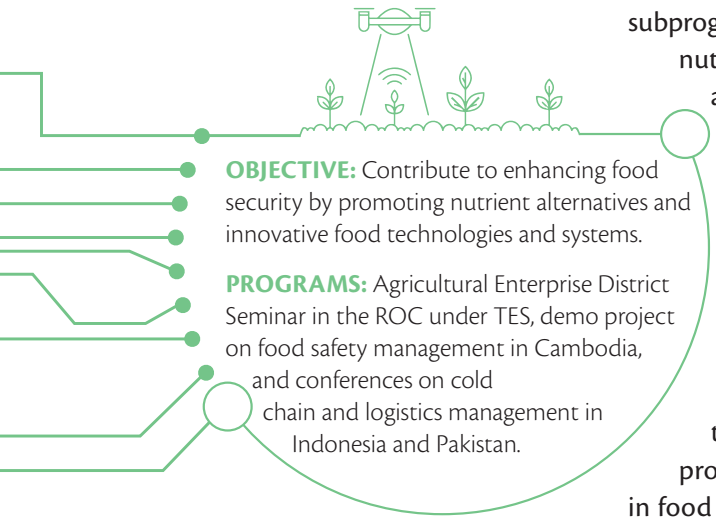
During 2018, the APO continued to promote technology to boost agricultural productivity and enhance the performance of agribusiness and food enterprises. Its Smart Agriculture Program focused on advanced farming technology, modern agribusiness models, innovative food-processing and -manufacturing technologies, and state-of-the-art food safety and quality management systems. The program also covered successful rural community development strategies and future food. These will contribute to sustainable productivity in agriculture, better

food security, enhanced farm and agribusiness operations, food-industry SME competitiveness, and more inclusive rural development in member countries.

The APO's Smart Agriculture Program projects are grouped under three subprograms: Future Food; Advanced Agricultural Management; and Rural and Inclusive Development.

Future Food

Demand for food will continue to increase in the foreseeable future due to expanding populations. Changes in dietary patterns will also be a significant challenge for developing countries in Asia as economic development leads to more meat consumption. Consumption pattern shifts to healthier lifestyles and nutritional food demands for aging populations have increased the importance of providing safe, high-quality food. However, traditional agricultural production methods and existing food products cannot meet those needs with shrinking agricultural and environmental resources.



OBJECTIVE: Contribute to enhancing food security by promoting nutrient alternatives and innovative food technologies and systems.

PROGRAMS: Agricultural Enterprise District Seminar in the ROC under TES, demo project on food safety management in Cambodia, and conferences on cold chain and logistics management in Indonesia and Pakistan.

Exploring future food sources is therefore critical. The APO's Future Food subprogram aims to contribute to enhancing food security by promoting nutrient alternatives and innovative food technologies and systems among key stakeholders in member countries. It also seeks to increase the productivity and competitiveness of agrifood SMEs by sharing state-of-the-art food-processing and -manufacturing technologies, quality and safety management systems, and smart value chain models.

The APO organized a variety of projects to explore business opportunities for future food, enhance the market access of agricultural products by meeting quality standards, encourage the adoption of cold chain technologies to maintain fresh produce quality, increase labor productivity through innovations in food value chains, and minimize the effects of food-borne illnesses by adopting modern food safety technologies.

Among national-level projects, the APO dispatched an international resource person to facilitate the Agricultural Enterprise District Seminar in the ROC under the Technical Expert Services (TES) Program. The resource person gave presentations to officers and representatives of agribusiness stakeholders on how to promote the sales of local products to the world market. In addition, the APO conducted a demonstration company project on Advanced Food Safety Management Systems for SMEs and follow-up national conference in Cambodia, and national conferences on Cold Chain and Logistics Management for Agrifood Products in Indonesia and Pakistan using cash grants from the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF). The projects in Indonesia and Pakistan transferred knowledge on preservation methods to provide higher-quality food to consumers.

Advanced Agricultural Management

Asian agriculture is experiencing common challenges of low productivity, poor performance of agribusiness SMEs, shrinking land and water resources, accelerated degradation of the resource base, huge postharvest losses, low value addition, high urbanization rates, poor environmental performance, and impacts of climate change. In general, the profitability of small and medium-sized producers remains low. Agriculture must take advantage of current

technology options to become more productive, sustainable, profitable, and convenient for farmers.

The objective of the Advanced Agricultural Management subprogram is promoting applications of new technologies in farming operations and agribusiness enterprises. Those applications can increase sustainable productivity in agriculture and agribusiness enterprises, promote better management of land and water resources, establish climate change-resilient models, and accelerate value addition. The APO organized numerous projects on sustainable, smart agriculture management-related topics in 2018. Expected outcomes include the adoption of smart technologies in agriculture and agribusiness and the promotion of organic food production.

The APO is stepping up the introduction of smart agriculture to member countries under the Agricultural Transformation Initiative. The Secretariat convened an Expert Consultation Meeting on the Development of an Agricultural Transformation Framework in Tokyo, 29 October–1 November. Workshops, self-learning e-courses, and an observational study mission were also organized on smart agriculture. The observational study mission was conducted with a cash grant from MAFF.

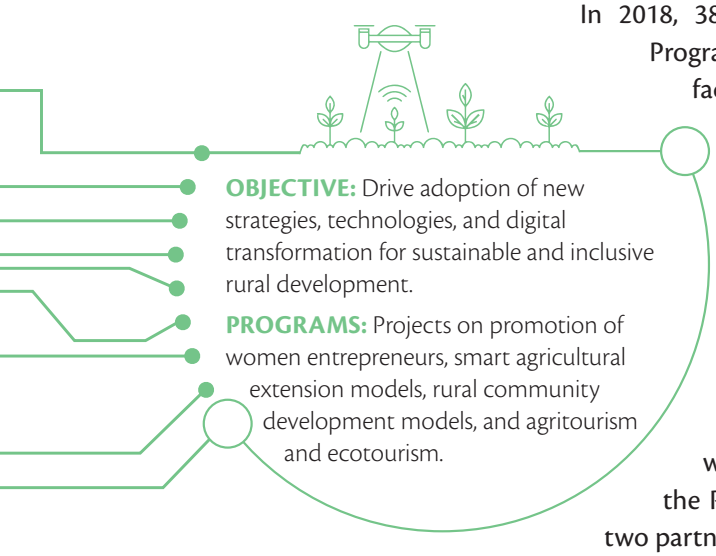
National projects under the Advanced Agricultural Management subprogram in 2018 were the International Conference on Smart Agriculture in the ROC and Training of Trainers on Organic Fertilizer in Mongolia under TES, Training of Trainers on Advanced Rice Farming for Sustainable Productivity in Lao PDR under the Development of NPOs (DON) Program with a MAFF cash grant, and Development of Demonstration Companies: Implementation of GLOBALGAP in Sun Feed Joint Stock Company in the Philippines. During the International Conference on Smart Agriculture, the APO-assigned resource person focused on sensor technologies to control the crop growth environment and optimize farm management.

Rural and Inclusive Development

Most people in developing Asian countries live in rural areas and include the majority of the world's poor. They are constrained by a lack of productive employment opportunities, poor education and infrastructure, and limited access to markets and services. Those are exacerbated by the aging of rural populations and migration of the young to urban areas. In many rural communities in the Asia-Pacific, the farming landscape is changing as women and the elderly come to dominate farm workforces. The rural–urban divide is widening, contributing to large-scale migration to cities. Rural communities must adopt new strategies, innovative technologies, and digital transformation for survival and growth.

Updated frameworks for rural development in APO member countries are needed to ensure sustainable socioeconomic development while promoting inclusive growth. The Rural and Inclusive Development subprogram addresses diverse aspects of rural socioeconomic development. Reading megatrends and applying future-scenario thinking, in 2018 the subprogram incorporated emerging global changes into APO efforts to meet specific member country needs.

To foster rural and inclusive development, 2018 projects under this subprogram covered areas such as: promotion of women entrepreneurs; smart agricultural extension models; innovative rural community development models; and agritourism and ecotourism.



OBJECTIVE: Drive adoption of new strategies, technologies, and digital transformation for sustainable and inclusive rural development.

PROGRAMS: Projects on promotion of women entrepreneurs, smart agricultural extension models, rural community development models, and agritourism and ecotourism.

In 2018, 38 projects were implemented under the Smart Agriculture Program, which consisted of 24 multicountry ones including face-to-face, videoconference-based, and online self-learning activities, in addition to 14 individual-country projects. The 24 multicountry projects were intended to achieve the three targets of the APO Vision 2020, i.e., enhancing labor productivity, raising competitiveness, and increasing APO brand recognition. Individual-country projects were designed to meet specific needs and expectations of members based on their project proposals submitted.

The Secretariat also implemented three projects in collaboration with the Centre on Integrated Rural Development for Asia and the Pacific and Cornell University under the MOU signed with the two partner organizations.

Smart Service

The service sector is one of the major contributors to GDP in most APO member countries. Service-sector innovation can result in quantum leaps in productivity and involves harnessing the creativity of employees to increase effectiveness and enhance overall productivity. Advances in ICT in the era of Industry 4.0 have given rise to multimedia and online phenomena that hold great promise for productivity promotion and enhancement, information dissemination, and other applications relevant to service.

Recently, the service industry has rapidly adopted smart technologies to develop new offerings in areas like transportation and logistics, hospitality, and healthcare to increase productivity in the sector. Smart cities is another area in which ICT is having a profound impact on the productivity of public services to citizens.

To increase global competitiveness in the service sector through capability building, consultancy, and policy advice utilizing Industry 4.0 digital technology, the APO has organized multicountry projects on business excellence (BE), organizational excellence, ICT innovation, customer satisfaction (CS) index development, CS management, and knowledge management and innovation as well as an e-learning course on Customer Satisfaction Management for the Health Sector to meet the needs of its member countries. Participants from government subsequently applied smart service policies in their units, and those from the private sector adopted smart service technologies in their organizations to improve overall productivity.

Exploring New Programs

To improve productivity and understand CS trends in the age of Industry 4.0 for the health sector, the APO offered an e-learning course on Customer Satisfaction Management for the Health Sector. Two hundred and thirty-eight individuals from 11 members took the course and shared their best practices in CS management in the health sector through country presentations after site visits.

A training-of-trainers course on Benchmarking to Enhance Organizational Excellence in the Service Sector was developed, which focused on the adoption of the BE framework and principles. Participants and resource speakers developed a manual detailing how BE can contribute to organizational excellence in the service sector. Participants created action plans to develop training programs and apply organizational excellence principles and frameworks in their workplaces based on the manual.

OBJECTIVE: Improve productivity in CS delivery and drive business and organizational excellence.

PROGRAMS: e-learning course on Customer Satisfaction Management for the Health Sector, and training-of-trainers course on Benchmarking to Enhance Organizational Excellence in the Service Sector.

Institutional Strengthening and Capacity-building Initiatives

To develop practitioners who can use the BE framework as a strategic management tool and plan for its adoption in organizations, the APO organized a workshop for Practitioners of Business Excellence. Participants attended the BE Award Winners Sharing Conference and learned about the best management practices and viewpoints in the public and private sectors in Singapore.

Trainers and NPO consultants dealing with CS attended the APO training of trainers on CS Index Development for the Service Sector. The course explained the use of CS measurement systems and indexes specifically for the sector, with case studies from Hong Kong, the ROK, and Singapore. A manual on developing CS indexes was jointly created by the resource speakers and participants, which can be used in a variety of service organizations.

The APO also organized a multicountry observational study mission on Labor-management Relations in Indonesia. Recent labor-management issues were examined, and the changing roles of government, labor unions, and SMEs in the era of Industry 4.0 were discussed. The study mission was attended by representatives of government agencies, labor unions, and NPOs in charge of labor-management relations.

OBJECTIVE: Develop practitioners who can use the BE framework as a strategic management tool and plan for its adoption in organizations.

PROGRAMS: Workshop for BE practitioners in Singapore, training of trainers on CS Index Development for the Service Sector, and a study mission on Labor-management Relations in Indonesia.

Smart Public Sector

The future of government will be different from what it is today given the uncertainties and unpredictable changes brought about by advances in digital technology. Public-sector productivity will be determined by a complex array of interconnected drivers. The rapid adoption of digital technology is changing citizens' expectations of interactions with government and prompting agencies to rethink how they deliver public services. Governments need to go beyond digitizing existing processes and services. The expectation is that public-sector organizations should interact better and deliver faster services amid the growing complexity of citizens' needs. They therefore need to harness the power of digital technologies to reimagine and transform the business models of government.

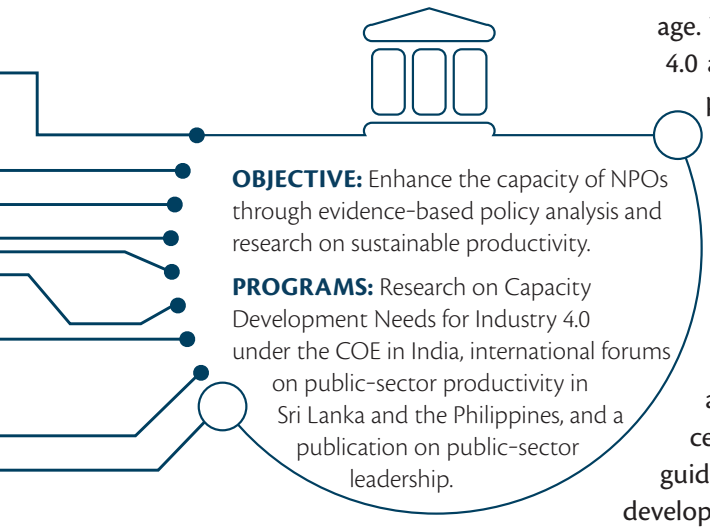
In the World Bank report on government effectiveness improvement indicators, the average ranking of 19 APO member countries was 54.12 in 2015, 55.29 in 2016, and 55.29 in 2017, a positive improvement of 1.17 points over those three years. To continue improvement in this indicator, the APO will explore new areas and provide capacity-building programs to contribute to the transformation of governments given the volatility, uncertainty, complexity, and ambiguity of the current environment. The APO therefore must introduce new capabilities for seizing opportunities offered by cutting-edge technologies to create maximum benefits and impacts for member countries.

Under the Smart Public-sector Program, initiatives are categorized into: 1) exploring new frontiers to enhance the capacity of NPOs through evidence-based policy analysis and research on sustainable productivity; and 2) institutional strengthening and capacity building to support NPOs and public-sector organizations in becoming more efficient, effective, accountable, and future-ready. In 2018, research, workshops, training courses, study missions, conferences/forums, and self-learning e-courses were conducted under the two types of initiative. Projects implemented in this program are categorized as multicountry, in-country, Bilateral Cooperation Between NPOs (BCBN), demonstration projects, Technical Expert Services (TES), Specific National Program (SNP), and in-

country observational study missions. These activities were aimed at strengthening NPOs and member economies in general and advancing the productivity movement in the region including the public sector.

Exploring New Frontiers

In supporting member governments in exploring new areas based on evidence-based policy, the Research on Capacity Development Needs for Industry 4.0 was undertaken. After identifying critical needs in the region, recommendations will be made on national roadmap development for member economies. This project was hosted by the Center of Excellence (COE) on IT for Industry 4.0 in India. Another important ongoing research project is on sustainable productivity. The results of these studies will assist public-sector agencies in identifying new opportunities to become more efficient and effective in the digital age. While there is still a long way to go before widespread Industry 4.0 adoption in member economies, it is clear that it will increase productivity in the long run. The APO therefore is taking a leading role in promoting Industry 4.0 transformation initiatives in the region, in which the role of the public sector through legislative and regulatory functions is crucial.



The publication of *Public-sector Leadership for Innovation and Productivity* last year fostered a common understanding of the role that innovative leadership plays in enhancing productivity and ensuring the cost-efficient provision of high-quality, citizen-centered public services. It also provided a blueprint and resource guide for public-service organizations in APO member economies to develop the leadership capacity of government officials.

The APO Sustainable Productivity Summit brought together technology leaders and policymakers from APO members and elsewhere to deliberate on the "next big thing" in terms of challenges, opportunities, and impacts of emerging technologies and the policy interventions needed to cope with them. With the theme "Shaping the Impossible," the summit in Tokyo was attended by 196 participants.

Two international forums on Public-sector Productivity conducted in the Philippines and Sri Lanka discussed the trends shaping the future of government and new drivers of productivity in the sector. The combined 400 participants in both events had opportunities to network with government leaders, policymakers, and experts.

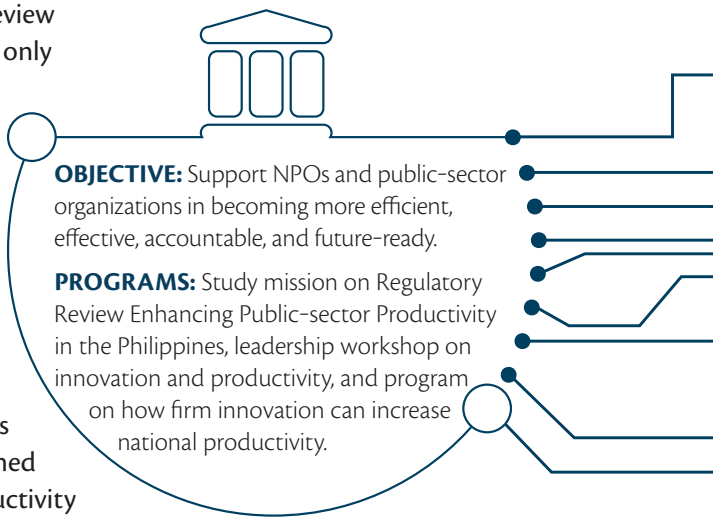
Institutional Strengthening and Capacity-building Initiatives

To build on existing leadership initiatives, the APO convened a workshop to develop its own complementary framework dedicated to public-sector leadership as a guide for member countries to anticipate the future of government. *Public-sector Leadership for Innovation and Productivity* was utilized as a reference material to help the participants appreciate the need for innovative leadership to increase public-sector productivity.

Governments worldwide increasingly view performance management as a tool to improve overall public-sector administration. Under its Public-sector Productivity Framework, the APO continued to train trainers in performance management in the sector in 2018. Those trained senior-level public-sector officials and human resources managers responsible for maintaining or introducing performance management systems, including those from NPOs, are expected to create multiplier effects.

Policymakers and governmental officials in charge of science, technology, and innovation policy (STIP) and R&D policy attended a 2018 APO workshop to discuss the importance of firm innovation in increasing national productivity. The successful design, implementation, and monitoring of STIP by governments are imperative, and APO support for those efforts is one element of capacity building for leaders and policymakers in the region.

The multicountry observational study mission on Regulatory Review Enhancing Public-sector Productivity held in the Philippines not only enhanced knowledge of the effectiveness of regulatory reform but also clarified the linkages between reform management and improved public-sector performance and productivity. Government officials from member countries who attended are expected to review existing regulations to make the business environment more conducive to growth.



The development of a course for productivity specialists in the public sector through the COE on Public-sector Productivity was a major step toward the creation of a pool of experts equipped with specialized knowledge and tools. Those APO-trained specialists will not only be responsible for enhancing the productivity of public services but also for conducting training on their own for different public organizations in their countries.

The Smart Public-sector Program represents a strategic approach to making the most of limited resources in the quest for more effective public service delivery and good governance.

APO Research

The new APO spearhead model was shared with delegates at the 2018 Strategic Planning Workshop (SPW) in July. Under that model, leadership by the Secretariat as an enabler, pioneer, or resource expert is demonstrated by promoting research, providing information and advice, instituting programs, strengthening national productivity frameworks, and establishing Centers of Excellence. With assistance from and follow-through by NPOs, the spearhead model served as the cornerstone of APO research in 2018. The overall goal was achieving value-added outcomes by acting as the leading think tank on productivity for member countries and the Asia-Pacific.

With the exponential rate of change increasing as a result of disruptive digital technologies, APO research activities paid extra attention to incorporating environmental scanning to uncover driving forces, emerging trends, and strategic issues on the horizon. This was reflected in the 2018 Quarterly Emerging Trends Reports, The Future is Now, which were published online and shared with APO stakeholders. However, these reports do not predict changes, much less forecast them. Rather, they seek to pique the interest of readers to make them more aware of the forces that are revolutionizing the productivity movement in the Asia-Pacific and beyond.

Through carefully crafted research programs, the APO hopes to shape the collective desired future following sound calibrated strategies. With research on sustainable productivity gaining momentum, leading experts are now working with the APO to anticipate economic growth in an era when rapid change is the new normal. The current approach represents a break from the past and is needed to halt the long-term downward trend in productivity growth, especially in developed economies. Human capital contributions to overall productivity and economic growth have declined, but education levels are rising worldwide. This leads to a situation where educational skill development models do not match technological progress, making it impossible for labor to create more with less. On the other hand, advances in technology at the current pace have enormous potential to contribute to labor productivity and economic growth. The upshot of these developments created the impetus for a new measurement of sustainable productivity which can capture the future-readiness elements of countries worldwide.

OBJECTIVE: Help APO members sustain future-oriented productivity growth through research and sound calibrated strategies.

PROGRAMS: SPW, Quarterly Emerging Trends Reports, *APO Productivity Databook 2018*, research on Capacity Development Needs for Industry 4.0, forum on Women's Labor Force Participation and Productivity Enhancement, and research on Youth Employment Issues and Human Capital Development, and Aging Society and Gender Mainstreaming in Human Capital Development.

APO research projects in 2018 were carried out alongside related programs such as the SPW, technology forums, and seminars. Every project was conducted with the aim of sustaining future-oriented productivity growth. The think tank role was reflected in the *APO Productivity Databook 2018* and accompanying Asian Economic Productivity Map. Both provide evidence-based statistics that are critical for the formulation of effective, sound policies.

As part of the Secretariat's efforts to align APO research with the UN Sustainable Development Goals (SDGs), salient documents were published from projects including the Forum on Women's Labor Force Participation and Productivity Enhancement, research on Youth Employment Issues and Human Capital Development, and research on Aging Society and Gender Mainstreaming in Human Capital Development. These shed light on regional issues affecting the achievement of the SDGs.

In addition, the research on Capacity Development Needs for Industry 4.0 and that on Science, Technology, and Innovation Policies in Member Countries and Implications for Productivity Enhancement focused on current hot-button issues involving the Internet of Things, big data, artificial intelligence, and Industry 4.0. The research on Capacity Development Needs for Industry 4.0 will lay the foundation for expanded investigations of the specific needs of member countries in anticipation of Industry 4.0 adoption. It also dovetails with the APO's cooperation in the Economic Development Board of Singapore's Smart Industry Readiness Index.

Centers of Excellence

The APO Center of Excellence (COE) Program encourages member economies to showcase their best practices in areas of specialization. Four COE have been designated by the Governing Body: COE on Business Excellence (BE) in SPRING (now Enterprise) Singapore (2009); COE on Green Productivity (GP) in the CPC of the ROC (2013); COE on Public-sector Productivity (PSP) in the DAP (2015); and COE on IT for Industry 4.0 in the NPC, India (2017). In 2018, activities were conducted under the four to strengthen COE capabilities and related efforts in member countries.

COE on BE

Developing the capacity of BE assessors

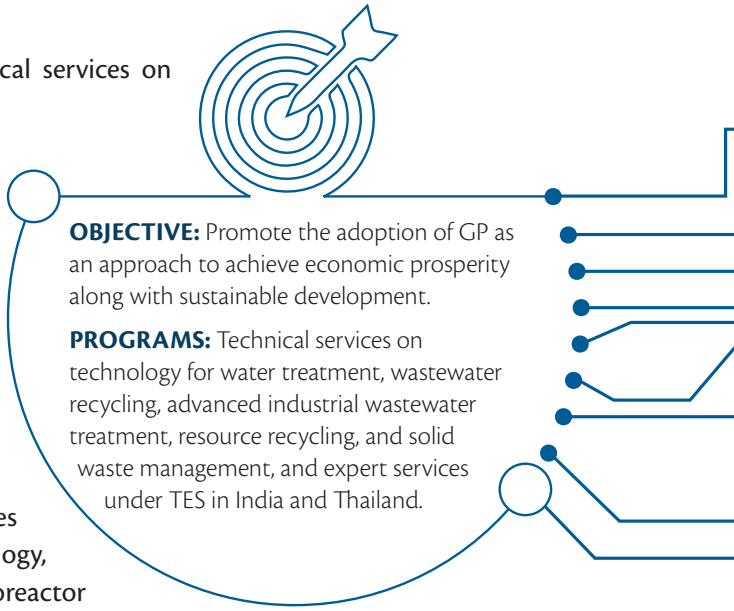
The APO extended assistance to the COE on BE to enhance the capabilities of the pool of assessors. A 2018 seminar was organized to strengthen the skills of BE assessors in Enterprise Singapore with reference to the Singapore BE framework and European Foundation for Quality Management (EFQM) framework. During the seminar, a resource person delivered presentations and case studies on the EFQM Excellence Model and elaborated on the keys to performing accurate stakeholder analysis. BE assessors of Enterprise Singapore were also guided throughout the discussion sessions to strengthen their competencies and elevate their level of understanding of best practices in Europe. At the end of the two-day seminar, the resource person submitted a report with recommendations on the Singapore BE framework, the assessment process, and assessor training.

The BE assessors trained in this seminar will in turn assist other member countries to build up their capacity and expertise on BE, enhance the management of BE initiatives, develop and strengthen quality award systems, and improve the productivity of various organizations.

COE on GP

Strengthening GP capabilities in member countries

The APO COE on GP promotes the adoption of GP as an approach to achieve economic prosperity along with sustainable development. The COE on GP under the CPC has utilized its pool of experts in the four priority areas of resource recycling, green energy, green factories, and ecoinnovation to strengthen the capabilities of member countries. APO members benefited through those services to upgrade their knowledge, understanding, and applications of GP tools, techniques, and methods.



In 2018, the COE on GP extended support through technical services on the topics of technology for water treatment, wastewater recycling, advanced industrial wastewater treatment, resource recycling, solid waste management, etc. Specifically, four experts were sent on three visits to government agencies in India and Thailand to provide advice and share experience under ROC government initiatives on waste processing, wastewater management, waste policy, and the four-in-one recycling program. Under the Technical Expert Services (TES) Program, experts also visited different enterprises in India and Thailand to demonstrate a water sample biodiagnosis kit and green energy industrial wastewater solutions. Presentations were delivered on strategic approaches for cooperation in water treatment, resource recycling technology, waste management technology transfer, ceramic membrane bioreactor technology, and the advanced treatment technologies of BioNET, EDR, and Forward Osmosis. The final reports on the identification of emerging areas in which the receiving countries required support and potential international collaboration on GP-related themes were also submitted.

Enhancing Expertise on GP and the Future of Sustainable Development

As part of the plan to strengthen the COE on GP by promoting GP-related activities and publicizing valuable examples of GP in the Asia-Pacific region, a three-day forum on GP and the Future of Sustainable Development was organized in Taipei, 18–20 September.

Fifty-six local participants representing industry, government agencies, chambers of commerce, and trade unions of the ROC attended. Nine international experts and participants from India, Indonesia, Lao PDR, Thailand, and Vietnam from government agencies and industries involved in GP were also in attendance. The forum shared key emerging trends in new clean technologies for the future, the promotion of resource efficiency with the focus on recycling, and green energy. Good practices in renewable energy, solar energy, and resource recycling were discussed among all experts and participants. Case studies and success stories from APO demonstration projects in various member countries were shared by the COE on GP technical services team. Future trends in resource management for sustainability, renewable and mini-grid applications of solar energy, resource conservation and minimization of waste, future techniques for resource recovery from wastewater, clean technology, etc. were at the core of discussions throughout the forum.

Enhancing the Capacity of the COE on GP

To upgrade the capability and expertise of the COE on GP, thus helping it to become a leading regional organization in the areas of resource recycling, green energy, green factories, green buildings, and agroinnovation, the APO supports it in conducting study missions to identify emerging needs and new initiatives in GP-related areas.

An expert was assigned to accompany the COE on GP team of the CPC to visit green economy authorities in Malaysia: the Environment and Natural Resources Economic Section; Economic Planning Unit of the Prime Minister's Department; Green Tech Malaysia; Malaysian Investment Development Authority; and MPC. When interacting with government agencies in charge of the National Green Technology Policy of Malaysia, the delegation utilized the opportunity to engage in experience sharing and productive discussions on environmental policies, technologies, and public administration. As part of the study mission, the delegation also visited NGOs including EcoLean, a local consulting firm assisting Malaysian industries in productivity enhancement; and the Suzuka Group. With the assistance of the expert, the mission identified key partners for COE on GP projects on the green economy, as well as emerging needs in Malaysia for future COE activities.

COE on PSP

Developing Productivity Specialists in the Public Sector

One of the major projects of the COE on PSP is the development of a course manual on *Developing Productivity Specialists in the Public Sector*, which is aimed at enhancing the abilities of public managers to improve the performance of their governments and individual public-sector organizations continuously. Six experts assigned to plan and develop the manual held a meeting in August 2016 in Manila and devised 11 modules. The experts also recommended that a pilot test to confirm the quality and relevance of the modules would be helpful, while providing participants with knowledge of recent trends in PSP and tools utilized in the sector.

Hosted by the DAP through the COE on PSP, the workshop on Developing Productivity Specialists in the Public Sector was held from 12 to 16 March 2018 in Manila with dual objectives of equipping participants with the knowledge and tools to develop competencies as productivity specialists in the public sector and assessing the topics/units outlined in the draft course manual. A total of 27 from 13 member countries participated. Six resource persons from Canada, Indonesia, the ROK, Malaysia, the Philippines, and Thailand made presentations on topics covered in the manual.

COE on IT for Industry 4.0

National Capacity Building on Industry 4.0 for SMEs

Two national training programs were conducted in 2018 by the COE on IT for Industry 4.0 in partnership with M/S Bosch India to equip Indian government officials with fundamental knowledge of Industry 4.0. Those programs were part of preparation efforts of the COE on IT for Industry 4.0 to expand its programs to disseminate knowledge to other member countries.

Establishment of an Expert Database on IT for Industry 4.0

Since the inauguration of the COE on IT for Industry 4.0, a directory of national experts on IT for Industry 4.0 has been developed, and the COE planned to expand it internationally in 2018 to ensure that member countries have easy access to such experts in different sectors.

Industry 4.0 Digitization Strategies for SMEs

Industry 4.0, the rapid technological revolution driven by new-generation technologies, has fundamentally transformed the future of production systems. The integration of manufacturing with state-of-the-art ICT linked to logistics processes among different companies is the key concept behind Industry 4.0. In APO economies, SMEs are on a fast-growth trajectory, but only a small fraction have access to the type of ICT that is commonplace in larger enterprises. There are numerous barriers to overcome before SMEs can fully embrace Industry 4.0, including a lack of digitization knowledge, the high learning curve involved, difficulty in defining the starting point, etc.

OBJECTIVE: Showcase digital technologies for industry and help member countries create frameworks and strategies for adoption of Industry 4.0.

PROGRAMS: Two national training programs, developed directory of national experts on IT for Industry 4.0, and research on Industry 4.0 Digitization Strategies for SMEs.

The COE on IT for Industry 4.0 initiated research on Industry 4.0 Digitization Strategies for SMEs. The results will support SMEs in member countries in moving toward digitization and staying competitive in global value chains as the Fourth Industrial Revolution proceeds. A chief expert from Germany and five national experts from the ROC, India, Indonesia, Malaysia, and Vietnam were selected to undertake the research and attended a coordination meeting including NPC and APO Secretariat staff, 13–15 December 2017 in New Delhi. That meeting defined the scope and methodology of the project, including data collection, data analysis, and timeline, and designed questionnaires to assess the current level of digitization and critical needs of SMEs to achieve it. A final research report pinpointing the critical needs of SMEs before they can embrace the Fourth Industrial Revolution and a set of recommendations for SME digitization strategies at national level was submitted in December 2018.

Development of Monitoring and Evaluation Systems for APO COE

During the 60th session of the Governing Body Meeting in Vientiane, Lao PDR, in May 2018, it was emphasized by APO Directors that the critical success factors for the COE Program should include annual performance monitoring and evaluation (M&E) for all existing and future COE. In order to adopt a longer-term approach in supporting the COE beyond the initial two years and to institutionalize procedures for the annual performance assessment, an M&E system should also ideally be in place for each COE. The M&E systems will allow better evaluation and alignment of COE activities and programs with the common goals of the APO Vision 2020.

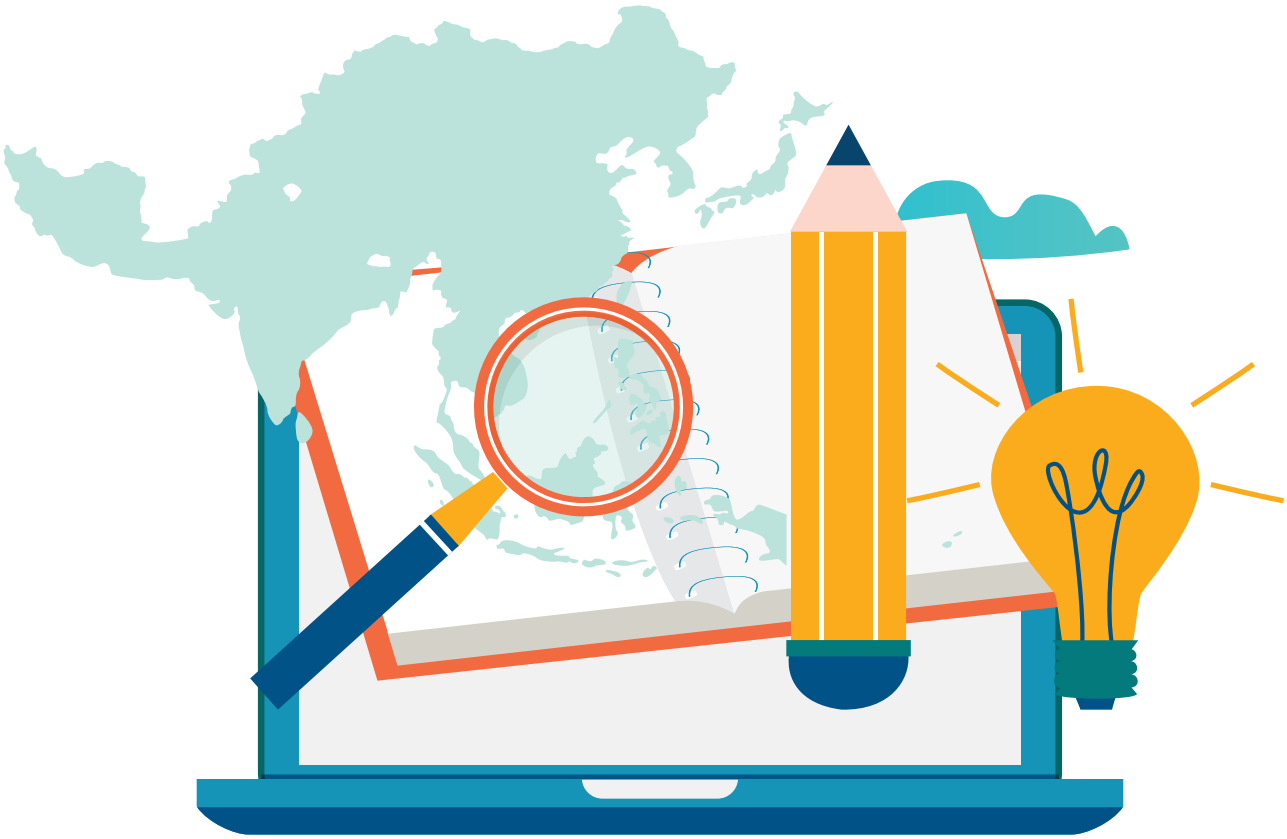
The development of the M&E framework began with the assignment of an expert who submitted a draft in December 2018 and shared it with the four COE. Based on the feedback received, the framework was tailored for each COE following consultations with the host NPOs. In a later phase, an expert evaluation of each COE will be conducted. Thereafter, each NPO hosting a COE will be requested to submit annual performance reports, in line with the Governing Body's recommendation to institutionalize the M&E process.

Identifying the Next COE

Preparations for the development of the next COE were in progress in 2018, including assessment of areas of excellence of NPOs or partner organizations and commencement of discussions. A proposal for a COE on Smart Manufacturing was received from the CPC of the ROC in October 2018. An expert panel meeting was convened via Skype on 30 January 2019 attended by the NPO Heads of India, the Philippines, and Vietnam plus an expert on Industry 4.0 smart manufacturing.

The expert panel will evaluate that proposal and recommend whether to approve it based on the general guidelines set by the APO Governing Body. Those guidelines include the competencies and expertise available in the proposing member country, current and suggested programs, and existing organizational structure to support the sustainable operation of the COE. Final recommendations were to be made to the 61st Session of the APO Governing Body in April 2019 based on the evaluation outcome.

Individual-Country Programs



Individual-country Observational Study Missions

Under the Individual-country Observational Study Mission (I-OSM) Program, a member country may send a mission(s) to one or more other member countries to study and observe recent developments and best practices in a particular area of interest relevant to its needs for productivity promotion. This program addresses individual member country needs in the pursuit of productivity enhancement.

In 2018, six I-OSMs benefiting 56 professionals from five member countries were carried out on: Innovations and Applications of New Technologies for SMEs from Cambodia to the ROK; Japanese Food Education from the ROC to Japan; Agricultural Innovation and the 6th Industrialization from the ROC to the ROK; Best Practices in Agriculture and Rural Development from the Philippines to India; Application of Innovation Management and Industry 4.0 from Mongolia to the ROK; and Learning Experiences in Benchmarking and Best Practices on Productivity from Vietnam to the ROC.

Development of Demonstration Companies

Demonstration projects attempt to develop model organizations that showcase good practices of productivity improvement with the support of technical experts and NPOs and the commitment of the target organizations.

OBJECTIVE: Develop model organizations to showcase best practices for driving productivity improvement in similar industries in the member country.

PROGRAMS: Continuation of 2017 programs in Bangladesh, India, Pakistan, Thailand, and Vietnam, and new programs in Fiji, Indonesia, and the Philippines.

Through capacity building, recording of improvement processes, and result dissemination, the program aims to demonstrate good practices that other organizations can learn from so that they can embark on similar improvements.

Five demonstration projects started in 2017 and continued in 2018, including the applications of material flow cost accounting (MFCA) in manufacturing, food processing, and the hospitality sector in Pakistan and in the leather sector in Bangladesh; applications of smart technologies in automotive parts manufacturing in India; digitizing outpatient management systems in the healthcare sector in Thailand; and the implementation of GLOBALGAP in a livestock company in Vietnam.

Three new demonstration projects were started in 2018. The first involves off-grid solar photovoltaic systems and establishing a training curriculum for solar energy in Indonesia, targeting the Center for Work Training Development in Serang. The second is applying the Common Assessment Framework in three public organizations in the Philippines. In the third, Future Farms Limited in Fiji is seeking improvements in processing livestock waste. All three projects were scheduled to be concluded in 2019.

Bilateral Cooperation Between NPOs

Collaborations and partnerships among member countries are among the APO's strengths as an international organization focusing on productivity. The diversity of its members creates valuable opportunities to learn about and share best practices, particularly in areas related to the productivity movement. The Bilateral Cooperation Between NPOs (BCBN) Program allows NPOs to learn from each other to address specific needs and requirements. The scheme facilitates the visits of high-level officials of NPOs and policymakers to observe and study firsthand proven or new productivity policies in other APO members.

OBJECTIVE: Enable member countries and their NPOs to learn from each other to address specific needs and requirements.

PROGRAMS: Six BCBN study missions were organized involving the ROC, Fiji, India, Japan, the ROK, Malaysia, Mongolia, Nepal, Sri Lanka, Thailand, and Vietnam.

In 2018, six BCBN study missions were organized by the APO involving the ROC, Fiji, India, Japan, the ROK, Malaysia, Mongolia, Nepal, Sri Lanka, Thailand, and Vietnam. Twenty-five delegates benefited from this program, and the missions covered different areas and perspectives based on the needs of each NPO and to showcase the APO Centers of Excellence. Topics included the Productivity and Innovation Promotion Program, Productivity Movement at National and Sectoral Levels, Strengthening Cooperation between NPOs, Industry 4.0: Digital Technology Implementation to Improve Productivity, and Industry 4.0 for Information Technology.

Technical Expert Services

The main objectives of the Technical Expert Services (TES) Program are to develop trainers and consultants of NPOs as well as related organizations and provide them with consultancy services to solve productivity-related issues. TES achieves these two main objectives through the assignment of experts who work closely with NPOs

and other productivity stakeholders on the ground. The Secretariat plans and coordinates TES activities in close cooperation with the recipient NPOs. The duration of TES projects is normally up to 12 days.

In 2018, 31 TES experts were assigned, with nine carried over from 2017. The most experts assigned from within the APO membership were from Japan (13), and the most from outside it were from the USA (two). Other experts came from the ROK (four), Malaysia (four), and Hong Kong (two).

Overall, expert services received an average evaluation score of 84 out of 100 for the quality of service provided to members who utilized them. Based on information provided by NPOs, around 4,000 participants, professionals, and employees benefited through lectures, presentations, consultations, and training conducted by the experts.

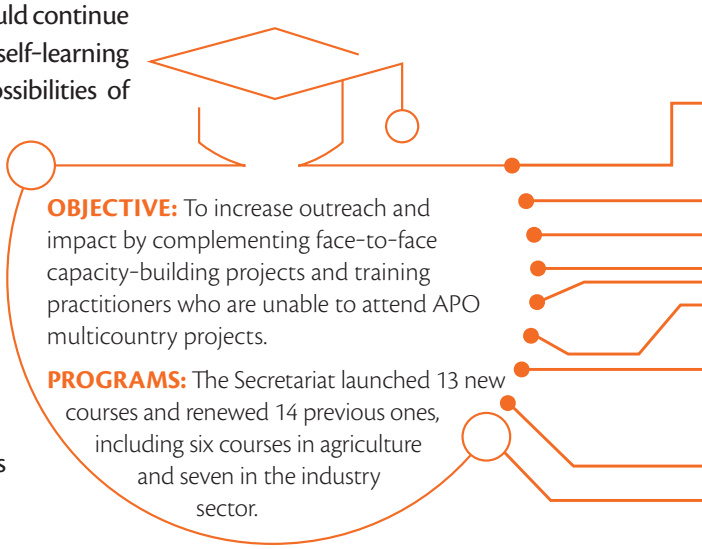
eAPO Digital-learning Platform

Online learning is an effective tool for providing training at reduced cost to achieve inclusive sustainable development and offer learning opportunities to people who had been excluded from conventional classroom face-to-face training efforts. It provides greater flexibility and more opportunities for customized learning. People can study when and where they feel the most comfortable. They can learn at their own pace and take breaks when needed.

In 2018, the Secretariat continued to offer self-learning e-courses through its open-source, Moodle-based digital-learning platform, the eAPO. The initiative helps the Secretariat increase its outreach and impact by complementing face-to-face capacity-building projects and training practitioners who are unable to attend APO multicountry projects. This will also contribute to the creation of 100,000 trained productivity practitioners as mandated under the Roadmap to Achieve the APO Vision 2020.

During 2018, the Secretariat launched 13 new courses and renewed 14 previous ones. The Secretariat also set up a Digital Learning Team to review all projects and explore options for partnerships with universities and leading online education

platforms. Based on the review, it was decided that the Secretariat would continue to strengthen its eAPO digital-learning platform and offer its own self-learning e-courses in 2019. The year also saw the Secretariat exploring possibilities of developing more interactive, user-friendly video-based courseware. This will be taken up as a pilot initiative in 2019.



OBJECTIVE: To increase outreach and impact by complementing face-to-face capacity-building projects and training practitioners who are unable to attend APO multicountry projects.

PROGRAMS: The Secretariat launched 13 new courses and renewed 14 previous ones, including six courses in agriculture and seven in the industry sector.

Agriculture Courses

Six e-learning courses on smart agriculture were launched under the Advanced Agricultural Management subprogram. They covered Organic Agriculture and Organic Agribusiness; Urban Agriculture; Building Climate Change-resilient Agriculture; Future Food: Exploring Business Opportunities; Business Models for Women Entrepreneurs; and Smart Farm Mechanization.

The six courses started from late 2018 and will be continued to mid-2019. As of the end of 2018, 335 participants had enrolled in the agriculture courses, of whom 95% were from member countries, while the remainder were from PR China, Denmark, France, Germany, Italy, Lebanon, Monaco, Nigeria, UAE, the UK, and USA. A total of 14 had passed the final examination required to receive the APO certificate.

Industry Courses

In line with the Industry Transformation Initiative of the APO and efforts to promote productivity knowledge, tools, and techniques related to technological advances and innovations on a wider scale within and beyond the Asia-Pacific region, seven new industry sector-specific self-learning e-courses were offered during the year. The topics covered diverse areas aimed at creating a pool of productivity professionals who will champion productivity-enhancing support services for industry in member countries such as: Smart Manufacturing (Basic and Advanced Levels); Energy Management System Auditor's Course; Sustainable, Resilient Supply Chains and Integration into Global Value Chains; Integrating Lean Manufacturing Systems and Industry 4.0 Concepts; Green Productivity and Integrated Management Systems; and Energy Efficiency Techniques.

A total of 1,802 participants registered in all courses, of whom 309 passed the final examination and received the APO certificate. The courses also attracted participants from outside the APO membership such as those residing in Afghanistan, Andorra, Antarctica, Austria, Azerbaijan, Bahamas, Bahrain, Benin, Botswana, Brazil, Burkina Faso, Cameroon, Canada, PR China, Egypt, Germany, Hong Kong, Ireland, Italy, Kenya, Mauritius, Monaco, Namibia, Nigeria, South Africa, Spain, Sweden, Uganda, UAE, the UK, and USA.

International Cooperation

In an increasingly interconnected world, the APO recognizes the importance of expanding ties with other international organizations, national agencies, and relevant bodies within and outside the Asia-Pacific region. It therefore continues to strengthen cooperation and collaboration with existing and new partner organizations to promote sustainable productivity initiatives. The International Cooperation Program contributes to expanding the pool of experts and resources for APO activities. It also provides member countries with opportunities to establish bilateral business ties and networks with counterparts in the region. The APO as a whole, its member countries, and its partners in cooperation all derive benefits from the synergies created.

Turkey

In 2018, the APO Governing Body formally approved the accession of the Government of the Republic of Turkey as a full member of the APO and gave in-principle agreement on the total membership contribution for the 2019–2020 biennium after it formally joins. The Foreign Affairs Commission of the Turkish National Assembly approved the proposed draft law on Turkey's membership in the APO and was in the process of obtaining approval from the

General Council and President at the end of 2018. Under its Industrial Strategy Vision, Turkey aims to accelerate the transformation of its industrial structure, which has significant effects on the environment and society; gain a greater share of world exports with high value added; and build up a more qualified labor force by improving productivity.

Myanmar

It has been almost four decades since the APO started inviting nonmembers to attend selected projects. The Republic of the Union of Myanmar has been an active participant in such opportunities to exchange knowledge and experience with APO members. The APO remained in regular contact with the Government of Myanmar regarding its membership in the APO. It will continue to support Myanmar by sharing expertise in human resources capacity building to improve productivity.

Brunei

The Prime Minister's Office of Negara Brunei Darussalam approached the APO for consultancy services on measuring public-sector productivity. This is one of the APO's key strengths, which can be shared to enhance knowledge of productivity in the civil service in ASESAN members. The APO will continue to explore possible collaboration with nonmembers including Brunei for mutual benefit and to contribute to enhancing the productivity frameworks of governments in the region.

Tonga

The Kingdom of Tonga has recently shown interest in APO membership after a meeting with the Secretary-General in Fiji. The Secretariat and the Ambassador of Tonga to Japan explored possible areas for collaboration such as programs for strategic foresight capabilities, new measurements to better capture productivity data, and specific national programs tailored to meet the needs of individual countries.

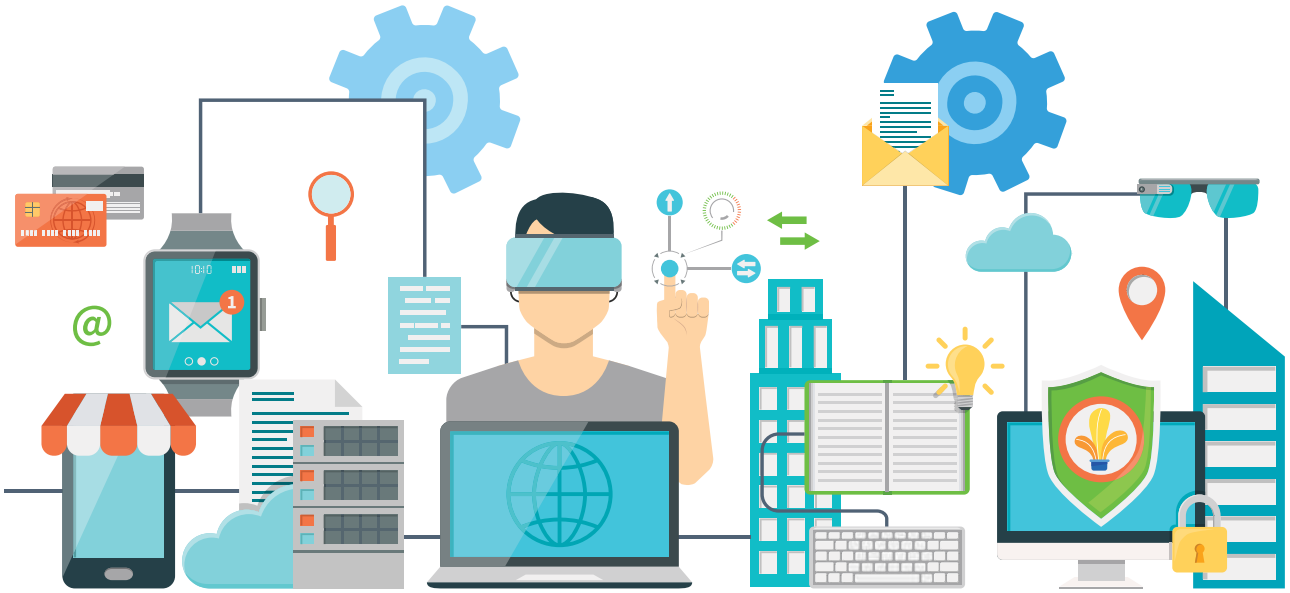
Centre on Integrated Rural Development for Asia and the Pacific

The APO continues to strengthen its collaboration with the Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP). The APO and CIRDAP signed a three-year MOU during the 59th Workshop Meeting of Heads of National Productivity Organizations in Yogyakarta in October 2018 in continuation of the first MOU signed in 2016. CIRDAP and the APO share the common goal of optimizing resources for achieving the UN Sustainable Development Goals through agricultural transformation, future food, and rural development programs.

Centre for Strategic Futures/Singapore Economic Development Board

Strategic foresight and scenario planning are important tools to address the challenges of Industry 4.0. The Secretariat has sought cooperation with the Centre for Strategic Futures in developing national scenarios for the transformation of the industry and agriculture sectors in APO member economies. In 2018, the APO became a founding member of the Smart Industry Readiness Index Partner network launched by the Singapore Economic Development Board and supported by Enterprise Singapore, the country's NPO, to identify and then address gaps in the readiness of members to take full advantage of Industry 4.0.

Information Technology Program



Technology is both an enabler and a disruptor, and it is important that the APO leverage it to meet the challenges of the dynamic digital world as well as deliver better value to stakeholders. With member economies adopting digital approaches to implement productivity initiatives, the Secretariat augmented its IT infrastructure and communications backbone in 2018 to meet future challenges.

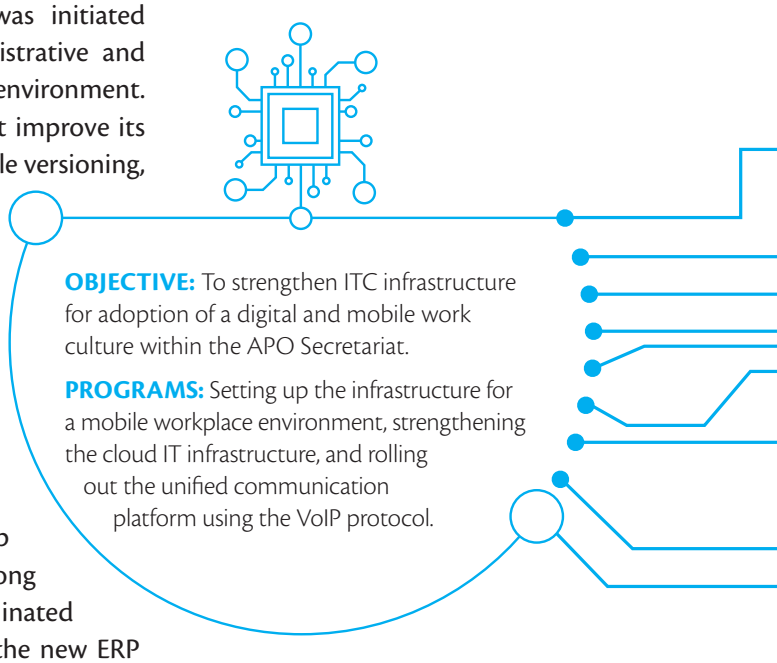
The initiative was in line with the strategy of the Secretariat to use digital technology pervasively across its operations to improve services and productivity through better planning, execution, and program monitoring. In keeping with global technology trends, the Secretariat set up the infrastructure for a mobile workplace environment, strengthened its cloud IT infrastructure, and rolled out a unified communication platform using the Voice over IP (VoIP) protocol for an enterprise-class software PABX.

On the maintenance front, the Secretariat continued to support the use of a few legacy IT systems, including those for project management and APO accounting and budget management, which are critical for day-to-day operations and business continuity. These will be gradually phased out after the rollout of the new enterprise resource planning (ERP) system. It also continued with the management and technical support of the digital-learning platform and videoconferencing (VC) facility in Tokyo as well as in member countries for its VC-based e-learning courses.

Four VC-based e-learning courses comprising eight sessions were conducted in 2018: Management Innovation in SMEs (Advanced); Customer Satisfaction Management for the Health Sector; Global Food Safety Initiatives; and Waste Management in Agribusiness. The 150-hour VC-based courses attracted more than 845 participants from 12 APO member countries.

ERP Initiative

The program to implement a Secretariat-wide ERP was initiated in 2017 with the objective of migrating all key administrative and operational functions to a single database-driven process environment. The integrated platform will not only help the Secretariat improve its document management system but also help avoid multiple versioning, thereby bringing consistency in documentation across different departments. It will enable the APO to work more efficiently by eliminating the need for paper-based documents while reducing the organization's ecological footprint. Access to uniform data and information will facilitate faster analysis and more efficient decision making by the APO.



OBJECTIVE: To strengthen ITC infrastructure for adoption of a digital and mobile work culture within the APO Secretariat.

PROGRAMS: Setting up the infrastructure for a mobile workplace environment, strengthening the cloud IT infrastructure, and rolling out the unified communication platform using the VoIP protocol.

During 2018, the Secretariat reviewed the strategic needs of the APO to determine the functional requirements to help in the selection of appropriate IT solutions. Workflows among departments and NPOs were also reviewed. This eliminated unnecessary processes and streamlined all processes on the new ERP platform. The three key components of finance, budget, and project management will be completed by early 2019.

The ERP rollout will involve a pilot test of the project management system planned for the first quarter of 2019 with a small group of member countries. The aim was to implement the project management system in all member economies by mid-2019 after conducting training for Liaison Officers in Tokyo. The new system will serve as the backbone of the APO's digital infrastructure, integrating processes across different functions within the Secretariat and with other stakeholders including participants, resource persons, and Liaison Officers.

The new IT infrastructure will also encompass other digital platforms such as the eAPO to enable synchronization of databases. Information on APO projects can therefore be shared with relevant stakeholders to give them a quick understanding of key metrics. The ERP and other digital platforms are cloud based.

Other New IT Initiatives

Investment in digital technologies is planned for the long term, which can be a mix of capital expenditure for hardware and software as well as operational expenditures with the availability of newer subscription-based infrastructure models. During 2018, the Secretariat continued with its balanced mix of both in a hybrid model to support existing operations and enable the APO to transform into a nimble organization.

The Secretariat's unified communication platform went live in 2018. By replacing the previous hardware-based PABX system with the cloud-based one, Secretariat staff can work and communicate from any location with Internet access to serve member countries better.

On the cloud infrastructure front, the Secretariat completed the migration of its file and email servers, two critical components for powering the virtual office. This not only reduced the Secretariat's dependence on hardware that has a fixed life and needs upgrading but also made the IT backbone more flexible with the ability to seamlessly scale up infrastructure requirements on the pay-per-use infrastructure as a service (IaaS) and software as a service (SaaS) models.

The completion of the cloud infrastructure setup will enable the Secretariat to power its operations virtually rather than relying on physical products and hardware and help in cutting down on paper waste, improving energy efficiency, and reducing emissions. This is also a step in the implementation of the Secretariat-wide ERP.

To embrace the digital office and reduce paper use further, the Secretariat implemented new printing solutions with card-based authentication for additional security and accountability. This new solution prevents waste to improve productivity and reduce print-related expenses. The Secretariat gradually decreased its printing costs during the previous two years by over 70% compared with 2016.

During 2018, the Secretariat also set up the APO Futures website. This is a content aggregation platform to curate and document global trends and research on emerging trends.

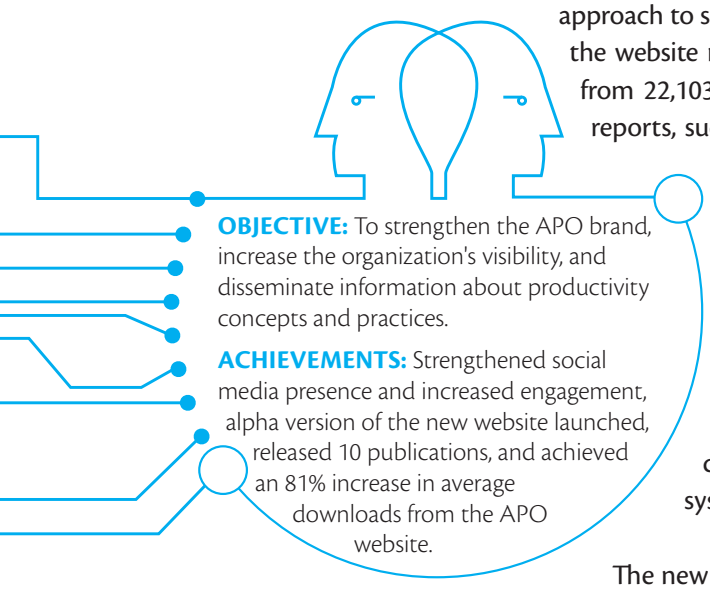
Information And Public Relations Program

Transformation was the key word for the APO in 2018. The Secretariat channeled all its efforts toward driving change, both internally and externally, as part of its initiatives and programs to enable member countries to meet the challenges of the future and achieve sustainable productivity growth for comprehensive socioeconomic development.

This was reflected in public relations and promotional activities, including in social media. A content-led inbound marketing strategy under the "attract, connect, and engage" principle continued to create more user engagement on the APO website and other digital platforms. However, in mid-2018, the Secretariat decided to focus only on sharing internal content, doing away with the practice of aggregating articles, reports, and analyses from other websites and online sources. The decision was aimed at increasing user engagement levels on APO-owned digital platforms.

Secretariat efforts to reduce its ecological footprint also continued, including digitally publishing all content, publications, and newsletters. A new publication template with a single-column layout was specially designed to improve user experience on different device formats and as a precursor to HTML5-based digital publishing. This helped improve readability of the publications, while the new-look cover and page-layout format increased overall readership and engagement levels on the website. During the year, the Secretariat recorded an 81% increase in average downloads from the website, up from 1,483 per month during 2017 to 2,684 per month.

The Secretariat strategy of digitally amplifying APO initiatives and events, promoting member country-specific activities, and giving updates on workshops, training, and e-learning programs was maintained. The integrated approach to social sharing of APO-related news, reports, and publications from the website resulted in an overall 8% increase in average monthly pageviews, from 22,103 in 2017 to 23,843 in 2018. A total of 90 inhouse website news reports, success stories, blog posts by the Secretary-General, and articles in Japanese were published during the year.



OBJECTIVE: To strengthen the APO brand, increase the organization's visibility, and disseminate information about productivity concepts and practices.

ACHIEVEMENTS: Strengthened social media presence and increased engagement, alpha version of the new website launched, released 10 publications, and achieved an 81% increase in average downloads from the APO website.

The development work for the new website was completed and an alpha version launched for review by Secretariat staff. Their feedback will be used to refine the functionality, look, and feel and improve the user interface before the website is formally launched in 2019. Besides its contemporary design and user interface, the new website is dynamic, with built-in responsive capabilities making it easier to view on any device and operating system, including laptops, tablets, and smartphones.

The new website also has a right-based access control feature that allows different levels of access based on user type, for both internal and external users. An advanced content management system supports responsive web design, progressive enhancement, and content scheduling. The website eLibrary enables HTML5-based publishing for easy online reading, a media center for any information journalists may need, and a social hub integrating and curating all APO-related posts for single-page viewing. A geo-tagged view of APO programs can be viewed in real time through an integrated application using Google maps. The geo-tagging is integrated with the program database to enable direct access to project notifications by clicking on the map.

The Secretariat combined different traditional and digital tools and channels to disseminate information about the APO, its vision and strategic goals, history, milestones, and important productivity terms and concepts. The website and social media platforms, mainly Facebook, Twitter, and LinkedIn, shared updates on programs, publications, reports, and photographs as well as project notifications. During 2018, the Secretariat undertook content-driven campaigns to publicize the eAPO digital-learning website, Sustainable Productivity Summit, Quarterly Emerging Trends Reports, and *APO Productivity Databook 2018* and other publications. It also utilized online wire services and social media to disseminate press releases and broadcast major events through webcasting and Facebook Live.

Social Media

In 2018, digital media continued to be the fulcrum and key tool for the Secretariat to reach out to its stakeholders and productivity practitioners across APO member economies and beyond. The inbound content-led strategy helped the number of APO Facebook page followers to cross the 25,000 mark, while those on Twitter touched 7,000. Overall, 2018 closed with a 151% increase in likes on the APO Facebook page and an 89% upswing in the Twitter follower base.

The Secretariat strengthened its presence on LinkedIn, with the volume of content rising by 110%, from 99 posts in 2017 to 208 by the end of December 2018. This primarily included updates on new initiatives, program reports, and recruitment-related posts. The approach helped expand the follower base on LinkedIn by 53% over the previous year.

On the engagement level, while the Secretariat registered a healthy 11% growth in 2018, overall engagement on Twitter dropped by 70%. This can be attributed to the change in content strategy to focus only on APO-related content rather than sharing content from other global sources as done in 2017. However, the Secretariat's initiative saw positive results in terms of the increase in the rate of engagement that went up from 1.41 to 2.16 for Facebook and from 1.30 to 2.62 for Twitter. The engagement rate is a measure of quality or efficiency, calculated as engagement volume divided by the number of users or events that could have triggered a response in terms of likes, comments, sharing, retweets, clicks, and other reactions on a social media platform.

The APO leveraged the power of social media to share information about the Governing Body Meeting (GBM), Workshop Meeting of Heads of NPOs (WSM), and APO Sustainable Productivity Summit. While the GBM and WSM were broadcast live over social media, the APO Sustainable Productivity Summit was webcast live through a third-party agency. Live webcasting of the summit garnered a viewership of 1,650 in 48 countries. A total of 160 updates on the summit were posted on social media, which generated 50,398 impressions on Facebook and Twitter.

PR and Media Relations

Traditional PR and media relations continue to be an important component of the APO outreach program, and the Secretariat worked to improve them, particularly in Japan. Those efforts saw a significant 69% rise in overall media coverage to 2,100 reports in 2018, while media visibility in Japan rose by 22%.

Online wire services disseminated information and press releases in APO member countries and for global outreach. The medium was also used for three major campaigns revolving around the Sustainable Productivity Summit 2018 in Tokyo, the APO joining Singapore's Index Partners Network, and the launch of the Cambodia National Productivity Master Plan under the Strategic National Program. Press releases on those events were circulated via APO social media platforms to a worldwide audience. The visibility created in member countries and nonmembers like Australia, Canada, PR China, France, Germany, Ireland, Latin America, the Netherlands, Turkey, the UK, and USA generated an estimated media value of USD430,000.

The Secretariat also engaged with the mass media in member countries in 2018, particularly with local media in Lao PDR during the GBM and during the Secretary-General's visits to Nepal and Cambodia. The five-day multicountry observational study mission (OSM) on Innovation and Productivity Promotion in SMEs for Mass Media Practitioners hosted by the APO in Tokyo was attended by 18 journalists and showcased innovations and best practices of Japanese SMEs. That OSM developed a framework for cooperation to strengthen links between the APO and mass media practitioners in member economies to promote the latest productivity trends and techniques throughout the region.

APO Honorary Fellows

Since 1978, the title of APO Honorary Fellow has been conferred by the APO Governing Body on former APO Directors, Alternate Directors, NPO Heads, Secretaries-General, or APO Liaison Officers in recognition of their outstanding contributions to the organization. Based on guidelines set by the APO Governing Body at its 19th Session held in 1977, seven individuals were approved by the APO Chair, First Vice Chair, and Second Vice Chair for conferment of the title of APO Honorary Fellow in 2018:

- Former APO Director and Head of NIPO Dr. Roya Tabatabaei Yazdi
- Former NPO Head and Senior Fellow of the DAP Carlos A. Sayco, Jr.
- Former Liaison Officer and Consultant of the MPC Khidzir Ahmad

Branding and Logo

Consistency in the brand image and logo is important for organizational identity and recall. During 2018, the Secretariat continued efforts to maintain uniformity in design and content in all documents. The new publication template and focus on standardizing all creatives for social media, presentations, and other communications helped maintain uniformity in branding. The standardized publication template also meets digital printing requirements and improves overall presentation quality, while making it reader-friendly for different media and devices.

To popularize the productivity concept, the APO produces promotional materials distributed to NPOs and others. One key tool for branding and information dissemination is the APO desktop calendar. The Secretariat decided to use the 2019 calendar, produced in 2018, to communicate its transformational initiatives and new programs introduced. A new website and collaterals were also created for the Sustainable Productivity Summit, while promotional materials like the APO badge, pin, and calendar were developed as part of the uniform branding strategy.

Publications

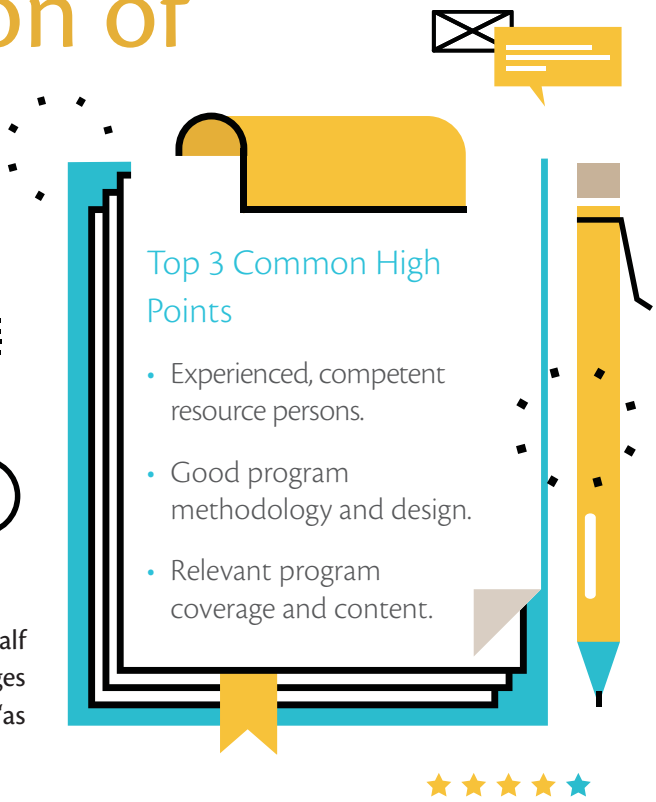
During 2018, the Secretariat brought out 10 publications, including books, research and resource papers, and outcome documents. Special publications assist NPOs and consultants in their training efforts or commemorate occasions and events organized by the APO. The Secretariat also continued to publish the *APO News* as a monthly newsletter distributed as an electronic digital mailer.

While the *APO Productivity Databook 2018* was published under the special publications category, the Secretariat also published an ebook titled *Public-sector Leadership for Innovation and Productivity* and an outcome document, Women's Labor Force Participation and Productivity Enhancement.

Seven research and resource papers resulting from specific APO projects were published in 2018. These included: Why Asia Must up Female Workforce Participation; Green Productivity: A Productivity Measurement Program for Myanmar; Improvement Alternatives for Productivity Courses: A Review of Training Courses in APO Member Countries; and three APO Quarterly Emerging Trend Reports, The Future is Now.

As part of the transformation agenda, it was decided that the APO would cooperate with other international organizations and consulting firms to create co-branded publications, white papers, periodicals, and journals. The first in the series of co-branded research publication titled *Visioning the Future of Growth* was published in collaboration with Singapore-based Future Moves. A second was initiated in collaboration with the OECD, and the research report was in the publication process at the time of writing.

Onsite Evaluation of 2017 Projects



The APO conducted evaluations of 60 multicountry projects implemented in 2017 with 1,895 participants. The projects comprised 14 training courses, 20 workshops, 12 observational study missions, three study missions to nonmember countries, five forums, and six conferences. Feedback from participants, resource persons, and implementing organizations was obtained through end-of-project questionnaires. The results showed that the projects carried out in 2017 were successful based on the fact that more than half of participants had positive responses, with the percentages of those rating projects as "more than expected" and "as expected" relatively unchanged over the past three years.

The results included the top three common high points cited by participants in APO multicountry projects. In more than 50% of 2017 multicountry projects, participants felt that the resource persons were beyond their expectations due their expertise, experience, and methods of engagement and guidance to provide new knowledge. This was followed by good program content and good methodology.

In more than half of the 60 projects, the participants noted that the program coverage, content, and design were good. Positive feedback was also received on site visits relevant to the topics and on the coverage of both theoretical and practical aspects. Similar to 2016, participants felt that it was necessary to improve the time allocation, particularly requesting more time for discussions and presentations.

Resource persons rated the participants' learning attitude, level of engagement, and degree of interest in the topics highly. Some resource persons pointed out that the selection of appropriate participants was crucial in achieving project objectives. Suggestions for improvement were also made in the areas of selecting participants with good communication skills and organizing follow-up activities to track the progress of their action plans.

By carefully designing projects with clear objectives, the Secretariat will attempt to resolve the tight program schedules and time allocation issues, which have been consistently cited as areas requiring improvement by project participants, resource persons, and implementing organizations. After the establishment of an interdepartmental Participant Selection Committee in the APO Secretariat in 2017, the screening process is more rigorous to ensure that participants in multicountry face-to-face projects will contribute to the intended outcomes.

Similar to face-to-face projects, five videoconferencing (VC)-based e-learning courses implemented in 2017 were evaluated through end-of-project questionnaires. This was the third year the APO Secretariat used in-house facilities to conduct e-learning courses. In 2017, 1,046 participants from 12 member countries completed e-learning courses. Positive feedback was given on resource persons, time management, physical arrangements, and

program content by two-thirds of the respondents, while one-third found that the VC courses were beyond their expectations. They generally appreciated the course design and the logistical preparations provided by VC center staff. Areas for improvement according to participants' feedback were: 1) incorporate more success stories from advanced countries; 2) develop and include game-type group exercises as a session; 3) improve the quality of IT facility connectivity; and 4) track follow-up actions by participants.

Resource persons appreciated the interactions with participants from various countries, including those from non-APO members. They indicated that it was necessary to follow up the courses by creating online discussion forums involving both participants and resource persons.

The implementing organizations approved of the methodology used in the VC courses and the cooperative attitude of participants, while making suggestions for improvement in three areas: 1) offering follow-up face-to-face courses after e-learning courses; 2) allowing longer Q&A sessions; and 3) opening the courses to all interested individuals.

In addition to VC-based e-learning courses, the APO also offers the self-learning e-course format. In 2017, 15 self-learning e-courses were held, nearly double the number in 2016. Despite that increase, the number of participants who registered, took the final exams, and passed decreased compared with 2016; a similar decline was seen from 2015 to 2016. NPOs have assisted in promoting the courses, and the learning platform was upgraded. Despite those efforts, the course format was the primary reason for the decreased number of participants. The feedback results showed that more efforts are required to overcome this. Particularly, designing courses that attract more participants and offering accredited courses in the future would be useful.

The Secretariat and NPOs must make concerted efforts to reverse the decline in the number of those who register for self-learning e-courses and the negative trend in passing the exams. The topics and quality should be more attractive in line with global trends. Better planning for the utilization of the digital-learning platform may be the key. Such efforts should be carried out systematically to increase the impact of APO programs/projects. The eAPO platform launched in December 2016 is interactive and will continue to allow self-learning e-courses to reach more potential participants.

APO 2018 PROJECTS AT A GLANCE

PROJECTS IN 2018 **188**

PARTICIPANTS ATTENDED APO PROJECTS **9,421**

551 EXPERTS ASSIGNED TO APO PROJECTS

NATIONAL COORDINATORS ASSISTED IN e-LEARNING PROJECTS **45**

255 VISITORS THROUGH APO EVENT OPEN TO THE PUBLIC

APPENDIX 1.

LIST OF PROJECTS

List of 2018 APO Projects

In 2018, the APO conducted various projects covering a multitude of topics. Projects totaled 188 (156 projects had been completed and 32 were in progress at the time of writing), with 9,421 participants. A total of 451 experts facilitated these projects, assisted by 45 national coordinators who focused on e-learning courses. The APO also extended its outreach to 255 visitors/observers through projects/events open to the public.

APO Projects in 2018

Type of project	Project		Resource persons		Participants
	Completed	In progress	Completed	In progress	
Multicountry	81	20	259	82	8,329
Individual-country	74	12	94	13	1,064
Nonmember country	1	-	3	-	28
Subtotal	156	32	356	95	
Total		**188**		**451**	**9,421**

Strengthening of NPOs

Project	Venue	Participants/ visitors
APO Sustainable Productivity Summit	Japan	293
Self-learning e-Course on Controlled-environment Agriculture	N/A	138
Self-learning e-Course on Good Agricultural Practices (GAP)	N/A	190
Self-learning e-Course on Food Safety Management (Basic)	N/A	288
Self-learning e-Course on Agritourism Business Development	N/A	154

Project	Venue	Participants/ visitors
Self-learning e-Course on Rural Entrepreneurship Development	N/A	204
Self-learning e-Course on Agribusiness Management (Advanced)	N/A	277
Self-learning e-Course on Food Safety Management (Advanced)	N/A	295
Self-learning e-Course on Organic Agriculture and Organic Agribusiness	N/A	149
Self-learning e-Course on Business Models for Women Entrepreneurs	N/A	62
Self-learning e-Course on Smart Farm Mechanization	N/A	52
Self-learning e-Course on Future Food: Exploring Business Opportunities	N/A	22
Self-learning e-Course on Building Climate Change-resilient Agriculture	N/A	23
Self-learning e-Course on Urban Agriculture	N/A	27
Demonstration Company Project on Advanced Food Safety Management Systems for SMEs (Phase II)	Cambodia	96
National Training Course on Advanced Rice Farming for Sustainable Productivity	Lao PDR	38
National Conference on Advanced Food Safety Management Systems in Cambodia	Cambodia	115
National Conference on Cold Chain and Logistics Management for Agrifood Products in Indonesia	Indonesia	100
National Conference on Promoting Public–private-sector Partnerships in Enhancing Food Value Chains in Pakistan	Pakistan	100
Workshop on Developing Productivity Specialists in the Public Sector	Philippines	27
Strengthening the Programs of the Center of Excellence on Green Productivity	India	N/A
	Thailand	N/A
Forum on Green Productivity and the Future of Sustainable Development	ROC	7
Enhancing the Capacity of the Center of Excellence on Green Productivity	Malaysia	N/A
Development of Monitoring and Evaluation Systems for the APO Centers of Excellence	MCs	N/A
Expert Panel Meeting to Assess the Proposal for a COE on Smart Manufacturing	APO Secretariat	N/A

Project	Venue	Participants/ visitors
Training Course on the Manpower Audit and Workforce Planning Program	Cambodia	42
Training Course on Productivity Management Systems	Mongolia	19
Training Course on Smart Manufacturing Applied Technology and Practices	ROC	22
Strengthening the Programs of the Center of Excellence on Business Excellence	Singapore	N/A
Research on GP for the Base of the Pyramid for Sustainable Development in APO Member Countries	APO Secretariat	N/A
Research on Industry 4.0 Digitization Strategies for SMEs	India	N/A
Training of Trainers in Good Agricultural Practices (GAP) for Women Small Farmers	IR Iran	56
National Conference and Training of Trainers in Green Productivity	Cambodia	N/A
National Workshop on Development of Rural Tourism Networks and Clusters for Enhancing the Competitiveness of Small Enterprises	Philippines	26
National Conference-cum-Workshop on Public-sector Productivity for High-level Public-sector Officials	Mongolia	142
Productivity Enhancement through Applications of Industry 4.0 in Fiji	Fiji	13
Training of Trainers and Consultants in Green Productivity (APO-certified GP Specialists)	Pakistan	N/A
National Seminar on Innovations in Postharvest Handling of Perishables in the Food Value Chain in Cambodia	Cambodia	80
Strategic Planning Workshop for Senior Planning Officers of NPOs	Japan	43
Certified Productivity Practitioners' Course	Philippines	21
Training of Trainers on Benchmarking to Enhance Organizational Excellence in the Service Sector	Fiji	21
Training Program on Productivity Improvement for the Supporting Industry	APO Secretariat	N/A
Workshop on Productivity Measurement in SMEs	Fiji	20
Impact Evaluation Study	APO Secretariat	N/A
Research on Productivity Analysis for NPOs	Vietnam	N/A
Research on Institutions Offering Productivity Courses	APO Secretariat	N/A

Project	Venue	Participants/ visitors
APO Productivity Practitioners Certification Management System	APO Secretariat	N/A
Inaugural Meeting of the APO Accreditation Body Council	APO Secretariat	N/A
APO Productivity Databook and Database (2018 edition)	APO Secretariat	N/A
APO Productivity Databook and Database (2019 edition)	APO Secretariat	N/A
Establishment of the APO Future Intelligence Center	APO Secretariat	N/A
APO Business Model Transformation Project	APO Secretariat	N/A
Data Skills Program: Fundamental Course	Japan	13
Strategic Foresight Capability Building in the Public Sector for NPO Heads under the Program Development Fund (1st Round)	Japan	11
Strategic Foresight Capability Building in the Public Sector for NPO Heads (2nd Round)	Japan	10
Development of an Agricultural Transformation Framework for APO Member Countries	Japan	N/A
Research on Youth Employment Issues and Human Capital Development for APO Economies	APO Secretariat	N/A
Review and Updating of the *KM Facilitators' Guide* and *KM Tools and Techniques Manual* under the Program Development Fund	APO Secretariat	N/A
Research on Capacity Development Needs for Industry 4.0	APO Secretariat	N/A
Research on Productivity Policy	APO Secretariat	N/A

Promoting the Development of SMEs and Communities

Project	Venue	Participants/ visitors
Self-learning e-Course on the Occupational Health and Safety Management System (OHSAS 18001)	N/A	570
Self-learning e-Course on Marketing Strategy and Product Branding for SMEs	N/A	244
Self-learning e-Course on Applying Green Productivity Based on ISO 14001 Standards	N/A	274
Self-learning e-Course on Material Flow Cost Accounting (ISO 14051)	N/A	215
Self-learning e-Course on Climate Change Impacts and Adaptation (Basic)	N/A	179
Self-learning e-Course on Sustainable, Resilient Supply Chains	N/A	256
Self-learning e-Course on Smart Manufacturing: Basic	N/A	319
Self-learning e-Course on the Energy Management System Auditors' Course	N/A	339
Self-learning e-Course on Integrating Lean Manufacturing Systems and Industry 4.0 Concepts	N/A	504
Self-learning e-Course on Green Productivity and Integrated Management Systems	N/A	279
Self-learning e-Course on Smart Manufacturing: Advanced	N/A	25
Self-learning e-Course on Energy Efficiency Techniques	N/A	170
Self-learning e-Course on Productivity Tools and Techniques (Basic)	N/A	583
Self-learning e-Course on Productivity Tools and Techniques (Advanced)	N/A	387
Multicountry Observational Study Mission on Innovation and Competitiveness in SMEs	ROC	18
Multicountry Observational Study Mission on SME Development	ROK	15
Multicountry Observational Study Mission on Best Practices in Agrotourism	ROC	17
Training of Trainers on Lean Manufacturing for SMEs	Pakistan	24
Training of Trainers in Total Productive Maintenance Applications for Manufacturing	Bangladesh	18
Training of Trainers in Total Quality Management for Industries	ROC	21

Project	Venue	Participants/ visitors
Training of Trainers in Lean Manufacturing Systems	Malaysia	23
Training of Trainers on Ecotourism and Agrotourism	Fiji	22
Advanced Agribusiness Management Course for Executives and Managers	Indonesia	28
Workshop on Innovative Rural Community Development Models	Indonesia	21
Workshop on International Marketing of Agrifood Products	Philippines	24
Research on Successful Agribusiness Models: Case Studies of Value Chain Analysis for Agroprocessing Enterprises	APO Secretariat	N/A

Catalyzing Innovation-led Productivity Growth

Project	Venue	Participants/ visitors
Forum on Women's Labor Force Participation and Productivity Enhancement	Japan	22
Forum on Strengthening Food Safety Standards	Sri Lanka	37
International Forum on Public-sector Productivity	Sri Lanka	42
Top Management Forum on Knowledge Management and Innovation for SMEs	Fiji	22
Forum on the Impact of Education Policies on National Productivity Growth	Philippines	35
International Conference on Public-sector Productivity	Philippines	22
e-Learning Course on Management Innovation in SMEs (Session 2)	Cambodia, Fiji, Japan, Malaysia, Mongolia, Philippines, Sri Lanka, Thailand	120
e-Learning Course on Management Innovation in SMEs (Advanced)	Bangladesh, Cambodia, Mongolia	69
	India, IR Iran, Pakistan, Philippines, Sri Lanka, Vietnam	149
e-Learning Course on Global Food Safety Trends: Application of Advanced Technologies	Bangladesh, Fiji, Mongolia, Vietnam	86
	India, IR Iran, Pakistan, Philippines	92
e-Learning Course on Customer Satisfaction Management for the Health Sector	Cambodia, Mongolia, Sri Lanka, Thailand, Vietnam	112
	Bangladesh, India, IR Iran, Nepal, Pakistan, Philippines	110
Multicountry Observational Study Mission on ICT Innovation in the Service Sector	Bangladesh	20

Project	Venue	Participants/ visitors
Study Mission on Productivity Enhancement through Applications of Industry 4.0 in Japan	Japan	21
Multicountry Observational Study Mission on Smart Rice Farming	Japan	18
Multicountry Observational Study Mission on Labor-Management Relations	Indonesia	21
Multicountry Observational Study Mission on Regulatory Review Enhancing Public-sector Productivity	Philippines	18
Industrial Human Resources Development for Africa: Training Course on Development of Advanced Productivity Practitioners	Namibia	28
Training of Trainers on Foresight Management for Strategic Planning Specialists	Thailand	18
Training of Trainers on Scenario Planning Development	Sri Lanka	16
Training of Trainers on Customer Satisfaction Index Development for the Service Sector	ROK	16
Training of Trainers on Performance Management for Public-sector Organizations	Philippines	21
Training of Trainers on Quality Standards for Agricultural Products to Enhance Market Access	Lao PDR	21
APO Developmental Workshop for Practitioners of Business Excellence	Singapore	15
Workshop on Innovations in Postharvest Handling of Perishables	Bangladesh	23
Workshop on Food Quality and Safety Assurance in Modern Food Production Systems	Thailand	23
Workshop on Digital Agribusiness	Mongolia	20
Workshop on Readiness for Industry 4.0: Assessment and Steps for Manufacturers	ROC	20
Workshop on Innovative Technologies for Increasing Agricultural Water Productivity	Sri Lanka	28
Workshop on APO Public-sector Leadership	Philippines	18
Workshop on Smart Industrial Application in SMEs	ROC	21
Workshop on Developing Strategies for Enhancing Global Competitiveness and Productivity Growth	ROC	21
Workshop on Development of Frameworks for Foresight in Public-sector Organizations	Philippines	22

Project	Venue	Participants/ visitors
Workshop on Smart Agriculture Extension Models	Sri Lanka	20
Workshop on Innovative and Strategic Leadership for Enhancing Public-sector Productivity	Sri Lanka	24
Workshop on Innovations in Food Value Chains	Cambodia	22
Workshop on Science, Technology, and Innovation Policies and Productivity Enhancement	Vietnam	23
Research on Aging Societies and Gender Mainstreaming in Human Capital Development	APO Secretariat	N/A
Research on Case Studies of Diversity Management and Human Capital Strategy	APO Secretariat	N/A
Research on Measurement of Productivity in the Public Sector	APO Secretariat	N/A
Research on Change Management in the Public Sector	APO Secretariat	N/A
Research on Science, Technology, and Innovation Policies in Member Countries and Implications for Productivity Enhancement	APO Secretariat	N/A
Research on Public Policy Innovation for Human Capital Development	APO Secretariat	N/A

Green Productivity

Project	Venue	Participants/ visitors
3rd International Conference on Biofertilizers and Biopesticides: Novel Industry Techniques, Market Trends, and International Cooperation	ROC	41
e-Learning Course on Waste Management in Agribusiness	Bangladesh, India, IR Iran, Nepal, Pakistan, Sri Lanka	146
	Cambodia, Mongolia, Philippines, Vietnam	57
Development of Demonstration Companies: Energy Efficiency and Conservation, Pakistan	Pakistan	N/A
Development of Demonstration Companies: Energy Efficiency and Conservation, Nepal	Nepal	N/A
Training Course on Energy Efficiency and Conservation	Japan	31
Training of Trainers and Consultants in Green Productivity (Certified GP Specialists)	ROC	20
Workshop on Organic Agriculture 3.0	India	22
Research on Green Productivity and Productivity Measurement Program for Myanmar	APO Secretariat	N/A

Projects Funded by Special Cash Grants

Project	Venue
Demonstration Company Project on Advanced Food Safety Management Systems for SMEs: Phase II	Cambodia
Multicountry Observational Study Mission on Smart Rice Farming	Japan
National Conference on Advanced Food Safety Management Systems in Cambodia	Cambodia
National Conference on Cold Chain and Logistics Management for Agrifood Products in Indonesia	Indonesia
National Conference on Promoting Public–private-sector Partnerships in Enhancing Food Value Chains in Pakistan	Pakistan
National Training Course on Advanced Rice Farming for Sustainable Productivity	Lao PDR
Development of Demonstration Companies: Energy Efficiency and Conservation, Nepal	Nepal
Development of Demonstration Companies: Energy Efficiency and Conservation, Pakistan	Pakistan
Industrial Human Resources Development for Africa: Training Course on Development of Advanced Productivity Practitioners	Namibia
Study Mission on Productivity Enhancement through Applications of Industry 4.0 in Japan	Japan
Training Course on Energy Efficiency and Conservation	Japan
Forum on Women's Labor Force Participation and Productivity Enhancement	Japan
Research on Green Productivity and Productivity Measurement Program for Myanmar	APO Secretariat

Individual-country Program

Individual-country Observational Study Missions

Subject	Venue	Participants
Innovations and Applications of New Technologies to Enhance Productivity for SMEs	ROC	10
Japanese Food Education	Japan	8
Agricultural Innovation and the 6th Industrialization of Agriculture in the Republic of Korea	ROK	15
Best Practices in Agriculture and Rural Development	India	12
Learning Experiences in Benchmarking and Best Practices on Productivity	ROC	5
Application of Innovation Management and Industry 4.0 for Productivity Improvement	ROK	6

Development of Demonstration Companies

Subject	Venue
MFCA-linked Lean Manufacturing for SMEs in the Manufacturing Sector	India
Material Flow Cost Accounting	Pakistan
Material Flow Cost Accounting for the Leather Sector	Bangladesh
Industry 4.0 Applications for the Healthcare Sector	Thailand
Application of Smart Technologies	India
Implementation of GLOBALGAP in Sun Feed Joint Stock Company (S.J.S.)	Vietnam
Off-grid Solar PV Training Project	Indonesia

Participation under BCBN Projects

Subject	Deputing country	Venue	Participants
Study the Role of the NPO in Leading the Productivity Movement	Mongolia	Cambodia	3
Planning and Implementation of Center of the Excellence	Fiji	ROC	3
Strengthening of the NPO	Nepal	Mongolia	4
Productivity Movement at National and Sectoral Levels	Sri Lanka	Japan, ROK	4
Productivity Promotion in APO Member Countries	Fiji	Vietnam	4
Industry 4.0: Digital Technology Implementation to Improve Productivity	Thailand	ROC	5
Industry 4.0: Digital Technology Implementation to Improve Productivity	Malaysia	ROC	4
Industry 4.0 and IT Education Programs	ROK	India, Vietnam	4

Specific National Program

Project	Venue	Participants
Development of the National Productivity Master Plan	Cambodia	N/A
Training of Trainers on Strategic Foresight and Scenario Planning	Thailand	25
Workshop on a Primer on Productivity	APO Secretariat	37

Technical Expert Services

Subject	Venue
Supporting the Establishment of a Database on Productivity Benchmarking and Best Practices	Vietnam
Sustainable Development and the Blue Economy	Indonesia
APICS Applied Instructor Skills Instructor Course in Japan	Japan
Training on Growing the Innovation and Startup Ecosystem	Mongolia
Create a Roadmap to Sustainability Excellence by the Dow Jones Sustainability Index	Thailand
Conference and Workshop on Innovation Development	Indonesia
Development of a Future and Innovation Laboratory for the COE on Public-sector Productivity	Philippines
Public-sector Productivity	Mongolia
Active Pharmaceutical Ingredient Manufacturing Expertise in Bangladesh	Bangladesh
The Tools and Techniques to Measure Productivity at Sectoral and National Levels	Bangladesh
Training Program on Lean Healthcare	Sri Lanka
Certificate Course on Big Data Analytics	India
Best Practice Sharing and Capacity Building on Traceability of Products	Vietnam
Advanced Training Course on Regulatory Impact Analysis	Philippines
Training Course on Global Market Access Focusing on the Retail Industry	Fiji
Customer Experience Forum on Smart Services	ROC
Workshop on Multifactor Productivity Measurement: KLEMS Method	Thailand
Training Course on Industry Productivity Specialists	Malaysia
International Conference on Smart Agriculture	ROC
Seminar on Smart Productivity and Innovation	ROC

Subject	Venue
Consultancy Program on the Human Resource Management Development Plan	Sri Lanka
International Forum and Workshop on Smart Innovation and Best Practices to Enhance Corporate Productivity	ROC
Training of Trainers on Organic Fertilizer	Mongolia
Total Quality Management and How to Reach Deming Award Standards	Sri Lanka
Training-cum-Workshop on Industry 4.0	India
Advanced Productivity Improvement Tools and Techniques for 5S Implementation	India
National Quality & Productivity Convention (NQPC) XXII and International Quality & Productivity Convention (IQPC) 2018	Indonesia
Improvement of Productivity by Developing Kaizen Culture in Square Pharmaceuticals	Bangladesh
International Conference on Agricultural Enterprise Districts	ROC

International Cooperation

Joint Projects

Project	Collaborating organization
Advanced Agribusiness Management Course for Executives and Managers	Cornell University
Forum on Strengthening Food Safety Standards	CIRDAP
Workshop on Organic Agriculture 3.0	CIRDAP

Services of Experts Received

Project	Collaborating organization
National Training Course on Advanced Rice Farming for Sustainable Productivity	International Rice Research Institute (IRRI)
Workshop on Innovative Technologies for Increasing Agricultural Water Productivity	International Water Management Institute UN FAO
e-Learning Course on Waste Management in Agribusiness	International Environmental Technology Centre, United Nations Environment Programme
Development of an Agricultural Transformation Framework for APO Member Countries	International Food Policy Research

Guest Observers Received

Project	Organization/number of observers
60th Session of the APO Governing Body	ADB/1 Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ)/1 PAPA/2
59th Workshop Meeting of Heads of NPOs	CIRDAP/1 IRRI/1 University of Technology Sydney/1

Participants from Nonmember Countries

Project	Participating country/ number of participants
Study Mission on Productivity Enhancement through Applications of Industry 4.0 in Japan	Myanmar/1
Industrial Human Resources Development for Africa: Training Course on Development of Advanced Productivity Practitioners	Botswana/3, Burkina Faso/2, Ghana/2, Kenya/2, Mauritius/3, Namibia/10, Nigeria/2, South Africa/2, Zimbabwe/2

APPENDIX 2.
SUMMARIES OF PROJECTS

Summaries of 2018 APO Projects

Strengthening of NPOs

APO Sustainable Productivity Summit

Technological changes and disruptions are occurring daily in every sphere. Old industries shrink or disappear, while new ones alter the social, economic, environmental, and political landscape. Today, technologies are combining new ways of improving business performance and productivity, offering benefits as well as challenges to which the public and private sectors must respond. Business leaders must update organizational strategies in the face of continual evolution, ensure that their organizations always look ahead, and use technologies to improve performance. They must also plan for a range of scenarios, abandon assumptions about where competition and risk could arise, and look beyond long-established models.

To provide insights on future strategies for productivity enhancement while introducing new trends and innovative technologies to policymakers and private-sector representatives, the APO organized the Sustainable Productivity Summit (SPS), 10 July 2018, at the Imperial Hotel in Tokyo. Six international organizations and 11 Japanese organizations and ministries supported the event. Speakers from Canada, Japan, Sweden, and the USA gave presentations on the future of government, transportation, food, cash, and cities. Moderator Devadas Krishnadas from Singapore led the panel discussion. The SPS attracted nearly 250 attendees, including 39 government officials from APO member countries and 15 guests from the embassies of both member and nonmember countries.

Program coverage: Government 2025; Future transportation; Future cashless society; Future food; and Future of sustainable smart towns and smart homes.

Self-learning e-Course on Controlled-environment Agriculture

Controlled-environment agriculture (CEA) systems have the advantage of high levels of certainty in meeting contractual commitments for the delivery of produce because cropping intensity and production cycles are programmed to meet market requirements in terms of volume, timeliness, and quality. Production is tailored to consumer specifications from the very beginning. Such production systems also reduce the risks of diseases and pest infestations and the corollary labor required to address such problems in conventional agriculture. CEA systems are seen as having great potential for agribusiness investment and for increasing agricultural productivity and food production, even with declining areas of prime agricultural land and obvious impact of climate change on the sector.

The APO launched a self-learning e-course on Controlled-environment Agriculture, available online since June 2017. Thus, this was a continuing online 2017 course. At the time of writing, a total of 138 participants had enrolled, of whom 122 were from member countries while 16 came from Australia, Brazil, Canada, Cameroon, Kenya, the Netherlands, UAE, UK, and USA. This course is offered to provide basic knowledge of the concepts and principles of CEA as well as the skills, tools, techniques, and technologies of CEA systems to enhance sustainable productivity in agriculture.

Program coverage: Introduction to CEA; Growing systems and the crops they support; Crop maintenance; Irrigation systems; Plant nutrition; Insect pests and diseases and their management; Greenhouse structure and design; Environmental control and energy conservation; Food quality and safety; and Marketing of CEA produce.

Self-learning e-Course on Good Agricultural Practices (GAP)

Agricultural producers, particularly small farmers, need to have their farms certified as GAP compliant to enhance the market acceptability of their products. Several countries have developed their own GAP standards and certification systems. However, the lack of harmonization among national GAP schemes and scarcity of affordable certification systems have often led to increased confusion and higher certification costs for farmers and exporters. Those with contractual relations with several retailers also complain about multiple audits against varying criteria set by different groups of retailers every year.

To enhance understanding of the approaches, principles, and standards of GAP and benchmarking of national GAP schemes against globally recognized guidelines like the GLOBALGAP standard, it is essential to enable stakeholders in member countries to orient and guide small farmers. The APO therefore launched a self-learning e-course on Good Agricultural Practices (GAP) on 26 April 2017 which was available online until 25 March 2018. In 2018, 190 participants enrolled in the course, of whom 181 were from member countries while nine came from Australia, Germany, Nigeria, UAE, and the UK.

Program coverage: Introduction to GAP; Development of GAP in conventional horticultural production practices; Farm management; Food safety; Environmental conservation; Workers' health, safety, and welfare; Quality management systems; and Implementation of GAP for greater access to markets.

Self-learning e-Course on Food Safety Management (Basic)

Food safety is a global issue as contaminated food causes widespread health problems with serious implications for families as well as public healthcare systems. There is an urgent need to put in place sound food safety management systems (FSMS) such as GAP, Good Handling Practices (GHP), Good Manufacturing Practices (GMP), and Hazard and Critical Control Point (HACCP) analysis through building reliable, safe food supply chains. The limited pool of trainers and experts who can provide training and consultancy in this field, as well as the high cost of implementing the requirements relating to food safety, especially for SMEs, are among the major challenges.

To provide food safety practitioners with good knowledge of fundamental FSMS concepts, principles, tools, techniques, regulations, and critical success factors for SMEs, the APO conducted a self-learning e-course on Food Safety Management (Basic) from 9 June 2017 to 8 June 2018. A total of 288 participants enrolled, of whom 275 were from member countries while 13 were from nonmembers Australia, Burkina Faso, Ghana, New Zealand, Saudi Arabia, UAE, the UK, and USA.

Program coverage: Introduction to and overview of FSMS; Key concepts in food quality and food safety; Basic concepts, tools, and techniques of FSMS; Implementation and certification of FSMS; Food traceability; and Strategies for achieving food safety by SMEs in the food industry.

Self-learning e-Course on Agritourism Business Development

Tourism is one of the world's largest industries, with 1.2 billion annual international travelers creating almost 300 million jobs. Recent global tourism trends have expanded to rural regions which allow tourists to participate in

agricultural and rural activities. About 51% of the world's population now lives in urban areas, and they often seek interactions with the natural environment, which can be most easily accomplished in rural areas. The trend has created greater tourism development opportunities for rural communities, in particular for farmers and related agricultural enterprises. The challenge, however, for public- and private-sector advocates of agritourism development is organizing, planning, and funding the identification, development, and promotion of high-potential farm-based tourism experiences. This process requires expertise, resources, and a high degree of collaboration among all affected stakeholders in designing and implementing an effective agritourism growth strategy.

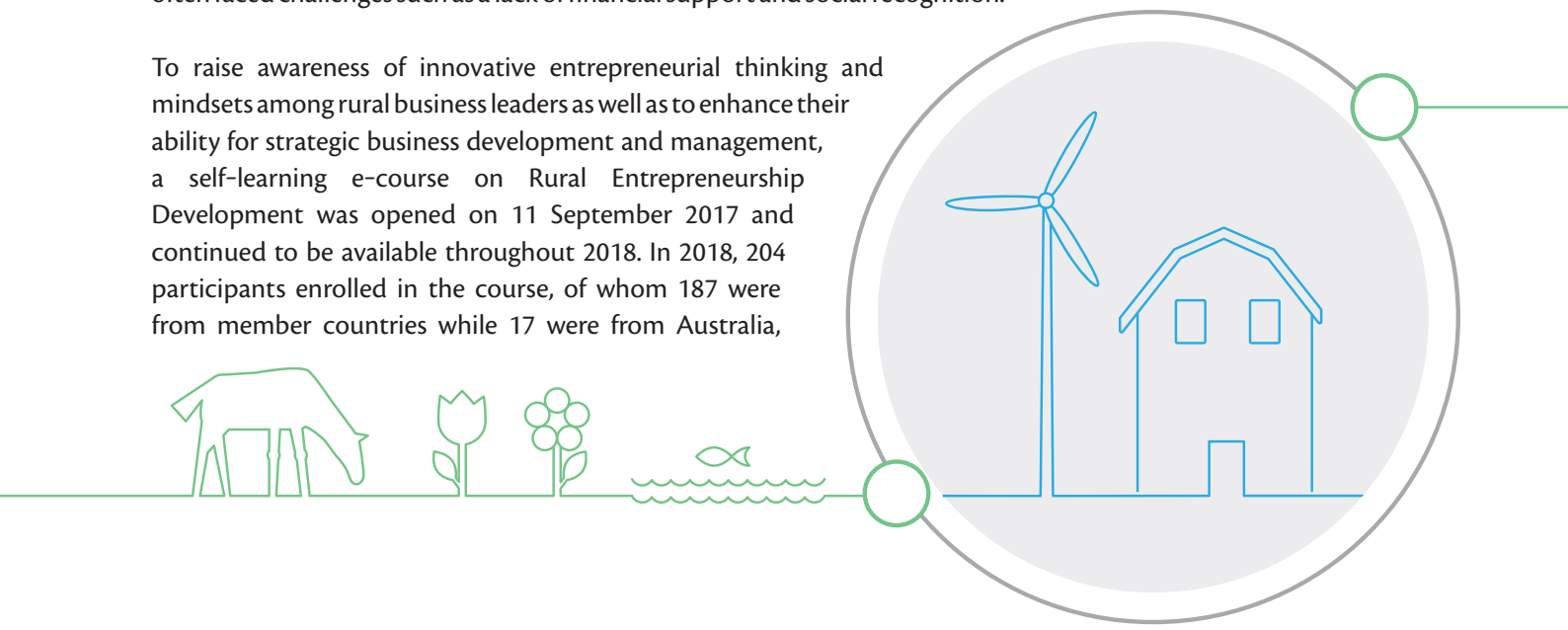
To promote agritourism business development and enhance participants' knowledge of essential marketing concepts, skills, and practices in agritourism product development and promotion, a self-learning e-course on Agritourism Business Development was launched on 3 July 2017 on the eAPO web portal and continued to be available throughout 2018. In 2018, 154 participants enrolled in the course, of whom 143 were from member countries while 11 were from Australia, Germany, Monaco, South Africa, and UAE. A Thai APO resource person developed the course contents introducing sustainable agritourism development models.

Program coverage: Introduction to agritourism (opportunities, definitions, and key concepts); Tourism trends and traveler behavior; Sustainable tourism development; Travelers' expectations and applications in agritourism development; Engaging stakeholders for collective impact; Organizing support for effective implementation; Developing differentiated agritourism experiences; Value-added agritourism products; Creating effective agritourism promotional strategies; Building brand engagement and loyalty; and Successful case studies of agritourism and key success factors.

Self-learning e-Course on Rural Entrepreneurship Development

Entrepreneurship is a driving force for rural development. It involves strategic interventions to accelerate and revitalize declining rural economies by expanding business outreach to farm/nonfarm areas. The interplay between rural development and entrepreneurship overcomes the constraints of primary industry, mainly agriculture. For example, rural entrepreneurship can offer innovative, cost-effective sources of living by crossing the boundaries among primary, secondary, and tertiary industries. It enables local people to appreciate the value of resources in the area and utilize them as inputs for creating value-added products and services. Thus entrepreneurship diversifies sources of livelihood and increases per capita income. In reality, however, nurturing successful entrepreneurs has often faced challenges such as a lack of financial support and social recognition.

To raise awareness of innovative entrepreneurial thinking and mindsets among rural business leaders as well as to enhance their ability for strategic business development and management, a self-learning e-course on Rural Entrepreneurship Development was opened on 11 September 2017 and continued to be available throughout 2018. In 2018, 204 participants enrolled in the course, of whom 187 were from member countries while 17 were from Australia,

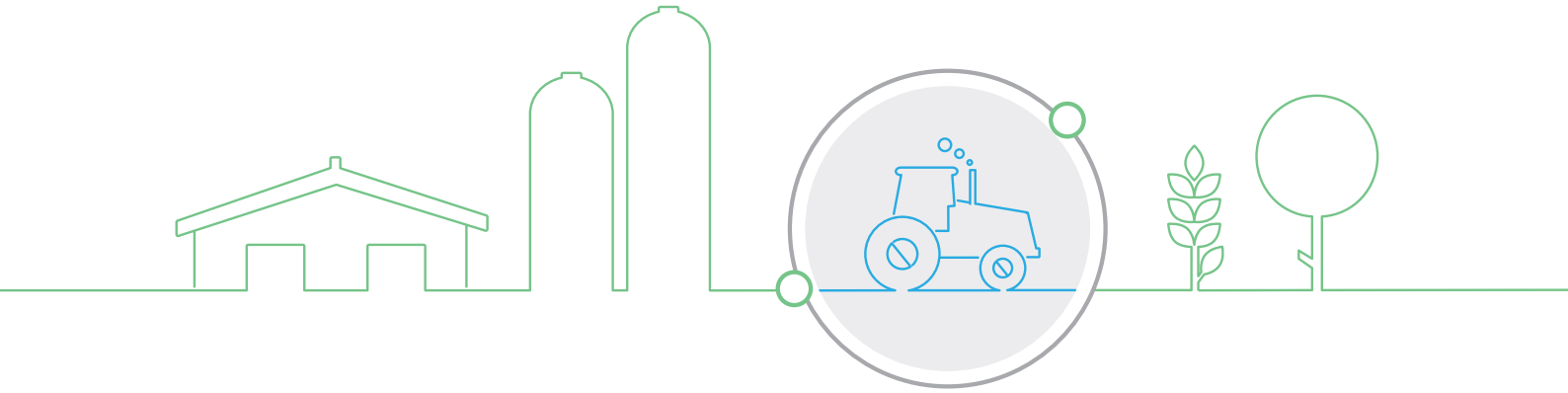


Germany, Monaco, South Africa, and UAE. An APO resource person from Pakistan was invited to develop the course for those engaged in business advisory services and/or interested in initiating businesses in rural areas.

Program coverage: Concept, features, key roles, challenges, and opportunities in rural entrepreneurship development; Developing entrepreneurial ideas into actionable plans; Issues in project implementation; Skills needed for successful project implementation; Project cycle management for rural entrepreneurship; Agribusiness/rural enterprise promotion and marketing; Understanding emerging areas for agricultural startups around the world; Role of governments in creating conducive environments to nurture young enterprises; Business development service providers (BDSPs) for establishing market linkages; Approaches to build the capacities and develop the competitiveness of BDSPs; Financial modeling for sustainable rural enterprises; and Case studies of entrepreneurial sharing for business goodwill and social responsibility.

Self-learning e-Course on Agribusiness Management (Advanced)

Farms and off-farm enterprises that produce and distribute agricultural inputs as well as assemble, store, process, and distribute fresh and processed farm commodities and products make up the agribusiness sector. Nonfood items such as fiber, fuel, timber, medicinals, and industrial raw materials are also important agricultural commodities. SMEs account for at least 80–90% of all enterprises and generate about 50–80% of total employment in the developing economies of Asia by most estimates. Similarly, a significant number of SMEs operate in various aspects of the



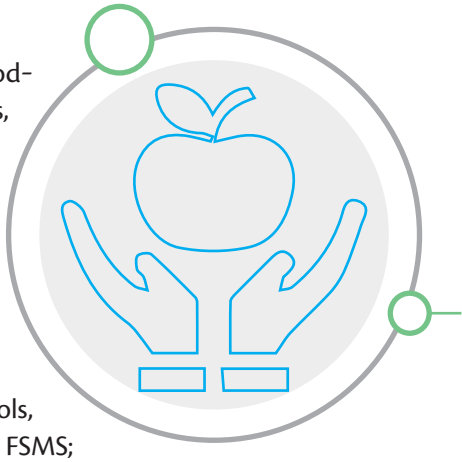
agrifood sector. Individuals who can manage SMEs in the agribusiness sector competently and sustainably within the context of value chains that serve both domestic and global markets are thus increasingly needed.

The APO launched a self-learning e-course on Agribusiness Management (Advanced), available online from 15 December 2017–31 December 2018. In 2018, a total of 277 participants enrolled, of whom 259 were from member countries while 18 came from Australia, Canada, Kenya, Monaco, Nigeria, Qatar, UAE, and the UK. This course is intended to train a critical mass of agribusiness stakeholders in advanced management techniques and enable them to apply theories and analytical principles in practice. After passing the course, they should be able to assess threats and opportunities critically, make decisions, and play leadership roles to help their organizations overcome the challenges associated with today's rapidly changing, interconnected business environment.

Program coverage: Value chains in Asian agribusiness; Environment-friendly concepts in food value chains; Agrifood innovation; Strengthening public–private partnerships in agribusiness; Innovative finance for agribusiness development; Lean agribusiness operation management; Managing entrepreneurial growth in agribusiness enterprises; Engaging small Asian farmers and entrepreneurs for inclusive agribusiness value chain development; and Sustainability assessment for agribusiness SMEs.

Self-learning e-Course on Food Safety Management (Advanced)

There is an urgent need to put in place sound FSMS by building reliable, safe food supply chains. The situation of food safety in many developing countries in the Asia-Pacific region, however, is not up to the mark. This is attributed to a lack of awareness of its socioeconomic significance and lack of understanding of basic concepts, tools, and techniques of food safety such as GAP, GHP, GMP, and HACCP. The limited pool of trainers and experts providing training and consultancy in this field, and high cost of implementing the requirements relating to food safety, especially for SMEs, are also among the major challenges.



To train a critical mass of individuals, in particular managers and officers of food-processing companies including SMEs, officers of government and NGOs, academics, extension officers, and consultants, the APO offered a self-learning e-course on Food Safety Management (Advanced),15 December 2017–14 June 2018. In 2018, a total of 295 participants enrolled in the course, of whom 283 were from member countries while 12 were from nonmembers Australia, Botswana, Denmark, Mauritius, Nigeria, Saudi Arabia, UAE, and the UK to acquire advanced knowledge of FSMS. Thirty-nine completed the course and passed the final examination.

Program coverage: Overview of advanced FSMS; Recent advances in FSMS; Tools, techniques, and approaches in advanced FSMS; Requirements of an advanced FSMS; Development and documentation of FSMS; Implementation of advanced FSMS; Performance evaluation of FSMS; and Overcoming difficulties in implementing and sustaining advanced FSMS for SMEs.

Self-learning e-Course on Organic Agriculture and Organic Agribusiness

Driven by growing consumer concerns about food safety and the need for healthier lifestyles, the global market for organic products is expanding fast, resulting in greater opportunities for Asian producers. Organic agricultural and food products, however, remain niche products, although they command premium prices. Marketability at a premium depends on consumer confidence in the authenticity of organic products. Therefore, producers need a way of assuring consumers that a product was grown using organic methods. This requires a credible system of organic standards, certification, and traceability in place. Organic agriculture is not just for more affluent countries but can be applied in other situations.

To provide knowledge, skills, tools, and techniques of production, processing, certification, labeling, and marketing of organic agricultural and food products; and to promote organic agriculture and organic agribusiness as a tool to contribute to sustainable agriculture and inclusive rural development, thereby helping member economies to achieve the UN Sustainable Development Goals, the APO relaunched a self-learning e-course on Organic Agriculture and Organic Agribusiness, available online from September 2018 to August 2019. In 2018, a total of 149 participants enrolled, of whom 135 were from member countries, while 14 came from nonmembers Denmark, France, Germany, Monaco, Nigeria, UAE, and the UK.

Program coverage: Overview; Conversion to organic agriculture; Soil fertility management; Insect, disease, and weed management; Organic biomass and resource management; Organic plant, animal, and aquaculture production; Food processing; Organic guarantee systems; Organic marketing and trade; and Frequently asked questions.

Self-learning e-Course on Business Models for Women Entrepreneurs

The increased rates of female education and economic participation have gradually brought about a change in women's position in business. More women are attempting to be employers like entrepreneurs and business

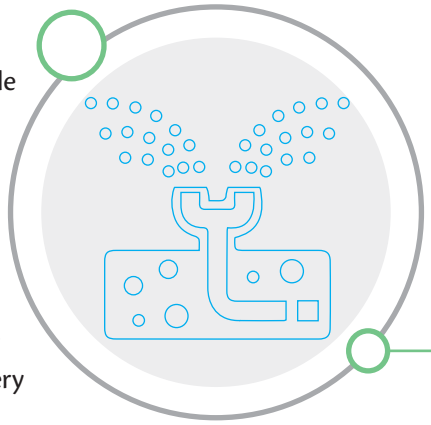
leaders rather than working in hired positions. Especially in rural areas, women's active participation in agribusiness significantly affects household income generation, which contributes to improving the livelihoods of families. Their business activities provide employment and bring new value to communities through their products and services. To accelerate the trend of female-run businesses, supporting women entrepreneurs in developing good business models is critical. Today's business environment is becoming more favorable to females as online market expansion allows fair competition and wider access to resources for rural women entrepreneurs. Currently, however, most female entrepreneurs in rural villages are associated with the wholesale and retail industry in SME family businesses, which are run by traditional handover practices from predecessors without considering business models.

To promote the adaptation and utilization of strategic agribusiness models and to contribute to providing livelihoods, creating employment, and enhancing rural women's empowerment, a self-learning e-course on Business Models for Women Entrepreneurs was launched on 15 October 2018 on the eAPO web portal. An APO resource person from Denmark developed the course content and provided a template for agribusiness planning to build rural women's capabilities as successful business owners. A total of 62 participants enrolled, of whom 57 were from member countries, while five came from nonmembers Denmark, Lebanon, Monaco, and Nigeria.

Program coverage: Why gender matters in business; Identifying opportunities and overcoming challenges for women entrepreneurs; Understanding agribusiness models; Seven steps to start an agribusiness; Process of a business model and making a personal business plan; Personal resource utilization in rural areas for female entrepreneurs (networks, educational experience, financial status, product knowledge, and internal trade networks); Agrifood products or services as the lifeblood of a new business; Things to consider for business development (specific product, line of goods/services, cost estimation, pricing, interchangeability, suppliers, distribution, and competitors); Identification and description of agriculture and food markets; Sales and marketing in agriculture and the food industry; and Organizing a company for administrative settings and business policies.

Self-learning e-Course on Smart Farm Mechanization

The agricultural sector in Asian countries is facing the critical challenge of aging farmers without successors and the lack of interest in farming by the younger generation. The rapid decline in farm labor has also led to a doubling of the workload for each farmer regardless of the increased risk to their health and safety as they age. Smart agricultural machinery has the potential to resolve labor shortages and assist the aging farm workforce in Asian countries to increase agricultural productivity on a sustainable basis. This can also help attract youth to agriculture for the establishment of profitable business enterprises.



The APO launched a self-learning e-course on Smart Farm Mechanization, available online from 15 November 2018 to 14 May 2019. In 2018, a total of 52 participants enrolled, of whom 48 were from member countries and four from Italy, PR China, Monaco, and the UK. The course is offered to equip a critical mass of stakeholders with advanced knowledge of farm mechanization. The individuals passing the course are expected to have a better understanding of agricultural machinery applications from preharvest to postharvest phases, concept and applications of precision agriculture, and efficient use of agricultural inputs, especially by minimizing fertilizer and pesticide applications. They will then be able to adopt smart agricultural machinery and disseminate methods for its use at the community level.

Program coverage: Agricultural machinery applications: Preharvest and postharvest operations; Preharvest preparation phases: Soil sampling and analysis, field preparation, transplantation or broadcasting, and crop

scouting; Postharvest phases: Harvesting, yield monitoring, transportation, threshing, drying, storage, parboiling, milling, and packaging; Shared cost-effective farm machinery systems and technologies; and Digital technology-enabled automated farm machinery and devices in various stages of farm operations.

Self-learning e-Course on Future Food: Exploring Business Opportunities

Warnings of food shortages have escalated due to the predicted world population increase to 10 billion by 2050 and rapid expansion of the middle class who can afford high-quality food. With a shared understanding of potential food shortages, many startups are jumping into the future food industry for commercialization. Food enterprises are turning their attention to alternative sources as a new growth engine with a blue ocean strategy. For example, according to a 2016 report by Boston-based Lux Research, the market size for alternative protein is estimated to expand by at least 14% annually up to 2024. One possible future food source is insects. Globally, there are 1,700 edible insect species, and more than 2 billion people already consume insects. In addition to insects, clean food produced in an eco-friendly, sustainable manner such as "vegetarian meat" is gaining popularity. Algae and seaweed are also being promoted as food sources.

To promote recent innovations in future food, examine the potential for future food commercialization, and gain novel ideas and insights for alternative food sources, a self-learning e-course on Future Food: Exploring Business Opportunities was launched on 3 December 2018 on the eAPO web portal. The contents of the e-course were developed by an APO resource person from Denmark to identify business opportunities in the blue ocean industry applicable to APO member countries. In 2018, a total of 23 participants enrolled, of whom 19 were from member countries and four from nonmembers Denmark, Lebanon, Monaco, and the UK.

Program coverage: Global food crisis and world hunger; The current status of global food security (food access, availability, and affordability); Types of future food; Insect food, vegetarian meat, cultured meat, and sea-based alternative food; Promotion strategies and packaging for novelty food; Overview of current and future market opportunities across supply chains in the future food industry; Successful business operation and management; Innovative business models in the future food industry; Selling products as well as delivering value for healthy diets and inclusive social development; Issues in promotion and sales of future food; Safety and quality of future food; and Institutionalized systems to nurture experts in future food and associated businesses.

Self-learning e-Course on Building Climate Change-resilient Agriculture

Agriculture is inextricably linked with climate change. The changing hydrologic cycle causes irregular events of droughts and floods in agricultural regions. Arable land zones are also susceptible to unexpected temperature change, and the distribution of crop diversity and productivity will be severely affected. In this regard, many reports pointed out that a warmer world will lead to the spread of crop pathogens, expansion of insect pests, unpredictable crop yields, food price fluctuations, agricultural market instability, and food insecurity. The importance of building food production systems and agricultural ecosystems resilient to the changing climatic conditions is obvious. Preparing adaptation strategies is also critical. Advanced technologies for data collection and field testing are being applied to adapt to capricious agroclimatic conditions.

To promote recent technological developments and innovations in climate-resilient agriculture as well as to share successful case studies on incorporating effective resilience-enhancement models to mitigate the risks of extreme weather change, a self-learning e-course on Building Climate Change-resilient Agriculture was initiated from 17 December 2018 on the eAPO web portal. One APO resource person from Pakistan developed the course manual to increase the productivity and

competitiveness of weather-sensitive agricultural operations in APO member countries. In 2018, a total of 23 participants enrolled, of whom 18 were from member countries and five from nonmembers Monaco, UAE, and the UK.

Program coverage: Climate change and impact on agricultural productivity and food production; Understanding climate change resilience, adaptation, and mitigation in agriculture; Technological advances and digitized methodologies for climate change studies; Integrated data collection, utilization, and management in agriculture and food supply chains; Agricultural information management and dissemination systems; Climate change-resilient management of land, soil, and water resources; Sustainable management of crops and livestock; Inclusive policies and social protection in responding to climate change; Gender-sensitive policies for evaluating climate change adaptation; and Key success factors in developing climate change-resilient agriculture.

Self-learning e-Course on Urban Agriculture

There is an increasing recognition of the potential importance of urban agriculture (UA). By 2050, 69% of the world population will be living in urban areas, with 86% in the developed world. This will create pressures on essentials like energy, food, and water. Researchers estimated that taken together, its multiple benefits make UA worth as much as USD160 billion per year globally. If fully implemented worldwide, UA could produce as much as 180 million metric tons of food a year and could provide as much as 15 billion kilowatt hours of annual energy savings. UA also performs several ecosystem services. There are many different challenges unique to UA like the limited space, unique pollutants in cities, and limited natural light.

To acquaint participants with key UA elements and unique features, as well as key roles of UA in an era of rapidly expanding urbanization, and to build the capabilities of a critical mass of stakeholders in UA knowledge, technologies, and best practices, the APO launched a self-learning e-course on Urban Agriculture in December 2018, which will continue to the end of May 2019.

Program coverage: The "why," "what," and "how" of UA; Understanding the roadmap of urban food (UF) production technologies; Achieving a fine balance among the 3Ps (people, planet, profit) in UF production; UF value propositions and feasible value chain designs; Setting up complementary partnerships for UF systems; and Approaches to scaling UA and food ecosystems.

Demonstration Company Project on Advanced Food Safety Management Systems for SMEs: Phase II

Under the Special Program for Capacity Building in the Food Industry in ASEAN Least Developed Countries (LDCs) initiated in 2015 under a special cash grant from the Government of Japan, a demonstration company project on Advanced Food Safety Management Systems for SMEs: Phase I was conducted in Cambodia from October 2016 to May 2017. The objective was to establish and promote advanced FSMS with the aim of enhancing food safety and quality standards and strengthening the training and consulting capacities of the NPCC on advanced FSMS with an emphasis on ISO 22000:2005.

Based on the achievements of phase I of the project, phase II was designed to provide further guidance to demonstration companies and local consultants. In addition to ISO 22000:2005, FSSC22000 of the Global Food Safety Initiative was introduced in phase II to enhance the understanding of NPCC consultants and demonstration company staff of recent advances in FSMS and to enable the demonstration companies to produce safe food products meeting the stringent requirements of the global market. An APO-assigned international resource person visited Cambodia three times under this demonstration project from February to May 2018.

Special Program for Capacity Building in the Food Industry in ASEAN Least Developed Countries

The APO Special Program for Capacity Building in the Food Industry in ASEAN LDCs was undertaken from 2015 to 2018, consisting of national capacity-building projects on productivity enhancement in agriculture and the food industry for ASEAN LDCs, in particular Cambodia, Lao PDR, and Myanmar, under a special cash grant from the Government of Japan. Two projects were conducted under this special program in 2018.

National Training of Trainers on Advanced Rice Farming for Sustainable Productivity

A national Training of Trainers on Advanced Rice Farming for Sustainable Productivity was organized in Khammouane province, Lao PDR, 23–25 May, to enhance participants' understanding of modern rice farming systems and current trends in the rice industry, familiarize them with new technologies and best practices of rice production and postharvest handling to increase sustainable productivity and minimize food losses, develop a roadmap for the dissemination and adoption of new technologies and best practices in rice farming, and enhance the sustainable productivity of rice farming and competitiveness of the national rice industry. Thirty-one individuals from relevant government agencies, agricultural groups/associations, and food-processing/manufacturing companies attended the training course, which was facilitated by one international resource person and four local experts.

National Conference on Advanced Food Safety Management Systems in Cambodia

A national Conference on Advanced Food Safety Management Systems in Cambodia was held in Phnom Penh, 17–18 May, to enhance the awareness of key stakeholders in Cambodian agribusinesses of the importance of advanced FSMS to improve productivity and competitiveness. The experiences of demonstration companies and NPCC staff in FSMS were shared during the conference. Based on the outcomes of APO demonstration company projects, conference participants made strategic recommendations to strengthen Cambodian food safety and quality (FSQ) control systems by enhancing the capacity of the food-processing industry and agribusiness subsector. They are expected to upgrade FSQ standards, thereby improving public health in Cambodia as well as the performance of the food-processing industry and agribusiness enterprises for greater competitiveness in global food markets. One hundred and nineteen representatives of the food-processing industry and agribusiness subsector, academia, and relevant government agencies attended the national conference, which was facilitated by two international resource persons and seven local experts.

Special Program for Promoting Public–private-sector Partnerships in Enhancing Food Value Chains in Asian Countries

The APO Special Program for Promoting Public–private-sector Partnerships (PPPs) in Enhancing Food Value Chains in Asian Countries (ASIA-PPPs) was conducted from 2015 to 2018, involving national capacity-building projects on productivity enhancement in agriculture and the food industry for Asian countries under a special cash grant from the Government of Japan. Two projects were conducted under this special program in 2018.

National Conference on Cold Chain and Logistics Management for Agrifood Products in Indonesia

In cooperation with the Ministry of Manpower and Trilogy University, a national Conference on Cold Chain and Logistics Management for Agrifood Products was organized in Jakarta, 4–5 April, to review recent developments in cold chain and logistics management for agrifood products in Indonesia; share knowledge on innovative technologies, new models, and best practices in cold chain and logistics management for agrifood products; formulate strategies for the development of efficient, effective cold chains and logistics management; and reduce postharvest losses and maintain the quality and safety of agrifood products. The conference was facilitated by three international resource persons and five local experts.

National Conference on Promoting Public–private-sector Partnerships in Enhancing Food Value Chains in Pakistan

In cooperation with the NPO, a national conference on Promoting Public-private-sector Partnerships in Enhancing Food Value Chains was organized in Lahore, 23–24 June, to deliberate on recent developments in PPPs in agribusiness and the food industry and how they can be promoted for enhancing food value chains (FVCs). Successful models of PPPs for enhancing FVCs and improving national food safety and quality management systems as well as the sustainability and competitiveness of food-industry SMEs in Pakistan were presented. More than 100 participants attended the two-day conference, representing various agriculture and food industry stakeholders, policymakers, government agencies, and academia. International resource persons from Malaysia, the Philippines, Singapore, and Thailand along with local experts facilitated the conference sessions and gave presentations emphasizing the crucial importance of FVCs in agricultural economies.

Workshop on Developing Productivity Specialists in the Public Sector

One of the major projects of the Center of Excellence on Public-sector Productivity (COE on PSP) is the development of a course manual on Developing Productivity Specialists in the Public Sector, which is aimed at enhancing the abilities of public managers to improve the performance of their governments and individual public-sector organizations continuously. Six experts, who were assigned to plan and develop this course manual, held a meeting in August 2016 in Manila and devised 11 modules. The experts also agreed and recommended to the APO that in order to confirm the quality and relevance of the different units contained in the modules, a pilot test would be helpful while providing participants with knowledge of recent trends in PSP and tools being utilized in the sector.

Hosted by the DAP through its COE on PSP, the workshop on Developing Productivity Specialists in the Public Sector was implemented from 12 to 16 March 2018 in Manila with the objectives of equipping participants with the knowledge and tools to develop their competencies as productivity specialists in the public sector and assessing the quality and relevance of different topics/units outlined in the course manual on Developing Productivity Specialists in the Public Sector. A total of 27 participants from 13 member countries joined. Six resource persons from Canada, Indonesia, the ROK, Malaysia, the Philippines, and Thailand made presentations on various topics identified in the course manual.

Program coverage: Role of the public sector, global trends in improving productivity, and the APO framework; Tools for improving organizational productivity; Citizen-centered service; e-Government; Regulatory reform; Performance management; Measuring PSP; Leadership for performance improvement; Collaboration for performance improvement; Change management; and Developing a productivity improvement plan. The participants visited two government offices, the Philippine Economic Zone Authority and Philippine Statistics Authority, to observe how they had improved their performance and compare their operations with the learning points from the workshop.

Assignment of Experts to Assist the Strengthening of Green Productivity Capabilities in Member Countries

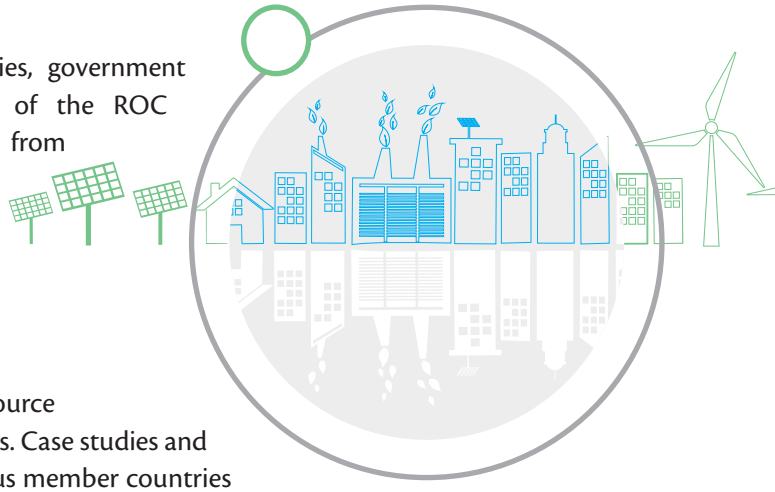
The APO COE on Green Productivity (GP) has long endeavored to promote the adoption of GP as an approach to achieve economic prosperity along with sustainable development. The COE on GP under the CPC has utilized its pool of experts in the four priority areas of resource recycling, green energy, green factories, and eco-innovation to strengthen the capabilities of member countries. APO member countries benefited through those services to enrich their knowledge, understanding, and application of GP tools, techniques, and methods.

In 2018, the COE on GP extended support through technical services on the topics of technology for water treatment, wastewater recycling, advanced industrial wastewater treatment, resource recycling, solid waste management, etc. Specifically, four experts were sent on three visits to various government agencies in India and Thailand to provide advice and share experience in ROC government initiatives on waste processing, wastewater management, waste policy, and the four-in-one recycling program of the ROC. Experts also visited different industries in India and Thailand to demonstrate a water sample biodiagnosis kit and green energy industrial wastewater solutions. Presentations were delivered on strategic approaches for cooperation in water treatment, resource recycling technology, waste management technology transfer, ceramic membrane bioreactor technology, and the advanced treatment technologies of BioNET, EDR, and Forward Osmosis. The final reports on the identification of emerging areas in which the receiving countries required support and potential international collaboration on GP-related themes were also submitted after those visits.

Program coverage: GP; Resource recycling; Advanced industrial wastewater treatment; Solid waste management; Waste processing, and The four-in-one recycling program.

Forum on Green Productivity and the Future of Sustainable Development

As part of the plan to strengthen the COE on GP by promoting GP-related activities and publicizing valuable examples of GP in the Asia-Pacific region, a three-day forum on GP and the Future of Sustainable Development was organized in Taipei, 18–20 September.



Fifty-six local participants representing various industries, government agencies, chambers of commerce, and trade unions of the ROC attended. Nine international experts and participants from India, Indonesia, Lao PDR, Thailand, and Vietnam representing government agencies and industries involved in GP were also in attendance. The forum shared key emerging trends in new clean technologies for the future, the promotion of resource efficiency with the focus on resource recycling, and green energy. Good practices in renewable energy, solar energy, and resource recycling were discussed among all experts and participants. Case studies and success stories from APO demonstration projects in various member countries were shared by the COE on GP technical services team. Future trends in resource management for sustainability, renewable and mini-grid applications of solar energy, resource conservation and minimization of waste, future techniques for resource recovery from wastewater, clean technology, etc. were at the core of discussions throughout the forum.

Program coverage: GP; Resource efficiency; Resource recycling; Green energy; Solar energy; and New clean technologies for the future. Site visits were made to Tatung University, Industrial Technology Research Institute, Exhibition Hall of Energy Taiwan, and Jia-Cheng Tech Co.

Enhancing the Capacity of the Center of Excellence on Green Productivity

To upgrade the capability and expertise of the COE on GP, thus helping it to become a leading regional organization in the areas of resource recycling, green energy, green factories, green buildings, and agroinnovation, the APO supports it in conducting study missions to identify emerging needs and new initiatives in GP-related areas.

An expert was assigned to accompany the COE on GP team of the CPC to visit different green economy authorities of Malaysia from 12 to 16 November. Specifically, visits were made to the Environment and Natural Resources Economic Section, Economic Planning Unit of the Prime Minister's Department, Green Tech Malaysia, Malaysian Investment Development Authority, and MPC. Interacting with government agencies in charge of the National Green Technology Policy of Malaysia, the delegation utilized the opportunity to engage in experience sharing and productive discussions on environmental policies, technologies, and public administration with representatives of the Malaysian government. As part of the study mission, the delegation also visited nongovernment organizations including EcoLean, a local consulting firm assisting Malaysian industries in productivity enhancement, and the Suzuka Group. With the assistance of the expert, the mission identified key partners for COE on GP projects on the green economy, as well as emerging needs in Malaysia for future activities of the COE on GP.

Program coverage: The green economy; Green technology policy; Resource recycling; Green energy; Environmental policies; and Productivity enhancement.

Development of Monitoring and Evaluation Systems for the APO Centers of Excellence

During the 60th session of the APO Governing Body Meeting in Vientiane, Lao PDR, in May 2018, it was emphasized by APO Directors that the critical success factors for the COE should include annual performance monitoring and evaluation (M&E) for all existing and future COE. In order to adopt a longer-term approach in supporting the COE beyond the initial two years and to institutionalize procedures for the annual performance assessment, an M&E system should also ideally be in place for each COE. The M&E systems will allow the APO to better evaluate and align COE activities and programs with the common goals of the APO Vision 2020.

The development of the M&E framework with relevant evaluation criteria and other elements began with the assignment of an expert. The draft M&E framework was submitted by the expert in December 2018 and shared with the four COE. Based on the feedback received, the framework was tailored for each COE following consultations with the host NPOs. In the later phase, an evaluation of each COE will be conducted by an expert. Thereafter, each NPO hosting a COE will be requested to submit annual performance reports, in line with the Governing Body's recommendation to institutionalize the process for the annual performance assessment of COE.

Program coverage: COE M&E systems; M&E framework; Evaluation criteria; COE institutionalization of procedures; and COE annual performance assessment.

Expert Panel Meeting to Assess the Proposal for a Center of Excellence on Smart Manufacturing

Preparations for the development of the next COE were in progress in 2018. In an effort to assess the areas of excellence of NPOs or partner organizations in member countries and identify the next COE, discussions commenced with potential organizations in member countries. A proposal for a COE on Smart Manufacturing was received from the CPC of the ROC. An expert panel meeting via Skype was planned for early 2019, to be attended by the NPO Heads of Japan, India, the Philippines, and Vietnam plus an expert on Industry 4.0 smart manufacturing.

The expert panel will evaluate the proposal for a COE on Smart Manufacturing and make recommendations on its acceptance based on the general guidelines set by the APO Governing Body. The assessment will include the competencies and expertise available in the proposing member country, current and suggested

programs, and existing organizational structure that could support the sustainable operation of the COE. Final recommendations will be made to the 61st Session of the APO Governing Body in April 2019 based on the evaluation outcome.

Program coverage: COE on Smart Manufacturing; Industry 4.0; COE expert panel; COE competencies and expertise; and Sustainable operation of the COE.

Institutional Strengthening of National Productivity Organizations through the Development of Productivity Practitioners

The Institutional Strengthening of National Productivity Organizations through the Development of Productivity Practitioners Program, also known as DON in-country projects, is designed to fulfill the ongoing need for the capacity building of NPOs. It aims to strengthen their ability to enhance productivity in each member economy by maintaining the availability, quantity, and quality of productivity practitioners. These productivity facilitators and practitioners are then expected to apply their acquired skills and knowledge in advisory and training services for multiplier effects. The focus of this program is on both NPOs and SMEs in line with the APO's strategic direction of strengthening NPOs and promoting the development of SMEs and communities.

Three DON in-country projects were implemented in 2018. The NPCC hosted a nine-day training course on the Manpower Audit and Workforce Planning Program in Phnom Penh, 14–24 August, which was attended by 41 participants representing NPCC staff, NPCC-associated consultants, and SME Development Agency staff. The MPO organized a 10-day training course on Productivity Management Systems in Ulaanbaatar, 17–28 September, with 19 participants representing MPO staff as well as associated consultants engaged in productivity promotion and implementation. A five-day training course on Smart Manufacturing Applied Technology and Practices was held by the CPC in Taipei, 3–7 September, which was attended 22 participants representing CPC staff and representatives of the SME Development Agency.

Assignment of an Expert to Assist in Strengthening the Capabilities of the Center of Excellence on Business Excellence

The APO continues to extend assistance to enhance the capabilities of the pool of assessors under the COE on Business Excellence (BE). A resource person from Germany was assigned to conduct a two-day seminar on 1 and 2 November. The seminar strengthened the skills of BE accessors in Enterprise Singapore with reference to the Singapore BE framework and European Foundation for Quality Management (EFQM) framework. The resource person delivered presentations and case studies on the EFQM Excellence Model and elaborated on the keys to performing accurate stakeholder analysis. BE assessors of Enterprise Singapore were also guided throughout the discussion sessions to strengthen their competencies and elevate their level of understanding of the best practices in Europe. At the end of the two-day seminar, the resource person submitted a report with recommendations relevant to the Singapore BE framework, the assessment process, and assessor training.

The capability of BE assessors strengthened through this seminar will in turn assist other APO member countries in the future to build up their capacity and expertise on BE, enhance the management of BE initiatives, develop and strengthen quality award systems, and improve the productivity of various organizations.

Program coverage: Singapore BE framework; EFQM Excellence Model; Good stakeholder analysis; BE assessment process; Quality award systems; and BE initiatives.

Research on Green Productivity for the Base of the Pyramid for Sustainable Development in APO Member Countries

Recent studies have indicated that base-of-the-pyramid (BoP) business activities by multinational and local companies could contribute to poverty reduction and sustainable development while generating profits in the long run. The other contention of this model is that low prices and easy access to products and services will help the poor increase both their productivity and purchasing power. To heighten awareness among organizations, companies, and individuals of the need for continuous improvement and innovative approaches, the COE on GP is undertaking research to examine possible contributions and opportunities for BoP-targeted GP activities to improve the quality of life of the people at the BoP while underpinning sustainable development.

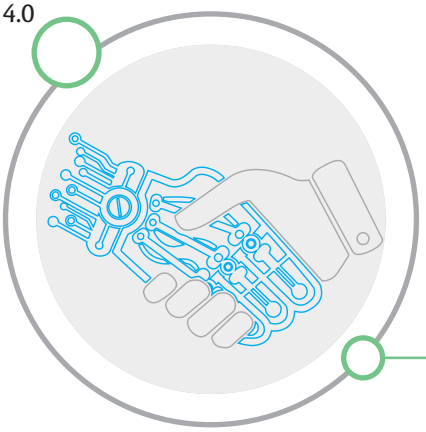
The Research on Green Productivity for the Base of the Pyramid for Sustainable Development in APO Member Countries was initiated in 2016. Six national experts from India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam were selected to undertake the research. The objective was to explore how the BoP approach interacts with issues such as ecobusiness, renewable energy, recycling industries, ecoagriculture, etc. while serving the interests of the poor. The final report containing cases of business strategy under the BoP model was finalized and submitted in 2018. It is envisioned that the output of this research will support overall GP approaches of the APO in spreading environmentally sustainable solutions and development in the region.

Program coverage: Defining the BoP as a business strategy within the framework of sustainable development; The BoP promise: Building businesses with impact and scale and its implications for sustainable development; and Examples of business strategies under the BoP model.

Research on Industry 4.0 Digitization Strategies for SMEs

Industry 4.0, the rapid technological revolution driven by new-generation technologies, has fundamentally transformed the future of production systems. The integration of manufacturing with state-of-the-art ICT linked to logistics processes among different companies is the key concept behind Industry 4.0. In APO economies, SMEs are on a fast-growth trajectory, but only a small fraction of them have access to the type of ICT that is commonplace in larger enterprises. There are numerous barriers to overcome before SMEs can fully embrace Industry 4.0. Such barriers include a lack of digitization knowledge, the high learning curve involved, difficulty in defining the starting point, etc.

Under the APO COE on IT for Industry 4.0 hosted by the NPC, research on Industry 4.0 Digitization Strategies for SMEs was initiated to support SMEs in member countries in moving toward digitization and staying competitive in global value chains as the Fourth Industrial Revolution proceeds. A chief expert from Germany and five national experts from the ROC, India, Indonesia, Malaysia, and Vietnam were selected to undertake this research. A coordination meeting among all experts, the NPC, and APO Secretariat took place 13–15 December 2017 in New Delhi to define the scope and methodology of the project, including data collection, data analysis, and timeline. They also designed a set of questionnaires to assess the current level of digitization and the critical needs of SMEs to achieve it. In October 2018, the team of experts concluded the research with a report pinpointing the critical needs of SMEs before they can embrace the Fourth Industrial Revolution.



Program coverage: APO COE Program; Industry 4.0; SME digitization strategies; Digital innovation; Digital ecosystems; and Smart processes.

National Follow-up Program

The National Follow-up Program (NFP) is designed to provide equal opportunities for all countries to have better access to and benefit from APO projects dealing with subjects that are most relevant to their needs. Through the NFP, it was expected that each country would have better access to APO technical and financial support and that the reach of APO projects would be expanded to wider groups of stakeholders.

The objectives of the NFP are to: 1) provide technical and financial assistance to NPOs or partner organizations in conducting national follow-up projects after specific multicountry projects; 2) support member countries in intensifying the dissemination of knowledge and information on productivity topics covered in multicountry projects; and 3) provide opportunities for more individuals from member countries to participate in national conferences, forums, workshops, and training courses on the themes and topics covered in multicountry projects. The aim is to strengthen the capacity of more stakeholders in member countries in a cost-effective way to increase their productivity and competitiveness, while enhancing the visibility of the APO.

In 2017, 12 NFP projects were implemented in seven APO member countries. Based on information provided by NPOs, 751 participants, professionals, and employees benefited. Eight international resource persons conducted the national projects, supported by local experts/coordinators. Overall, the feedback from participants and implementing organizations was positive. The window for 2017 NFP projects was 1 June 2017–31 May 2018, while the window for implementation of 2018 NFP projects is 1 June 2018–31 May 2019. At the time of writing, three additional proposals from Fiji, India, and Pakistan had been accepted under the 2017 NFP, while another three proposals from Cambodia, Mongolia, and Sri Lanka had been accepted under the 2018 NFP. Thus all NFP projects will be implemented by the end of May 2019. The main challenge was that only a limited number of member countries benefited from the NFP. Keeping in view the low popularity of NFP projects among members, starting from 2019 this program will be merged into the new Specific National Project (SNP) Program.

Training of Trainers in Good Agricultural Practices (GAP) for Women Small Farmers

There is enormous potential to increase agricultural productivity and farm incomes in IR Iran. However, inappropriate use and high prices of agricultural inputs as well as the scarcity of irrigation water are main challenges to the sustainability of agriculture, with implications for both producers and consumers. The adoption of GAP as a national strategy will be needed to develop productive, sustainable, safe, climate-resilient agriculture and enhance national food security. The main impediments to the promotion and adoption of GAP are the lack of a critical mass of GAP trainers, preponderance of smallholders with insufficient resources, and inability of small farmers to adopt GLOBALGAP standards.

To enable women extension experts to act as trainers on the principles and standards of GAP for small farmers, especially women, in IR Iran, the APO in collaboration with NIPO and the Nomad & Rural Women Agricultural Activities Development Office organized a training of trainers in Good Agricultural Practices (GAP) for Women Small Farmers in Tehran, 7–11 January. A total of 76 participants and eight resource persons attended. The APO assigned one overseas resource person.

Program coverage: GAP principles; GAP and sustainability in agriculture; GAP and market access; GAP in the context of value chains and value added; GAP schemes for small women farmers; Procedures and process of GAP implementation by small women farmers; and Key success factors in promoting GAP implementation. Participants visited greenhouses growing medicinal plants, cucumbers, strawberries, etc.; a pistachio garden; an animal husbandry farm; a dried-fruit processing and sorting unit; and an ostrich-breeding farm.

National Conference and Training of Trainers in Green Productivity

The NPCC was established to undertake activities and projects designated by the Royal Government of Cambodia. The NPCC has acted as a catalyst in promoting the productivity movement and related efforts at national, provincial, and district levels. These include organizing productivity seminars, national training programs, workshops, and courses and developing materials relating to all aspects of productivity necessary for increased national and international competitiveness. The NPCC also offers consultancy and support services to the public sector and industry.

To enhance awareness of the impact of environmental performance on socioeconomic development, the NPCC is promoting GP among Cambodian enterprises, especially SMEs. However, this requires the creation of a large pool of capable trainers and consultants in GP. Therefore, a one-week course was organized to develop trained GP specialists in Cambodia, 26–30 March, as a follow-up to the APO multicountry project on a similar topic held 14 August–1 September 2017 in the ROC. A total of 40 participants completed the course.

Program coverage: GP methodologies, tools, and techniques; GP case studies; Project plan preparation; and Individual assessment.

National Workshop on Development of Rural Tourism Networks and Clusters for Enhancing the Competitiveness of Small Enterprises

The APO in partnership with the LNPO organized a workshop on Development of Rural Tourism Networks and Clusters for Enhancing the Competitiveness of Small Enterprises, in Vientiane, 21–25 November 2016. Following the success of that workshop, the DAP conducted a follow-up project to share knowledge on best practices for rural tourism development, particularly for SMEs' competitiveness enhancement. The economy of the Philippines is currently service based, and the country hopes to attract more tourism numbers, similar to the tourism-advanced countries in Asia such as Japan, Malaysia, and Thailand. The Philippines has abundant land resources and pristine nature sites, which could make rural tourism a driver of economic growth. As sustainable tourism utilizes existing natural resources, developing tourism networks and clusters would allow cost-effective business for SMEs and bring economic and social benefits to rural communities.

A national workshop on Development of Rural Tourism Networks and Clusters for Enhancing the Competitiveness of Small Enterprises was held 21–25 May in Tagaytay City, organized and implemented by the DAP in collaboration with the APO Secretariat. One APO international resource person from Thailand and three local ones were invited to promote the different approaches to rural tourism models and enhance skills in planning rural tourism projects, networks, and clusters. Twenty-six participants from government, the tourism industry, and academia attended the five-day workshop to discuss diverse approaches and strategies for developing competitive rural tourism in the country.

Program coverage: Recent developments, issues, and challenges for sustainable tourism development; Philippines' tourism policies and initiatives; Understanding agritourism/farm programs and models in the Philippines; Development of rural tourism products and marketing; Developing tourism clusters and extending networks; Ecotourism and geotourism models in the Philippines; Sustainable tourism projects for actionable tourism management; Designing and mapping sustainable tourism projects; and Agritourism product development model. Site visits were hosted by Gorgeous Farms, the Wild Juan, and the heritage town Taal Maranan Farmville in Taal, Batangas.

National Conference-cum-Workshop on Public-sector Productivity for High-level Public-sector Officials

The APO held an International Conference on Public-sector Productivity, 9–11 August 2016, hosted by the MPC in Kuala Lumpur, with the objectives of sharing the latest status of PSP in the region, exchanging information on performance management for the public sector, and identifying the future challenges hindering the improvement

of productivity in the sector. Given its value and importance, a similar project was implemented in Mongolia as a national follow-up activity.

The MPO organized its national Conference-cum-Workshop on Public-sector Productivity for High-level Public-sector Officials, 30 May–1 June in Ulaanbaatar. The program was divided into two parts, with day 1 as a national conference with 117 participants followed by a two-day workshop with 25 participants. Two resource persons from Canada and Sri Lanka gave presentations on various topics relating to PSP.

Program coverage: The APO Public-sector Productivity Framework and methods to derive a productivity policy strategy from it; Good governance to improve stakeholder satisfaction; Implementation of quality management systems in public-sector organizations and state-owned enterprises; and Results of citizens' satisfaction surveys on activities of public organizations.

Productivity Enhancement through Applications of Industry 4.0 in Fiji

The APO organized a study mission on Productivity Enhancement through Applications of Industry 4.0 in Tokyo, 6–9 March 2018. Given its value and importance, a similar project was implemented in Fiji later in the year as a national follow-up activity.

The NTPC and Fiji Commerce & Employers Federation conducted a workshop to intensify the sharing of knowledge on best practices for promoting productivity enhancement through applications of Industry 4.0, 18–23 June in Suva and Nadi. A resource person from Japan gave presentations on various topics relevant to Industry 4.0.

Program coverage: The Internet of Things to streamline manufacturing processes by connecting all computer numerical control operations and central control systems; Applications of Industry 4.0 in the context of the manufacturing sector; and IT applications in business processes and factory operations to address labor constraints, sustain profitable operations, and improve productivity.

Training of Trainers and Consultants in Green Productivity (APO-certified GP Specialists)

As the leading productivity institution in Pakistan, the NPO has been in the forefront of promoting GP through training and consultancy. It is expected that client enterprises will able to sustain productivity growth and simultaneously reduce their environmental impact. However, these activities require a larger pool of trainers and consultants considering the size and number of enterprises in Pakistan. Therefore, training of trainers is necessary to develop more national experts. It will also help develop the NPO's capacity as an APO-accredited training provider on GP in the future.

To address that, the NPO of Pakistan organized a course on Training of Trainers and Consultants in Green Productivity (APO-certified GP Specialists) from 9 to 13 July. The course was a follow-up to the APO multicountry project on a similar topic held 14 August–1 September 2017 in the ROC. A total of 30 participants completed the course, which was conducted by an APO resource person from Malaysia.

Program coverage: GP methodologies, tools, and techniques; GP case studies; Project plan preparation; and Individual assessment.

National Seminar on Innovations in Postharvest Handling of Perishables in the Food Value Chain in Cambodia

Agriculture is a major sector of the Cambodian economy, as it employs more than 25% of the country's workforce. Fruit and vegetable production losses are reported to average 25–30% annually, and innovative ideas and

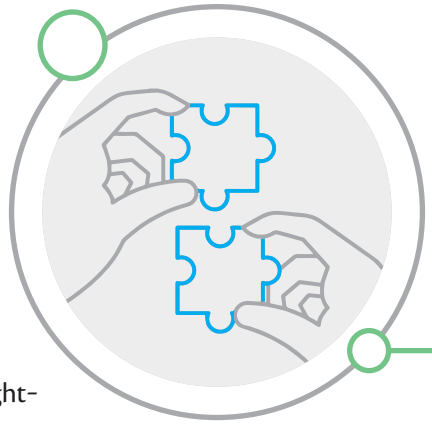
concepts are required to enhance shelf life, introduce value-added practices to optimize yields, reduce losses, and diversify agricultural produce/products. The Ministry of Agriculture, Forestry, and Fisheries of Cambodia has been formulating an agricultural extension policy, which is an essential instrument to organize, strengthen, and support mechanisms, regulations, human resources, techniques and technologies, and methods and approaches for the postharvest handling (PHH) of perishables to meet farmers' needs and market demand.

To provide a platform for local stakeholders to engage in networking while sharing the latest technical and scientific innovations at the global level, as well as to enhance the awareness of national policymakers and planners of the importance of PHH and reduction of postharvest losses, the NPCC, Ministry of Industry and Handicraft, and APO organized a national Seminar on Innovations in Postharvest Handling of Perishables in the Food Value Chain, 26–28 December in Phnom Penh. Eighty participants attended. The project was a follow-up to the APO multicountry workshop on Innovations in Postharvest Handling of Perishables, 20–24 May 2018, in Dhaka, Bangladesh.

Program coverage: Innovative ideas and concepts in the PHH of perishables; Emerging technologies in the PHH of perishables in the Asia-Pacific; Smart technologies for improving postharvest management; Cost-effective new postharvest technologies for SMEs; Introduction of digital technology applications in postharvest operations to enhance producers' efficiency and effectiveness; and Successful models and best practices of the PHH of perishables.

Strategic Planning Workshop for Senior Planning Officers of NPOs

The Strategic Planning Workshop for Senior Planning Officers of NPOs (SPW) is held at the start of the APO's planning cycle. Attended by NPO Heads, APO Directors, and senior planning officers of NPOs, the SPW shares emerging trends and issues identified by the Secretariat and their implications for productivity in member countries and drafts preliminary strategies to address them, customized for each member country. The 2018 SPW also provided an informal venue to discuss the new business model and key business transformations to achieve the objectives of the Roadmap to Achieve the APO Vision 2020. Held immediately after the SPS on 10 July, participants identified trends and advanced technologies that would influence the future and how the key business transformations could enable member countries to overcome the challenges ahead.



The Secretariat gave presentations on the proposed new business model and transformations and on how to understand and address the complex problems member economies are increasingly facing. Those included new demands and expectations as well as rapid advances in technologies. Participants explained specific concerns, suggested refinements in the proposed transformations, and assessed the current health of APO programs and activities. The SPW led to the adoption of the new business model and key business transformations by APO Directors through a circular in September 2018.

Program coverage: New business model; Key business transformations; Foresight-based strategic planning; Proposed new programs; and Scenario planning.

Certified Productivity Practitioners Course

After more than two decades of organizing the Development of Productivity Practitioners: Basic and Advanced (DPP: Basic and Advanced), the APO decided to revamp the overall implementation to align them with in-country and e-learning efforts. Realizing that the latter initiatives can accommodate more participants, are cost-effective, and can be tailored to the specific needs of NPO capability building, it was suggested that NPOs utilize these in developing

their staff. The DPP: Basic and Advanced courses were renamed the Certified Productivity Practitioners' Course and focus more on preparing participants for certification and becoming full-fledged productivity practitioners.

In collaboration with the DAP, a total of 21 participants attended the course from 20 to 31 August held in Tagaytay City. The APO assigned resource persons from Japan, Malaysia, and Singapore, while the DAP invited several local resource persons to support course delivery. The participants were requested to submit project reports six months after course completion to qualify as APO-certified productivity practitioners.

Program coverage: Module 1, Functional competency development; Module 2, Productivity and quality diagnosis; and Module 3, Project development for the certification program. Four organizations were selected as venues for practical study: the Provincial Government of Cavite, Sanggunian Panlalawigan; Municipal Government of Carmona, Cavite; General Trias Dairy Raisers Multipurpose Cooperative; and Amira's Buco Tart Haus.

Training of Trainers on Benchmarking to Enhance Organizational Excellence in the Service Sector

The BE framework is a dynamic tool enabling organizations to improve competitiveness and productivity. Using the BE framework, organizations can identify strengths and opportunities and then align management systems and processes to create an environment for sustainable, continuous improvement. It is about achieving organizational excellence in all spheres of activity, including leadership, strategy, customer service, people, processes, and knowledge management.

Targeting BE trainers and consultants who deal with organizational excellence for the service sector to help them develop greater competencies, the APO in conjunction with the NTPC held a training-of-trainers course on Benchmarking to Enhance Organizational Excellence in the Service Sector in Suva, 10–14 December. It was attended 21 participants from 14 APO member countries. The primary objective was to promote the use of assessment tools for organizational excellence while exchanging information on and experience in best practices in training and consulting in BE-related areas. Three resource speakers from Japan, Singapore, and the USA were invited to give presentations on the BE framework and strategies specific to the service sector.

Program coverage: Adopting the organizational excellence framework for the service sector; How to conduct a quick self-assessment of organizational capabilities, strengths, and weaknesses; Government policy and strategy to enhance service excellence in Japan; BE for organizational excellence in Fiji; How to ensure your service delivery meets stated and unstated customer requirements; The organizational excellence framework and strategy; Design thinking for organizational excellence in the service sector; Productivity management systems for organizational excellence; Benchmarking strategy for service organizations; Best practices of organizational excellence in the service sector in Japan; and How to align strategy and action plans for service excellence. Participants visited iTaukei Land Trust Board and Telecom Fiji Limited to observe how they apply the BE framework to achieve excellence in service provision.

Training Program on Productivity Improvement for the Supporting Industry

Through cooperation with local enterprises, numerous Japanese companies have expanded their business into Asia and contributed to its economic growth. To maintain rapid economic growth, improved productivity in local supporting industries is particularly crucial. The Training Program on Productivity Improvement for the Supporting Industry, conducted under a special cash grant from the Japanese Ministry of Economy, Trade and Industry, aims to promote improvements in local supporting industries and the quality of their human resources by providing

opportunities to learn about and acquire productivity skills and management techniques developed and refined in Japan. This will allow more supporting industries to contribute to higher national productivity. The program is designed to benefit local companies that are current or potential suppliers and business partners of Japanese companies in the target countries as well as Japanese SMEs that have business bases in those countries.

At the time of writing, 106 proposals had been received from 42 local companies in India wishing to apply for training courses under the scheme proposed by Japanese manufacturers.

Workshop on Productivity Measurement in SMEs

SMEs operate in agriculture, industry, and services. Within each sector, they are also in various subsectors, engaged in a wide range of business activities. This variety of activities makes it difficult to use a common yardstick for measuring, comparing, and monitoring their productivity at national, sectoral, and even at firm levels. The many different approaches to productivity measurement and their calculation and interpretation require careful consideration depending on whether it is measured by statisticians, researchers, or analysts. Despite the various differences and challenges in measuring, monitoring, and analyzing SME productivity, the APO has long offered projects to support such capacity-enhancing needs.

A workshop on Productivity Measurement in SMEs was organized 3–7 September in Fiji, which was hosted by the NTPC. The objectives of the workshop were to: enhance understanding of productivity concepts and measurements for SMEs; review the tools, approaches, and techniques for SME productivity measurement used by relevant government agencies and NPOs; identify and recommend a suitable sectoral SME productivity measurement system including the use of online/IT-based platforms so that monitoring, analyzing, and benchmarking will be possible; and develop a productivity report template that will be used for SME development and national decision making. Fourteen international participants and six local ones attended the workshop. Two APO resource persons from Malaysia and the Philippines made presentations on different topics and facilitated the group exercises.

Program coverage: Review of productivity measurements and methodologies applicable to SMEs; How to measure SME productivity: National, sectoral, and organizational indicators; Establishing a productivity measurement system at the SME level; Introduction of IT-based SME productivity measurement, monitoring, and analysis; and Development of a productivity report template for documentation. The participants also visited a local SME to learn about actual productivity measurement and monitoring at the firm level and took the final exam as a course requirement.

Impact Evaluation Study

To assess how APO projects have benefited participants and/or organizations in member countries, the Secretariat conducts an impact evaluation study (IES) every two years. The main focus of the IES is assessing the achievements of projects in terms of intended outputs, outcomes, and impacts. The study also collects feedback on results and on what could be done to achieve the intended outcomes more effectively. The sixth IES built on insights from previous ones, with an increased focus on results. The evaluation framework was developed by the OECD-DAC, which adopts the five criteria of relevance, effectiveness, efficiency, impact, and sustainability. This framework is widely used for evaluating development projects and programs.

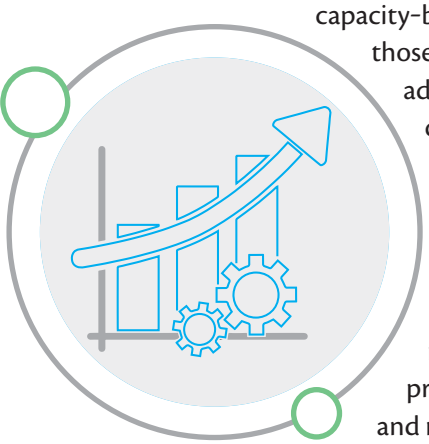
Director, Institute of Public Policy and Governance, University of Technology Sydney, Professor Roberta Ryan presented the IES findings and recommendations at the 59th Workshop Meeting of Heads of NPOs (WSM) in Yogyakarta, Indonesia, in October. During the plenary session, she listed possible new areas to address the needs

of member countries through the SNP and customized Technical Expert Services. Analyses of the qualitative and quantitative data collected were also presented for the approval of NPO Heads at the WSM.

Program coverage: Impact evaluation; Needs and expectations of member countries; Impact and outcome evaluation covering multicountry and individual-country projects; and Flagship projects implemented in 2016 and 2017.

Research on Productivity Analysis for NPOs

With the increasing recognition that productivity growth is one of the keys to sustained economic expansion, measuring and analyzing productivity are becoming more important for member economies and NPOs to provide better recommendations to policymakers on setting appropriate priorities for their economic growth. As a part of capacity-building efforts, it is necessary to strengthen the ability of NPOs to collect and utilize those data in their own national productivity analyses and provide evidence-based policy advice and guidance to policymakers. While recognizing that it is daunting to discuss different issues of productivity measurement in each participating member, this project is the initial feasibility study on the capacity building of NPOs in productivity measurement and producing national productivity reports.



This research was initiated by a coordination meeting of national experts in December 2014 in Vietnam, where they agreed to undertake a study analyzing national productivity and economic growth trends and attempt to produce national productivity analysis reports, while establishing collaborative channels between NPOs and national statistics offices. Participating countries have so far submitted partial drafts of national productivity reports based on their research, and the Secretariat has provided feedback and advice to some experts. National experts worked on the final national productivity analysis reports which were completed in 2018.

Program coverage: Productivity concepts and different productivity measures; National data collection and productivity analyses at national level; Labor productivity and sources of growth; and National development plans and evidence-based policy analyses.

Research on Institutions Offering Productivity Courses

The researchers involved in the project on Institutions Offering Productivity Courses first attended a coordination meeting held 6–8 October 2015 in Hanoi, Vietnam. Six national experts from Bangladesh, Pakistan, the Philippines, Sri Lanka, Thailand, and Vietnam with a chief expert from India were selected to undertake the project. The objectives were to: assess the curriculum designs and training programs of institutions that offer productivity courses; expand the productivity courses and programs of institutions to increase the number of productivity specialists in the region; and make recommendations that will strengthen the delivery and quality of productivity courses and training programs. The final consolidated report was published in 2018.

APO Productivity Practitioners Certification Management System

Over the years, the APO has organized numerous training courses to enhance the capability and expertise of productivity professionals either from NPOs or relevant organizations in member countries. The trained individuals are expected to become experts to lead productivity and quality improvement programs at organizational and national levels. To validate their competency and skills, some member countries expressed the desire for the APO to

develop a certification/accreditation system. This will also gain global recognition and raise the visibility of the APO as a leading international productivity organization by 2020. The APO first launched a pilot certification program in 2015. An annual core course, DPP: Basic and Advanced, was chosen as the prerequisite for the certification program. Participants need to undergo three stages, consisting of self-learning e-courses, face-to-face DPP courses, and their own project implementation. Each participant is given six months to implement a project and submit a project report. In 2017, the APO added the Training of Trainers in Green Productivity to the Certification Program list.

An Evaluation Committee consisting of representatives of the Secretariat, NPOs, and external experts was established to assess the reports by participants. Evaluations determine whether participants showed a clear understanding of productivity tools and techniques, had an overall understanding of productivity, were able to analyze issues and then utilize appropriate approaches and methodology to resolve them, described the detailed process followed in the project, and presented the relevant facts and figures, along with the overall results or intended results/outcomes.

Based on the assessment and evaluation, in 2018 six participants from India, Indonesia, Malaysia, and Sri Lanka became APO-certified Productivity Practitioners (Advanced) for a period of three years, and two participants from Vietnam certified as APO Productivity Practitioners (Basic). Meanwhile, six participants from Indonesia, IR Iran, Sri Lanka, and Vietnam became APO-certified GP Specialists for the same period.

Inaugural Meeting of the APO Accreditation Body Council

One of the main goals of the APO Vision 2020 is to achieve recognition as the leading international organization on productivity enhancement. Even though APO services have been sought after by various international organizations over the years, there is a need to increase its visibility to enhance its global reputation. Global recognition could pave the way for sustaining the APO as an international institution through the recruitment of new members, increased global demand for its services, and enhancement of members' satisfaction level.

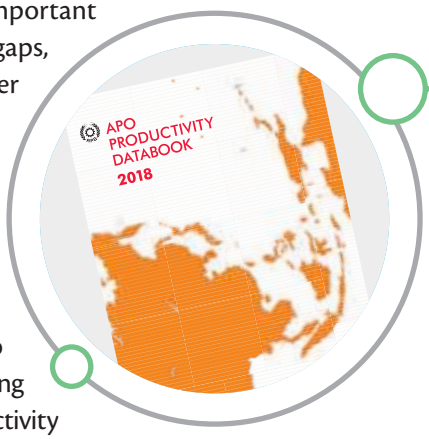
The certification program has been identified as one activity that could raise the visibility of the APO. By recognizing the competence of individuals in different fields of productivity, their certification will build APO brand awareness, cultivate a community of experts, and strengthen leadership in specific areas. To ensure that APO certification programs meet the needs of stakeholders and comply with international standards, the Secretariat proposed the establishment of an accreditation body. The accreditation body will assess organizations that conduct APO certification courses against the standards set by the APO.

The inaugural meeting of the APO Accreditation Body (APO-AB) Council was held from 27 to 28 November 2018 in Tokyo. The council serves as the highest authority of the body and is responsible for providing advice on the policies, guidelines, and strategies of accreditation and certification programs. The council meeting, chaired by the APO Secretary-General, was attended by the: APO Director for Singapore; Alternate Director for Indonesia; NPO Head of Fiji; Vice President of the National Graduate Institute for Policy Studies, Japan; Executive Director of the Japan Small and Medium Enterprise Management Consultant Association; Senior Assistant Director of the Japan International Cooperation Agency; President of the Foundation for Industrial Development, Management System Certification Institute, Thailand; and representatives of the JPC and Institute of Future Research of Stellenbosch University, South Africa. A representative from the Indonesian Ministry of Manpower also attended as an observer.

The meeting adopted several documents including the APO-AB rules and procedures, quality manual, requirements for APO certification bodies, and terms of reference for technical working groups.

Research on the APO Productivity Databook and Database (2018 edition)

A major challenge to sustaining growth continues to be raising productivity. As the sole organization devoted to productivity in the Asia-Pacific, the APO has endeavored to offer innovative solutions and assistance to its member economies for enhancing productivity. Measuring productivity is an important part of the APO project portfolio, as it is tasked with monitoring productivity gaps, analyzing socioeconomic growth, and setting future productivity targets for member countries. To support various stakeholders in member economies and to strengthen the evidence-based policy advisory role of the APO Secretariat, the Productivity Databook project continues to conduct research to measure productivity and generate a set of socioeconomic and productivity data under an internationally harmonized measurement framework.



The project is carried out under a research partnership between the APO and Keio University in Tokyo, together with national experts who collect basic primary data following the internationally harmonized methodology. The project not only monitors productivity trends but also provides analysis of the most up-to-date socioeconomic performance indicators for assessing potential economic growth, the productivity of cities, and energy productivity. In 2018, the *APO Productivity Databook 2018* as well as the APO Productivity Database (PDB) were published on the APO website. The Asian Economy and Productivity Map (AEPM) will be also fine-tuned for greater user-friendliness with updated data releases.

Program coverage: Comparative analyses of labor productivity and sources of economic growth; Total factor productivity (TFP) analysis; Energy productivity, city productivity, and sustainable development; Projections of economic growth and labor productivity in APO members; Analytical reports for publication in the *APO Productivity Databook 2018*; APO PDB; and AEPM Database.

Research on the APO Productivity Databook and Database (2019 edition)

Policymakers, economic analysts, development planners, and productivity specialists in member countries rely on productivity data and economic statistics to analyze socioeconomic progress and set goals for potential growth in the future. To assist these stakeholders in monitoring productivity gaps and set new targets for the future productivity movement, the APO has conducted annual research projects on productivity measurement and developed a comprehensive productivity database under a long-term partnership with Keio University, Tokyo.

The 2019 editions of the *APO Productivity Databook* and PDB were under preparation at the time of writing. Adopting an internationally harmonized measurement framework, the *APO Productivity Databook* and PDB 2019 will present detailed analytical reports on recent and long-term productivity and economic performance in the Asia-Pacific and reference economies. The quality of economic growth through cross-country comparisons at different development stages will also be analyzed. The *APO Productivity Databook 2019* is expected to become a main source of productivity statistics for regional policymakers in the Asia-Pacific. It expands the projections of economic growth, labor productivity, and TFP estimates in APO member countries, which will enable evidence-based policy advisory services to member countries. The online data visualization system of the AEPM illustrating quarterly economic growth in APO members and annual productivity indicators will also be updated.

Program coverage: Comparative analyses of labor productivity and sources of economic growth; TFP analysis; Energy productivity; City productivity; Forecasting Asian economic growth and productivity indicators; APO PDB; and AEPM Database.

Establishment of the APO Future Intelligence Center (Program Development Fund): Shaping Tomorrow

The Program Development Fund (PDF) is earmarked for activities not covered elsewhere in the annual program, which allows rapid responses to trends impacting productivity and competitiveness. The PDF was used to subscribe to an artificial intelligence-driven trend scanning and analysis platform, Shaping Tomorrow. This is called the "APO Strategic Future Platform" and used by the APO Futures Team to conduct horizon scanning for trends, drivers, and uncertainties that may affect the organization and its member countries.

Futures Team members are licensed to access Shaping Tomorrow and receive instructions on using its features, focusing on horizon scanning. The Futures Team leader underwent three individual training sessions with the company founder and then trained other team members. Shaping Tomorrow's findings have contributed to both the trend database maintained and updated quarterly by the Futures Team as well as the third and fourth Quarterly Emerging Trends Report. Additional training sessions are planned specifically for scanning emerging trends and "weak signals."

Program coverage: Horizon scanning; Strategic foresight; Scenario planning; and Emerging trends.

APO Business Model Development Project

The Roadmap to Achieve the APO Vision 2020 approved by the Governing Body has served as a strategic framework to guide the planning and implementation of programs and projects up to 2020. Its objective was to steer the APO to becoming the leading international organization on productivity enhancement, in the process enabling APO member economies to be more productive and competitive.

The Secretariat engaged leading consulting firm Accenture to review the approach to achieving the goals of the roadmap and recommend a new business model to maximize the impact of APO activities. This consultancy project was conducted between February and May 2018 and led to the formulation of a new business model, with several suggestions for key transformation initiatives. These are preparing the Secretariat and member countries for the productivity challenges ahead. The new business model was presented at the SPW, 11–12 July, and approved by the Governing Body via circular. The program plans under the overarching framework of the key business transformations were also approved at the 59th WSM in October.

Program coverage: New business model; Key business transformations; Future-ready program plans; Industrial Transformation Initiative; Agricultural Transformation Initiative; The SNP; Digital business platforms; and Future-ready programs under the key business transformation.

Data Skills Program: Fundamental Course

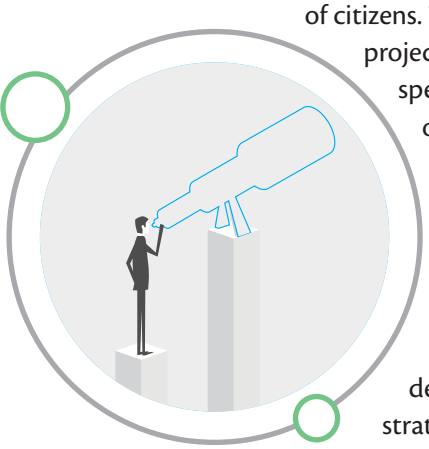
The APO Secretariat is embracing change and infusing a forward-looking perspective into efforts to increase productivity and enhance competitiveness in member countries. The IT revolution, which has altered everyday life and work in previously unimaginable ways, has transformed digital data and information into a new asset. Although vast amounts of data and information are accessible through technological devices, the distribution of skills related to their analysis and management remains somewhat skewed. It is therefore necessary to upgrade data analysis abilities for more informed decision making. The APO Secretariat is no exception and is working to develop the capacity to deal with large amounts of multidimensional data, particularly to add value to the ways in which services are provided to member countries.

To introduce the principles of data analysis and management, including visualization for decision-making purposes, the APO organized the Data Skills Program: Fundamental Course in Tokyo, 30 May–1 June. The three-day workshop conducted by the Singapore-based Future Moves Group was aimed at enhancing the capacity of the JPC and APO Secretariat to perform predictive data analysis.

Program coverage: Data principles and fundamentals; Population and sampling; Data cleaning and preparation; Review of descriptive statistics; Basic predictive analysis: Simple and multiple regression modeling; Regression and time-series analysis; Visual basics for applications; Introduction to coding: Visual Basic for Applications; and Communicating insights effectively: Data visualization using Qlik Sense.

Strategic Foresight Capability Building in the Public Sector for NPO Heads (1st Round)

The United Nations Development Programme explains that strategic foresight encourages innovation, strategic evaluation, and the proactive shaping of the future. If applied in public administrations, it will guide them in generating forward-looking, adaptive, resilient policies and programs while shaping events to the best advantage of citizens. The APO had not previously undertaken any strategic foresight and scenario planning projects to support member countries, especially NPOs, in their capacity-building initiatives, specifically in addressing the challenges of strategic planning for the long term in the face of uncertainty and accelerating change.



As the first attempt to introduce foresight tools to member countries, a project titled Strategic Foresight Capability Building in the Public Sector for NPO Heads was implemented from 5 to 8 March in Tokyo with the objectives of: equipping participants with the fundamentals of strategic foresight and scenario planning, including their relevance and approach specific to public-sector organizations; developing the ability of public-sector organizations to undertake foresight-based strategic planning by creating scenarios for the future; and learning the requirements for establishing a Strategic Foresight Center to institutionalize foresight and scenario planning. A total of 11 participants from nine NPOs and eight staff from the Secretariat attended. The two resource persons were from Futures Thinking (Maree Conway) and Looking Up Feeling Good (Marcus Barber), Australia.

Program coverage: Introduction to future studies and foresight; Finding and analyzing change that matters: Environmental scanning; Identifying scenario parameters; Identifying and refining strategic options; and The role of foresight in government agencies. Participants also made presentations on the different scenarios they created during the workshop in addition to the many group exercises conducted.

Strategic Foresight Capability Building in the Public Sector for NPO Heads (2nd Round)

With the intention of developing the capability of public-sector organizations to set forward-looking strategic directions based on plausible scenarios for the future, the APO hosted the second round of a capacity-building workshop in Tokyo, 5–8 June, as a continuation of a similar program on Strategic Foresight Capability Building in the Public Sector for NPO Heads held in March.

Those who attended the workshop on Strategic Foresight Capability Building in the Public Sector for NPO Heads were familiarized with the fundamentals of strategic foresight and scenario planning. Participants represented

Bangladesh, Cambodia, Fiji, IR Iran, Lao PDR, Mongolia, Nepal, and Pakistan, along with six APO Secretariat staff. The workshop was facilitated by two resource persons from Australia.

The four-day workshop established a common knowledge base for future studies and foresight, including principles, assumptions, overview of methods, and value of foresight in the public sector as well as ways to institutionalize foresight thinking in development policy planning. Participants gained an understanding of how collective scenarios can be created to build supporting policy narratives.

Program coverage: Fundamental techniques in strategic foresight; Deriving strategies from scenarios; and Institutionalizing foresight in public-sector organizations.

Development of an Agricultural Transformation Framework for APO Member Countries

Agricultural transformation lies at the core of poverty reduction, food security, and improved nutrition. Transforming a country's agriculture sector can create jobs, raise incomes, reduce malnutrition, and kick-start the economy. However, core agriculture has been slower to respond to the multiple opportunities and challenges unleashed by digital disruptions. The Agricultural Transformation Framework (ATF) is part of the APO's transformation agenda to help members overcome the challenges posed by the fast-changing socioeconomic-political environment and enhance sustainable productivity in agriculture to meet future food requirements.

To review the key concepts in agricultural transformation, identify successful case studies from member countries and developed countries outside the region, and create a master ATF, the APO organized an expert consultation meeting on Development of an Agricultural Transformation Framework for APO Member Countries in Tokyo, 29 October–1 November. The expert team members were from the International Food Policy Research Institute; Philippine Institute for Development Studies; National Taiwan University, ROC; University of Tsukuba, Japan; and Seraku Ltd., Japan. The draft ATF will include steps for the adoption of modern technologies, list of adoptable technologies, and preconditions, including the level of readiness to adopt transformation initiatives, with the ultimate goal of developing guidelines for the country-specific agricultural transformation of member countries in coming years.

Program coverage: Overview of existing agricultural transformation models; Developing a master outline of the ATF for promoting applications of digital technologies in agrifood chains in member countries; and Generating a set of recommendations for national roadmaps on capacity development needs for the digital transformation of agriculture in member countries.

Research on Youth Employment Issues and Human Capital Development for APO Economies

In all APO member countries, the youth face more than two-fold higher unemployment rates than adults. Many APO member countries are experiencing a "youth bulge," a period in which young people are far more numerous than all other age-groups combined. Measures to ensure that the youth bulge will turn into a demographic dividend or to maximize the human capital potential and minimize the negative impact of youth employment issues are essential. Encouraging youth entrepreneurship is one approach to solve the issues of youth unemployment and underemployment. Youth entrepreneurship is not a panacea to deal with employment challenges but it could contribute to job creation and boost innovation for the economy by fostering new, innovative models.

The APO assigned a research team of one chief expert and seven national experts from India, Indonesia, Malaysia, Nepal, Pakistan, Thailand, and Vietnam to support member countries in dealing with the challenges posed by youth employment issues. The research project focused on the study of the policies and programs initiated by governments, the private sector, and PPPs focusing on youth entrepreneurship promotion. In December 2017, a report on best practices, failures, and constraints of the programs and policies implemented within the past five years in the participating countries was submitted. Policy implications to help entrepreneurship contribute to solving the issue of youth employment, thus enhancing labor productivity and the quality of human capital, were highlighted. The final report was published in 2018.

Program coverage: Youth employment; Youth unemployment and underemployment; Youth entrepreneurship; Youth not in employment, education, or training (NEET); Start-up supporting policies; Innovative self-employment programs; and Skill development programs.

Review and Updating of the *KM Facilitators' Guide* and *KM Tools and Techniques Manual* under Program Development Fund

The APO published the *KM Facilitators' Guide* and *KM Tools and Techniques Manual* in 2009 and 2010, respectively. Those publications were favorably received by NPOs and other knowledge management (KM) practitioners as good references for KM training and consultancy across APO member countries. The APO KM Framework was developed to provide a common understanding among NPOs and practitioners in APO members and designed based on practical experience in KM from several countries in Asia, along with best practices from Australia, Europe, and the USA. The two publications have proven so useful to NPOs and KM practitioners that the Secretariat no longer had a stock of printed copies. However, since they were developed almost a decade ago, and given the recent trends and developments particularly in applications of ICT in various aspects of KM, there was a need to revise them.

In a concerted effort to update KM practitioners on current best practices, the APO convened an expert meeting, 16–17 February 2016 in Phnom Penh, Cambodia, with the cooperation of the NPCC to review the contents of the two manuals as well as the APO KM Framework, taking into account user feedback during recent projects, and identify sections and topics of the manuals and framework which required updating from the viewpoint of recent developments in ICT. Four experts from India, Malaysia, Singapore, and the UK, along with APO Secretariat staff, attended. The revised version will be released soon.

Program coverage: APO KM Framework; Applications of ICT in KM; and Areas for enhancement in the two publications.

Research on Capacity Development Needs for Industry 4.0

Industry 4.0, driven by new-generation technologies, is transforming the future of production systems. The response to the waves of Industry 4.0 must be strategically integrated with national policies on industrial competitiveness, labor markets, and new digital ecosystems. A major challenge in coping with Industry 4.0 is the need for human capital, specifically people with the qualifications to plan, oversee, and operate digital processes and services.

The research on Capacity Development Needs for Industry 4.0 initiated by the APO is examining the level of Industry 4.0 integration into national industrial policies. The status of readiness of businesses in the region to adopt Industry 4.0 in selected APO member countries is also covered. Specifically, the research is looking into the contexts of the economy, labor markets, education, digital infrastructure, policies, and national innovation capabilities. A chief expert from Germany and six national experts from the ROC, India, Indonesia, Malaysia, the Philippines, and

Vietnam were assigned to conduct the research. A coordination meeting among all experts, the NPC, and APO Secretariat took place 12–14 December in New Delhi to define the scope and methodology of the project, including data collection, data analysis, and timeline. Critical needs for capacity development for embracing Industry 4.0 at national level, thus unlocking opportunities for exponential growth through leveraging digital technologies, will be pinpointed at the end of the research.

Program coverage: The APO COE on IT for Industry 4.0; Industry 4.0 context conditions; Wealth of data; Industrial digital ecosystems; Innovative productive systems; Innovation capability; Human capital; and Complexity capital, structural capital, and relational capital.

Research on Productivity Policy

Existing economic and productivity measurement does not adequately accommodate the gains coming from digital services. A significant portion of the benefits of free digital services/products such as search engines, real-time traffic, instant messaging, etc. is not accounted for in productivity measurement. This is a typical "productivity paradox," a term famously coined by Robert Solow in 1987. It implies that the current productivity measurement approach may not be correct. While representing clear values to consumers and occupying an increasing share of consumption, the exclusion of digital products and services from standard GDP accounting might potentially be obfuscating the information on real economic activity and performance since GDP growth could be reported as slow while, at the same time, consumer welfare increases.

In 2018, the APO initiated a research project on Productivity Policy to explore new, more accurate measurements of productivity in collaboration with international institutions sharing similar views. At the time of writing, the collaborators were finalizing the research design and other details.

Promoting the Development of SMEs and Communities

Self-learning e-Course on the Occupational Health and Safety Management System (OHSAS 18001)

The rapid growth and diversification of industries and economic activities have helped achieve greater prosperity in the Asia-Pacific region. However, this has posed new challenges such as occupational health and safety issues. The lack of measures to safeguard occupational health and safety can result in workplace injuries and illnesses, with long-term implications for workers, their families, and employers. Millions of work-hours are lost due to job-related injuries and diseases, which may occur due to poor understanding of safety and health aspects and a weak or absent management system. To address those issues using a management approach, OHSAS 18000, consisting of parts 18001 and 18002, was developed.

In 2017, the APO designed a self-learning e-course on the Occupational Health and Safety Management System to impart basic training under OHSAS 18001 covering all specifications, which was continued in 2018. In 2018, a total of 553 participants from APO member countries enrolled, of whom 241 passed the final exam. Other participants taking the course came from Brunei Darussalam, Burkina Faso, Egypt, Namibia, New Zealand, Nigeria, Saudi Arabia, Uganda, and the UK.

Program coverage: Policy; Identification of occupational health and safety risks; Legal requirements; Generation of objectives and targets; Preparation of management plans and activities; Monitoring of system performance; Auditing; Continuous review of the management program; and Improvement.

Self-learning e-Course on Marketing Strategy and Product Branding for SMEs

The crux of business success lies in marketing. Marketing helps create awareness among the public about a company's products/services, increase sales, build brand reputation, and foster an environment in the marketplace for healthy competition. A marketing strategy takes a comprehensive view of all activities related to selling a product or service and helps ensure that these activities support each other. Branding is especially important for SMEs as it influences people's perceptions of a company's quality of customer service, image, advertising, and logo. Today, many SMEs have great products and provide excellent customer service, although most do not know how to develop appropriate marketing and branding strategies to keep the business afloat.

In line with the APO's SME development program, a self-learning e-course on Marketing Strategy and Product Branding for SMEs was developed in 2017 to help SMEs in developing marketing and product branding strategies and to enable participants to gain fresh perspectives on developing new products and services. The course

continued to be available in 2018, when 231 participants enrolled in the course and 32 completed all modules and passed the examination. Thirteen participants from the 11 nonmember countries Botswana, Burkina Faso, Canada, Mauritius, Monaco, Namibia, the Netherlands, Saudi Arabia, South Africa, UAE, and the USA also enrolled for self-development.

Program coverage: Designing new products; Determining pricing structures; Developing promotional strategies; Competitive distribution channels; and Branding strategies, loyalty, and intellectual property.

Self-learning e-Course on Applying Green Productivity Based on ISO 14001 Standards

An environmental management system (EMS) is part of the overall management system that addresses the impact of an organization's activities, products, and services on the environment. An EMS allows an organization to identify and take control of the environmental impacts that it generates and is a tool to improve efficiency to benefit the entire organization. The end goal is to make day-to-day operations more sustainable. Sustainability can include cost savings, improved product reputation, engaged employees and business partners, and resilience against the ever-increasing uncertainty and complexity in today's world. More importantly, an EMS can also improve relationships with suppliers and customers as a result of more consistent management and reduced environmental impacts. The APO has organized a number of projects related to the EMS and ISO 14001 due to the relevance of the topics to member countries.

In 2017, a self-learning e-course on Applying Green Productivity Based on ISO 14001 Standards was offered to help participants understand the ISO 14001 EMS and how it can be implemented utilizing the Green Productivity (GP) approach. The course was continued in 2018, in which 259 enrolled from APO member countries with 24 passing the final exam. Other countries that participated in the course included Australia, Burkina Faso, PR China, France, Namibia, Spain, Uganda, and the UK.

Program coverage: General concept and overview of EMS: ISO 14001; Understanding the EMS standard ISO 14001; Implementation of EMS—operation, checking and correcting, and management review steps; General concept of GP and interrelation with ISO 1400; and Application of GP tools to adopt EMS: ISO 14001.

Self-learning e-Course on Material Flow Cost Accounting (ISO 14051)

The concept of material flow cost accounting (MFCA), developed in Germany in the late 1990s and since adopted widely in Japan, focuses on tracing waste, emissions, and nonproducts and can help boost an organization's economic and environmental performance. It is one of the major tools of environmental management accounting used to link environmental considerations with economic objectives. MFCA promotes the efficient use of materials more effectively, contributing to reductions in waste, emissions, and nonproducts. It also increases the transparency of material flow, which is a key to successful problem solving and improvement. To standardize MFCA practices, a working group of the ISO Technical Committee developed ISO 14051, which complements the ISO 14000 family of EMS standards.

The APO offered a self-learning e-course on Material Flow Cost Accounting (ISO 14051) in 2017 to acquaint participants with the basic concepts and principles of MFCA and enhance their understanding of ISO 14051. The course continued to be offered in 2018 with 203 registering from APO member countries, among whom 19 passed the final exam. Other participants during the year were from nonmember countries Belgium, Canada, PR China, Ghana, Mauritius, South Africa, Turkey, and the UK.

Program coverage: General concept of MFCA; Background of the MFCA standard ISO 14051; Understanding the MFCA standard ISO 14051; Fundamental elements of MFCA; and MFCA implementation steps.

Self-learning e-Course on Climate Change Impacts and Adaptation (Basic)

The unsustainable relationship humans have had with the environment in the past has become a new dimension of challenges to be resolved. The current climate change has numerous ramifications. Social unrest might be one of the worst results if appropriate, timely actions are not taken. The physical surface of the earth is already being altered, and the ongoing changes are predicted to accelerate over the next few decades in the absence of effective global actions to steer a different course.

In line with the APO's Green Productivity Program, a self-learning e-course on Climate Change Impacts and Adaptation (Basic) was developed in 2017 as an introduction to multidisciplinary perspectives on climate change and how it affects individuals, local communities, countries, and the global community as well as to adaptation strategies to reduce the impacts. The course continued to be available in 2018, with 172 enrollees from APO member countries, of whom 32 passed the final exam. Other countries that participated during the year included Canada, PR China, Egypt, UAE, and Zambia.

Program coverage: Science and impact of climate change; Energy usage; Environmental economics; Mitigation measures; Climate change adaptation; and Future focus.

Self-learning e-Course on Sustainable, Resilient Supply Chains and Integration into Global Value Chains

A key characteristic of today's world is inherent dynamic change occurring at an unprecedented rate. This needs to be managed to minimize negative effects. Firms in this environment must maintain efficiency in the delivery of products and services, which requires resiliency and agility in dealing with change. When these two underlying concepts of resiliency can be integrated into systems and maintained flexibly, the concept of sustainability can be translated into optimal value chain management.

The self-learning e-course on Sustainable, Resilient Supply Chains and Integration into Global Value Chains was developed to explain the significance and ramifications of supply chain resilience in organizations. In particular, it aimed to: identify the factors that help build resilience in supply chains; clarify the key principles that affect supply chain resilience; differentiate between risks and opportunities; and discuss various standards associated with supply chain resilience and risk management. It was offered from 1 January to 31 December, and 238 participants from 17 APO members enrolled. Others who took the course resided in Canada, PR China, Egypt, Italy, Nigeria, Sweden, South Africa, UAE, and the UK.

Program coverage: Introduction to sustainable supply chains; Introduction to supply chain resilience; Quality management systems (ISO 9001); and The EMS (ISO 14001). Taking and passing a final exam with at least a 75% score was required to receive the APO certificate.

Self-learning e-Course on Smart Manufacturing: Basic

The self-learning e-course on Smart Manufacturing: Basic served as an introduction to smart manufacturing. Starting with an overview of current digital transformations in manufacturing processes including additive manufacturing, it examined the evolution of cyberphysical systems, which form the core of Industry 4.0 in which

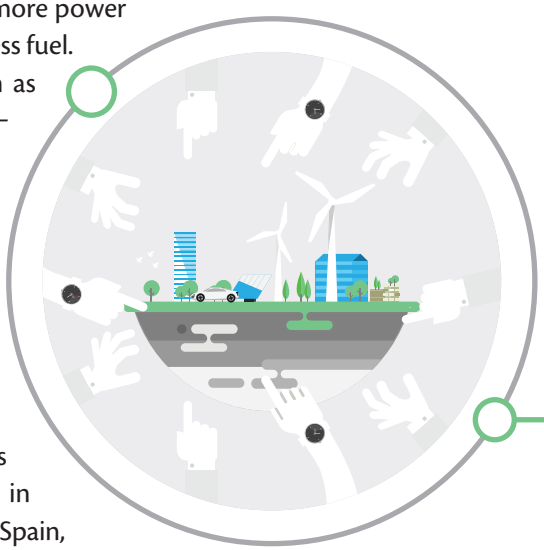
the infrastructure components are addressed primarily from a user perspective by describing the relevance of the IT/operational technology (OT) convergence to achieve data-driven manufacturing.

The objective of this self-learning e-course was for participants to acquire basic knowledge of smart manufacturing through an introduction to Industry 4.0. Specifically, at the end of the course, participants were able to: explain the basic concepts of smart manufacturing; understand the current digital transformations in manufacturing processes; and describe the relevance and convergence of IT and OT under the smart manufacturing model. The course was open to the public from 1 May to 31 December, with a total of 305 participants from 16 member countries. Those from nonmember countries came from Burkina Faso, Canada, Egypt, Mauritius, Monaco, Nigeria, Sweden, UAE, Uganda, and the UK.

Program coverage: Introduction to smart manufacturing; Digital thread; The industrial Internet of Things; Additive manufacturing; Intelligent and collaborative robotics; and The Internet, communication, and OT. To receive the APO certificate, a final examination was included, requiring a pass rate of 70% correct answers.

Self-learning e-Course on the Energy Management System Auditors' Course

Interest in energy efficiency is not new among organizations and companies in all sectors as well as consumer groups worldwide. Energy efficiency has been a goal for years to provide more power for economic activities and residential demand at lower cost while using less fuel. There have been some clear successes in many parts of the world, such as growing adoption of energy-saving appliances and utilization of energy-efficient techniques and technologies. Yet more needs to be done in both the public and private sectors to facilitate energy-efficient practices and procedures in the Asia-Pacific region.



The self-learning e-course on the Energy Management System Auditors' Course was developed to enable participants to review the energy management system (EnMS; ISO 50001) and acquire the necessary knowledge and skills to plan, conduct, report on, and follow up an EnMS audit. It was offered from 1 January to 31 December, and 323 participants from 17 APO members enrolled. Others who took the course resided in Cameroon, PR China, Egypt, Germany, Ireland, Monaco, Saudi Arabia, Spain, Sweden, Uganda, UAE, the UK, and USA.

Program coverage: Recap of the EnMS; Introduction to auditing; Preparing for the audit; Conducting the onsite audit; Nonconformity reporting; and Reporting and follow-up. Taking and passing a final exam with at least a 70% score was required to receive the APO certificate.

Self-learning e-Course on Integrating Lean Manufacturing Systems and Industry 4.0 Concepts

Lean manufacturing is a system of techniques and activities widely adopted to improve productivity, which involves reducing operational costs by the elimination of waste and activities that do not add value. Meanwhile, the Industry 4.0 concept emphasizes the establishment of smart factories with advanced ICT and future-oriented technologies including cyberphysical systems, the Internet of Things, big data analytics, cloud computing, and cognitive computing. It is possible to combine the two concepts into a single approach to achieve greater efficiency on the production floor.

To show how this combination can be achieved in practice, the APO offered a self-learning e-course on Integrating Lean Manufacturing Systems and Industry 4.0 Concepts from 1 January to 31 December. The objectives of the course were to: review the concepts of lean manufacturing systems and their most recent developments; outline the detailed steps in creating lean systems; discuss how to combine lean manufacturing, technological advances, and big data analytics in the Industry 4.0 era; and revisit lean concepts to enhance their relevance in the current context of rapid technological change. A total of 484 participants representing 18 APO member countries enrolled, along with individuals in Afghanistan, Brazil, Burkina Faso, Canada, Egypt, Kenya, Monaco, Morocco, Namibia, Spain, South Africa, UAE, and the UK.

Program coverage: Introduction to fundamentals of lean manufacturing; Initiating the lean process; Creating process stability; Standardizing work; Implementing the pull production system; Preventing failure with *jidoka*; Planning for lean adoption; and Lean implementation enabled by Industry 4.0. A minimum score of 75% on the final examination was required to qualify for the APO e-certificate.

Self-learning e-Course on Green Productivity and Integrated Management Systems

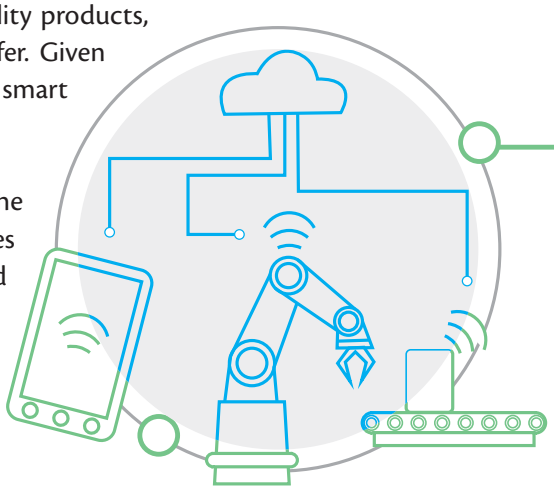
GP leverages various productivity tools and techniques to address issues that organizations commonly face, such as quality, safety, and the environment. Integrated management systems (IMS) similarly address the above but incorporate relevant international standards and systems, allowing organizations to make systematic improvements in those areas. Combining these two concepts and practices provides a systematic approach for all organizations to achieve sustainable productivity growth.

The self-learning e-course on Green Productivity and Integrated Management Systems was developed to familiarize participants with the principles of quality management, environmental management, and occupational health and safety; how they are reflected and examined in international standards; and how they can be incorporated into GP concepts. It was offered from 1 May to 31 December, and 265 participants from 18 APO members enrolled. Other who took the course resided in Afghanistan, Australia, Burkina Faso, Botswana, PR China, Egypt, Sweden, Uganda, and UAE.

Program coverage: Introduction to GP and IMS; Annex SL; Quality management (ISO 9001); Environmental management (ISO 14001); Occupational health and safety (ISO 45001); and Implementation, planning, and certification. Taking and passing a final exam with at least a 70% score was required to receive the APO certificate.

Self-learning e-Course on Smart Manufacturing: Advanced

The concept of smart manufacturing is based on the merging of the physical and virtual worlds, which opens up new areas of innovation to optimize the entire sector to create higher-quality products, improve productivity, increase energy efficiency, and make plant floors safer. Given the widespread recognition of the value of this system, it is predicted that smart manufacturing will usher in the Fourth Industrial Revolution.



The self-learning e-course on Smart Manufacturing: Advanced offered by the APO was a continuation of the introductory course on the topic. Its objectives were to: explain the advanced concepts of smart manufacturing; understand the fundamentals of smart manufacturing value including smart business processes and smart solutions; grasp the changing role of human capital in smart manufacturing; and understand how to build a business case for implementing smart manufacturing. It was offered from 1 August to 31 December, and a total of 25 participants from nine APO members enrolled.

Program coverage: Smart manufacturing value; Smart business processes and smart solutions; Empowered workers; and Building a business case for smart manufacturing. Those with 70% or more correct answers on the final exam received the APO certificate.

Self-learning e-Course on Energy-efficiency Techniques

Rapid industrialization in Asian economies has been a strong driving force in raising productivity in the region. On the other hand, it has shown negative effects on the environment such as global warming, climate change, energy price fluctuations, etc. Organizations that waste energy through lax processes and insufficient management are not only losing money but are also causing avoidable pollution through increased carbon emissions. In addition, energy security and fossil-fuel depletion have become global concerns. Proper energy management through energy-efficiency/conservation measures is therefore of paramount importance.

The self-learning e-course on Energy-efficiency Techniques was developed to familiarize participants with the basic concepts, together with the best practices, of energy-efficiency techniques. This course aimed to provide participants with fundamental knowledge, specifically of different subcomponents that are crucial for energy efficiency in organizations. It was offered from 1 January to 31 December, and 155 participants from 13 APO members enrolled. Others who took the course resided in Afghanistan, Andorra, Antarctica, Austria, Azerbaijan, the Bahamas, Bahrain, Benin, Egypt, Monaco, Spain, and Uganda.

Program coverage: Energy efficiency basics; Lighting; Motion (motors); Combustion (boilers); Cooling; and Management techniques. Taking and passing a final exam with at least a 70% score was required to receive the APO certificate.

Self-learning e-Course on Productivity Tools and Techniques (Basic)

The APO launched the self-learning e-course on Productivity Tools and Techniques (Basic) to provide enrollees with a clear understanding of the background of the productivity movement in the Asia-Pacific. The course is considered to be foundational. It is also necessary to enroll in it and pass the final exam before attending face-to-face projects for the development of productivity practitioners and later be eligible to apply for APO certification.

The self-learning e-course on Productivity Tools and Techniques (Basic) opened on 8 May 2017 and will be available online until 31 December 2019. In 2018, 543 participants from APO member countries enrolled in the course, and 166 completed it and passed the examination. Forty from the 15 nonmember countries Botswana, Brunei Darussalam, Burkina Faso, Canada, Egypt, Ghana, Kenya, Mauritius, Namibia, Nigeria, Uganda, South Africa, UAE, the UK, and Zimbabwe also enrolled.

Program coverage: Introduction to productivity, quality, and competitiveness; Background of the Asian productivity movement; The profile of a productivity practitioner; Basics of productivity measurement; Basic productivity and quality tools and techniques; Introduction to total quality management; and Final exam.

Self-learning e-Course on Productivity Tools and Techniques (Advanced)

The self-learning e-course on Productivity Tools and Techniques (Advanced) is a continuation of the basic version. While the basic course introduces productivity fundamentals, the advanced one provides knowledge on selected advanced productivity improvement tools and techniques such as measurement techniques, statistical data analysis, lean concepts, and the business excellence framework. Therefore, participants who have completed the basic course are encouraged to enroll in the advanced one. In addition, it is a prerequisite for participants from APO member countries before attending multicountry face-to-face courses on similar topics.

The self-learning e-course on Productivity Tools and Techniques (Advanced) opened online on 1 July 2017 and will be available until 31 December 2019. In 2018, the course recorded a total of 357 enrollees, with 124 completing the modules and passing the examination. It also attracted 30 individuals from the nonmember countries Burkina Faso, Botswana, Egypt, Ghana, Kenya, Mauritius, Namibia, Nigeria, South Africa, UAE, the UK, and Zimbabwe.

Program coverage: Productivity measurement; Business excellence; Lean techniques; Basic statistical data analysis; Value stream mapping; MFCA; and Final exam.

Multicountry Observational Study Mission on Innovation and Competitiveness in SMEs

The era of Industry 4.0, increasing technological complexity required for new products, shorter product life cycles, and unceasing competition have forced SMEs to move beyond the change philosophy of continuous improvement to enhance their competitiveness. SMEs often confront barriers to innovation, e.g., resource constraints, which hinder their capacity to invent and commercialize new products, services, or processes. Realizing the importance of innovation to the success of SMEs, the APO has organized many e-learning courses and face-to-face projects over the past decade to help them innovate their products, strategies, services, processes, and policies.

In cooperation with the CPC, the APO organized a multicountry observational study mission on Innovation and Competitiveness in SMEs, 10–14 September in Taipei. The mission objectives were to: learn how to develop national strategies for an innovative, creative culture in SMEs for sustaining business performance and competitiveness in the era of Industry 4.0; observe excellent practices and technologies that encourage innovation in SMEs; and share best practices and innovation initiatives of successful SMEs. Fourteen international and four local participants attended, along with three resource persons from Japan and Singapore.

Program coverage: Sustainable productivity improvement through innovation to meet the needs of Industry 4.0; How Japanese "century companies" drive innovative cultures and competitive advantage in SMEs; ROC success stories of innovation and competitiveness in SMEs; Managing knowledge to generate new knowledge for innovation; Business idea creation for innovation by design thinking; Business excellence for SMEs and best practices of applying new technology of Industry 4.0; Enabling a culture of innovation for competitive advantage; New strategies for SME innovation in the era of Industry 4.0 and best practices in Japan; Innovation excellence in the era of Industry 4.0; and SME innovation strategy and best practices in Singapore. Participants had the opportunity to visit Henrex Corporation and Billy King Jewellery Co., Ltd. to observe their innovative practices.

Multicountry Observational Study Mission on SME Development

Supporting the development of SMEs has been a core element of the APO's mandate and one of its strategic directions. In recent years, a trend in leveraging the momentum of innovation from SMEs, microenterprises, and startups has also emerged. Even the ROK, where the economy is dominated by gigantic industrial conglomerates, has increased its focus on assisting SMEs and startups.

To demonstrate the current trends in supporting startups and entrepreneurs as a development strategy in addition to traditional assistance to SMEs as well as the ROK's initiatives for and experiences in assisting SMEs and entrepreneurs, the APO in collaboration with the KPC organized an observational study mission on SME Development, 10–14 September, in Seoul. Fifteen participants representing 12 APO members attended, along with resource persons from the ROC, ROK, and Singapore, who shared observations and macro strategies for SME and startup development, especially in the era of Industry 4.0.

Program coverage: Introduction: Unleashing the potential of SMEs—innovation as a major focus for SME development; Cultivating innovation: An ecosystem encouraging innovation and entrepreneurship; Korea's strategies and policies for SME development: In response to Industry 4.0 and need for innovation; The Korean experience in supporting SME innovation and startups; SMEs and startups as a leading source of competitiveness: The importance of entrepreneurship and technology; Experiences from Taiwan: Practices and policy programs supporting SME and startup development; and Experience from Singapore: Initiatives for SME and startup development. Participants visited four public and private organizations that support SMEs and startups via financial and in-kind support, coaching and training, sector-specific assistance, and exposure to international markets and resources: the Small and Medium Business Corporation; D.CAMP; Gyeonggi Center for Creative Economy and Innovation; and K-Global (K-Startup Challenge).

Multicountry Observational Study Mission on Best Practices in Agrotourism

Agrotourism in Asia has great potential to attract visitors. Various activities in agricultural settings such as outdoor leisure and educational opportunities are usually included in agrotour packages. The diversity of nature, culture, traditions, and people in rural areas fascinates urban dwellers and overseas travelers who want to have authentic experiences at their destinations. Locality-based tourism lowers facility investment costs by using people's residential spaces as accommodations and local specialties for meals. The scenes of daily rural life create pleasant memories and offer emotional satisfaction to visitors. In this way, implementing agrotourism can not only revitalize rural economies but also develop a healthy leisure culture in society.

To expose participants to successful agrotourism sites in the ROC and gain insights into how sustainable tourism contributes to agricultural and rural development, an observational study mission on Best Practices in Agrotourism was held 19–23 November in Taipei. Seventeen participants from seven APO member countries attended. The course was facilitated by a resource person from the Netherlands and two local ones from the ROC.

Program coverage: Concepts, trends, and characterization of agrotourism; Developing competitive agrotourism projects; Strategic promotion and management of agrotourism businesses; Public–private collaboration in offering agrotourism services; and The platform economy and reflection in agribusiness and agrotourism. Site visits were hosted by Agrioz Candied Fruit Museum in the Zhentoushan Agricultural Leisure Area, Shyang Yeu Organic Tea Farm and Xing-Yuan Tea Farm in the Jhongshan Agricultural Leisure Area, and Flying Cow Ranch and Shan Ban Qiao Leisure Farm to observe their agrotourism activities and promotional strategies.

Training of Trainers in Lean Manufacturing for SMEs

Lean manufacturing involves the systematic elimination of all types of waste in production and related processes. Lean also involves the concept of continuous production flow to satisfy customer demand by minimizing production lead times. The objective is to get the needed items to the right place at the right time in the right quantity and quality. To achieve the objectives of lean systems, several techniques and concepts are indispensable, including just-in-time inventory, the pull concept, small-lot production or cellular manufacturing, total quality management (TQM), supply chain management, and value stream mapping. For decades, large manufacturing companies have been achieving higher productivity and substantial operational improvements using these methods. In a high-volume manufacturing environment where market demand is relatively stable and controllable, lean has been proven effective. Through lean adoption, manufacturers have been able to reduce waste and inventories, improve quality, and shorten lead times.

In collaboration with the NPO of Pakistan, the Training of Trainers on Lean Manufacturing for SMEs was held from 26 February to 2 March in Islamabad. A total of 24 participants from 11 member countries attended the course. The APO assigned resource persons from Japan and Malaysia to give presentations, guide discussions, and facilitate the training.

Program coverage: Concepts, tools, and techniques for lean manufacturing systems; Methodologies and approaches to apply lean systems in SMEs; Integrating lean with agile manufacturing; and Supplementary smart technologies that optimize work flows and production systems. Participants visited Silver Lake Foods Limited to observe productivity improvement activities implemented at the shopfloor level.

Training of Trainers in Total Productive Maintenance Applications for Manufacturing

Total productive maintenance (TPM) is a powerful management technique that focuses on comprehensive, continuous optimization in the area of production and maintenance with direct participation of the entire workforce. It was first developed in Japan with a focus on preventive maintenance and then expanded to overall business management. In the era of the Fourth Industrial Revolution, TPM plays an even more important role in manufacturing because the utilization of cyberphysical systems and customized production require more integrated management of employees, equipment, maintenance, planning, and monitoring. Effectively linking TPM concepts and techniques provides strong support for manufacturers.

To equip participants with updated knowledge of TPM, its implementation in the manufacturing sector, and implications for the Fourth Industrial Revolution, the APO collaborated with the NPO of Bangladesh in organizing a training-of-trainers course in Total Productive Maintenance Applications for Manufacturing, 29 April–3 May, in Dhaka. Eighteen participants from 12 APO members attended, along with resource persons from Japan and Malaysia, who provided a holistic overview of TPM concepts and principles, steps for implementation, and practical TPM consulting experiences, which enabled participants to disseminate TPM knowledge and practices in the manufacturing sectors of their countries.

Program coverage: Concepts and development of TPM; Strategy and management of TPM implementation; Overall equipment effectiveness; Implementation of kaizen; Implementation of the eight TPM pillars; Sharing of TPM consultancy: Experiences from Japan and Malaysia; TPM in the era of Industry 4.0 and implications for manufacturing; and Planning for TPM implementation.

Training of Trainers in Total Quality Management for Industries

TQM focuses on quality control, improvement, and customer satisfaction. It emphasizes the importance of process standardization, quantitative analysis, and staff participation, while incorporating methods for comprehensive management. It also provides a foundation for advanced management approaches, such as lean manufacturing and Six Sigma, and includes elements such as business excellence and national quality awards.

To provide participants with updated knowledge and practices of TQM and demonstrate how it contributes to productivity in the era of Industry 4.0, the APO collaborated with the CPC in organizing a Training of Trainers in Total Quality Management for Industries, 4–8 June, in Taipei. Twenty-one participants from 12 APO members attended, along with resource persons from the ROC, Japan, and Singapore who demonstrated practical experiences and applications of TQM from those countries and how businesses can adapt to the new wave of industrialization by applying the TQM philosophy.

Program coverage: Introduction: The concept and philosophy of TQM; TQM implementation: Process, tools, and techniques; Case studies on TQM practices and implementation in Japan, Singapore, and Taiwan; TQM, international standards, and organizational excellence; and TQM and Industry 4.0. Participants visited Ko Da Pharmaceutical, a devoted TQM practitioner and winner of the ROC's National Quality Award, where they observed how leadership, policies, and TQM implementation contributed to a quality and innovation culture and productivity improvement.

Training of Trainers in Lean Manufacturing Systems

Lean manufacturing is a classic management methodology widely studied and practiced by academics and industries. It emphasizes eliminating all types of waste and streamlining processes while paying specific attention to value creation in all actions. Effectively linking lean concepts and techniques with digitization, data analysis, and resource efficiency can support organizational upgrading in response to the opportunities and challenges created by the Fourth Industrial Revolution, helping enterprises to become resilient, future-ready, and more productive.

To equip participants with updated knowledge of lean manufacturing and its connections to Industry 4.0 and better resource efficiency, the APO collaborated with the MPC in organizing a training-of-trainers course in Lean Manufacturing Systems, 9–13 July, in Selangor. Twenty-three participants from 14 APO members attended. Resource persons from the ROC, Japan, and the Netherlands demonstrated how this productivity philosophy could be practiced and embodied in the manufacturing sector today when leveraging digital technologies to provide efficient production while using inputs sustainably is required.

Program coverage: The concept and philosophy of lean management; Steps and techniques for lean implementation; Lean and resource efficiency; Data and lean management; Lean, Industry 4.0, and digitization; Leveraging the power of data and lean; and Case studies of applying lean management. Participants visited Item Industrial Engineering Sdn. Bhd. where they observed applications of lean management and provided suggestions to the company based on their learning from the training.

Training of Trainers on Ecotourism and Agrotourism

Ecotourism as a subsector of sustainable tourism is expected to grow continuously at a 20% annual rate. It refers to visiting pristine natural areas and being mindful of responsible tourism involving activities like ecological conservation for communities. Today's travelers also seek unique, authentic experiences rather than "quantity tours." Agrotourism shares values in common with ecotourism because it includes a variety of farm experiences in nature such as picking fruit and feeding animals to gain an authentic feel of local life. Agrotourism offers educational sites for urban children and a place of peace and relaxation for people exhausted by busy lives. Therefore, eco/agrotourism can be a critical success factor for village development and empower communities by creating value chains across the tourism business.

To review recent tourism trends in rural areas, develop successful tourism products and services, and discuss strategies for enhancing the productivity of rural communities, a Training of Trainers on Ecotourism and Agrotourism was held 22–26 October, in Nadi, Fiji. Twenty-two participants from 12 countries attended. The course was facilitated by three APO resource persons from Australia, Hong Kong, and the UK.

Program coverage: Introduction to ecotourism and agrotourism; Value-added tourism products/services through community involvement; Innovations and out-of-the-box thinking in ecotourism and agrotourism; Daily roads that become successful ecotourism sites; Gastrotourism based on local agricultural products; Ethical tourism practices; and Tourism promotion through digitized methodologies. A site visit was arranged to the Garden of the Sleeping Giant (orchid exhibition), a volcanic mudpool, and a Fijian cultural village.

Advanced Agribusiness Management Course for Executives and Managers

A major portion of Asian agribusiness consists of SMEs. To be sustainable and competitive, SMEs must overcome the challenges of insufficient management capacity, inadequate financial resources, shortages of labor, and poor access

to modern technologies. Efforts to expand agribusiness operations must also deal with the emerging challenges like climate change, decimation of agricultural lands, aging of farmers, and the migration of the young labor force to urban areas. A looming question is how agriculture can meet the food requirements of the future.

To enhance participants' understanding of emerging developments in agribusiness, applications of modern technology, and best practices in agribusiness management with the emphasis on promoting the adoption of such technologies and practices by agribusiness startups and early-growth SMEs, the APO in collaboration with the Ministry of Agriculture and Ministry of Manpower R.I. and the Dyson School of Applied Economics and Management of Cornell University organized an Advanced Agribusiness Management Course for Executives and Managers, 5–9 March in Bali. Twenty-eight participants from 11 APO members, 42 observers, and six international and local resource persons attended.

Program coverage: Major trends in food and agribusiness; Challenges to enhancing sustainable agricultural productivity in Asia; Future food value chains; Small business incubators; How to support startups? Role of incubation in supporting agrifood-industry SMEs in Indonesia; IT applications for bringing SME producers to the market; Value-added agrifood industry; Case study—from cocoa to chocolates: Cau Chocolates Company; and Strategic agribusiness thinking marketing strategy. Participants visited two agribusiness enterprises, P4S Mupu Amerta and CV Kayu Batu Baliwein.

Workshop on Innovative Rural Community Development Models

More than 75% of the developing world's poor are estimated to live in rural areas, and therefore many countries have launched national rural community development (RCD) initiatives to revitalize their economies. One of the drivers of successful RCD is recent technological advances that have reshaped the landscape of knowledge and methodologies to achieve increased productivity. Innovative community models incorporating residents' ideas and participation are also being introduced. Building community competitiveness is another core element in creative approaches to sustainable rural development.

To review the latest trends in RCD models and examine elements of community development utilizing local resources as well as to explore innovative ideas to revitalize rural economies for sustainable growth, a workshop on Innovative Rural Community Development Models was held 22–26 October, in Yogyakarta, Indonesia. Twenty-two participants from 13 countries attended. The workshop was facilitated by three APO resource persons from Japan, the ROK, and New Zealand.

Program coverage: Recent developments and trends in RCD; Systems utilizing collective intelligence for rural agendas; Agriculture and rural associations that revolutionize supply chains in agribusiness; Partnerships in goodwill and cooperative business models; Agricultural technology innovations around the world and projections for developing Asian countries; Agricultural technologies that reshape the ways of utilization of the rural workforce; Success factors for rural community-based enterprises and organizations; and Women- and youth-friendly RCD models for greater competitiveness. A site visit was hosted by BUM Desa (a village-owned enterprise) in Ponggok, Klaten, when the village leader and head of BUM Desa made a presentation on its programs for economic development, and participants observed community enterprises in action.

Workshop on International Marketing of Agrifood Products

The agribusiness industry is expanding quickly, fueled by growing consumer demand for exotic products and technological developments in marketing and processing. International trade and marketing in agrifood products

are diverse, complex operations in which many new companies and countries are striving to take part. Such trade is important for importing countries to ensure national food security, while exporting countries view it as a source of foreign exchange. Although international agrifood trade has many challenges for Asia-Pacific countries, it also has huge potential to access international markets.

To enhance the knowledge and understanding of agrifood business stakeholders of emerging trends in international agrifood trade and international markets and policies, the APO in partnership with the DAP organized a workshop on International Marketing of Agrifood Products in Manila, 6–9 November. Twenty-four participants from 12 member countries as well as five resource persons from the ROC, Hong Kong, India, and Singapore and one local one from the Philippines attended.

Program coverage: Global and regional trends in international marketing of agrifood products; Digital transformation in international trade; IT and the Internet of Things for seafood traceability system development; Quality assurance, risk reduction, and management strategies in food supply chains; Trade policies, agreements, and regulations pertaining to international trade with ASEAN integration; Successful cases of smart global food value chains; Development of business from startup to successful export enterprise; Seafood hazards and control of seafood allergens; and Logistics for efficient marketing of perishable products for small farmers. Participants visited Gawad Kalinga Enchanted Farm in Angat, Bulacan (45 km from Metro Manila) and the Fisher Farms Inc. Plant Site located in Pulilan, Bulacan.

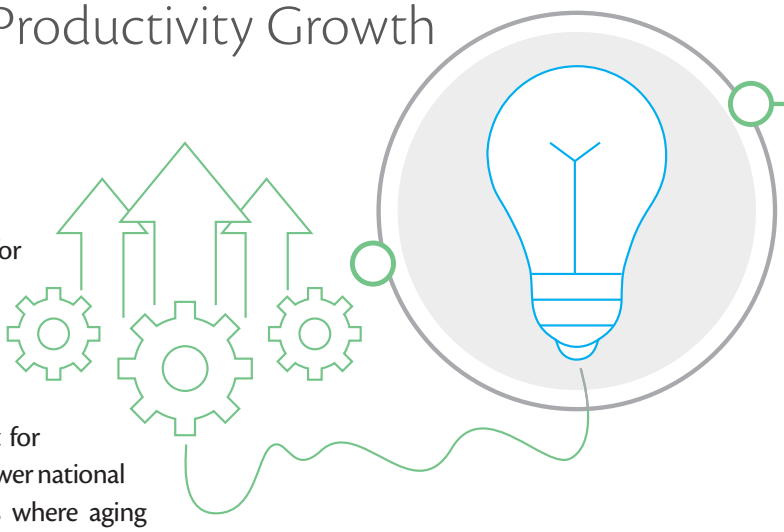
Research on Successful Agribusiness Models: Case Studies of Value Chain Analysis for Agroprocessing Enterprises

Agribusiness is increasingly becoming a very dynamic industry susceptible to the vagaries of nature and markets. To stay competitive, agribusinesses must explore new business models and organizational structures to increase their efficiency, productivity, and sustainability and strengthen their market positions. They need policymakers, executives, and managers who have an international perspective and are equipped with the knowledge and skills to respond to actual issues arising from rapid changes in the business environment. Thus, today's agribusiness policymakers, executives, and managers must operate in a rapidly changing, volatile, technology-driven, consumer-focused environment. Developing an understanding of the forces that drive change is critical to the formulation of successful public policies and private strategies.

Initiated in July 2018, the research on Successful Agribusiness Models: Case Studies of Value Chain Analysis for Agroprocessing Enterprises was designed to study selected cases of value-adding agribusinesses, food-processing industries, and innovative institutions and to develop the research results into technical diagnostic-prescriptive resource materials to be used in APO and partner institution workshops on agribusiness management and related courses.

This research project is being undertaken with the cooperation of the Dyson School of Applied Economics and Management, Cornell College of Business, under a Memorandum of Understanding between Cornell University and the APO. The output of this research will be the resource materials that can be the basis for workshops and other projects on agribusiness management organized by the APO and its partners. An APO-assigned chief expert from Cornell University is leading the research team. The research is scheduled to be completed by the end of May 2019.

Catalyzing Innovation-led Productivity Growth



Forum on Women's Labor Force Participation and Productivity Enhancement

Increasing female labor force participation (FLFP) for productivity growth remains high on the international agenda, such as under the 17 UN Sustainable Development Goals (SDGs) and G7 Ise-Shima Leaders' Declaration in 2016. The rate of untapped productive potential of women is almost double that for men. That underutilized human capital potential will lower national competitiveness if not addressed. In Asian countries where aging populations coupled with declining birth rates pose grim prospects for labor shortages, the need to bring women to the labor force is greater than ever. Policymakers, government officials, and industry leaders must recognize the importance of more inclusive policies and programs to unleash the potential of women, enabling them to contribute fully to society.

In continued efforts to promote FLFP, a three-day forum in Japan, funded by the Ministry of Foreign Affairs, was organized 5–7 February by the APO to examine government policies and best practices on FLFP, ways to eliminate gender disparities and bias while encouraging gender equality in the workplace, and the role of business federations in Japan in encouraging FLFP among private-sector enterprises. Twenty-two participants from 14 member countries attended. Seven resource speakers from Japan, the Philippines, Sri Lanka, and the UK gave presentations and led discussions. An outcome document was produced at the end of the forum in recognition that full FLFP results in more private-sector business opportunities, stronger communities, and more sustainable GDP growth.

Program coverage: FLFP; Womenomics for Society 5.0; Women's empowerment and gender equality in the workplace for productivity enhancement and SDG achievement; Diversity and inclusion strategy; Women in science, technology, engineering, and mathematics careers; and Women in leadership positions.

Forum on Strengthening Food Safety Standards

Food safety and quality standards are global concerns as they are important for public health and impact international trade. Consumers are increasingly concerned about the quality and safety of food and are taking unprecedented interest in the way food is produced, processed, and marketed while demanding greater quality and safety assurances from agribusinesses and food companies. Globalization of trade makes food chains longer and more complex and increases the risk of food safety incidents.

To share recent developments, advanced knowledge, and emerging trends in farming and management systems in major global markets and find ways to adopt and scale them up in member countries, the APO in partnership with the Hector Kobbekaduwa Agrarian Research and Training Institute, NPS, and Centre on Integrated Rural Development for Asia and the Pacific organized a forum on Strengthening Food Safety Standards in Colombo, 5–8 March. Thirty-seven participants from 15 countries as well as six resource persons from Hong Kong, India, Italy, Poland, Thailand, and the UK attended.

Program coverage: Overview of international food safety standards and regulations; Application and enforcement of modern food safety standards; Issues and challenges faced by farmers and SMEs in the agrifood industry in

meeting the requirements for certification in food standards; Capacity building of SMEs for better adoption of food safety standards; Best practices to respond to the requirements of private food standards; and Formulation of strategic recommendations for strengthening food standards. Participants visited Country Style Food Pvt. Ltd., a family-operated fruit beverage company, in Colombo.

International Forum on Public-sector Productivity

It has long been the challenge of the public sector to do more for less, which clearly describes productivity. Given this premise, the APO has focused on public-sector productivity growth in recent years. Various initiatives have been undertaken to help improve the motivation and skill level of public officials, strengthen management systems, and enhance performance given the changing environment and current commitment to public-service renewal in many countries. The APO Public-sector Productivity Framework formulated in 2012 emphasized different areas relevant to the challenges faced by governments of the future in executing productivity-enhancing strategies in the face of global uncertainty, budgetary austerity, and more demanding citizens.

As a continuation of its focus, the APO held an International Forum on Public-sector Productivity, 2–4 July, in Colombo, which was hosted by the NPS. The objectives of the forum were to: discuss the trends shaping the future of government together with their implications for public-sector productivity performance; examine the new drivers of productivity in the public sector and how they can help meet citizens' expectations; and assess the rate of change driven by technology in terms of its various impacts on public services. Thirty-one international participants and 11 local ones attended. Five APO resource persons from Australia, Estonia, the ROK, Malaysia, and the UK made presentations on various topics under the session themes.

Program coverage: Trends shaping the public sector and its productivity; Drivers and trends of productivity in the public sector in the future; Skills/reskilling of government workers and governing the public management system; and The futures of government and public services and productivity.

Top Management Forum on Knowledge Management and Innovation for SMEs

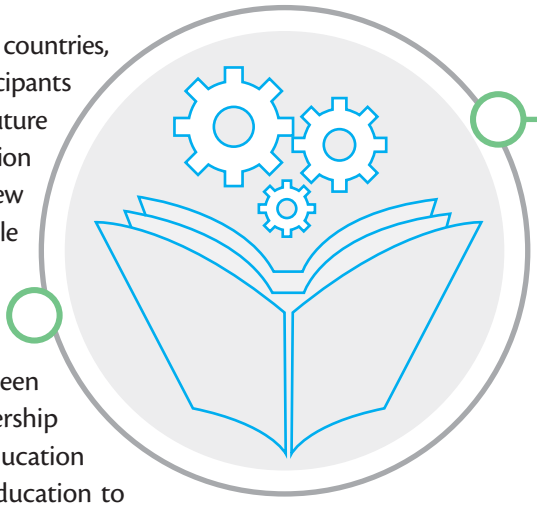
SMEs are essential sources of entrepreneurship, employment, and innovation. Knowledge management (KM) and innovation contribute to enhancing the intangible capital of SMEs, which helps them to gain competitive advantage. Innovation through effective KM is rapidly becoming the most important asset of virtually all organizations, and SMEs are no exception. KM can confer a competitive advantage through greater competency and synergy, more balanced decisions with fewer errors, increased creativity and innovation, broader collaboration and knowledge sharing, and easier links to expertise and understanding.

The 2018 APO Top Management Forum on Knowledge Management and Innovation for SMEs was held 18–20 July 2018 in Fiji, hosted by the NTPC. The forum explored how KM and innovation practices could strengthen organizational competitiveness and examples of advanced applications of the APO KM Framework, KM tools and techniques, and innovation efforts in SMEs as they take advantage of Industry 4.0. Sixteen international and six local participants, along with three resource persons from Japan, Singapore, and the UK, attended.

Program coverage: Knowledge productivity for SMEs; Overall concept of KM and innovation; Principles and global standards of KM for SMEs in the age of Industry 4.0; Good KM practices for SMEs; KM tools and techniques for SMEs; KM best practices in Fiji; Global trends in future centers and innovation labs; Social media technologies and KM platforms for SMEs; and Key success factors and practical guidelines for KM implementation in SMEs.

Forum on the Impact of Education Policies on National Productivity Growth

To explore a new education model focusing on worker agility and maximizing the contributions of human capital, the APO organized a forum on the Impact of Education Policies on National Productivity Growth in Manila, 14–17 August, attended by 35 participants from 11 member countries and facilitated by six international resource persons.



The forum focused on practical aspects that participants could apply in their countries, including developing action plans for refining education policies. Participants examined key issues and challenges in education, labor market dynamics, future skills, financing models for higher education, and the mechanics of collaboration between education and industries. They also deliberated on possible new education models and policies for higher and vocational education to enable APO member economies to meet future labor market needs.

Program coverage: Changing technologies, changing work, and changing education and training; Education and productivity: Closing the gap between technological advances and skills; The future of public education in partnership with the private sector: Issues and possible policy solutions; New education models and methods for the future workforce; Contribution of higher education to development: Experience from Asian countries; Skill shortages: Concepts and policy responses; Identification of future skill needs; Impactful education policies: Incorporating contextual factors in their design and implementation; National education policy and future job openings by industry and occupation; Productivity and inclusive growth: Role of education; Critical issues in financing higher education; Models for collaboration between industry and educational institutions; Measuring productivity in the education sector; Strategic policy directions for cultivating new talent in the Industry 4.0 era; Education and the middle-income trap; Challenges of future skill needs: Reskilling, upskilling, and retraining; Reconceptualizing teacher expertise in the 21st century; and Labor's continuous learning through employer-supported training.

International Conference on Public-sector Productivity

Due to the increasing demand for better result demonstration, transparency of operations, and stricter scrutiny of public expenses, raising efficiency and effectiveness with the finite resources of the public sector matters more than ever. Public-sector productivity enhancement helps governments save resources while driving economic performance and national competitiveness, achieving greater efficiency in delivering services, and increasing public satisfaction. A forward-looking perspective to foresee and be well prepared for the rapidly changing, highly uncertain future should be incorporated in the agenda for public-sector enhancement.

The APO held an International Conference on Public-sector Productivity, 22–24 November, in Tagaytay City, the Philippines, which was hosted by the DAP. The objectives were to: identify the trends impacting government of the future and the future of governance in APO member countries; and share knowledge and best practices on public-service delivery innovations and leadership for public-sector productivity enhancement. Three hundred eighty-five attended, including 17 international participants from 12 APO member countries. Six APO resource persons from Australia, Finland, Hong Kong, Japan, Malaysia, and Sri Lanka made presentations on various topics under the session themes.

Program coverage: Government of the future; Strategic foresight for the public sector; Innovative and smart public sectors; Deepening an innovation culture in public-sector organizations; Future directions for government; Building an ecosystem for public-sector innovation; and Future challenges of government. The conference was divided into plenary presentations with discussions and breakout sessions.

e-Learning Course on Management Innovation in SMEs

The capacity to innovate in today's world is as important for SMEs as for larger enterprises. Greater competitive pressure and uncertainties in the external environment mean that the creation and introduction of new products/services, as well as of their components and related procedures and/or processes, are constant requirements. Management innovation involves deliberate application of information, imagination, and initiative in deriving greater or different value from resources and encompasses all processes by which new ideas are generated and converted into useful products.

To enhance productivity and efficiency in SMEs by increasing their capacity to innovate, the APO organized the second session of a videoconference (VC)-based e-learning course on Management Innovation in SMEs, 15–18 January, for Cambodia, India, Fiji, Malaysia, Mongolia, the Philippines, Sri Lanka, and Thailand. A total of 120 participants attended the VC course. The session was coordinated by their NPOs. The APO assigned resource persons from India and Japan to guide the participants' learning activities.

Program coverage: Overview of management innovation; Important elements of management innovation for SMEs; Strategies for management innovations in SMEs; Sustaining innovation for SMEs; Continuous creation of new value for SMEs; and Open innovation for SMEs. During the course, participants visited SMEs in their countries to observe the applications of management innovation in real-life situations in addition to proposing suggestions for improvement.

e-Learning Course on Management Innovation in SMEs (Advanced)

As an advanced-level course, the objectives of the e-learning course on Management Innovation in SMEs were to offer knowledge of management innovation in SMEs for higher productivity, increase the capacity of SMEs to achieve long-term sustainability through the development of innovative strategies, assess innovative strategies/tools, and learn about emerging trends in management innovation in SMEs. The course was implemented in two sessions: 3–6 September (Bangladesh, Cambodia, and Mongolia) and 15–18 October (India, IR Iran, Pakistan, the Philippines, Sri Lanka, and Vietnam). A total of 218 participants from the nine participating countries attended the course. The sessions were coordinated by NPOs in each country, and the APO-assigned resource persons were from India and Japan.

Program coverage: Emerging trends in management of innovation in SMEs; Innovation creation through design thinking; Practical systems to make innovation sustainable in SMEs; Government support for innovation creation in SMEs; Innovative strategies for SMEs; and Assessment of innovative tools/strategies. During the course, participants visited SMEs in their countries to observe advanced management innovations to supplement classroom learning.

e-Learning Course on Global Food Safety Trends: Application of Advanced Technologies

Food safety is a matter of global concern. Increasing reports of outbreaks of foodborne illnesses worldwide in recent years have heightened consumers' food safety awareness and caused public distrust of increasingly complex cross-border food value chains (FVCs). Food safety management therefore has become a crucial part of any modern food business. Applications of advanced technologies can help the food industry reduce risks associated with modern food supply chains.

An e-learning course on Global Food Safety Trends: Application of Advanced Technologies was offered using the APO's own VC platform. Bangladesh, Fiji, Mongolia, and Vietnam participated in the first session held 29 October–1 November, while the second session held 17–20 December catered to India, IR Iran, Pakistan, and the Philippines. Three APO international resource persons from Thailand and Japan facilitated both sessions, which were attended by a total of 178, and reviewed recent trends and applications of advanced technologies in food safety management.

Program coverage: Food safety technology trends; Blockchains for food safety management; and Next-generation sequencers for food safety management. A field visit was conducted on the third day of the course in each participating country.

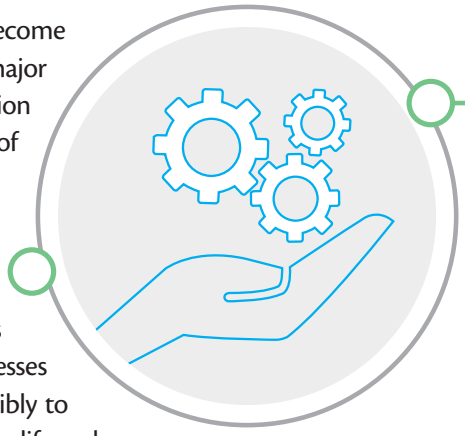
e-Learning Course on Customer Satisfaction Management for the Health Sector

The service sector is one of the major contributors to the GDP of all APO member countries. The promotion of productivity and innovative service-sector management is therefore crucial to drive national economies. Customer satisfaction (CS) management innovation, especially in the health sector, can result in quantum leaps in productivity and involves harnessing the creativity of employees to increase efficiency and enhance overall performance.

To examine CS management trends in the age of Industry 4.0, key skills in handling quality CS management, and best practices in CS management in the health sector, the APO organized an e-learning course on Customer Satisfaction Management for the Health Sector. It was held in two sessions: 12–15 November for Cambodia, Mongolia, Sri Lanka, Thailand, and Vietnam; and 3–6 December for Bangladesh, India, IR Iran, Nepal, Pakistan, and the Philippines Two hundred and twenty-two participants took the course. Two resource speakers from Japan and Singapore conducted both sessions. Member countries also shared their best practices in CS management for the health sector through country presentations after site visits.

Program coverage: Module 1, Customer service—key for healthcare excellence; Module 2, Business excellence framework for the health sector in Japan; Module 3, Business excellence model: A holistic approach to customer service in the healthcare industry; Module 4, CS attributes; Module 5, Total healthcare experience—enabling robust customer service standards; and Module 6, Service innovation in the health sector in Japan. A written examination was given on the final day to evaluate learning from the course.

Multicountry Observational Study Mission on ICT Innovation in the Service Sector



The service sector plays a vital role in a country's economic growth. This has become especially evident recently in the Asia-Pacific region. The service sector is one of the major contributors to the GDP of many APO member countries. Service-sector innovation can result in quantum leaps in productivity and involves harnessing the creativity of employees to increase overall effectiveness and enhance customer satisfaction.

Industry 4.0 as a key supplier of cyberphysical production systems is attracting great interest worldwide. It has inspired the establishment of cooperation across industries and economies to connect complementary initiatives. Industry 4.0 integrates manufacturing and service with state-of-the-art ICT linked to logistics processes between different companies in order to optimize material flows and respond flexibly to changing customer needs and market conditions. Industry 4.0 encompasses the entire life cycle of products and services, from concept to development, manufacturing, use, maintenance, and then to recycling.

A multicountry observational study mission on ICT Innovation in the Service Sector was organized by the APO in conjunction with the NPO of Bangladesh in Dhaka, 7–10 January, attended by 20 participants from 13 APO member countries. The aim was to enable participants to understand the latest technological developments in the era of Industry 4.0 and their impact on the service sector and lifestyles, exchange information on and experience in the innovative use of ICT for accelerated productivity growth and improvement in the quality of services, and promote greater ICT use in the sector. Three resource persons from the ROC, Japan, and ROK facilitated the mission

proceedings, discussed the effects of ICT on service-sector productivity, and analyzed current ICT policies of APO members and how they could drive future productivity initiatives.

Program coverage: Sustainable productivity in the era of Industry 4.0; The Fourth Industrial Revolution and its impact on the service sector; ICT tools and instruments for service-sector productivity; ICT and the Internet's impact on business organizations, productivity, and management paradigms; The Internet of Things (IoT), smart factories, and ICT impact on service-sector productivity; Enhancing service productivity and customer relationship management through ICT; and Best practices of ICT innovation for the service sector from Bangladesh, the ROC, Japan, and ROK. Participants visited High-tech Park Kaliaqoir to observe how the national digital plan and strategy for Bangladesh are being undertaken by enterprises.

Study Mission on Productivity Enhancement through Applications of Industry 4.0 in Japan

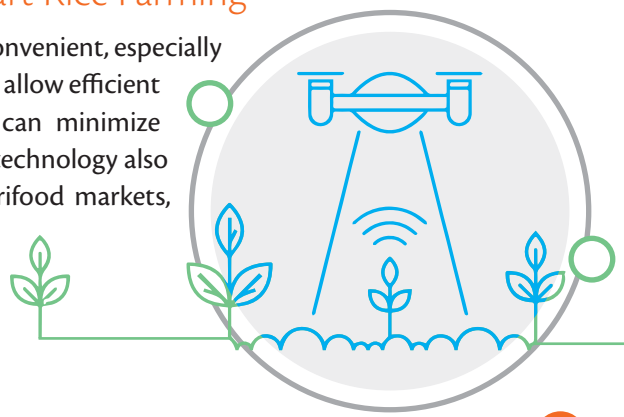
Related to Society 5.0, the concept of "connected industries" is a goal of the Japanese manufacturing sector, meaning that humans, machines, and technologies are linked across borders and generations and new value is generated continuously. Many Japanese companies are now using IT and artificial intelligence (AI) to automate operations. The use of the IoT has also enhanced production efficiency by improving cross-sectional factory management and production process-flow management. Hence, IT applications in business processes and factory operations are widespread to address labor constraints, sustain profitable operations, and improve productivity.

A study mission on Productivity Enhancement through Applications of Industry 4.0 in Japan was organized under a cash grant from the Japanese Ministry of Foreign Affairs. The objective was to familiarize participants with how Japan applies Industry 4.0 practically in enterprises in tandem with the promotion of Society 5.0 and connected industries. The APO Secretariat conducted the study mission in Tokyo, 6–9 March, with 21 manufacturing operations managers and senior government officials involved in setting industrial policy from 19 member countries in attendance, as well as one participant from the nonmember Myanmar. Resource persons from Germany and Japan facilitated the course and compared Industry 4.0 efforts in Germany and Japan. Presentations given by Japanese companies shared practical applications of Industry 4.0 and connected industries.

Program coverage: Society 5.0 as Japan's Fourth Industrial Revolution; The Fourth Industrial Revolution in Japan and activities of the SME-Action Group; Fujitsu smart *monozukuri* (manufacturing); Robotics, IoT, and AI for smarter manufacturing; and Situation of Industrie 4.0 in Germany, comparison with Japan, and how to start. Site visits were hosted by FANUC, Fujitsu I-Network Systems Limited, and DMG Mori Seiki Co., Ltd. to allow participants to observe practical applications of Industry 4.0.

Multicountry Observational Study Mission on Smart Rice Farming

Smart farming equipment makes farming operations easier and more convenient, especially for the elderly and women. It can also make farming attractive to youth, allow efficient use of agricultural inputs, and conserve resources. Smart farming can minimize natural resource degradation and carbon footprints. The use of smart technology also gives rural farmers and SMEs access to the latest information on agrifood markets, enhancing their profitability. Precision agriculture can contribute to building resilience to climate change. Thus, digital technology-enabled smart farming is important for promoting sustainable productivity in agriculture and inclusive growth.



The APO organized a multicountry observational study mission on Smart Rice Farming, 4–9 June, in Japan to study smart agriculture focused on rice farming. The study mission was conducted under a special cash grant from the Government of Japan. Eighteen participants from relevant government agencies, the farm machinery industry, NPOs, and academic institutions of 13 member countries, along with eight resource persons, attended.

Program coverage: Japanese rice farming: Trends, issues, and challenges and the way forward; Rice production system in Japan: Trends, challenges, and opportunities; Precision rice farming technologies; Applications of digital agricultural technology in extension; Analyzing big data with sensor and IoT technology; Inspection, management, and analysis of rice grain quality: Experience of the Japan Grain Inspection Association; Smart agricultural mechanization technologies to improve agricultural productivity and sustainability; and Recent developments in agricultural mechanization in Asia. Site visits were hosted by the National Agriculture and Food Research Organization, Kubota Tsukuba Factory, Hiratsuka Rice Center, Tsukuba University, Kobayashi Nousan, Pearl Rice Center, JA Agri Town, Fukuhara Farm, Yanmar Museum, and Satake Corporation.

Multicountry Observational Study Mission on Labor-Management Relations

Labor-management relations refer to the system in which employers, workers, their representatives, and, directly or indirectly, the government interact to set the ground rules for the governance of work relationships. Especially in the era of Industry 4.0, how government and labor unions play their roles in fostering productive, amicable relationships between workers and management is an important issue for mutual benefit.

The APO organized a multicountry observational study mission on Labor-Management Relations, 23–26 July 2018 in Jakarta, which was hosted by the NPO Indonesia. The objectives were to observe the best examples of effective, amicable labor-management relations with the cooperation of government, labor unions, and SMEs; discuss the recent status and issues of labor-management relations and identify the roles of government, labor unions, and SMEs in the era of Industry 4.0; and promote constructive, harmonious labor-management relations that will lead to sustainable productivity improvement. Seventeen international and six local participants attended. Two resource persons from Japan made presentations and facilitated discussions.

Program coverage: Productivity improvement and the importance of labor-management relations; The global wave of Industry 4.0 and what it means for the productivity movement and labor-management relations; New concepts of and frameworks for human resources management/development; Labor-management dialogue, especially joint consultation systems; and Best practices of labor-management relations in SMEs. The participants also visited Bank Central Asia and the Ministry of Manpower.

Multicountry Observational Study Mission on Regulatory Review Enhancing Public-sector Productivity

Regulatory reform is important to achieve innovation, inclusive growth, and higher productivity in the Asia-Pacific region. Many regulations are created to encourage investment from overseas, address monopolies in critical sectors, introduce tariffs, and improve corporate governance through sectoral reforms. However, those regulations simultaneously alter the behavior of the private sector, communities, and individuals. Governments should therefore review their efficiency and consistency to confirm the positive effects on society.

To familiarize participants with regulatory reform and review to make the public sector more future-ready while improving performance and productivity, the APO in cooperation with the DAP conducted a multicountry observational study mission on Regulatory Review Enhancing Public-sector Productivity, 19–23 November, in Manila. Eighteen government

officials involved in regulatory implementation and review and NPO consultants in charge of public-sector productivity from 11 member countries attended. Resource persons from the ROK and Mexico facilitated the course, stressed the importance of improving regulatory quality, and introduced assessment tools for performing regulatory reviews.

Program coverage: Introduction to regulation policy, management, and reform; Framework for good regulatory management systems: Korean model; Introduction to regulatory impact analysis; Introduction to the traffic light score methodology; Introduction to regulatory management system standards; and Introduction to compliance cost analysis. Site visits were hosted by the Food and Drug Administration, National Privacy Commission, Philippine Economic Zone Authority, and Municipal Government of Valenzuela to allow participants to observe how different regulatory agencies carry out their mandates through a spectrum of regulatory enforcement options.

Industrial Human Resources Development for Africa: Training Course on Development of Advanced Productivity Practitioners

To maintain sufficient productive human resources to support the industrialization process in Africa, the APO has been carrying out interventions to boost productivity on the continent. In collaboration with the Pan African Productivity Association (PAPA), the APO organized a series of training courses for productivity practitioners at both the basic and advanced levels for NPO staff, training more than 190 individuals since 2007. This effort built up a pool of productivity practitioners, which is an important initiative in the development of a productivity culture but not sufficient to create the critical mass of activists required to lead the productivity movement in Africa. Therefore, continuous effort with broader coverage of and deeper exposure to productivity skills and knowledge is imperative.

With the support from a special cash grant from the Japanese government, the APO organized Industrial Human Resources Development for Africa: Training Course on Development of Advanced Productivity Practitioners, 5–14 March, in Windhoek, Republic of Namibia. A total of 28 participants from nine PAPA member countries attended. The APO assigned resource persons from Malaysia, the Philippines, and Singapore to lead the training. The Ministry of Labor, Industrial Relations and Employment Creation, Republic of Namibia, provided the logistic support.

Program coverage: Module 1, Productivity tools and techniques; Module 2, Principles of training and consultancy; Module 3, Sustaining productivity in the future; and Module 4, In-plant practice and development of action plans. Participants visited Dinapama Manufacturing and Supplies and the Ministry of Labor, Industrial Relations and Employment Creation to observe their operations and make recommendations for improvement in public-and private-sector productivity.

Training of Trainers on Foresight Management for Strategic Planning Specialists

As the pace of change in the world accelerates and interdependencies grow in complex ways, relying solely on traditional planning processes leaves policymakers more exposed to risk and uncertainty. Strategic foresight and scenario planning allow practitioners to prepare for the future and develop robust long-term strategies. Scenario planning involves developing several plausible "stories" about the future in a rigorous, structured manner. The APO has developed a three-phase program for building strategic foresight capability in member countries.

To enhance the ability to undertake foresight and scenario planning and assist public-sector organizations in setting forward-looking strategies, the APO organized a five-day training course on Foresight Management for Strategic Planning Specialists, 17–21 September in Bangkok. This was the second of three initial workshops aimed at spreading foresight practice across all APO member countries. Resource persons Dr. Anita Sykes-Kelleher and Marcus Barber of the Centre for Australian Foresight were the lead facilitators. Seven international

participants from Cambodia, Lao PDR, Malaysia, Singapore, and Vietnam as well as 11 local participants from public agencies in Thailand attended.

Program coverage: Overview of strategic foresight and scenario planning; Setting context; Environmental scanning; Key drivers; Causal layered analysis; Critical drivers and scenario quadrants; Scenario development; Focal questions and strategic initiatives; Wildcards; Organizational evolution; Backcasting; Selecting strategies; and Setting up foresight units in government.

Training of Trainers on Scenario Planning Development

Relying on traditional planning models and techniques such as trend extrapolation or advanced statistical forecasting often results in poor long-term predictions. Consequently, strategy becomes outdated in a changing environment. Policymakers and planners thus require different tools. Strategic foresight and scenario planning offer a means to anticipate the future. Scenarios are plausible stories about the future constructed through an interactive, creative, research-driven process. They can help to generate new ideas, create consensus, and stress-test existing strategy. The APO has developed a three-phase program for building strategic foresight and scenario planning capability in member countries.

To create awareness of strategic foresight practices and encourage public-sector employees to integrate them into organizational processes, the APO in cooperation with the NPS organized a training of trainers in Scenario Planning Development in Colombo, 15–19 October. The course was facilitated by two resource persons, Centre for Australian Foresight Co-founders Marcus Barber and Dr. Anita Sykes-Kelleher. Sixteen public-sector participants from the governments of Bangladesh, India, IR Iran, Nepal, Pakistan, and Sri Lanka attended.

Program coverage: Overview of strategic foresight and scenario planning; Setting context; Environmental scanning; Key drivers; Causal layered analysis; Critical drivers and scenario quadrants; Scenario development; Focal questions and strategic initiatives; Wildcards; Organizational evolution; Backcasting; Selecting strategies; and Setting up foresight units in government.

Training of Trainers on Customer Satisfaction Index Development for the Service Sector

The service industry plays a vital role in a country's economy. Thus, the promotion of productivity in the service sector is crucial to sustain growth. There has been increasing demand from APO project participants and NPOs for methods to measure CS levels specifically in the service industry. They pointed out that the training of trainers would enable NPOs to analyze CS and then develop national CS measurement systems related to services, which are critical to understanding current levels of CS and how they might change in the future, resulting in increased long-term competitiveness and improved productivity of service-sector enterprises.

A training-of-trainers course on Customer Satisfaction Index Development for the Service Sector was therefore organized by the APO in conjunction with the KPC in Seoul, 12–16 November, attended by 16 participants from 14 member countries. The aim was to review the use of CS measurement systems and indexes for the service sector; provide a platform for sharing the status, best practices, and successful models of CS measurement; and develop national systems to assess overall performance in the service sector. Three resource speakers from Hong Kong, the ROK, and Singapore shared insights and suggested guidelines to develop CS measurement systems for the sector.

Program coverage: Measuring CS in Singapore—the Singapore journey; CS measures in Hong Kong; National CS index in the ROK; Making CS relevant—moving beyond the standard CS models; Relationship between the CS index

and other Hong Kong economic indicators; Developing CS measurement tools for the retail sector; and The CS index and company value. The Lotte Global Restaurant Service and Research Center and Lotte Hotel World hosted site visits demonstrating how they developed CS measurement systems and apply them for productivity improvement.

Training of Trainers on Performance Management for Public-sector Organizations

Performance management is increasingly gaining momentum in the public sector since it is an effective strategic approach to making the most of limited resources and involves the quest for efficiency in service delivery. However, much work still needs to be done, especially in expanding the capacity of key actors to undertake performance management reforms, which have become part of national good governance agendas to ensure that financial and human resources are utilized to achieve the intended results. The APO has been carrying out initiatives to introduce and encourage the use of performance management in the public sector in member countries through training courses and workshops.

A training of trainers on Performance Management for Public-sector Organizations was conducted from 12 to 16 November in Manila, hosted by the DAP. The objectives were to familiarize participants with the fundamentals and knowledge requirements of performance management in the public sector, introduce different approaches in conducting performance management training in various public-sector organizations, and develop a pool of trainers in performance management in the public sector to contribute to improved organizational performance. A total of 21 participants from 13 member countries attended, with resource persons from Public Administration International in the UK.

Program coverage: Principles, objectives, and scope of performance management; Different models and applications of performance management; Setting the context and rationale for performance management in the public sector; and Approaches to performance management training for the public sector. A site visit and final examination were also included in the project.

Training of Trainers on Quality Standards for Agricultural Products to Enhance Market Access

To export to international markets, producers and exporters must comply with technical regulations and mandatory standards set by public institutions to ensure product quality, environmental protection, and consumer health. Noncompliance with these requirements may lead to product quarantine or rejection by importing countries. Other standards were developed and are enforced by associations of private enterprises, mainly in the retail industry in developed nations, and mostly used in the B2B context. As a business reality, agricultural and food-industry players in the Asia-Pacific need to be well acquainted with the requirements of standards for agrifood products to enhance the access of their products to advanced markets.

To enhance trainers' knowledge of quality standards for agricultural products so that they can educate a critical mass of stakeholders in their countries, resulting in enhanced market access and export competitiveness, the APO in cooperation with DOSMEP organized a training of trainers on Quality Standards for Agricultural Products to Enhance Market Access, 10–14 December, in Vientiane. Twenty participants from 16 countries and three international resource persons attended.

Program coverage: Why quality standards?; Global trends in quality standards; Quality standards desired by retailers; Food safety standards of agricultural products; Good Agricultural Practices (GAP) standards; Organic standards and labeling rules; Storage and distribution standards; Innovative logistics for agricultural products; Innovative labeling and packaging technologies for promoting exports of agrifood products; and Temperature management along the food cold chain. Participants visited a hydroponic tomato farm to observe quality management practices.

APO Developmental Workshop for Practitioners of Business Excellence

The business excellence (BE) framework is a dynamic tool for managing organizations to improve competitiveness and productivity. Using the framework, organizations can identify strengths and opportunities and then align management systems and processes to create an environment for sustainable, continuous improvement. In 2009, SPRING Singapore (now Enterprise Singapore) was designated as the APO Center of Excellence (COE) on BE to assist other member countries in developing and strengthening their BE initiatives.

In collaboration with Enterprise Singapore, an APO workshop for Practitioners of Business Excellence was held 12–15 March in Singapore. It was intended to: strengthen national BE strategies and promote the adoption of the BE framework in organizations; develop practitioners who can assess the need for using the BE framework as a strategic management tool and plan for its adoption in organizations; facilitate organizational self-assessment using the framework; provide guidance on the use of tools and techniques to improve organizational systems, processes, and practices; and share experience and best practices among BE practitioners. Fifteen international participants attended, and two local resource persons gave presentations and guided discussions on BE topics.

Program coverage: Introduction to COE on BE initiatives; Presentations by 2017 BE Award winners; Panel discussion with BE winners: Future-readiness for organizations; and Managing and sustaining BE. Participants also attended the 2017 BE Award Winners Sharing Conference.

Workshop on Innovations in Postharvest Handling of Perishables

Major causes of postharvest losses in developing countries are inappropriate practices of crop harvesting and postharvest handling and poor infrastructure for transportation, storage, cooling, processing, and marketing. More than one-third of food produced is lost or wasted annually. The magnitude of postharvest losses of perishable commodities is greater in developing countries and in regions with warm climates. Reducing postharvest losses could be a sustainable solution to increase food availability, reduce pressure on natural resources, decrease production costs, and minimize hunger. It could also save agricultural inputs, improve farmers' livelihoods, and contribute to mitigating climate change.

To share innovative postharvest technologies and models and find ways to promote their adoption and scaling up in member countries, the APO in partnership with the NPO of Bangladesh organized a workshop on Innovations in Postharvest Handling of Perishables in Dhaka, 20–24 May. Twenty-three participants from 17 member countries as well as five resource persons from Malaysia, New Zealand, and Thailand and two local experts from Bangladesh attended.

Program coverage: Emerging trends in postharvest handling of perishables in Asia and the Pacific; Smart technologies for improving postharvest management; Cost-effective new postharvest technologies for SMEs; Applications of digital technology in postharvest operations to enhance their efficiency and effectiveness; Public–private partnerships for developing and promoting innovative postharvest technologies; and Successful models and best practices of postharvest handling of perishables. Participants visited the vegetable and fruit demonstration farms of the Department of Agricultural Extension, Narsingdi district (50 km from Dhaka).

Workshop on Food Quality and Safety Assurance in Modern Food Production Systems

Consumers are increasingly demanding food to be healthy, tasty, safe, and sound in respect to animal welfare and the environment. Developed countries are applying more stringent regulations on food imports, and the competitiveness of exporters depends on reliable quality and safety measures and acceptable production procedures. However, food quality and safety assurance systems in many developing Asian countries could be improved through more modern approaches, giving their agrifood businesses greater access to world markets.

Sound food quality and safety assurance systems to ensure a consistent supply of high-quality, safe food are now a timely issue. To update food quality and safety systems, as well as disseminate the best practices of food-industry enterprises, the APO in partnership with the FTPI organized a workshop on Food Quality and Safety Assurance in Modern Food Production Systems in Bangkok, 28 May–1 June. Twenty-three participants from 13 countries as well as seven resource persons from PR China, Hong Kong, Malaysia, and the USA and three local experts from Thailand attended.

Program coverage: Current issues and global trends in the food business; International food safety management standards; Controlling food safety in the food industry; Food hazards and critical control points; Modern methods for detecting food pathogens; Modern food traceability systems; Food safety regulations in advanced countries (Japan, EU, USA); and Strategies for achieving food safety in the food industry and key success factors. Participants visited a noncarbonated beverage company, Green Spot Limited, in Prathumthanee (30 km from Bangkok) and the 15th THAIFEX-World Food of Asia 2018 Exhibition.

Workshop on Digital Agribusiness

Digital technology can help agribusinesses keep up with the growing demand for agricultural and food products to feed, fuel, and fortify about 10 billion people worldwide by 2050. This technology can have major impacts across agribusiness value chains. It enables enterprises to enhance competitiveness, improve margins, manage producer relationships better, and provide better service to customers. Digitization offers customers more information about where food comes from and how it is processed, allowing them to make informed choices. It is also beneficial for upgrading agribusiness in rural areas and creating new methods to feed the world. Digital technology can be used to enhance agribusinesses in rural Asia and around the world.

To create awareness of global trends in digital technologies and their impact on agribusiness globally and promote the adoption and scaling up of digital technologies in the sector in member countries, the APO in cooperation with the MPO organized a workshop on Digital Agribusiness, 25–29 June, in Ulaanbaatar. Twenty participants from nine countries and six resource persons from Canada, the ROC, Hong Kong, and Mongolia attended.

Program coverage: Key concepts in digital agriculture and digital agribusiness; Case studies of precision agriculture; Smart livestock farming; Applications of digital technology in agribusiness; Digitization of agrifood supply chains; Digital marketing of agrifood products; Digitization of marketing and service systems for the poultry industry; and Creating an enabling environment for accelerating adoption of digital technology in agribusiness. Participants visited the greenhouse of Green City Garden LLC and automated warehouse of MTS Agro LLC.

Workshop on Readiness for Industry 4.0: Assessment and Steps for Manufacturers

A common difficulty that governments and enterprises face when formulating strategies for Industry 4.0 is in understanding their current status and identifying starting points for this movement. Measuring readiness and then developing strategies are thus the first indispensable steps to begin the Industry 4.0 journey.

To provide references for industries in APO member countries to assess their readiness for Industry 4.0 and to assist governments in upgrading their industries in a practical, incremental manner, the APO collaborated with the CPC in conducting a workshop on Readiness for Industry 4.0: Assessment and Steps for Manufacturers, 25–29 June, in Taipei. Twenty participants from 13 APO members attended, along with resource persons from the ROC, Germany, and Singapore who demonstrated a number of readiness assessment tools applicable to enterprises, enabling company owners and policymakers to develop strategies for digital upgrading by businesses and industries.

Program coverage: Introduction: What is Industry 4.0?; Readiness for Industry 4.0; Singapore Smart Industry Readiness Index; Applying the Singapore Smart Industry Readiness Index and its implications; Developing strategies for industrial upgrading; Global benchmarking on digital innovation readiness; The digital innovation quotient: Practical experience and hands-on exercise; A roadmap for Industry 4.0; Assessment tool for Industry 4.0 maturity and case studies from Taiwan; and Challenges and opportunities of Industry 4.0 for APO member countries. Participants visited Sha Yang Ye Industrial Co. Ltd., an innovative robot maker transformed from a traditional gear manufacturer, where they observed how an SME started its journey of digital upgrading with the support of simple digitization, CPC consultancy on productivity enhancement, government programs, and collaboration with academia.

Workshop on Innovative Technologies for Increasing Agricultural Water Productivity

Water availability for agriculture is likely to decline as more water will be needed by the expanding industrial sector and urban centers, as well as for healthy ecosystem function. Water pollution and overuse are further aggravating the situation. Agriculture will have to produce additional food to feed 5.3 billion people in Asia in 2050 with increasing demand for more diversified diets. Water scarcity will be the key constraint for future food production systems. Increased agricultural water productivity is the way forward to achieve sustainable agriculture and food security.

To share cost-effective, smart technologies and innovative models for increasing agricultural water productivity and find ways to promote the adoption and scaling up of such technologies and models in member countries, the APO in partnership with the Ministry of Agriculture of Sri Lanka and the NPS organized a workshop on Innovative Technologies for Increasing Agricultural Water Productivity in Colombo, 23–27 July. Twenty-eight participants from 11 countries as well as three resource persons from the International Water Management Institute-India, Tottori University of Japan, and UN Food and Agriculture Organization-Thailand along with two local experts from Sri Lanka attended.

Program coverage: Current status and scope for improvement of agricultural water productivity in Asia and the Pacific; Precision irrigation as a smart technology; Application of digital technology in water management; Economics of water productivity in managing water for agriculture; Increasing water productivity in rice-based systems in Asia and in dry areas; Agricultural reuse of wastewater and sustainable water management; and Improving the productivity of crops in water-limited environments. Participants visited both the Nilwala Ganga Flood Protection Scheme under the Irrigation Department of the Southern Province and a *deegala* tank (reservoir), 30 km from Galle.

Workshop on APO Public-sector Leadership

The APO recognizes that a number of member countries have undertaken their own leadership development initiatives in the public sector. Those efforts are important and commendable. Under its Public-sector Productivity Program Framework and broad action plan, the APO intends to supplement national efforts by developing a complementary framework dedicated to public-sector leadership as a guide for member countries to anticipate the future of government. One of the aims of the framework is to bring greater coherence and comprehensiveness to the different approaches by emphasizing the need for innovation leadership to increase public-sector productivity. The framework also identifies the desirable leadership competencies and capabilities to lead an innovative, productive public-sector organization.

A workshop on APO Public-sector Leadership was organized 6–10 August in Manila, which was hosted by the DAP. The objectives of the workshop were to: define the critical role of leadership within the framework of good public governance of the future; understand the drivers of change in the future and their impact on public-sector leadership; and disseminate the APO Public-sector Leadership Framework and its related elements in line with efforts to enhance productivity in the sector. Sixteen international participants and two local ones were in attendance. Three APO resource persons from Canada, Malaysia, and the Philippines made presentations on different topics under the framework and guided discussions.

Program coverage: Drivers of change in the public sector; The need for leadership in government in anticipating the future; Defining leadership in the public sector; The APO Public-sector Leadership Framework; Key principles and focus areas in guiding public-sector leadership; and Emphasizing results and expected outcomes of public-sector leadership. The participants also visited the local municipal government of Paranaque and Philippine Deposit Insurance Corporation to learn more about leadership and its relationship with the productivity of public-sector organizations.

Workshop on Smart Industrial Applications in SMEs

Typically, SMEs are hesitant to undertake Industry 4.0 upgrading due to their limited capital, little access to advanced technologies, and insufficient knowledge of strategies involved in Industry 4.0. However, with a focus on initial steps such as basic digitization, data analysis, and system connectivity, starting the Industry 4.0 journey can be made simpler with commonly available tools and technologies.

To provide an opportunity and reference for its members to identify suitable applications that can assist SMEs in their first steps toward Industry 4.0, the APO collaborated with the CPC in conducting a workshop on Smart Industrial Applications in SMEs, 20–24 August, in Taipei. Twenty-one participants from 11 APO members attended, along with resource persons from Canada, the ROC, and Singapore, who explained how SMEs could initiate digital transformation and gave examples that leveraged simple, practical applications for digital upgrading.

Program coverage: Introduction: Industry 4.0 ecosystem, business transformation, and empowerment of next-generation workers in SMEs; Digitalization for SMEs; A roadmap and basic steps for SMEs' integration in Industry 4.0; Unleashing the power of data; Case studies of SME digitization; How can data contribute to SME competitiveness?; The development and applications of smart manufacturing transformation of SMEs in Taiwan; Policy programs assisting digitization of SMEs; and Building a business case for Industry 4.0. A site visit was hosted by Henrex Corporation, a plastic molding company that started its upgrading by applying productivity techniques, deploying automation equipment, and digitizing management systems. Participants witnessed how digitization contributed to operational performance and how a small-sized enterprise could leverage the power of data and digitization with reasonable resource inputs.

Workshop on Developing Strategies for Enhancing Global Competitiveness and Productivity Growth

APO members have a common goal under the Roadmap to Achieve the APO Vision 2020: improve their average ranking in the Global Competitiveness Index by five points by 2020. To achieve this, promoting innovation-led growth has been identified as the most suitable strategy.

To assist member countries in raising national competitiveness, the APO in association with the CPC conducted a workshop in Taipei on Developing Strategies for Enhancing Global Competitiveness and Productivity Growth, 28–31 August. The four-day workshop reviewed the strengths and weaknesses of national competitiveness among member countries as well as policy initiatives that had been effective in strengthening competitiveness and driving

innovation for productivity enhancement. Attended by 21 participants from 12 APO members, the workshop was facilitated by two international resource persons from Japan and Norway and two local ones.

Program coverage: Innovation, competitiveness, and economic growth; Innovation-led productivity growth; Strengthening national competitiveness; and APO member countries' global competitiveness. A site visit was made to Taoyuan International Airport, the largest airport in the ROC, which has risen significantly in international rankings and demonstrated how innovation at the organizational level could boost the national image and competitiveness.

Workshop on Development of Frameworks for Foresight in Public-sector Organizations

With increasing complexity in public policy formulation and socioeconomic development agendas, it is critical to equip public-sector and corporate planners with the principles of strategic foresight and scenario planning. While these tools are useful in all sectors, some approaches are specific to public organizations. Public-sector organizations in APO member economies need long-term national strategic plans developed through foresight management and scenario planning, which will help them identify directions derived from plausible scenarios of the future.

As part of its capacity-building series on strategic foresight, the APO in cooperation with the DAP conducted a workshop on Development of Frameworks for Foresight in Public-sector Organizations in Manila, 3–7 September. Five participants from the ROC, Fiji, Indonesia, and Mongolia and 18 representatives of public agencies in the Philippines attended. The workshop was opened by APO Director for the Philippines Dr. Adoracion Navarro, with DAP President and CEO Engelbert C. Caronan, Jr. presiding over the inaugural session.

Program coverage: Organizational shifts; Learning public-sector enterprises; Overview of the concepts and methodologies of foresight systems; and Horizon scanning of the external environment.

Workshop on Smart Agriculture Extension Models

Rural areas face many challenges in improving labor productivity and competitiveness. Knowledge dissemination and advisory service outreach remain limited in the remote countryside. To alleviate disparities in information sharing for agricultural and rural development, IT-based agriculture extension services (AES) can overcome the physical barriers to small farmers' access to learning opportunities. AES provided through digitized methodologies have become smart agriculture extension models (AEMs) that encourage users' active participation and allow widespread knowledge dissemination. Through user-centric mechanisms, learners can be provided with customized content and, when they are allowed to give inputs, new content can be generated. Similarly, smart AEMs are gender inclusive, since women comprise more than 50% of the rural workforce.

A workshop on Smart Agriculture Extension Models was held 17–21 September in Colombo, implemented by the Ministry of Agriculture of Sri Lanka in cooperation with the NPS. Three APO resource persons from the ROK, Philippines, and USA and one local expert were invited to share best practices of smart AEMs and discuss the evolving roles of AES in supporting rural farmers, particularly less-privileged groups, to formulate recommendations with a foresight viewpoint. Twenty participants involved in planning, establishing, or evaluating digital learning platforms for AES attended, representing 10 APO member countries.

Program coverage: Status of online/offline agriculture extension and advisory systems in Asia; Global trends and technology advancement in education and reflection in agriculture extension; Developing and starting online platforms for user-friendly agriculture extension systems; Successful cases of AEM to empower marginalized groups

and women in rural areas; and Institutional reforms and guiding recommendations for AEM development in Asia. Participants visited the Crop Clinic in Kosgama to observe plant diagnosis and treatment practices.

Workshop on Innovative and Strategic Leadership for Enhancing Public-sector Productivity

The ability to innovate is crucial for enabling public-sector organizations to cope with their rapidly changing, challenging environment and unpredictable future. It is also where the role of top leaders running any public-sector organization in encouraging strategic innovation has become more important, as they help define and shape work contents that contribute to organizational and individual innovation. Under its Public-sector Productivity Program Framework and broad action plan, the APO emphasizes the importance of developing innovative, strategic leadership in the sector so that more efficient, effective products and services can be offered to satisfy citizens' expectations. In sustaining this initiative, the APO focuses on enhancing the ability of public-sector organizations to innovate, especially in their leadership programs.

The APO organized a workshop on Innovative and Strategic Leadership for Enhancing Public-sector Productivity, 17–21 September, in Colombo, which was hosted by the NPS. The objectives of the workshop were to: examine leadership activities that foster the development of an innovative, strategic, future-oriented public sector; review the importance of innovative and strategic leadership as applied in the public-sector context; and discuss the role of leadership at different hierarchical levels in public-sector organizations as a strategic approach to enhancing productivity. Seventeen international participants and seven local ones attended. Two resource persons from Canada and the ROK and two local speakers made presentations on various topics relating to innovation and strategic leadership in the public sector.

Program coverage: The role of innovation and strategic leadership in the future public sector; Defining innovation and strategic leadership in the public sector; Innovating the public sector through a strategic leadership approach; Linking innovative and strategic public-sector leadership with productivity; and Creating an innovative and strategic public-sector leadership for the future. The participants also visited two public-sector organizations to apply and enhance their learning and presented action plans to create multiplier effects.

Workshop on Innovations in Food Value Chains

FVCs are a crucial global strategy to achieve food security by ensuring safety and quality and reducing losses. A sequence of value-adding stages from production to storage, processing, distribution, and consumption is closely integrated in FVCs, resulting in greater benefits to stakeholders. Value addition to agricultural and food products has enormous potential for increasing productivity, incomes, and off-farm employment opportunities in developing countries.

It is important for producers, related agribusiness-related players, and food-industry SME entrepreneurs to have the skills and know-how to utilize modern technologies and innovations to add value to agricultural and food products and increase their profitability. To update participants on global trends, new tools and techniques, and innovative best practices in FVCs, the APO in partnership with the NPCC, Ministry of Industry and Handicraft, organized a workshop on Innovations in Food Value Chains in Phnom Penh, 26–30 November. Twenty-two participants from 11 member countries as well as three resource persons from Italy, Pakistan, and Thailand and one local expert from Cambodia attended.

Program coverage: Value chain concept, approaches, and tools to support FVC development; Value addition through food quality and safety assurance certification systems; Business models for improved inclusion of small farms and SMEs

in FVCs; Incremental improvement of agribusiness value chains through innovative processes; Product development, innovation, and value addition in food processing; Public–private partnerships for developing innovative, inclusive FVCs; Innovative value-addition technologies for food packaging and marketing; and Successful cases of innovative FVCs. Participants visited Kiriroom Food Production Co., Ltd., a Khmer-owned business based in the mango heartland in the Kirirom region. The company is a leading exporter of Cambodian mangos and related products.

Workshop on Science, Technology, and Innovation Policies for Productivity Enhancement

Scientific advances, technological changes, and innovative value creation are important drivers of productivity and economic growth. Building up an effective science, technology, and innovation (STI) system that can absorb technical know-how, strengthen scientific capabilities, and improve firm innovation is receiving a surge of interest from many governments. STI policies (STIPs) need to be well designed and implemented to enable STI systems to contribute their full economic potential.

As part of APO efforts to support informed STIPs in member countries and to promote forward-looking perspectives on STIP design, a four-day workshop on Science, Technology, and Innovation Policies for Productivity Enhancement was organized 27–30 November in Hanoi. Welcoming 23 participants from 13 APO member countries, STAMEQ Director-General Ha Minh Hiep advised them to exchange views on STIPs and learn from the resource persons about the experiences of Japan, the ROK, and Singapore. Participants planned to apply the ideas presented for the successful design, implementation, and monitoring of STIPs to foster productivity growth in their countries.

Program coverage: Key trends impacting STI systems; Collaborative linkages among STI actors; Industry 4.0; Society 5.0; Technological advances and the productivity paradox; Regulatory sandbox mechanism; Analysis of recent developments in STIPs; and Policy implications to strengthen technological and innovative performance. A site visit was made to Hoa Lac Hi-tech Park, the first high-tech park in Vietnam under the Ministry of Science and Technology, to observe how the STIP mobilizes resources from the government, private sector, and academia for better STI outputs.

Research on Aging Societies and Gender Mainstreaming in Human Capital Development

Currently, APO member countries face the prospect of shrinking labor forces and thus labor shortages in coming years with rapidly aging populations. Better utilization of the untapped or underutilized pool of female labor is crucial to stimulate productivity growth and cope with the challenges facing aging societies. Initiated at the end of 2015, the research on Aging Societies and Gender Mainstreaming in Human Capital Development aims to examine the trends, patterns, and determinants of the FLFP rate in participating countries and their impact on labor productivity. One chief expert and six national experts from the ROC, India, Indonesia, Malaysia, the Philippines, and Thailand were assigned to conduct the research. After one year spent collecting data, the research team consolidated a report containing an analysis of policies to boost the participation of women in the labor force. The final research report on good practices and lessons learned from advanced countries with experience in driving FLFP and recommendations for the more active participation of women in the labor force in participating member countries was published in 2018.

Program coverage: Aging societies; Gender mainstreaming; Human capital development; FLFP; Quality employment for female labor; Labor market participation framework; and Labor productivity.

Research on Case Studies of Diversity Management and Human Capital Strategy

Employing a diversified workforce is not only an advantage but also a challenge for management. Diversity could have both positive and negative effects on firm productivity. A successful strategy to manage diversity creates a work environment where similarities and differences in the workforce are included and valued. Such a strategy turns a diverse workforce into an inclusive one. The more diverse and inclusive the workforce, the greater the team collaboration and commitment to organizational performance and productivity enhancement. The organization's ultimate goal of improving efficiency and effectiveness while achieving better productivity performance can be achieved by well-satisfied, better-performing, more committed employees.

Initiated in September 2016, the research on Case Studies of Diversity Management and Human Capital Strategy was designed to assess the impact of a diverse, inclusive workforce on organizational productivity gains and competitiveness. One chief expert and six national experts from the ROC, India, IR Iran, Malaysia, the Philippines, and Thailand were commissioned to conduct the research. In December 2017, a report covering best practices in strategies for diversity management and inclusiveness in organizations in both the public and private sectors was submitted. The impact of diversity and inclusion on productivity gains was analyzed in each case. The final report was published in 2018.

Program coverage: Diversity and inclusion strategy; Human capital development; Unconscious bias; Organizational performance; and Firm productivity.

Research on Measurement of Productivity in the Public Sector

Improving productivity in the public sector may benefit governments with resource savings in the form of productivity gains, which can then be reinvested to achieve greater efficiency in delivering services. To take advantage of productivity gains, public-sector organizations need comprehensive strategies, including better ways to measure productivity and its gains, priority areas for improvement expected to provide significant leverage to overall productivity efforts, and the identification of models for institutionalizing a productivity culture.

In an effort to fill the gaps in measuring and assessing productivity in government sectors, in 2018 the APO started a research project on Measurement of Productivity in the Public Sector. It is the first step in testing the feasibility of method-based public-sector productivity measurement focusing on the healthcare and education sectors involving five APO member countries. This research project is a follow-up to the APO study of the productivity of government agencies delivering tax and passport services.

An Australian expert on productivity measurement is leading the research project in collaboration with national experts from India, Indonesia, Malaysia, the Philippines, and Thailand. The project was in the final stage before publication at the time of writing.

Research on Change Management in the Public Sector

Change models and processes that aim to change the culture of the public sector have been introduced under the banners of organizational development and institutional reform. Similarly, some governments have instituted mechanisms in the public sector for managing electoral transitions including securing the tenure of key officials in the bureaucracy to ensure stability in the delivery of public services.

To investigate models and theories of change management applied to the public sector, examine the complexities and results of their application to organizations, and provide recommendations to enhance overall performance, the APO is conducting a research project on Change Management in the Public Sector. It is led by a chief expert

from Thailand working in collaboration with national experts from Cambodia, India, Indonesia, Malaysia, Nepal, Pakistan, the Philippines, Sri Lanka, and Thailand.

The experts were finalizing the report on their findings at the time of writing, with publication planned in early 2019.

Research on Science, Technology and Innovation Policies for Productivity Enhancement in APO Member Countries

Recently, various socioeconomic, environmental, technological, and political trends have been influencing the development of societies and economies. The emerging trends not only are promising but also carry significant risks for the future. They pose challenges to the direction and pace of STI activities as well as the status and efficacy of STIPs.

In order to support informed policymaking in member countries, a research project on Science, Technology and Innovation Policies for Productivity Enhancement in APO Member Countries is being conducted. It aims to determine the key trends impacting STI, review collaborative linkages among STI actors and recent developments in STIPs, and publish an outlook document focusing on strengthening future STI systems and their policy implications for APO member countries. A three-day coordination meeting of experts was held 21–23 November in Vientiane, attended by one chief expert from Japan and eight national experts from the ROC, India, Indonesia, Lao PDR, Pakistan, Sri Lanka, Thailand, and Vietnam. The meeting discussed the scope, framework, methodology, and timeline of the research. In 2018, the final report presenting future STI systems, providing policy insights for efficient interventions to boost economic growth, and making recommendations to encourage stronger linkages among STI players was finalized.

Program coverage: Key trends impacting STI systems; Review of collaborative linkages among STI actors; Industry 4.0; Society 5.0; Future-oriented technology analysis; Analysis of recent developments in STIPs; Future of STI systems; and Policy implications to strengthen technological and innovative performance.

Research on Public Policy Innovation for Human Capital Development

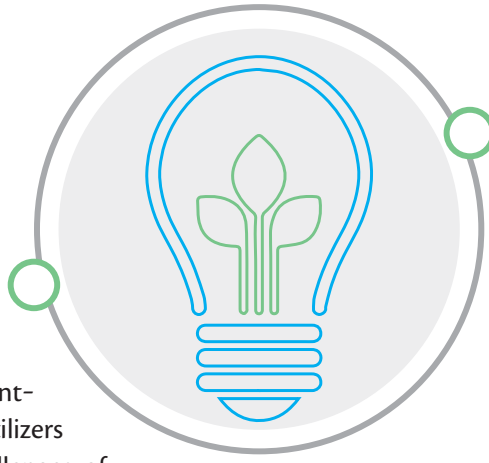
Optimal investment in human capital is pivotal in increasing a nation's ability to innovate and be more productive. However, human capital investment systems often fail to keep up with the demand for skills arising from new technological developments. In the current context, ensuring investment in 21st-century skills is critical. For low- and lower middle-income Asian countries, the obvious challenge is mass illiteracy and innumeracy. Human capital investment programs require public support and access to high-quality, high-equity education for the entire society. Many public policy support programs for human capital development have resulted in disparities in terms of results/achievements. Additional public-sector policy support is therefore needed for future skill and workforce development within the framework of human capital development.

The APO initiated a research project on Public Policy Innovation for Human Capital Development to look into innovative approaches to public investment in human capital using 21st-century skills as the framework in selected APO member countries. It will propose recommendations on managing future skill and workforce development in response to the technology-driven changes and structural adjustments now taking place.

At the time of writing, the research was in the final stage, with publication of the results planned for March 2019 after a coordination meeting held in Colombo, Sri Lanka, 11–13 December 2018. A chief expert and guest expert from Japan led the project in collaboration with national experts from Cambodia, the ROC, India, Indonesia, IR Iran, Malaysia, the Philippines, Sri Lanka, Thailand, and Vietnam.

Promoting Green Productivity

3rd International Conference on Biofertilizers and Biopesticides: Novel Industry Techniques, Market Trends, and International Cooperation



The use of chemical fertilizers and pesticides is an integral part of today's agriculture and is on the rise in Asia. The inappropriate use of agricultural chemical inputs decreases soil fertility, pollutes air and water, and releases greenhouse gases. Chemical residues in agricultural products have serious implications for food safety, human and animal health, and food trade. It is therefore crucial to promote the use of environment-friendly methods of improving plant nutrition and protection. Biofertilizers and biopesticides (B&B) are important alternatives to meet the challenges of increasing agricultural yields sustainably.

To share recent advances in the B&B industry and novel techniques and technologies for B&B development and application, the APO in partnership with the CPC and Council of Agriculture, Executive Yuan, organized the 3rd International Conference on Biofertilizers and Biopesticides: Novel Industry Techniques, Market Trends, and International Cooperation in Taipei, 7–10 August. Forty-one participants from 14 APO member countries and over 200 observers as well as six overseas resource persons from India, Malaysia, the Philippines, Switzerland, Thailand, and the USA, along with three experts from the ROC, attended.

Program coverage: Global B&B development trends and market overview; Novel techniques for the application and international marketing promotion of B&B; Regulatory challenges and auxiliary policies for B&B in Asia and the USA; Progress in regulations and registration systems in the EU; Quality detection and strain preservation management of commercial B&B products; Successful case study of international cooperation and promotion strategy of B&B; Successful examples of commercialization of B&B; Successful examples of public–private partnerships in biopesticide product development; and Cases of R&D applications, product development, and promotion of B&B. Participants visited three Miaoli District Agricultural Research and Extension Stations, Lu Ching Farm (which belongs to Taiwan Fertilizer Co., Ltd.), and the Tea Research and Extension Station.

e-Learning Course on Waste Management in Agribusiness

Agricultural waste is generated in different processes and operations along the agrifood supply chain. That waste is estimated to account for 30% of worldwide agricultural production. Farm waste includes materials from crop growing such as unusable biomass, harvest residues, and harvest waste (herbs, grains, roots, tubers, stubble), which may affect the environmental performance of operations. Beyond the farm level, food-processing operations in the postharvest stage are another area that produces huge amounts of agricultural waste. Turning the waste into profitable products is critical in improving the productivity of agribusiness.

To enhance participants' understanding of recent trends and innovative approaches in agricultural waste management (AWM) as well as build knowledge of value-added product development from agrifood waste, an e-learning course was held 27–30 November 2018 (session 1) and 11–14 December 2018 (session 2). Organized by the APO Secretariat, 146 people from six countries and 57 people from four countries participated in sessions 1 and 2, respectively. Four APO resource persons from Japan, the ROK, and Sri Lanka shared their expertise and professional experience in conducting the course.

Program coverage: Understanding AWM; Current status and trends in AWM at the farm and postharvest stages; Integrated solid waste management for organic waste; Waste reuse and recycling through technological methods; Incorporating AWM as a plausible business model; Exploring methodologies, tools, and techniques for transforming agricultural and food waste into useful resources; Government initiatives and legal schemes to promote implementation of AWM; and Establishing AWM as a common practice in the public and private sectors. A site visit was hosted in each participating country to an organization and/or company to observe the current status of AWM and to provide suggestions during country presentation sessions on the last day of the course.

Development of Demonstration Companies: Energy Efficiency Program, Pakistan

Under the Special Cash Grant Program on Energy Conservation funded by the Ministry of Economy, Trade and Industry of Japan, the APO has been organizing demonstration company projects and assigning experts to target countries to offer know-how on energy conservation measures and technical assistance. The establishment of demonstration companies disseminates knowledge of and techniques for energy conservation to a wider variety of people along with trained trainers through onsite assistance by an expert(s).

On 18 April, the APO and NPO Pakistan organized a conference for the dissemination of the results of the demonstration project undertaken in Pakistan. Three demonstration companies, Islamabad Serena Hotel, Asian Food Industries Ltd., and Pakistan Engineering Company Ltd., shared examples of the applications of energy management tools and techniques as well as the outcomes of their demonstration projects. The conference was attended by Secretary Mian Asad Hayaud Din of the Ministry of Industries and Production and Supplies and over 140 participants from energy-related fields in the public and private sectors.

Program coverage: Outcomes of demonstration company projects on energy efficiency and conservation to learn from their experience; Energy conservation laws; and Effective ways to promote energy conservation.

Development of Demonstration Companies: Energy Efficiency Program, Nepal

Another APO project under the Special Cash Grant Program on Energy Conservation funded by the Ministry of Economy, Trade and Industry of Japan was carried out in demonstration companies in Nepal. On 18 December, the APO and NPEDC organized a conference for the dissemination of the results of the project. The two demonstration companies, Hetauda Cement Industry Ltd. (HCIL) and Udayapur Cement Industries Ltd. (UCIL), shared examples of the applications of energy management tools and techniques as well as the outcomes of their demonstration projects. The conference was attended by Joint Secretary Madhu Kumar Marasini of the Ministry of Industry, Commerce and Supplies and over 70 participants from energy-related fields in the public and private sectors. Significant results achieved under the project at HCIL and UCIL included 22% and 19% improvement in their energy performance indicators, respectively.

Program coverage: Outcomes of demonstration company projects on energy efficiency and conservation to learn from their experience; Energy conservation laws; and Effective ways to promote energy conservation.

Training Course on Energy Efficiency and Conservation

Rapid industrialization in Asian economies has been a strong driving force in raising productivity in the region. On the other hand, it has had negative effects on the environment such as contributing to global warming, climate change, energy price fluctuations, etc. It is crucial to promote energy conservation in the region to enable smarter, more efficient use of energy. The promotion of energy conservation will also help in the transition from carbon-intensive to environment-friendly, sustainable living patterns.

To address the issues of energy efficiency and conservation in the industry and service sectors, it would be beneficial to transfer advanced knowledge to targeted APO member countries by providing capacity-building opportunities for human resources who can lead energy initiatives. The Ministry of Economy, Trade and Industry of Japan provided a special cash grant for that purpose, targeting Bangladesh, Mongolia, Nepal, Pakistan, and Sri Lanka. Under the grant, a training course on Energy Efficiency and Conservation was held in Tokyo, 22–25 May. Thirty-one participants from 16 APO member economies attended, along with seven resource speakers from Japan and one from the United Nations Environment Programme. At the conclusion, participants developed action plans to be submitted to their NPOs based on their learning for postproject follow-up.

Program coverage: Outcomes of demonstration company projects on energy efficiency and conservation in selected countries to learn from their experience; Energy conservation laws; and Effective ways to promote energy conservation.

Training of Trainers and Consultants in Green Productivity

Since 1994, the APO has been promoting Green Productivity (GP) vigorously through various initiatives and platforms. The Training of Trainers in GP, as a core program for developing highly qualified practitioners, is just one good example of how the APO promotes GP in the region. Because GP is defined as a strategy for enhancing productivity and environmental performance for overall socioeconomic development, GP specialists must acquire the skills, knowledge, and ability to apply appropriate productivity and environmental management tools, techniques, and technologies to reduce the environmental impact of an organization's activities, goods, and services and at the same time increase productivity and profitability. Hence, this training course creates future trainers who will support the APO in pursuing good environmental management practices, especially in industries.

In order to produce APO-certified GP specialists, the APO conducted a course on Training of Trainers and Consultants in Green Productivity, 23 July–8 August, in Taipei, which was hosted by the CPC. The objectives were to develop and certify productivity practitioners specialized in GP, with in-depth knowledge of and hands-on experience in methodologies, tools, and techniques, enabling them to lead environment-related initiatives as APO-certified GP specialists. Seventeen international participants and three local ones attended the course. Two resource persons from Malaysia and Singapore and two from the ROC were involved.

Program coverage: Overview of GP programs implemented by the Center of Excellence on GP in the ROC; GP tools and techniques; and Case studies. Participants also undertook an in-plant study as part of the assessment and preparation for certification. In order to carry out individual GP assignments within six months after the training course, the APO assigned faculty members who provided mentoring and coaching to guide participants in preparing their project reports, which are a prerequisite for obtaining GP specialist certification.

Workshop on Organic Agriculture 3.0

Organic agriculture has not been sufficiently included, or inclusive, to contribute solutions on a global scale. Organic 3.0 is the title of a vision and a strategy developed by the organic movement led by IFOAM Organics International aimed at solving challenges in the food chain by offering healthy, affordable food for everyone; minimizing environmental and food pollution; increasing animal welfare; ensuring fairness for producers, as well as transparency and interdependence across value chains; and maximizing efficiency in resource utilization. Organic 3.0 food and farming systems are ecologically sound, economically viable, socially just, culturally diverse, and transparently accountable. The overall goal of Organic 3.0 is to enable the widespread adoption of truly sustainable farming systems and markets based on organic principles.

To familiarize participants with the goals of Organic 3.0 and promote the adoption of sustainable farming systems and markets based on organic principles, the APO in partnership with the Centre on Integrated Rural Development for Asia and the Pacific, NPC, and Rajiv Gandhi National Institute of Youth Development organized a workshop on Organic Agriculture 3.0 in Chennai, 3–7 December. Twenty-two participants and several observers from 13 countries as well as three resource persons from PR China, the Philippines, and the USA and three local ones from India attended.

Program coverage: Organic farming and the Sustainable Development Goals; Principles and values of organic agriculture and their implications; Revolution in organic agriculture and the Organic 3.0 approach and goals; Organic food systems for sustainable, healthy diets; True-cost accounting, true value, and fair pricing; Organic agriculture 3.0 and innovation with research; Features of transparent integrity and inclusiveness of Organic 3.0; Family farming in organic agriculture; Organic 3.0 and food system models from around the world; and Successful models of organic agriculture. A site visit was arranged to an organic herbal village in Thandarai, Chengelpet district, and natural herbal center operated by the Irula Tribal Women's Welfare Society.

Research on Green Productivity and Productivity Measurement Program for Myanmar

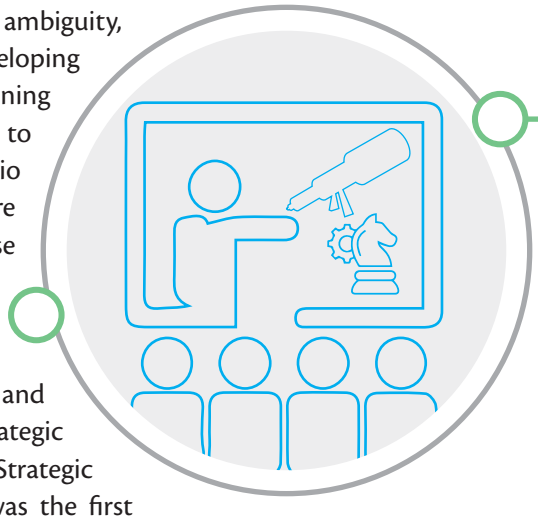
Measuring the productivity performance of a nation is essential to evaluate its efficiency in resource use and assess areas for potential economic growth, which are pivotal for evaluating national productivity improvement. An APO research project is attempting to assess labor, capital, and energy productivity while examining the potential for improving energy efficiency with lower carbon emissions in Myanmar.

This project is implemented under a cash grant from the Japanese Ministry of Foreign Affairs. The first phase of the research was a collaboration between the APO and Keio University (Keio) and generated a preliminary draft report examining energy productivity and overall productivity in Myanmar. It has now moved into the second phase, which entailed inviting another partner, the Research Institute of Innovative Technology for the Earth (RITE) and evolving into a three-party project undertaken by the APO, Keio, and RITE. The second, final phase will produce a research paper, including international comparisons of energy productivity, for Myanmar. The final report published in 2018 will contribute to enhancing understanding of productivity measurement and evidence-based productivity analysis, as well as the productivity statistics issues involved.

Program coverage: Assessment of national account data; Establishment of preliminary methodology to construct a growth accounting framework; Productivity and energy efficiency; and International comparisons.

Specific National Program

Training of Trainers in Strategic Foresight and Scenario Planning



The contemporary policy environment is marked by uncertainty, volatility, ambiguity, and complexity. Policymakers face tremendous challenges when developing strategies given these conditions, especially when relying on traditional planning methods. Strategic foresight and scenario planning allow practitioners to prepare for the future and develop robust long-term strategies. Scenario planning involves developing several plausible "stories" about the future in a rigorous, structured manner. The APO has developed a three-phase program for building strategic foresight capability in member countries.

To enhance the ability to undertake foresight and scenario planning, assist public-sector organizations in setting forward-looking strategies, and develop the skills to lead scenario development exercises and conduct strategic foresight training sessions, the APO organized a training of trainers in Strategic Foresight and Scenario Planning in Bangkok, 12–16 November. This was the first activity in the second phase of the program. Resource person Jonathan Star of Scenario Insight Ltd. was the lead facilitator and developed the *APO Trainer's Manual on Scenario Planning and Strategic Foresight*. The manual will be a key resource for member countries in conducting their own foresight activities and training sessions. Twenty-five participants from Thai government ministries, agencies, state-owned enterprises, and the military attended.

Program coverage: Overview of strategic foresight and scenario planning; Developing focal questions and framing strategic challenges; Facilitation and meeting design; Conducting foresight research and environmental scanning; Creating scenario frameworks; Strategic storytelling and communication; Using scenarios for strategy; and Designing training interventions and foresight projects.

Development of the National Productivity Master Plan for Cambodia

The APO's new Specific National Program (SNP) helps member governments to improve their regulatory frameworks for enhancing productivity and competitiveness. Cambodia was the first to receive policy consultancy services under the SNP. In 2018, the APO assisted the Royal Government of Cambodia in developing a National Productivity Master Plan to drive long-term productivity increases.

The consultancy project was conducted in collaboration with the NPCC. The development of the master plan spanned the period 17 September–12 December. It involved two stages: first, diagnostics to understand the current situation, challenges, gaps, and opportunities for Cambodia; and second, drafting of the plan based on the findings and feedback from relevant policymakers in Cambodia.

The National Productivity Master Plan for Cambodia 2020–2030 serves as a comprehensive guide for the country to embark on a productivity-driven growth strategy. The time frame of 2020–2030 was adopted to align it with the government's aim for Cambodia to become an upper middle-income country by 2030. The APO experts involved and Secretariat presented the proposed plan to the NPCC, Minister of Industry and Handicraft, and other key policymakers on 13 December 2018, which marked the end of the consultancy project. Cambodia can follow the document or use it as a draft to develop the official National Productivity Master Plan.

Workshop on the Primer on Productivity (for APO Staff)

The APO Secretariat facilitates continuous learning for its staff to achieve the goal of being the leading institution on productivity enhancement in the Asia-Pacific region. The focus on productivity requires a detailed understanding of the myriad concepts involved for the Secretariat to carry out daily tasks successfully.

The new business model calls for a more inclusive view of productivity and competitiveness including the interplay of productivity with standards of living. The unprecedented rate of technological change means that the APO must revisit and revise basic concepts to contribute meaningfully to enhanced productivity in its members.

On 13 July, the Secretariat conducted an internal one-day workshop on the Primer on Productivity covering topics related to the economics of productivity as well as the latest innovations in addressing this issue. The session was facilitated by an expert from Singapore and attended by all APO Secretariat staff.

FINANCIAL REPORT

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Independent Auditor's Report

To the Governing Body of Asian Productivity Organization

Our opinion

In our opinion, Asian Productivity Organization (the Organization)'s financial statements present fairly, in all material respects the financial position of the Organization as at 31 December 2018, and its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards.

What we have audited

The Organization's financial statements comprise:

- the statement of financial position as at 31 December 2018;
- the statement of revenues or expenses and other comprehensive income for the year then ended;
- the statement of changes in surplus for the year then ended;
- the statement of cash flows for the year then ended; and
- the notes to the financial statements, which include a summary of significant accounting policies.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We are independent of the Organization in accordance with the International Ethics Standards Board for Accountants' Code of Ethics for Professional Accountants (IESBA Code) and the ethical requirements that are relevant to our audit of the financial statements in Japan. We have fulfilled our other ethical responsibilities in accordance with the IESBA Code and the ethical requirements in Japan.

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Responsibilities of management and those charged with governance for the financial statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Organization's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Organization or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Organization's financial reporting process.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Organization's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

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- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Organization's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Organization to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

PricewaterhouseCoopers Aarata LLC

6 March 2019

ASIAN PRODUCTIVITY ORGANIZATION
STATEMENTS OF FINANCIAL POSITION
31 DECEMBER 2018 AND 31 DECEMBER 2017

(US dollars)

	2018	2017
ASSETS		
Cash and cash equivalents (Note 3)	$28,063,697	$21,714,534
Receivables (Note 4):		
Member countries	2,458,723	8,230,503
Others	6,895	2,937
Prepaid expenses	105,450	51,431
Deposits and other advance payments	57,985	55,363
Total current assets	30,692,750	30,054,769
Fund for severance payments (Note 11)	270,067	261,418
Property, plant and equipment (Note 5):		
Structure	349,440	349,440
Equipment	180,840	180,840
Automobile	72,935	72,935
Others	189,895	93,175
Accumulated depreciation	(555,026)	(468,551)
Intangible assets (Note 5)	217,502	103,993
Total noncurrent assets	725,653	593,251
Total assets	$31,418,403	$30,648,020
LIABILITIES AND SURPLUS		
Accounts payable	$1,930,982	$1,782,672
Withholding tax and social insurance	23,699	53,142
Other current liabilities (Note 8)	7,557,334	9,225,641
Total current liabilities	9,512,015	11,061,455
Accrued annual leave (Note 6)	633,397	632,444
Liability for severance payments (Note 12)	2,333,081	2,517,221
Other noncurrent liabilities	90,046	90,046
Total noncurrent liabilities	3,056,524	3,239,711
Total liabilities	12,568,539	14,301,166
Surplus:		
Appropriated for		
Working capital fund	6,000,000	6,000,000
Contingency fund (Note 2)	500,000	500,000
Continuing projects	4,900,197	4,398,306
Unappropriated surplus (Note 15)	7,511,650	5,659,414
Accumulated other comprehensive income (Note 12)	(61,983)	(210,866)
Total surplus	18,849,864	16,346,854
Total liabilities and surplus	$31,418,403	$30,648,020

The accompanying notes are integral part of these statements.

ASIAN PRODUCTIVITY ORGANIZATION
STATEMENTS OF REVENUES OR EXPENSES AND OTHER COMPREHENSIVE INCOME
YEARS ENDED 31 DECEMBER 2018 AND 2017

(US dollars)

	2018	2017
Revenues:		
Membership contributions (Note 7)	$11,986,035	$11,986,035
Special cash grants (Note 8)	1,901,864	839,110
Mandatory contribution for rent (Note 9)	230,778	219,156
Participation by member countries	4,236	4,806
Miscellaneous	52,958	38,455
Total revenues	14,175,871	13,087,562
Expenses:		
Projects		
Current year's project costs:		
APO share	3,905,720	4,644,287
Subtotal	3,905,720	4,644,287
Prior years' continuing project costs:		
APO share	2,828,597	2,946,050
Subtotal	2,828,597	2,946,050
Allocation to project costs from		
Administration expenses (Note 10)	1,571,790	1,766,032
Total	8,306,107	9,356,369
Administration		
Staff expenses (Note 12)	4,577,342	5,127,751
Office maintenance (Note 13)	272,870	250,981
Depreciation expenses (Note 5)	61,246	91,990
Operations	69,586	59,654
Miscellaneous	257,618	264,447
Allocation to project costs (Note 10)	(1,719,464)	(1,929,442)
Total	3,519,198	3,865,380
Exchange (gain)/loss	(152,760)	(404,882)
Increase (decrease) in loss allowance (Note 4)	164,634	1,704,801
Total	11,874	1,299,919
Total expenses	11,837,178	14,521,668
Net adjustment for closed projects (Note 14)	(15,434)	(2,514)
Excess of revenues over expenses	2,354,127	(1,431,592)
Other comprehensive income (loss):		
Pension liability adjustments (Note 12)	148,883	(9,097)
Total other comprehensive income (loss)	148,883	(9,097)
Total comprehensive income (loss)	$2,503,010	($1,440,689)

The accompanying notes are integral part of these statements.

ASIAN PRODUCTIVITY ORGANIZATION

STATEMENTS OF CHANGES IN SURPLUS

YEARS ENDED 31 DECEMBER 2018 AND 2017

(US dollars)

	Appropriated for					
	Working capital fund	Contingency fund	Continuing projects	Unappropriated	Accumulated other comprehensive income	Total
2017						
Surplus as of 1 January 2017	$6,000,000	$500,000	$5,517,674	$5,971,638	($201,769)	$17,787,543
Excess of expenses over revenues	-	-	-	(1,431,592)	-	(1,431,592)
Transfer to continuing projects	-	-	(1,119,368)	1,119,368	-	-
Pension liability adjustment (Note 12)	-	-	-	-	(9,097)	(9,097)
Surplus as of 31 December 2017	$6,000,000	$500,000	$4,398,306	$5,659,414	($210,866)	$16,346,854
2018						
Excess of revenues over expenses	-	-	-	2,354,127	-	2,354,127
Transfer to continuing projects	-	-	501,891	(501,891)	-	-
Pension liability adjustment (Note 12)	-	-	-	-	148,883	148,883
Surplus as of 31 December 2018	$6,000,000	$500,000	$4,900,197	$7,511,650	($61,983)	$18,849,864

The accompanying notes are integral part of these statements.

ASIAN PRODUCTIVITY ORGANIZATION

STATEMENTS OF CASH FLOWS

YEARS ENDED 31 DECEMBER 2018 AND 2017

(US dollars)

	2018	2017
Cash Flows from Operating Activities:		
Excess of revenues over expenses	$2,354,127	($1,431,592)
Adjustments:		
Depreciation and amortization	126,642	138,995
Provision for losses on accounts receivable	164,634	1,704,801
Interest income	(48,882)	(32,859)
Exchange variance	(275,827)	(488,724)
Decrease (increase) in receivables from member countries	5,608,333	(7,365,689)
Decrease (increase) in receivables - others	(5,145)	75,859
Decrease (increase) in other current assets	(56,640)	73,559
Decrease (increase) in funds for severance payments	(8,649)	11,963
Disposal (purchase) in property, plant and equipment	(250,395)	(77,278)
Increase (decrease) in accounts payable	148,310	392,355
Increase (decrease) in other current liabilities	(1,697,750)	(221,936)
Increase (decrease) in accrued annual leave	953	39,090
Increase (decrease) in liability for severance payments	(35,257)	26,106
Subtotal	6,024,453	(7,155,349)
Interest received	48,882	32,859
Net cash flow from operating activities	6,073,335	(7,122,490)
Effect of exchange rate changes on cash and cash equivalents	275,827	488,724
Net increase (decrease) in cash and cash equivalents	6,349,162	(6,633,767)
Cash and cash equivalents at beginning of year	21,714,534	28,348,301
Cash and cash equivalents at end of year (Note 3)	$ 28,063,697	$ 21,714,534

The accompanying notes are integral part of these statements.

ASIAN PRODUCTIVITY ORGANIZATION

NOTES TO FINANCIAL STATEMENTS

1. Organization, business, and source of funding

The Asian Productivity Organization (the "Organization" or "APO") is an intergovernmental regional organization established in 1961 by several governments in Asia with its headquarters in Tokyo, Japan, and continues to operate from this location. The Organization is nonpolitical, nonprofit making, and nondiscriminatory.

The objective of the Organization is to increase productivity and thereby accelerate economic development in Asia through mutual cooperation among member countries. To fulfill its objective, the Organization institutes programs for the development of productivity, provides information and advice for productivity improvement, and promotes and disseminates modern productivity skills and techniques in the agriculture, industry, and service sectors.

The Organization membership is open to all Asian and Pacific governments that are members of the United Nations Economic and Social Commission for Asia and the Pacific. From 1 July 1997, the Hong Kong Productivity Council was instructed to cease all APO activities when sovereignty was transferred to the People's Republic of China.

The Organization performs activities in cooperation with national productivity organizations (NPOs) and other international organizations. NPOs in member countries that deal with productivity activities at the national level act as implementing agencies for the Organization's projects and nominate participants from their countries to attend those projects.

The budget of the Organization is composed of the budget covering the program of action of the Organization and staff, administrative, and nonproject expenses. The Governing Body, which is the supreme organ of the Organization, meets once a year to decide on policy matters concerning program and budget, finances, and membership. The sources for the budget are:

a) Annual membership contributions based on gross national income;
b) Special cash grants given by member governments and external assistance from cooperating agencies and institutions;
c) Project implementation grants given by member governments that host projects and other governments and organizations that organize projects jointly with the Organization; and
d) Miscellaneous income such as proceeds from interest income.

2. Significant accounting policies

(1) Basis of preparation of accompanying financial statements

a) Compliance with IFRS
The financial statements of the Organization are prepared based on the Convention and the Financial Regulations established by the APO, which is in line with International Financial Reporting Standards ("IFRS").

b) Historical cost conversion
The financial statements of the Organization are prepared on a historical cost basis, except for certain financial assets and liabilities which are measured at fair value.

c) Changes in accounting policies
The Organization has applied the following standard and amendment for the first time for its annual reporting period commencing 1 January 2018:

- IFRS 9 Financial Instruments

The Organization had to change its accounting policies and make certain retrospective adjustments following the adoption of IFRS 9. The adoption did not have any impact on the amounts recognized in prior periods and is not expected to significantly affect the current or future periods.

d) New standard and interpretation not yet adopted
Certain new accounting standards and interpretations have been published that are not mandatory for 31 December 2018 reporting period and have not been early adopted by the Organization.

Standard	Title	Mandatory application (from fiscal year beginning on or after)	Fiscal year in which the Organization will apply the standard	Summary of new or amended standard
IFRS 16	Leases	1 January 2019	Fiscal year ending 31 December 2019	Amendment of accounting treatment for lease contracts

The effect of application of IFRS 16 on the Organization is currently under assessment and cannot be estimated as of the reporting date.

(2) Receivables

Receivables are recognized initially at fair value and subsequently measured at amortized cost using the effective interest method, less loss allowance.

(3) Property, plant and equipment and intangible assets

Property, plant and equipment and intangible assets consist of the furniture and fixtures, building improvements, structures and equipment which the Organization obtained at the time of relocation. The Organization books on the statements of financial position for the items whose acquisition cost amount is significant.

Depreciation is calculated to write off the cost of items of property, plant and equipment and intangible assets using the straight-line method over their estimated useful lives, and is recognized in profit or loss.

The estimated useful lives of the property, plant and equipment and intangible assets are as follows:

- Structure: 5–8 years
- Equipment: 5–8 years
- Automobile: 6 years
- Software: 5 years
- Others: 5–10 years

Depreciation methods and useful lives are reviewed at each reporting date and adjusted if appropriate.

(4) Fund for severance payments

The fund for severance payments consists of an insurance endowment fund and money market fund and is stated at fair value. The fair values of the fund for severance payments are estimated based on values quoted by financial institutions.
IFRS 7 "Financial Instruments—Disclosures" defines fair value and establishes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The three levels of the fair value hierarchy are as follows:
Level 1: Quoted prices (unadjusted) in active markets for identical assets or liabilities
Level 2: Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly
Level 3: Unobservable inputs for the asset or liability
The insurance endowment fund held by the Organization is classified into Level 2 assets.

(5) Liability for severance payments

Staff members terminating their employment with the Organization are entitled, under most circumstances, to severance payments based upon the monthly basic pay at the time of termination of employment and years of service. The cost of the severance payments is determined using the Projected Unit Credit Method, with actuarial valuations being carried out at the end of each reporting period. Remeasurements of the Organization's defined benefit obligation, which comprise actuarial gains and losses are recognized immediately in other comprehensive income.

(6) Accrued annual leave

Based on Rule 5.01 of APO Staff Regulation V, annual leave is accumulated up to 90 days, which does not expire until leaving the Organization. In 2018, the Organization recorded accrued annual leave of 68 days (68 days in 2017) for staff members who had annual leave of more than 68 days as a liability, since the unused accrued annual leave up to 60 days is paid by a sum of money equivalent to their salary for the period of the accrued annual leave upon separation from the Organization, and in consideration of the possible utilization of unused accrued annual leave in excess of 60 days upon separation.

(7) Revenues

Major sources of revenues of the Organization are membership contributions and special cash grants, among others. Membership contributions, which are approved by the Session of the Governing Body (GBM), are recognized as revenues on 1 January of each fiscal year. Special cash grants are recognized as revenues over the period necessary to match them with the costs that they are intended to compensate.

(8) Appropriation for working capital fund

Based on Regulation 7 of the Financial Regulations, a working capital fund is established from which advances may be made to finance budgetary appropriations to the extent that this is necessary in anticipation of pledged but unpaid contributions.
Based on the decision in the 54th GBM, the Organization has set up a contingency fund amounting to $500,000.

(9) Appropriation for continuing projects

The outstanding balance of commitments for continuing projects at year-end, which has been funded mainly from membership contributions and special cash grants, is appropriated for continuing projects. The balance for continuing projects funded from special cash grants includes unspent balances of special cash grants, which are balances generated from completion of some projects prior to the year-end being reallocated for the following year's projects in the same programs.

(10) Translation of foreign currencies

For the purpose of the financial statements, the results and financial position of the Organization are expressed in US dollars, which is the functional currency of the Organization and presentation currency for the financial statements. The Organization's books of account are maintained both in Japanese yen and US dollars. Assets and liabilities denominated in Japanese yen are translated into US dollars at the appropriate exchange rate on the statements of financial position date. For revenue and expense accounts, average rates for the prior month of the transactions are applied. Revenue and expense accounts of other currencies except Japanese yen are translated into US dollars at the rates prevailing at the time of the transactions. The resulting unrealized gain/loss from translation is included in exchange gain/loss in the statement of revenues or expenses and other comprehensive income.

(11) Taxes

The Organization is exempt from direct taxes on assets or income and from customs duties.

(12) Use of estimates

The Organization makes estimates and assumptions to prepare the financial statements. Such estimates and assumptions affect the reported amounts of assets, liabilities and expenses. Actual results could differ from those estimates.

3. Cash and cash equivalents

Cash and cash equivalents include all highly liquid investments, generally with original maturities of three months or less, which are readily convertible to known amounts of cash and are so near maturity that they present insignificant risk of changes in value because of changes in interest rates. Money market funds, which are treated as cash and cash equivalents except for specific use of the funds for severance payments, are carried at cost plus accrued interest.

Cash and cash equivalents	2018	2017
Current Deposits	$25,931,563	$19,620,124
Time Deposits	2,079,222	2,042,218
MMF	52,912	52,192
Total	$28,063,697	$21,714,534

4. Receivables of membership contributions, participating country expenses, and others

Receivables	2018	2017
Membership contributions	$4,575,512	$10,183,844
Participating country expenses	5,918	4,470
Others	4,064	368
Loss allowance	(2,119,876)	(1,955,242)
	$2,465,618	$8,233,440

Receivables represent uncollected revenue from membership contributions, participating country expenses, and others. Membership contributions approved by the GBM are to be paid to the Organization from each member as soon as possible after the receipt of such advice according to Regulation 6 of the Financial Regulations.

The Organization has receivables that are subject to the expected credit loss model and applies the IFRS 9 simplified approach to measuring expected credit loss which uses lifetime expected loss allowance for the receivables.

31 December 2018	Current	More than 1 year overdue	Total
Expected loss rate	0%	100%	
Gross carrying amount - receivables	$2,465,618	$2,119,876	$4,585,494
Loss allowance	-	$2,119,876	$2,119,876

1 January 2018	Current	More than 1 year overdue	Total
Expected loss rate	0%	100%	
Gross carrying amount - receivables	$8,233,440	$1,955,242	$10,188,682
Loss allowance	-	$1,955,242	$1,955,242

The closing loss allowance for receivables as of 31 December 2018 reconcile to the opening loss allowance as follows:

	2018	2017
31 December - calculated under IAS 39	$1,955,242	$250,441
Amount restated through opening retained earnings	-	-
Opening loss allowance as of 1 January 2018 - calculated under IFRS 9	1,955,242	250,441
Increase in loss allowance recognized in profit or loss during the year	527,302	1,706,107
Unused amount reversed	(362,668)	(1,306)
31 December	$2,119,876	$1,955,242

Loss allowance is maintained for potential credit losses based upon the assessment of the receivables aging, taking into consideration any circumstances regarding member's inability to meet its financial obligations. The Organization's exposure to credit risk is influenced mainly by the individual characteristics of each member country. The receivables overdue for one year and longer amounts to $2,119,876, which includes the receivable of $954,847 from Iran for membership contributions of 2016 and 2017, and a long-outstanding receivable of $248,125 from Hong Kong since 31 December 1999 after the transfer of sovereignty. The maximum exposure to credit risk is represented by the carrying amount of receivables.

5. Property, plant and equipment and intangible assets

Movements in property, plant and equipment and intangible assets for the year ended 31 December 2018 were as follows:

	Structure	Equipment	Automobile	Others	Total	Software
Cost						
On 1 January 2018	$349,440	$180,840	$72,935	$93,175	$696,391	$152,420
Additions	-	-	-	96,720	96,720	153,675
Disposals	-	-	-	-	-	-
On 31 December 2018	349,440	180,840	72,935	189,895	793,111	306,096
Accumulated depreciation						
On 1 January 2018	245,438	124,629	47,611	50,873	468,551	48,427
Depreciation	33,213	22,240	12,156	18,865	86,475	40,167
Disposals	-	-	-	-	-	-
On 31 December 2018	278,651	146,869	59,766	69,738	555,026	88,594
Net Book value						
On 1 January 2018	104,003	56,211	25,325	42,301	227,840	103,993
On 31 December 2018	$70,789	$33,971	$13,169	$120,156	$238,085	$217,502

Movements in property, plant and equipment and intangible assets for the year ended 31 December 2017 were as follows:

	Structure	Equipment	Automobile	Others	Total	Software
Cost						
On 1 January 2017	$349,440	$178,227	$72,935	$87,653	$688,256	$116,776
Additions	-	2,613	-	5,522	8,134	35,644
Disposals	-	-	-	-	-	-
On 31 December 2017	349,440	180,840	72,935	93,175	696,391	152,420
Accumulated depreciation						
On 1 January 2017	194,650	91,564	35,455	37,360	359,030	18,953
Depreciation	50,788	33,065	12,156	13,513	109,521	29,474
Disposals	-	-	-	-	-	-
On 31 December 2017	245,438	124,629	47,611	50,873	468,551	48,427
Net Book value						
On 1 January 2017	154,790	86,663	37,481	50,293	329,227	97,823
On 31 December 2017	$104,003	$56,211	$25,325	$42,301	$227,840	$103,993

6. Accrued annual leave

Movements in accrued annual leave for the year ended 31 December 2018 were as follows:

On 1 January 2018	$632,444
Additional accrual during the year	113,451
Payments made during the year	(68,013)
Reclassified to Payable	(56,111)
Foreign exchange movements	11,626
On 31 December 2018	$633,397

Movements in accrued annual leave for the year ended 31 December 2017 were as follows:

On 1 January 2017	$593,353
Additional accrual during the year	120,108
Payments made during the year	(55,789)
Reclassified to Payable	(45,608)
Foreign exchange movements	20,380
On 31 December 2017	$632,444

7. Membership contributions

The apportionment of total membership contributions for 2017/2018 was based on the long-term permanent membership contribution formula based on the six-year average GNI as approved by the 58th GBM held in April 2016. There are no unfulfilled conditions or other contingencies attaching to these contributions.

8. Special cash grants

Special cash grants are used for specific programs and other administrative expenses for which member governments are encouraged to cooperate with the APO in addition to their membership contributions. There are no unfulfilled conditions or other contingencies attaching to these grants. The Organization will recognize special cash grants received from Government of Japan as revenues over the period necessary to match them with the costs that they are intended to compensate. Unrecognized revenue balances for the year ended 31 December 2018 and 2017 were $7,501,151 and $8,860,101, respectively and were included in other current liabilities.

The detailed amounts of the special cash grants for the years ended 31 December 2018 and 2017 were as follows:

Purpose of grants	2018	2017
Project costs	$1,901,864	$839,110
	$1,901,864	$839,110

9. Mandatory contribution for rent

The 54th GBM decided that the cost of the annual rental for the APO Secretariat Office from 2013 onward shall be borne by the host government, the Government of Japan. This amount, which shall not exceed JPY 26 million, is to be considered as a mandatory contribution of the host government, distinct and separate from its annual membership contribution to the APO.

10. Allocation to project costs

The APO allocated administration expenses which are directly or indirectly related to project activities to project costs.

11. Fund for severance payments

The balances of the fund for severance payments represent the amounts for the severance payments resulting from employees' termination of employment and comprise the following:

	2018	2017
Insurance endowment fund	$270,067	$261,418
	$270,067	$261,418
Time deposit	$2,079,222	$2,042,218

The fund for severance payments is exposed to a variety of financial risks, including the effects of change in debt and equity market prices, foreign currency exchange rates, and interest rates. The Organization has a policy of considering economic conditions at the time of the contract and consistently monitors the effectiveness of its selection. In 2001, the APO purchased three types of insurance for each employee, of which the beneficiary is the APO. In addition, the Organization has a time deposit in Japanese yen and the purpose of the insurance and the time deposit was to pay for the severance payments. Time deposit account was classified in cash and cash equivalents as of the statement of financial position date. Net gains on the fund for severance payments for the years ended 31 December 2018 and 2017 were $3,869 and $3,827, respectively, and were included in miscellaneous revenues.

12. Liability for severance payments

For the purposes of the actuarial valuations, the Organization used the discount rate of 0.30% per annum for the year ended 31 December 2018 and 0.35% for the year ended 31 December 2017. The expected rate of salary increases was applied in determining the projected benefit obligation and the expected rate was compiled from data of employee's basis salary.

Amounts recognized in profit or loss in respect of the defined benefit plan were as follows:

	2018	2017
Current service cost	$249,510	$390,640
Interest on obligation	8,370	9,270
Net periodic pension cost	$257,879	$399,911

Movements in the present value of the defined benefit obligation in the current period and the amount included in the statements of financial positions arising from the Organization's obligation in respect of its defined benefit plan were as follows:

	2018	2017
Opening defined benefit obligation	$2,517,221	$2,482,018
Current service cost	249,510	390,640
Interest cost	8,370	9,270
Remeasurements (actual gain/loss)	(148,883)	9,097
Benefits paid	(328,959)	(453,715)
Foreign currency translation adjustments	35,822	79,910
Closing defined benefit obligation	$2,333,081	$2,517,221

The impact of the value of the defined benefit obligation of a reasonably possible change to the discount rate of 0.35% per annum for the year ended 31 December 2018, holding all other assumption constant, is presented in the decrease of $6,893.
The impact of the value of the defined benefit obligation of a reasonably possible change to the discount rate of 0.38% per annum for the year ended 31 December 2017, holding all other assumption constant, is presented in the decrease of $4,676.

13. Operating leases

The Organization leases office space under a cancelable lease agreement. The contract can be terminated at any time by either party with six-month advance notice in writing. No rental deposit for the lease has been paid to the building owner. Rental expenses under operating leases for the years ended 31 December 2018 and 2017 were $230,770 and $226,027 respectively.

14. Net adjustment for closed projects

Adjusted revenues and expenses attributed to projects that have already been closed prior to this financial year have been recorded in account of revenues and expenses retroactive year.

	2018	2017
Revenues	-	-
Expenses	$15,434	$2,514
Net adjustment for closed projects (loss)	$15,434	$2,514

15. Unappropriated surplus

The unappropriated surplus of $7,511,650 as of 31 December 2018 will be disposed of as follows:

Surplus balance as of 31 December 2018	$7,511,650
To be disposed of in 2019 as follows:	
Funding various 2019 projects	2,099,228
Surplus balance	$5,412,422

The 60th session of the Governing Body approved $2,099,228 by using unappropriated surplus to fund the increase for the 2019 budget.

16. Related party transactions

Key management personnel compensations for 2018 and 2017 were as follows:

	2018	2017
Short-term employee benefits	$212,365	$209,675
Annual leave	21,670	19,412
	$234,035	$229,087

LIST OF NPOs (As of 30 May 2019)

BANGLADESH

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Phone: 855-12-814150 | Fax: 855-23-222243 | Email: npccambodia@gmail.com; hengeang_npcc@yahoo.com

REPUBLIC OF CHINA

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FIJI

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Phone: 679-338-1044 Ext. 4501/9984668 | Fax: 679-331-3185 | Email: dntpc@fnu.ac.fj | Website: www.fnu.ac.fj/ntpc

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Hong Kong Productivity Council
HKPC Building 78, Tat Chee Avenue, Yau Yat Chuen, Kowloon, Hong Kong
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INDIA

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INDONESIA

Directorate General of Training and Productivity, Ministry of Manpower
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Phone: 82-2-724-1180/4 | Fax: 82-2-737-9140 | Website: www.kpc.or.kr

LAO PDR

Department of Small and Medium Enterprise Promotion (DOSMEP), Lao National Productivity Organization (LNPO), Ministry of Industry and Commerce
Nongbone Road, 01005 Banfai, Saysettha District, Vientiane Capital, Lao PDR, P.O. Box No.474
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MALAYSIA

Malaysia Productivity Corporation (MPC)
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Website: www.npedc.nepal.org

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PHILIPPINES

Development Academy of the Philippines (DAP)
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SRI LANKA

National Productivity Secretariat (NPS), Ministry of Public Administration and Disaster Management

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Phone: 94-11-2186026 | Fax: 94-11-2186025 | Email: nposlanka@gmail.com; krishanthinposl@gmail.com; erandinposl@gmail.com | Website: http://productivity.lk/

THAILAND

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Website: http://tcvn.gov.vn/

ABBREVIATIONS AND ACRONYMS USED

AEPM	Asian Economy and Productivity Map
APO-AB	APO Accreditation Body
ASEAN	Association of Southeast Asian Nations
B&B	Biofertilizers and biopesticides
B2B	Business to business
BCBN	Bilateral Cooperation Between NPOs
BE	Business excellence
BoP	Base of the pyramid
CEA	Controlled-environment agriculture
CIRDAP	Centre on Integrated Rural Development for Asia and the Pacific
COE	Center of Excellence
CPC	China Productivity Center
DAP	Development Academy of the Philippines
DON	Development of NPOs
DOSMEP	Department of Small and Medium Enterprise Promotion
DPP	Development of Productivity Practitioners
EMS	Environmental Management System
ERP	Enterprise resource planning
EU	European Union
FLFP	Female labor force participation
FSMS	Food safety management system
FSQ	Food safety and quality
FTPI	Thailand Productivity Institute
FVC	Food value chain
GAP	Good Agricultural Practices
GBM	Governing Body Meeting
GHP	Good Handling Practices

GMP	Good Manufacturing Practices
GP	Green Productivity
HACCP	Hazard and Critical Control Point
ICT	Information and communication technology
IMS	Integrated management system
I-OSM	Individual-country observational study mission
IoT	Internet of Things
IRRI	International Rice Research Institute
ISO	International Standardization Organization
IT	Information technology
JPC	Japan Productivity Center
KM	Knowledge management
KPC	Korea Productivity Center
LDC	Least developed country
LNPO	Lao National Productivity Organization
MAFF	Ministry of Agriculture, Forestry and Fisheries (Japan)
M&E	Monitoring and evaluation
MFCA	Material flow cost accounting
MOU	Memorandum of understanding
MPC	Malaysia Productivity Corporation
MPO	Mongolian Productivity Organization
NIPO	National Iranian Productivity Organization
NPC	National Productivity Council
NPCC	National Productivity Centre of Cambodia
NPEDC	National Productivity and Economic Development Centre
NPO	National productivity organization
	National Productivity Organisation (Bangladesh)
	National Productivity Organization (Pakistan)
NPS	National Productivity Secretariat
NTPC	National Training & Productivity Centre, Fiji National University
OECD	Organisation for Economic Co-operation and Development

OHSAS	Occupational Health and Safety System
PAPA	Pan African Productivity Association
PDB	Productivity Database
PPP	Public–private partnership
PSP	Public-sector productivity
SDGs	Sustainable Development Goals
SNP	Specific National Program
SPS	Sustainable Productivity Summit
SPW	Strategic Planning Workshop
STI	Science, technology, and innovation
STIP	Science, technology, and innovation policy
TES	Technical Expert Services
TFP	Total factor productivity
TPM	Total productive maintenance
TQM	Total quality management
UA	Urban agriculture
UN	United Nations
VC	Videoconference
VNPI	Vietnam National Productivity Institute
WSM	Workshop Meeting of Heads of NPOs

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