

**Policy Development  
for Green  
Productivity  
Promotion:  
Evidence from Asian  
Productivity  
Organization  
Member Economies**



First published in Japan  
by Asian Productivity Organization  
Leaf Square Hongo Building 2F  
1-24-1 Hongo, Bunkyo-ku  
Tokyo 113-0033, Japan  
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## **ACKNOWLEDGEMENT**

The APO is grateful to Dr. Peter Noel King, Senior Policy Advisor, Institute for Global Environmental Strategies, who was responsible for this report. The data of this report were based on the country papers written under the APO Workshop on Workshop on Policy Development for Green Productivity Promotion conducted from 10 to 13 March 2015.

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# **CONTENTS**

## **ACKNOWLEDGEMENT**

<b>OVERVIEW</b>	<b>1</b>
<b>INTRODUCTION</b>	<b>6</b>
<b>COUNTRY SITUATIONS</b>	<b>6</b>
<b>SYNTHESIS</b>	<b>19</b>
<b>CONCLUSIONS AND RECOMMENDATIONS</b>	<b>29</b>
<b>ANNEX 1 - WORKSHOP AGENDA</b>	<b>34</b>
<b>ANNEX 2 - LIST OF PARTICIPANTS</b>	<b>40</b>

## **OVERVIEW**

A workshop was organized in the Republic of China (ROC) (10–13 March 2015) by the Asian Productivity Organization (APO)<sup>1</sup> on “Policy Development for Green Productivity Promotion” with 21 participants from the ministries, academia, and regional and local policymaking bodies of 15 member economies. It was hosted by the China Productivity Center (CPC), the National Productivity Organization (NPO) counterpart of the APO.

The purpose of the workshop was (i) to identify areas in the selected Green Productivity models of resource recycling, green energy, green factories, and eco-agricultural innovation where suitable policies can be promoted and adopted; and (ii) to share achievements of existing public policies and programs to promote best practices for resource recycling, green energy, green factories, and eco-agricultural innovation of APO’s Center of Excellence on Green Productivity (COE on GP), under the auspice of CPC.

This working paper contains a synthesis of the findings of the workshop and draws some conclusions for further work by APO in the area of Green Productivity in the region. The four areas of emphasis (resource recycling, green energy, green factories, and eco-agricultural innovation) were initially addressed by the two resource persons for the workshop.

Dr. Peter King, the author and the senior policy advisor at the Institute for Global Environmental Strategies (IGES) opened with an overview of the state of the environment in the Asia-Pacific region and its implications for sustainable development. It was pointed out that while the region holds 900 million of the world’s poor, it is also

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<sup>1</sup> The Asian Productivity Organization (APO) is the sole nonprofit international organization in the Asia-Pacific region devoted to productivity enhancement. Established in 1961 as a regional intergovernmental organization, the APO contributes to the sustainable socioeconomic development of the Asia-Pacific through productivity enhancement. The current membership comprises 20 economies. Three strategic directions guide the APO: strengthen NPOs and promote the development of SMEs and communities, catalyze innovation-led productivity growth, and promote Green Productivity.

home to an emerging middle class of 1.9 billion people, many of whom are moving into the mega-cities of Asia.

The presentation outlined the drivers-pressures-state-impacts-responses (DPSIR) model of analyzing the state of the environment, pointing out that understanding effective policy responses requires a prior assessment of the underlying drivers. Numerous examples of policy responses to the key environmental issues of climate change, biodiversity loss, freshwater quality and quantity, chemicals and waste, and environmental governance were discussed.

Recent assessments of these issues, such as the *Intergovernmental Panel on Climate Change Fifth Assessment Report* in 2014, the *Small Island Developing States Outlook* in 2015, and the *Post-2015 Disaster Risk Reduction Strategy* approved at the Sendai Third World Conference on Disaster Risk Reduction in 2015 were explained. The presentation also addressed the emerging Sustainable Development Goals, the forthcoming summit on Financing for Development, and the Conference of the Parties on Climate Change, which collectively will highlight advances in sustainable development in 2015.

Liana Bratasida, former Deputy Minister of Environment in Indonesia, outlined the connection between Green Productivity and sustainable development. Regardless of what it is called (“green growth,” “green economy,” or “Green Productivity”), the outcome is likely to be higher growth than business as usual, but we also need to ensure that growth is fairly distributed. A new development paradigm is needed that simultaneously addresses economic performance, environmental sustainability, and social inclusiveness.

Resource-efficient and cleaner production addresses the three dimensions of sustainable development, through production efficiency, environmental management, and human development. Green industry is the sector strategy for realizing green growth, green economy, and green jobs in the manufacturing and related sectors. The concepts of resource decoupling and impact decoupling as essential pathways towards sustainable consumption and production, or doing more and better with less, were highlighted. The presentation likewise conveyed that policy makers need guidance on how to internalize and mainstream Green Productivity into existing planning processes and actions. Virtually

all of society's actions need to be viewed through a lens of Green Productivity, from the way we design products to the way we manage waste. She recommended the need for enhanced cooperation among APO member countries, along with technology transfer and capacity building through strong partnerships.

A referral was made to the need to enhance the capacity of policymakers in developing countries to “green” national development by focusing on Green Productivity, and emphasized that sustainability is essentially political and about empowerment, rather than merely for the surest experts or the loudest voices. To convince decision makers, it is necessary to create trust and credibility, making sure that all data sources are truly credible. Capacity-building and awareness-raising efforts need to identify champions, carefully select their audience, set clear objectives, craft the message, and consider the best media and feedback loops. Themes and clusters can serve knowledge management strategies, making the complexity of sustainable development easier to grasp.

One of the recommendations emphasized was the need to reach out beyond environmental ministries, as well as other sectors, to leverage multi-sectoral and multi-stakeholder strengths in ensuring effective communication and technical assessments. At the local level, empower and partner with community leaders, and use new information and communication technologies to broaden the reach of public participation. The author outlined the global situation of resource recycling, eco-agriculture, green factories, and green energy, with the implications for national policy development.

In relation to resource recycling, he noted that waste generation is increasing in Asia, with projections suggesting that Asia could be responsible for 31.4% of global waste by 2050, increasing from 24.2% in 2000. Domestic material consumption in Asia could increase eightfold under a business-as-usual scenario. In 2013, 30 countries adopted the *Ha Noi 3R Declaration on Sustainable 3R Goals for Asia and the Pacific*, but with some exceptions, implementation remains weak. Japan was cited as one of the front-runners with regards to recycling and a sound materials cycle policy, with a wide range of synergistic laws and policies.

Regarding eco-agriculture, it was suggested that much of the projected increase in cropland to meet the food needs of an expanding global population will be at the expense of forest cover and associated biodiversity. A reference was made to the existing serious land degradation affecting 550 million ha of Asia, and the likely future contribution of climate change. It was also noted that of the nine planetary boundaries, the four that have been exceeded (nitrogen and phosphorus flows, land system change, biosphere integrity, and climate change) all have strong agricultural drivers. Eco-agriculture is not a new concept and goes by many names, each with common elements. Asia has 3.2 million ha of organic agriculture, but this only accounts for 0.2% of land area.

Industrial pollution has been a common aspect of industrial development in Asia. Despite end-of-pipe treatment and issuance of air and water quality standards in most countries, compliance and enforcement remain weak in developing Asian countries. Green factories stop such pollution at the design stage and through process improvements. Energy and material flow audits can identify points of waste, as well as inefficient energy and materials use. Several countries in Asia are promoting green factories, often using rating systems and awards to trigger voluntary improvement.



*Resource persons and participants during a site visit to a family-owned Yu Pu Organic Farm in Taoyuan province, ROC.*

The progress of 3R policies in the PR China, Malaysia, the Philippines, the Republic of Korea (ROK), Thailand, Vietnam, and the ROC was outlined. It was concluded that Asia is making progress in 3R laws, regulations, policies, and incentives, but compliance and enforcement remain weak, while there is still massive pressure for rapid economic growth. The new challenge is “a paradigm shift which is needed so that all sectoral policies and investment decisions start from the view of how ‘nature’ would handle this issue.”

The resource persons were followed by country presentations, culminating in group activities designed to prepare individual action plans to be implemented on return to the participants’ home countries. The final agenda for this workshop is attached as Annex 1.

## **INTRODUCTION**

A workshop was organized in the ROC (10–13 March 2015) by the Asian Productivity Organization (APO) on “Policy Development for Green Productivity Promotion” with 21 participants from the ministries, academia, and regional and local policymaking bodies of 15 member economies (see Annex 2 for the list of participating countries).

The purpose of the workshop was (i) to identify areas in the selected Green Productivity models of resource recycling, green energy, green factories, and eco-agricultural innovation where suitable policies could be promoted and adopted, and (ii) to share the achievements of existing public policies and programs to promote best practices for resource recycling, green energy, green factories, and eco-agricultural innovation of the Center of Excellence on Green productivity (COE on GP) of the APO. The COE on GP pays special attention to building up the capacities of local stakeholders to ensure sustainable approaches to reducing the environmental impacts of operations, and enhancing quality of life.

The workshop was organized to implement one of the recommendations of research conducted by APO in 2013 to assess the adoption of Green Productivity practices in member countries in the agriculture, industry, and service sectors, and to give full support

to the productivity movement in terms of relevant policy and public programs. The agenda for the workshop is attached as Annex 1.

This project report contains a synthesis of the findings of the workshop and draws some conclusions for further work by APO in the area of Green Productivity.

## **COUNTRY SITUATIONS**

### **Cambodia**

In recognition of the importance of the primary sector in Cambodia and the likely threats from climate change, the Ministry of Agriculture, Forestry and Fisheries (MAFF) has issued specific goals in the Cambodian Climate Change Strategy Plan to reduce the negative impacts on agriculture, animal production, forestry, and fisheries. The Action Plan for MAFF on Climate Change (2014–2018) stresses agriculture, as well as agro-industry, rubber, livestock, forests, fisheries, and cross-cutting issues.

Cambodia also has a Low Carbon Development Strategy toward 2050, which includes four policy areas: green environment; harmonization of green economy, society, and culture; blue economy (marine and coastal zone); and eco-villages. A national bio-digester program plans to establish 20,000 plants to convert organic waste to energy.

In addition, Cambodia's National Green Growth Roadmap covers water resource management and sanitation, food security and non-chemical products, sustainable land use, renewable energy and energy efficiency, access to information and knowledge, better mobility, and access to finance and investment. The National Policy on Green Growth was approved in 2013. The National Strategic Plan on Green Growth (2013–2030) focuses on green investment and green jobs, green economic management, blue economic development, green environment and natural resources management (including environmental quality improvement), human resource development and green education, green technology, promotion of a green social safety net, protection of the green cultural heritage and national identity, and good governance.

## **ROC**

Prof. Allen Hu of the National Taipei University of Technology discussed the role of awards in promoting Green Productivity. He said that corporate sustainability can help to fill the gap between business as usual and sustainable development. Dr. Hu said that the new generation of Green Productivity “should follow the practices of contemporary corporate sustainability” with emphasis on promoting green and sustainable innovation, to create green and sustainable competitiveness. He said the Center of Excellence on Green Productivity (COE on GP) has been working on developing a draft Green Productivity award framework, which was recently recognized by the APO. He suggested that two different awards be given: national Green Productivity best practice awards (one per country) and COE on GP Green Productivity excellence awards (up to 10 per country). The first award selection will be conducted by selection committee consisting of eight to ten members in 2016.

Eugene Lin introduced the APO COE on GP, which was established in the ROC in 2013, to share the ROC’s experience on green growth with other member countries, to promote regional innovation and sustainable development, and to enhance Green Productivity and competitiveness jointly with member countries. The COE on GP aims to become the leading organization for boosting inclusive development on Green Productivity. Its five main goals are building a shared vision, enhancing the capacity of the ROC, disseminating knowledge and technologies, developing capabilities of APO member countries, and conducting research to underpin these activities. The four models being used to provide technical services to members are the same as the four themes of the workshop: resource recycling, green energy, green factories, and eco-agriculture.

Dr. Lian-Tung Chen of the Industrial Development Bureau of the Ministry of Economic Affairs introduced the green factory labeling system in the ROC, which combines the green building label and cleaner production certificate. It is expected to enhance eco-friendly industries and products, and to contribute to a low-carbon society. The Green Building Label was launched in 1999 and is issued by the Ministry of the Interior.

Dinah Tai of the Foundation of Taiwan Industry Service introduced support to Indonesia's promotion of green factories, as part of the technical services provided by the APO COE on GP. The technical services cover a needs survey, provision of experts, and technology transfer. The companies assisted include pulp and paper mills, as well as a textile factory.

Dr. Peng Hwang, Director of the Hualien District Agricultural Research and Extension Station, outlined the ROC's approach to eco-agriculture. He noted that the ROC is actively engaged in green agriculture exchanges with other countries, such as Thailand. He introduced several innovative organic agriculture production measures in rice cultivation and the organic leisure industry.

Dr. Gwo-Chen Li provided information on the development of bio-materials for increasing green agricultural productivity in the ROC. This research involves breeding crop varieties suitable for organic agriculture, biological pesticides, biological fertilizer, and biological soil modifiers.

Shou-Chien Lee discussed solid waste recycling in the ROC, covering the extended producers' responsibility law, four-in-one recycling program, recycling fund, financing, and auditing and certification. Recyclable waste in the ROC includes paper, steel, aluminum, glass, plastic, computer disks, cell phones and chargers, and regulated recyclable waste. Regulated recyclable waste includes containers, batteries, vehicles, tires, IT equipment, home appliances, and lighting. In the ROC, producers pay a recycling fee to the Environment Protection Administration of Taiwan (EPAT), and then EPAT uses those fees to subsidize collection and recycling. Recyclable materials are clearly marked with a recycling label and designated retailers install the necessary collection facilities to take back regulated recyclable waste. This four-in-one recycling program is an integrated system involving the community, recyclers and collectors, local government, and the recycling fund. Recycling rates vary from 40% for general batteries to 100% for lighting.

Jin-Sheng Su of the Bureau of Energy of the Ministry of Economic Affairs outlined green energy promotion policies and accomplishments in the ROC. The energy policy framework consists of three principles (safety, efficiency, and cleanness), six policy guidelines (total

quantity management and energy efficiency improvement on the demand side, diversification and structure improvement on the supply side, and balanced supply and demand planning and system efficiency improvement on the system side), and two supporting measures (emergency response and risk management, and low carbon governance and supporting measures). He gave an overview of the Renewable Energy Act 2009, which targets increasing capacity by 6.5 GW to 10 GW, and which is now believed to reach 13.75 GW by 2030, mostly through solar photovoltaics. The key incentive driving the rapid increase in renewable energy is the feed-in tariff, which will apply for 20 years. Significant government plans include the million solar rooftop photovoltaics project, the thousand wind turbines project, small-scale hydropower development, biogas and bio-fuels, and geothermal and ocean energy.

Tom Wu, Principal Engineer of the Industrial Technology Research Institute, outlined the technical services provided and available to APO members. Support to the Philippines and Lao PDR was described, along with an open invitation to other APO member countries to disseminate green energy technology, encourage green energy policy learning, and promote green energy market opportunities.

## **Fiji**

Fiji issued its Green Growth Framework in 2014 to accelerate integrated and inclusive sustainable development. The guiding principles of the Framework include improving resource productivity, environmental audits, structural reform to encourage fair competition and efficiency, and incentivizing investment in efficient use of natural resources.

The National Training & Productivity Centre (NTPC) promotes and provides training and consultancy in Green Productivity. The initial Green Productivity program commenced with managing waste from the Fiji Sugar Corporation's factories. Other notable projects included recycling lead at Pacific Battery Limited and recycling industrial oil for use in the furnaces at Fletcher Pacific Steel Limited.

The NTPC also assists with energy audits, waste management, bio-fuel, recycling paper, scrap metal, water and solid waste, agro-ecological methods in the farm sector, and the introduction of efficient technologies (including green information technologies).

## **India**

The Indian case example came from the mountainous region of Ladakh, which has addressed the issue of sustainable development through the Vision Statement 2025, released in 2005. The Vision Statement is intended to incorporate development planning through public participation, and where biodiversity conservation and preservation of culture would be integral to development.

One example of this approach is the Eco-Tourism and Rural Livelihood Improvement Initiative. As the number of tourists each year (150,000) equals the total population of the Leh district of Ladakh, an integral part of the eco-tourism sector has been the promotion of recycling, renewable energy, energy efficiency, and water conservation, and the creation of economic opportunities for the local population.

Another example is the Ladakh Renewable Energy Initiative, a USD78 million project funded by the Government of India in 2010, and implemented by the Ladakh Renewable Energy Development Agency. The impact on the lives of people in Ladakh is already being felt, with reliable energy being provided in over 40 villages that previously were either un-electrified or had extremely unreliable sources of power, with solar water heaters being used extensively for water heating and space heating purposes, greenhouses providing vegetables in winter months, and solar cookers reducing the dependency on LPG and biomass for fuel. The construction of 2,500 domestic greenhouses and 250 commercial greenhouses has seen increased crop production, even during the winter months, with an additional 3,500 tons per year of organic vegetables produced.

Ladakh is also promoting green small-scale and cottage industries to produce handicrafts and handlooms, as well as in horticulture and livestock, based on local resources such as pashmina wool, apricots, sea buckthorn berries, and the skills of traditional craftspeople. Ladakh has also traditionally relied on organic farming, which

is seen as a competitive niche industry for the region. Organic products include dried apricots, apricot nuts, roasted barley, walnuts, black pepper, apricot papad, tea, apricot oil, cumin, and apricot jams.

## **Indonesia**

Industry is the biggest contributor to gross domestic product (GDP) in Indonesia, with over 3.4 million companies, the majority micro- and small-scale, employing a total of 14.8 million people. These companies contribute 62% of Indonesia's total national exports. Therefore, Green Productivity in this sector is a national priority to maintain competitiveness in a globalized market. Indonesia has pursued green industry development since 1984, formalizing the policy with Industrial Act No. 3/2014.

Green industry is mandated by the 2014 Act, which emphasizes (i) optimizing resource use, (ii) effectiveness and efficiency of production processes, and (iii) sustainable industrial development. The Ministry of Industry is currently formulating green industry regulations and a Ministerial Decree on green industry standards, certification body, and accreditation body.

Green industry standards have been prepared for the cement, textile, ceramics, steel, and pulp and paper industries. Alternative eco-friendly materials have been identified for textiles, ceramics, and various food items. Cleaner production and energy conservation training has been provided for both industry practitioners and government officials. Energy audits and conservation programs have been initiated at 35 steel companies and 15 pulp and paper companies. The Ministry of Industry has set up technical units supporting green industry implementation, with 11 industrial research centers.

Indonesia's Green Industry Award assesses production processes, waste and emissions management, and company management. Since its start in 2010, 256 companies have received the Green Industry Award as of 2014. Significant efficiency gains have been achieved through this program in raw material usage, raw material substitution, energy efficiency, alternative energy, and water consumption reduction.

## **Islamic Republic of Iran**

Although the Islamic Republic of Iran (IR Iran) is one of the world's greatest producers of fossil fuels, its policy on Reform of Energy Consumption states that energy intensity of the economy should be reduced by 33% by 2016, and by 50% by 2021, compared to the base year of 2011. Policy instruments to reduce energy consumption are included in the National Economic, Social and Cultural Development Plan (2001–2015), General Policies of Energy Consumption Reform (2011), Energy Consumption Reform Act (2011), and the Targeted Subsidies Reform Act (2010). Implementation of these policies, however, remains the main challenge to achieving these objectives.

## **ROK**

The ROK has pursued eco-design as a positive approach to addressing environmental problems caused by mass consumption and production. The Ministry of Environment amended the Environmental Technology Support and Development Act in 2000, laying out the legal basis for eco-design. Eco-design guidelines and software have been circulated to all industries to raise awareness of eco-design and to improve the competitive edge of Korean industry. The Ministry of Environment also promoted a project to develop eco-design software for computers, vacuum cleaners, kitchen furniture, and tires.

The Ministry of Commerce, Industry and Energy has promoted eco-design as part of the Cleaner Production Technology Development Program, which includes sustainable product design, cleaner production process technology development, non-toxic and environment-friendly material development technology, and recycling technology. A life cycle inventory database is being maintained and applied to the Type III Environmental Label, Environmental Declarations of Products, and Certification of Green Buildings. To nurture Green Productivity, the Government will subsidize 50–75% of the costs of small and medium-sized enterprises (SMEs) willing to implement clean production and environment-friendly management.

## **Lao PDR**

Lao PDR aspires to graduate from being a least developed country by 2020. To achieve this, the Government has formulated a wide array of policies, strategies, legislation and

regulations related to green industry. Relevant laws include the Manufacturing Industry Law (2013) and Environment Protection Law 2012, among others. Relevant strategies include the National Socio-economic Development Strategy (2011–2020), Strategic Framework for National Sustainable Development Strategy for Lao PDR (2008), National Environmental Strategy toward 2020, Renewable Energy Strategy to 2025, Industry and Commerce Development Strategy (2016–2020), Industry and Handicraft Development Strategy toward 2020, among others. Although there is no specific Green Productivity policy, the Ministry of Industry and Commerce is developing a new manufacturing law, which is expected to include the concept of “green industry.”

The Lao Cleaner Production Center was funded through the Government of Switzerland through UNIDO, and offers cleaner production quick scans, audits, advocacy, guidelines, renewable energy and energy efficiency guidance, and production of training materials. The Center is also expanding its operations in the tourism and hotel sector.

## **Mongolia**

Mongolia is at the starting point of an economic boom backed by its rich natural resources. Mongolia supports the global commitment to change current development trends towards a socially inclusive, low-greenhouse-gas, reduced-waste development model. Mongolia’s Green Development Policy has six strategic objectives: (i) sustainable consumption and production, (ii) sustained ecosystem carrying capacity, (iii) increased investment in natural capital, (iv) establishing a green lifestyle, (v) education, science and technology as the catalyst for green development, and (vi) a population settlement plan in accordance with climate change and regional resilience. The policy implementation plan is divided into two phases: (i) 2014–2020: lay the foundation for green development, and (ii) 2021–2030: transformation to green development.

## **Nepal**

Provisions of the Industrial Enterprises Act and Industrial Policy (2010) related to Green Productivity include (i) technical and financial assistance to environmentally friendly and energy efficient industries, and (ii) promotion of green industries and making established industries pollution-free with zero carbon emissions.

An environment sector program support (2000–2005), funded by Denmark, assisted 332 industrial enterprises in adopting cleaner production. A 2009 study on cleaner production potential in nine sectors identified relatively fast payback for adoption of specific investments with significant reductions in pollutant loadings.

### **Pakistan**

Public policies to (indirectly) promote Green Productivity in Pakistan include (i) segregated collection of waste materials from various sectors, and (ii) reuse and recycling of non-hazardous waste items like glass, plastic, paper, and metals. Although there is no specific national policy or strategy for Green Productivity, elements are addressed through policies such as the National Environment Policy (2005), National Energy Conservation Policy (2006), and the National Sanitation Policy (2006), among others. The Energy Conservation Bill is awaiting approval from the National Assembly.

### **Philippines**

A voluntary eco-labelling program was initiated many years ago and has been progressively strengthened under the Department of Trade and Industry, with an independent entity, Green Choice Philippines, mandated to evaluate the environmental claims of each product or service. Environmental quality and standards are monitored by the Eco-Watch program and the Philippine Environmental Partnership Program under the Environmental Management Bureau of the Department of Environment and Natural Resources. More efficient energy use is promoted by the Department of Energy's monitoring and energy audits.

### **Sri Lanka**

Sri Lanka's Management Development and Productivity Center was established under the Ministry of Industries in 1968, later changing its name to the National Institute of Business Management. In 1994, a separate National Productivity Secretariat (NPS) was set up to accelerate the dissemination of productivity promotion techniques, and in 2001 it was transferred to the Ministry of Employment and Labour, then the new Ministry of

Productivity Promotion in 2010, and currently the Ministry of Public Administration, Provincial Council, Local Government, and Democratic Governance.

Since becoming a member of the APO in 1966, various actions have been undertaken in Sri Lanka to promote national productivity, such as (i) the decade of productivity (1997–2006) and (ii) a National Productivity Policy Framework in 2002. In 2015, a Green Productivity Enhancement Committee was established to mainstream green components into the policy framework.

To promote Green Productivity, the NPS proposes to (i) establish a Green Productivity demonstration project, (ii) introduce Green Productivity to the SME sector under the Kaizen Entrepreneurs Project, (iii) conduct “training of trainer” programs on Green Productivity, (iv) increase the availability of Green Productivity resources, and (v) strengthen the Green Productivity Enhancement Committee.

Other supportive policies in Sri Lanka include (i) a national industrial pollution management policy statement (1996), (ii) inclusion of cleaner production in the National Environmental Policy (2000), (iii) the National Cleaner Production Policy and Strategy (2005), (iv) the National Solid Waste Management Strategy (2000), (v) the National Solid Waste Management Policy (2008), (vi) the National Climate Change Policy (2011), (vii) the National Action Plan for Implementation of the Haritha (green) Lanka Programme (2009), (viii) the National Green Reporting System (2011), and (ix) a proposed green procurement policy (under preparation).

The National Energy Policy has set a target of at least 10% of the electrical energy supplied to the grid coming from natural renewable energy by 2015, and achieving an energy savings equivalent to 20% of 2010’s total energy consumption, by 2020. A Green Rating System has been developed by the Green Building Council of Sri Lanka in 2012 to promote sustainable building practices. The National Human Resource and Employment Policy (2012) also recognizes the need to promote green jobs and green entrepreneurship. The National “Green Jobs” Award system was introduced in 2009 by the Ministry of Environment, and is implemented by the Central Environmental Authority as an annual event at present.

The National Cleaner Production Centre (NCPC) was established by UNIDO in 2002, under the Ministry of Industry and Commerce, to assist industries to operate more efficiently without harming the environment. In 2013, the NCPC became a limited liability company, providing information dissemination, policy advice, professional training, in-plant assessments and demonstrations, and promotion of environmentally sound technologies.

In 2012, the Ministry of Agriculture developed a cleaner production policy for the agriculture sector, in collaboration with the Ministry of Environment, in line with the National Cleaner Production Policy. The mission of this policy is to achieve national food security through ecologically sound, economically viable, and socially acceptable agricultural systems. One of its four policy goals is to improve eco-efficiency in the entire agriculture sector, with an objective of promoting ecologically sound agricultural practices.

## **Thailand**

Thailand's efforts to promote Green Productivity are embedded in the Environmental Management Plan (2012–2016), the 11<sup>th</sup> National Economic and Social Development Plan (2012–2016), and a range of sector plans and green growth strategies. Importantly, the latest five-year development plan includes a green policy calling for rigorous attention to climate change and moving towards a low-carbon economy and “green society.”

Thailand's Green Growth Strategy (2014–2018) comprises (i) environmentally friendly/green production and services promotion, (ii) greenhouse gas mitigation and climate change preparation promotion, (iii) natural capital resources and environmental management, and (iv) environmentally friendly society establishment. Strategic plans under the first item include green agriculture, green industry, green transport, green tourism, and green city development. There are plans to create ten eco-industry towns by 2018.

The Ministry of Industry launched the Green Industry project in 2011 to encourage industries to be more environmentally friendly and responsible to society. Five levels of green industry are proposed: (i) green commitment, (ii) green activity, (iii) green systems,

(iv) green culture, and (v) green network. Key policies include (i) creating a green database, (ii) promotion of clean technology, (iii) zero waste to landfills through waste utilization, (iv) metal recovery from e-waste, (v) the eco-industrial development pilot project, (vi) green products using the Green Label and Carbon Label, and (vii) promotion of waste recycling technology. The Ministry aimed to increase the number of green factories to 70,000, or 50% of the total, by 2015.

Thailand has also initiated carbon footprint assessments to launch a new labeling system in 2014. To date, 1,388 products by 339 companies have completed product life-cycle assessments and have had their carbon footprints calculated. Eligible companies that demonstrate a commitment to reduce the footprint of their products can use the carbon footprint reduction logo. To date, 38 products by eight companies have completed the carbon footprint reduction, reducing greenhouse gas emissions by more than 70,000 tCO<sub>2</sub>e.

## **Vietnam**

Green Productivity was first implemented in Vietnam in 1998 through the Green Productivity Demonstration Program. Vietnam also has a Green Productivity Center under the Ministry of Science and Technology. Green Productivity is also an essential component of the National Strategy for Green Growth 2011–2020, with a vision to 2050, as well as having Green Productivity principles embedded in various laws, such as the Environment Protection Law, the Law on Goods and Product Quality, the Law on Effective Use and Saving of Energy, and the Law on Consumer Protection.

Vietnam's Solid Waste Management Strategy by 2025, with a vision to 2050, has set a goal of 100% of urban areas having solid waste treatment plants by 2025, with 100% of domestic waste in urban areas and craft villages being collected and treated in accordance with environmental standards. The new Environment Law (2014) states that organizations and individuals engaged in waste recycling will enjoy preferential policies (tax breaks, financial support, and land for facility construction) in accordance with relevant legislation.

Vietnam has had an eco-labeling system (Vietnam Green Label) since 2009, which aims to minimize the use of materials and energy, as well as an Energy Label scheme since 2013. A UNEP-funded project is developing a national action plan for sustainable public procurement, which will help to stimulate the Green Label and Energy Label production systems. Also, as a consequence of globalization, Vietnam's production systems have adopted quality management objectives through several ISO programs.

Recognizing the increasing demand for energy in Vietnam, which is forecast to increase fourfold by 2030, renewable energy is seen as the key to national energy security. Renewable energy policies are embodied in the Law on Electricity (2004); the National Power Development Plan 2011–2020, with a vision to 2030; the Development Strategy of National Renewable Energy 2020; and a development of biofuels scheme by 2015, with a vision to 2025.

In the agriculture sector, the government of Vietnam has issued guidelines and policies to gradually transform Vietnam into a leading producer of safe, organic agriculture. Organic farming households use various techniques, such as composting, raising beneficial insects, and maintaining biodiversity, using bio-pesticides, rotational cropping, and intercropping.

## **SYNTHESIS**

Table 1 attempts to summarize the rich contributions of the country participants at the workshop, recognizing that some participants chose to concentrate on one particular aspect of Green Productivity important to their country, rather than trying to give a comprehensive overview.

The overwhelming impression from this synthesis of the presentations is that nearly all countries have developed a wide range of national strategies related to Green Productivity, while not necessarily referring to them as Green Productivity strategies. There was less evidence of widespread legislation addressing Green Productivity, but countries like Vietnam could be good models for other developing countries to examine and learn from.

Table 1. Synthesis of the Country Papers

Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
Cambodia		National Green Growth Roadmap National Strategic Plan on Green Growth 2013–2030 Cambodian Climate Change Strategy Plan		Low Carbon Development Strategy toward 2050		Action Plan for MAFF on Climate Change 2014–2018	Cambodian Development Council under Ministry of Economy and Finance Ministry of Agriculture, Forestry, and Fisheries

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Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
ROC	Extended producers' responsibility law	National Green Productivity award program	Four-in-one recycling program, recycling fund, financing, and auditing and certification	Renewable Energy Act 2009 Energy policy framework Million solar rooftop photovoltaics project Thousand wind turbines project Small-scale hydropower development Other renewable energy: biogas and bio-fuels, geothermal, and ocean energy.	Green factory labeling scheme	Innovative organic agriculture production measures in rice cultivation and the organic leisure industry Breeding crop varieties suitable for organic agriculture, biological pesticides, biological fertilizer, and biological soil modifiers	Center of Excellence on Green Productivity Industrial Technology Research Institute

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Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
Fiji	Environment Management Act 2005	Green Growth Framework 2014	Waste management from Fiji Sugar Corporation Recycling Lead from Pacific Battery Ltd. Recycling industrial oil at Fletcher Pacific Steel Ltd.	Energy Policy 2013 Energy audits Bio-fuel	Introduction of efficient technologies	Agro-ecological methods	NTPC Short courses on Green Productivity
India		Ladakh Vision Statement 2025	Eco-tourism and Rural Livelihood Improvement Initiative	Ladakh Renewable Energy Initiative	Small scale and cottage industries promotion	Greenhouse construction and organic vegetable production	Ladakh Renewable Energy Development Agency
Indonesia	Industrial Act No. 3/2014	Green industry policy since 1984 (Act 5/1984)		Energy audits and conservation programs Roadmap and strategy for energy efficiency	Green industry standards for the cement, textiles, ceramics, steel, and pulp and paper industries Green industry awards since 2010		Industrial research centers Cleaner production and energy conservation training

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Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
IR Iran	Energy Consumption Reform Act (2011) Targeted Subsidies Reform Act (2010)	National Economic, Social and Cultural Development Plan (2001-2015)		Reform of energy consumption 2011			
ROK	Environmental Technology Support and Development Act 2000	Creative economy policy			Cleaner Production Technology Development Program Eco-design guidelines and software Type III Environmental Label Environmental Declarations of Products Certification of Green Buildings		Korea Environment Industry and Technology Institute (KEITI)

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Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
Lao PDR	Manufacturing Industry Law 2013 Environment Protection Law 2012	National Socio-economic Development Strategy (2011–2020) Strategic Framework for National Sustainable Development Strategy for Lao PDR (2008) National Environmental Strategy toward 2020		Renewable Energy Strategy to 2025	Industry and Commerce Development Strategy (2016–2020) Industry and Handicraft Development Strategy toward 2020		Lao Cleaner Production Center Lao Productivity Center
Mongolia	Renewable Energy Law 2007	Green Development Policy 2013 Partnership for Action on Green Economy 2013		National renewable energy program 100,000 solar homes			Ministry of Environment, Green Development and Tourism

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Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
Nepal	Industrial Enterprises Act and Industrial Policy (2010) Environment Protection Act (and regulations)	Environment sector program support (2000–2005)		Nepal Energy Efficiency Program	Cleaner production potential in nine sectors (2009) Pollution control certificates		Chamber of Commerce
Pakistan	Energy Conservation Bill approved in principle in 2010, now in process of approval.	National Environment Policy (2005) National Sanitation Policy (2006)	Waste segregation and recycling Waste management company concept introduced in some cities The private sector is working at some level	National Energy Conservation Policy (2006) Energy audits	Green Productivity awards (NA) No such campaign or concept yet		Environment Protection Councils at province level Pakistan Energy and Environment Management Center Climate Change Division

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Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
Philippines		Eco-watch and Philippine Environmental Partnership program Eco-friendly government office program	Ecological solid waste management policies National Ecosavers Program for children	Energy audits by Department of Energy	Voluntary eco-labelling	Environment Management Bureau Green Choice Philippines	

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Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
Sri Lanka		Decade of productivity (1997-2006) National Productivity Policy Framework 2002 National Environmental Policy 2000 National Climate Change Policy 2011 National action plan for implementation of the Haritha (green) Lanka Programme 2009 National Green Reporting System 2011 Green jobs policy in Human Resource Development 2012	National Solid Waste Management Strategy 2000 National Solid Waste Management Policy 2008	National Energy Policy Green Rating System for buildings	National Cleaner Production Policy and Strategy 2005 National industrial pollution management policy statement (1996)	Cleaner production policy for agriculture sector 2012	Management Development and Productivity Center 1968 National Productivity Secretariat 1994 Green Productivity Enhancement Committee 2015 Green Building Council National Human Resources and Employment Policy 2012 Green Jobs Award National Cleaner Production Center

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Country	National Legislation	Overarching Strategies	Interventions				Governance
			Resource Recycling	Green Energy	Green Factories	Eco-Agriculture	
Thailand		Environmental Management Plan 2012–2016 11 <sup>th</sup> National Economic and Social Development Plan 2012–2016 Green Growth Strategy 2014–2018		Carbon footprint assessment Carbon Label Carbon footprint reduction label	National Industrial Development Plan (2012–2031) Green industry project 2011 Ten eco-industry towns by 2018 Green Label		
Vietnam	Environment Protection Law Law on Effective Use and Saving of Energy Law on Goods and Product Quality Law on Consumer Protection	Green Productivity Demonstration Program 1998 National Strategy for Green Growth 2011–2010	Solid Waste Management Strategy by 2025	Energy Label National Power Development Plan 2011–2020 Development Strategy of National Renewable Energy 2020	Vietnam Green Label	Promotion of organic agriculture	Green Productivity Center Vietnam National Productivity Institute

The specific coverage of sectoral approaches like recycling, green energy, green factories, and eco-agriculture depended on the emphasis each participant chose, suggesting that a more comprehensive inventory would help to fill out this table.

The institutional coverage was also fairly sparse, suggesting that additional institutions could be important in each national context. A perhaps surprising omission was any mention of national sustainable development councils, which most countries had set up to implement Agenda 21, suggesting that each country may need to reinvigorate such institutions to implement the impending Sustainable Development Goals. A very comprehensive mix of relevant institutions was presented by Sri Lanka, offering some models for other countries to examine. Regardless of the institutional mix, however, most participants indicated that the principal barrier to promotion of Green Productivity has been the poor implementation record to date.

## **CONCLUSIONS AND RECOMMENDATIONS**

The workshop captured a wide range of policy responses to promote Green Productivity in Asia. The value of such workshops is to expose participants to interesting interventions in other countries, but unless such learning is translated into action on return home, this value diminishes quickly. Therefore, it is highly significant that each participant was required to prepare his or her own action plan, which would then be copied to their national productivity office and followed up on after six months. For example, Cambodia will focus on green agricultural production, while Fiji will try to initiate corporate social responsibility reporting, and Indonesia will try to introduce green industry standardization. The first recommendation, therefore, is to take these action plans seriously, and for APO to follow up on their implementations, as well as the challenges met and (hopefully) overcome by each of the participants.

The attendees of workshops like these establish close personal relationships throughout the workshops and the group activities, but again, the value of these relationships can be lost quickly once the participants return home. The challenge for APO is to foster an active

community of practice, as there was genuine interest in the four topics covered. While the obvious way to create such a community of practice is to establish a web-based dialogue forum or Listserv, experience suggests that a proactive coordinator/moderator is needed to keep the community active and alive. Another alternative is to accept that each of the participants is an expert in his or her own right, and to facilitate cross-country sharing through peer-to-peer (or twinning) relationships, which can be done at relatively low cost. Specific recommendations for each participant country are as follows:

### **Cambodia**

Consider developing a nationwide recycling program, based on the 3R approach successfully implemented in Japan. Develop a green factory standard, possibly adapting the approach adopted by Indonesia and the green building certification developed in the ROK.

### **ROC**

The Extended Producer Responsibility Law, Renewable Energy Act, and related Green Productivity programs indicate that the ROC is paying increased attention to the environmental consequences of its industrial activities. Consolidating these gains through a Green Productivity Law would make each sector more aware of its obligations, especially if backed by a major awareness-raising campaign.

### **Fiji**

Mainstream the Green Growth Framework into national and sectoral development plans. Consider expanding current resource recycling programs to the important tourism sector. Consider requiring all medium- to large-scale industries to appoint an internal energy auditor to track down potential energy savings and possibilities for replacing imported fossil fuels with renewable energy. Much like Cambodia, develop green factory and green building standards, and require these standards to be implemented for all new investments.

## **India**

Examine the potential for scaling up the initiatives adopted in Ladakh to other states, especially in the renewable energy area (with the experience of the Ladakh Renewable Energy Development Agency) and organic vegetable production. The experience gained from the field visit to an organic vegetable farm in the ROC can be passed on to other parts of India and assist in improving India's food security. State-based legislation on Green Productivity could also be considered.

## **Indonesia**

The two main gaps identified for Indonesia were in relation to resource recycling (where a national 3R program is recommended, again drawing from Japanese experience), and eco-agriculture (where the agro-forestry approaches developed by the Center for International Forestry Research in Bogor need to be scaled up to the national level).

## **IR Iran**

In the case of the IR Iran, a broad-based approach to Green Productivity is needed, covering industry, resource recycling, energy, and agriculture. National legislation mandating Green Productivity could be considered as an initial step.

## **ROK**

The ROK can act as a mentor to other APO member countries in the field of eco-design and green certification. The creative economic policy and emphasis on green growth needs to be deepened and cover all sectors of the economy.

## **Lao PDR**

Lao PDR has many of the necessary elements for Green Productivity documented as national strategies, with the possible exceptions of resource recycling and eco-agriculture. The challenge now is to turn those strategies into implemented programs on the ground, with the full cooperation of the private sector.

## **Mongolia**

The dominance of the mining sector in Mongolia suggests that additional attention should be paid to more efficient recycling of resources and processing of mineral products, utilizing renewable energy under the National Renewable Energy Program. Mongolia also has a significant agriculture sector, which would benefit from increased attention to agro-forestry and rehabilitation of degraded grasslands.

## **Nepal**

Greater attention needs to be paid to resource recycling and “mining of urban waste” as sources of livelihoods, as well as material use efficiency in Nepal. Hydropower is a major energy source in Nepal and potentially a significant export revenue source. However, the impact of climate change on the Himalayan glaciers threatens this source of energy, so greater attention needs to be paid to reducing the potential impacts of glacial lake outburst floods. As a global leader in community forestry, Nepal can also pay greater attention to agro-forestry and watershed management.

## **Pakistan**

New legislation mandating Green Productivity in all major sectors could be considered in Pakistan. In addition, Pakistan’s factories often use outdated equipment and are highly polluting, so adoption of a green factory standard, drawing from Indonesian and Korean experience, would make a significant difference. With a large percentage of the population involved in the agriculture sector, and significant deterioration of both soil and water quality, increased attention to eco-agriculture is needed (with agro-forestry and organic agriculture as two elements of this approach).

## **Philippines**

The Philippines has excellent civil society programs, such as Eco-watch and the Philippine Environmental Partnership. However, voluntary approaches to Green Productivity only go so far. Stronger legislation mandating Green Productivity in all sectors is needed. Standards for green factories, eco-labeling, and green buildings are also needed.

## **Sri Lanka**

Sri Lanka has an extensive array of national strategies and policies dealing with Green Productivity, and could act as a mentor for other developing countries in APO. As for other countries, however, it would be good to consolidate all of these impressive elements into an overarching Green Productivity law.

## **Thailand**

Much like Sri Lanka, an overarching Green Productivity law would be a useful adjunct to the various strategies and plans being implemented in Thailand. The one notable omission appears to be in the area of resource recycling, as well as possible industrial ecology opportunities in the various industrial estates that agglomerate factories.

## **Vietnam**

Most of the elements of an effective Green Productivity approach exist in Vietnam, with effective laws, demonstration programs, national strategies (green growth, solid waste management, renewable energy, etc.), and relevant institutional arrangements. Perhaps the one major area that could be improved on is in relation to green factories and green buildings, and effective monitoring of their performance.

The final recommendation is for APO to further fill out Table 1, as surely considerable detail was missed by focusing attention on a particular aspect of Green Productivity. The value of completing this table and keeping it up to date would be that countries would be able to quickly recognize advances in Green Productivity policies that they can examine closely and perhaps adopt or adapt to their own national circumstances. The ROC-based Center of Excellence could perhaps take on the task of keeping such a table up to date, through regular contact with the nascent community of practice and other national sources of information.

## ANNEX 1 – WORKSHOP AGENDA



Center of Excellence on Green Productivity  
Asian Productivity Organization

**Workshop on Policy Development for Green Productivity Promotion**  
**10 -13 March, 2015, Taipei, ROC**  
**Draft Program Schedule**

As of 7 March 2015

Time	Activity/Topic	Presenter/Facilitator
<b>Monday, 9 March, 2015</b> <b>Arrival of experts and participants</b> <b>Hotel Accommodation: Howard Civil Service International House</b> <b>Address: No. 30, Sec. 3, Shin-Sheng South Road. Taipei, 106, Taiwan, ROC</b>		
<b>Day 1: Tuesday, 10 March</b>		<b>Venue: Room 101</b>
08:30 – 09:00	<b>Registration at the session room</b>	<b>Secretariat (APO, CPC and COE GP)</b>
09:00 – 09:05	<b>Opening Session</b> <ul style="list-style-type: none"> <li>▪ Welcome remarks by the China Productivity Center (CPC)</li> </ul>	<b>Dr. Kuo Ming Wang</b> Adviser, APO COE GPAC & Managing director and chief Consultant, CPC
09:05 – 09:10	<ul style="list-style-type: none"> <li>▪ Opening Remarks by the Ministry of Economic Affairs</li> </ul>	<b>Dr. Liang-Tung Chen</b> Deputy Director Industrial Development Bureau, Ministry of Economic Affairs
09:10 – 09:15	<ul style="list-style-type: none"> <li>▪ Opening Remarks by the Ministry of Foreign Affairs</li> </ul>	<b>Mr. James Lee</b> Counselor Department of International Affairs, MOFA
09:15 – 09:35	<b>Keynote speech: Rewarding Enterprises to Stimulate the Corporate Sustainability Trend Sharing the TCSA Experience</b>  <i>Background:</i> To achieve the APO GP 2020 shared vision and objectives, the COE GP is closely collaborating with member countries on technical and industrial exchange services with experts from the ROC. This collaboration aims to promote environment-friendly products, technology, and services among businesses, governments, and the society at large. This special presentation will highlight how this collaborative effort is advancing and winning the support of GP stakeholders in enhancing the international collaboration.	<b>Dr. Eugene Chien</b> Chairman Taiwan Institute for Sustainable Energy Former minister of MOFA Former minister of EPA

Time	Activity/Topic	Presenter/Facilitator
09:35 – 09:45	▪ Introduction of experts and participants	<b>Dr. Jose Elvinia</b> Program Officer, R&P Dept., APO
09:45 – 10:00	Traditional group photo & refreshment break	
10:00 – 10:15	<b>Brief introduction about the APO and workshop objectives</b>	<b>Mr. Naoki Ogiwara</b> Director, R&P Dept., APO
10:15 – 11:15	<p><b>Presentation 1: Present state of the environment in Asia and the Pacific and its implications for sustainable development</b></p> <p><i>Background:</i> Development is a process that enables people to improve their well-being that can only be achieved through sustainable management of various assets that includes natural resources. This is because if the environment which provides the essential materials and economic base that contribute to development and human wellbeing is not sustainably managed, the current environmental problems continue. This presentation will put the workshop into context by pointing out the present state of the environment vis-à-vis its link to sustainable development especially in the Asia-Pacific setting.</p>	<b>Dr. Peter Noel King</b> Senior Policy Advisor Institute for Global Environmental Strategies (IGES) Bangkok Regional Office Thailand
11:15 – 12:15	<p><b>Presentation 2: Green Productivity and sustainable development</b></p> <p><i>Background:</i> There is a close link between the concept of GP and sustainable development as it is widely accepted that enhancing GP will not be possible without protection and improvements of the natural environment. Moreover, GP was originally conceived on the understanding that a healthy environment and robust, competitive economy are mutually dependent. This session will elaborate this link to guide policymakers in their quest for sustainable development via GP approaches.</p>	<b>Ms. Liana Bratasida</b> Former Deputy Minister Ministry of Environment, Indonesia
12:15 – 13:30	Lunch break	
13:30 – 14:30	<p><b>Presentation 3: Global situations of resource recycling, eco-agriculture, green factory and green energy and its implications for national policy development</b></p> <p><i>Background:</i> The APO, through the Center of Excellence on Green Productivity (COE on GP), has put greater importance to the four areas on resource recycling, eco-agriculture, green factory, and green energy in instituting the application of GP approaches to pay equal attention to the environment as member economies strive for rapid economic growth. The objective of this presentation is to provide current global situation in these areas to lay down the foundation of policymaking especially in situations where these areas are not fully developed yet.</p>	<b>Dr. Peter Noel King</b> Senior Policy Advisor Institute for Global Environmental Strategies (IGES) Bangkok Regional Office Thailand

Time	Activity/Topic	Presenter/Facilitator
14:30 – 15:30	<p><b>Presentation 4: Enhancing the capacity of policymakers in greening development with focus on the GP</b></p> <p><i>Background:</i> GP is still not well understood by many stakeholders especially among development planners and policymakers of APO member countries. This session will provide examples of public policies and programs with special focus on GP from local to national level. The cases will hopefully provide some guide and reference in the policymaking and program development in member countries.</p>	<p><b>Ms. Liana Bratasida</b> Former Deputy Minister Ministry of Environment, Indonesia</p>
15:30 – 15:45	Refreshment	
15:45 – 16:15	<p><b>Special Presentation: Looking ahead with GP and its implications in the APO region: the role of awards</b></p> <p><i>Background:</i> The Center of Excellence on Green Productivity (COE GP) in the ROC is embarking on GP Excellence Awards for the region that aims to promote further the adoption of green-related and environment-friendly productivity practices, tools and techniques among enterprises. This special report will talk about the overarching goal of the proposed awards in relation to APO's Green Productivity (GP) flagship program for the region and the COE on GP.</p>	<p><b>Dr. Allen H. Hu</b> Committee Member APO COE GPAC Professor Institute of Environmental Engineering and Management, National Taipei University of Technology</p>
16:15 – 16:45	<p><b>Short briefing about the APO COE GP</b></p> <p>Background: This session will briefly introduce the COE on GP in the ROC including the background, mission and vision, GPAC and current activities.</p>	<p><b>Dr. Eugene Lin</b> Director and Liaison Officer for ROC, China Productivity Center</p>
16:45 – 17:00	Administration	<b>Secretariat</b>
18:00 – 20:30	<b>Welcome Dinner Hosted by the APO</b>	<b>4F, Howard Hotel</b>
<b>Day 2: Wednesday, 11 March</b>		<b>Venue: Room 101</b>
08:50	<b>Meeting at the session room</b>	
09:00 – 09:25	<p><b>Presentation on COE GP model 1: Green factory</b> (Sharing of policies, good practices and successful cases in the ROC)</p> <p><i>Background:</i> The country initiatively integrated green building and cleaner production in promoting the voluntary green factory label in 2011. Companies from then on were encouraged to obtain certifications under these regulations which requirements include conservation of energy resources, green manufacturing process/product/service, green management, and social responsibility. It is envisioned that such initiatives will facilitate the realization of industrial upgrade and transformation. This session will explain the implementation process, progress and outcome of these policies in the country including the best practices of sample cases.</p>	<p><b>Dr. Liang-Tung Chen</b> Deputy Director Industrial Development Bureau, Ministry of Economic Affairs</p>
09:25 – 09:50		<p><b>Ms. Mo-fan Tai</b> Deputy Project Manager Foundation of Taiwan Industry Service</p>
09:50 – 10:00	<b>Q&amp;A</b>	

Time	Activity/Topic	Presenter/Facilitator
10:00 – 10:25	<p><b>Presentation on COE GP Model 2: Green energy</b> (Sharing of policies, good practices and successful cases in the ROC)</p> <p><i>Background:</i> In 2012, the country passed the new energy development policy which set the core goal for developing a safe, efficient and renewable energy in order to establish a stable, effective and clean energy provision system and to achieve a more sustainable energy situation for the country. In order to achieve higher energy independence and to leverage the limited natural resource and geographic environment, promoting green energy is one of the key energy policies. This presentation will report on the present status of green energy resource in the country given the policies passed and will share successful cases of the industry as a whole.</p>	<p><b>Dr. Jin-Sheng Su</b> Director Bureau of Energy, Ministry of Economic Affairs</p>
10:25 – 10:50		<p><b>Mr. Tom Wu</b> Principal Engineer Industrial Technology Research Institute 2014 COE on GP expert to the Philippines &amp; Laos PDR</p>
10:50 – 11:00	<b>Q&amp;A</b>	
11:00 – 11:15	Refreshment	
11:15 – 11:40	<p><b>Presentation on COE GP model 3: Resource recycling</b> (Sharing of policies, good practices and successful cases in the ROC)</p> <p><i>Background:</i> Promulgated in 1974, the Solid Waste Disposal Act has been amended several times. Many of these amendments were made during the time when the country's economy, industry and commerce began to flourish. While the economy prospered, Taiwan also saw unprecedented levels of environmental pollution. This session will cover major policies and regulations related to municipal solid waste management in the country especially at a time when environmental pollution issues came along with economic prosperity. Some best practices of the industry will also be shared.</p>	<p><b>Mr. Shou-Chien Lee</b> Section Chief Recycling Fund Management Board, Environmental Protection Administration</p>
11:40 – 12:05		<p><b>Dr. Hsiao-Kang Ma</b> Committee Member APO COE GPAC Professor National Taiwan University 2014 COE on GP expert to Vietnam and India</p>
12:05 – 12:15	<b>Q&amp;A</b>	
12:15 – 13:30	Lunch break	
13:30 – 13:55	<p><b>Presentation on COE GP model 4: Eco-agriculture</b> (Sharing of policies, good practices and successful cases in the ROC)</p> <p><i>Background:</i> The Council of Agriculture has developed and implemented incentive programs to encourage farmers to invest more in organic agriculture sector. The main topics related to organic agriculture development are: production technologies, organic certification and accreditation, and dissemination platform. Consequently, the incentives provided by the government did encourage the farmers to invest more in this sector. This session will talk about these government programs and will cite cases/outcomes of implementation including best practices of selected farming groups/farmers who are into local organic agriculture.</p>	<p><b>Dr. Lao-Dar, Juang</b> Director Southern Region Branch, Agriculture and Food Agency</p>
13:55 – 14:20		<p><b>Dr. Hwang Peng</b> Director Hualien District Agricultural Research and Extension Station Council of Agriculture 2014 COE on GP expert to Thailand</p>

Time	Activity/Topic	Presenter/Facilitator
14:20 – 14:30	<b>Q&amp;A</b>	
14:30 – 14:45	Refreshment	
14:45 – 18:00	<p><b>Country presentation</b> The contents of presentation are based on the guidelines provided as follows:</p> <ol style="list-style-type: none"> <li>1. Public policies that promote GP with the focus on resource recycling, green/renewable energy, green factory, and eco-agriculture;</li> <li>2. National plans, programs, and projects including achievements and best GP practices focusing on resource recycling, green/renewable energy, green factory, and eco-agriculture; and</li> <li>3. Key issues and challenges encountered in promoting and implementing GP-related public policies.</li> </ol> <p><i>(Note: Due to limited time, each participant will only be given 15 minutes including Q&amp;A. Please note that we will be very strict with time.)</i></p>	<b>Delegates</b>
<b>Day 3: Thursday, 12 March</b>		
08:00	<p><b>Assemble at hotel lobby for site visit</b> (The purpose of the site visit is to enhance classroom learnings presented by the APO and COE on GP resource persons by looking into actual cases/best practices of companies/organizations engaged in the areas of resource recycling, eco-agriculture, green factory, and green energy of the COE on GP. The visit will also promote networking between participants and local companies/organizations.)</p>	
	Site visit 1 - COE GP model: <b>Eco-agriculture</b> <b>Company in Taoyuan –Yu Pu Organic Farm</b>	<b>Secretariat</b>
12:30 –	Lunch break	
	Site visit 2 - COE GP Model: <b>Green energy</b> <b>Company in Taipei -Everlight lighting CO., LTD.</b>	<b>Secretariat</b>
	Site visit 3 - COE GP model: <b>Resource recycling</b> <b>Company in Taipei - DA.AI TECHNOLOGY CO.,LTD.</b>	<b>Secretariat</b>
18:30 – 20:30	<b>Farewell Dinner Hosted by the APO COE GP</b>	<b>14F, VIP room, Howard Civil Service International House</b>

<b>Day 4: 13 March</b>		<b>Venue: Room 204</b>
08:55	<b>Meeting at the session room</b>	
09:00 – 10:45	<p><b>Group discussion and presentation on the learnings and insights from the workshop and site visit.</b></p> <p>Guide questions:</p> <ol style="list-style-type: none"> <li>1. What are the key learnings from the workshop?</li> <li>2. What knowledge/information did you gain from the site visit (in resource recycling, eco-agriculture, green factory, and green energy)?</li> <li>3. What kind of policy or program you think very useful for the APO to promote in the region in the areas of resource recycling, eco- agriculture, green factory and green energy?</li> <li>4. How can the proposed GP excellence awards promote the green leadership agenda of the COE GP? What advice can you give to make this award successful for APO regional level implementation?</li> <li>5. Please propose a project in any of the four areas in your country where COE GP can help develop as a demo project in the future.</li> </ol> <p><i>(Note: The delegates will be split into smaller groups to discuss the questions.)</i></p>	<b>Resource persons as facilitators</b>
10:45 – 11:00	Refreshment	
11:00 – 12:00	<p><b>Individual action plan presentation</b></p> <p>Guide questions:</p> <ol style="list-style-type: none"> <li>1. What are your key learnings from the workshop?</li> <li>2. What kind of policy or program you will propose to your country/locality based on your learnings from the workshop and site visit in the areas of resource recycling, eco-agriculture, green factory, and green energy?</li> <li>3. What activities you will undertake within the next 6 months in achieving the #2 question?</li> </ol>	<b>Delegates</b>
12:00 – 13:00	Lunch break	
13:00 – 14:00	<p>Open Forum: <b>Looking forward with GP policy options for national development</b></p> <p>(This session will wrap up all group presentations and individual action plans of participants by resource persons. It will conclude on how the learnings from the workshop can be put into action in terms of public policies/programs/projects to enhance the GP application in member countries especially in the areas of resource recycling, eco-agriculture, green factory, and green energy. As a whole, any GP-related policies must adhere to the national sustainable development agenda of the country.)</p>	<b>Dr. Allen H. Hu Dr. Peter Noel King Ms. Liana Bratasida</b>
14:00 – 14:05	Closing remarks	<b>Dr. Liang-Tung Chen</b> Deputy Director Industrial Development Bureau, Ministry of Economic Affairs
14:00 – 15:00	Evaluation of the workshop	<b>Secretariat/APO COE GP</b>
<b>Saturday, 14 March – Departure of experts and participants</b>		

## **ANNEX 2 – LIST OF PARTICIPANTS**

**14-RP-12-GE-DON-C    Workshop on Policy Development for Green Productivity Promotion**

(10–13 March 2015, Taipei, ROC)

**Cambodia**

**Chan Phaloeun**

Deputy Director General  
General Directorate of Agriculture (GDA) of Ministry of  
Agriculture, Forestry and Fisheries (MAFF), Cambodia

**ROC**

**Chen, Chian-Yu**

Inspector  
Bureau of Energy, Ministry of Economic Affairs

**Chi-Pin Chen**

Associate Technical Specialist  
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Assistant Research Fellow  
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**Fiji**

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Division of Business and IT  
National Training and Productivity Centre (NTPC), Fiji National  
University

**IR Iran**

**Faraz Sojdei**

HSE/M&V Manager  
Iranian Fuel Organization Company

**India**

**Rigzin Spalbar**

Chairman/Chief Executive Councillor  
Ladakh Autonomous Hill Development Council, Leh

**Indonesia**

**Solehan**

Sub Division Head of Green Industry Development  
Ministry of Industry, The Republic of Indonesia

<b>ROK</b>	<b>Dong-Hee Sin</b> Researcher Korea Environmental Industry & Technology Institute
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