



**Asia-Pacific
Economic Cooperation**

International Workshop and Training on The Role of Business Incubators in Developing Green Technology-Based SMEs

Yogyakarta, Indonesia, 27 - 29 September 2011

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Produced by :

Julian Webb

Syah Indrawati Azron

Deva Primadia Almada

Hadi K Purwadaria

Ministry of Cooperatives and SME, Republic of Indonesia

Jln MT Haryono Kav. 52-53, Jakarta, Indonesia

Tel/Fax : +62-21-7942721 Fax : +62-21-7942861

Email: wayan_dipta@yahoo.com

For:

Asia-Pacific Economic Cooperation Secretariat

35 Heng Mui Keng Terrace

Singapore 119616

Tel : +65-6891-9600 Fax : + 65-6891-9690

Email: info@apec.org

Website: www.apec.org

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FOREWORD

The APEC International Workshop and Training on “ The Role of Business Incubators in Developing Green Technology-Based SMEs” was organized in Yogyakarta, Indonesia on 27 -29 September 2011. The activity aims to develop recommendations for business incubator management in nurturing the development of newly green based firms, strengthening the network and capacity of technology business incubator managers in the Asia Pacific region in order to provide better services to newly technology-based SMEs, and their incubatees, and offering opportunities for newly green technology-based SMEs to find a new market and establish business partnership in the region.

The green technology application and adoption at the SME level is still early and yet to be more socialized to increase their awareness. Contribution of SMEs in this area, once they have adopted the green technology, will be a great positive impact on world energy solution, and the overcoming of global warming negative changes. This socializing, increasing awareness and broadening the adoption of green technology in the SMEs should be organized and practiced continuously in the future, if mankind would like to be survived in the generation to come. No doubt, green technology adopted by SMEs will also improve the economic development and leverage the poor into much better well-being, not only in the APEC region but also in other parts of the world.

The International Workshop and Training was jointly funded by APEC and the Government of Indonesia through the Ministry of Cooperative and SMEs, and was participated by forty (41) participants coming from APEC Member Economies namely China, Chile, Indonesia, Malaysia, Mexico, Peru, Papua New Guinea, The Philippines, Singapore, Thailand and Viet Nam. Sixteen (16) participants and 7 (seven) speakers were funded by APEC. The participants were coming from various institutions and incubators as well as from the university.

The three-days activity covered the above-mentioned issues, in this light, it recommended that it would be most beneficial if the outcomes of this APEC International

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Workshop and Training would be extended beyond the outcomes described in the general information, i.e., guidelines and SOP for business incubators in implementing plan to nurturing the development of newly green based firms, success story of the green technology based SMEs, and action plans from each participating incubator.

The establishment of an APEC Center for Green Technology Based SMEs would be an effective measure to create a joint effort in the contribution of SMEs in solving the world food and energy crisis and global warming through the adoption of green technology.

This report is intended to present a summary of the International Workshop and Training implementation, results of the evaluation as well as comments given by the participants. It is hoped that this report would serve as a reference for future similar activity.

May I also take this opportunity to express my sincere gratitude and appreciation to APEC Secretariat, the Association of Indonesian Business Incubators, the Ministry of Cooperatives and SMEs, and the National Development Planning Agency of the Republic of Indonesia who had contributed in realizing this International Workshop and Training on “ The Role of Business Incubators in Developing Green Technology-Based SMEs”.



I Wayan Dipta
Deputy of R&D for Cooperative and SME Resources
Ministry of Cooperatives and SMEs
Republic of Indonesia

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I. INTRODUCTION

In the last decade, some APEC member countries have developed good course of strategies in developing green technology-based firms; while other APEC member countries are still at the initial stage in developing its capacity to nurture and develop green technology-based SMEs. Business Incubator is an important instrument to develop new green-based technology firms as these firms need special environment and climate in order to grow. It is therefore crucial for APEC member countries to strengthen the management capacity of business incubators, so they can provide better services to its green tech-based tenants (SMEs). Availability of practical concepts and appropriate strategy and improvement of the managerial capacity of business incubator in the region will lead to the attainment of one of the objectives of APEC SMEWG, enhanced competitiveness of SMES in the Region.

Recognizing the importance and effective role of SMEs as a significant source of prosperity and employment and a major contributor to innovation – and thus are a growth engine of the Asia Pacific region, the International workshop and Training focusing on The Role of Business Incubators in Developing Green Technology-Based SMEs conducted by the Office of Ministry for Cooperatives and SME of the Republic of Indonesia is a welcome new development.

OBJECTIVES:

1. To develop recommended guidelines for business incubator management in implementing plan to nurture the new green technology –based SMEs.
2. To strengthen network and capacity of business incubator managers in the Asia Pacific region in order to provide better services to new green technology-based SMEs (tenants).
3. To broaden the opportunities for new green technology-based SMEs to find a new market and business partnership in the region.

II. WORKSHOP AND TRAINING

2.1. Program Implementation

The International Workshop and Training on The Role of Business Incubators in Developing Green Technology-Based SMEs commenced on 27 September 2011, was preceded by a short report on the preparation of the event, the participants as well as the speakers and the content of the programme presented by Prof. Dr. Hadi K. Purwadaria the local Project Overseer, while Mr. I Wayan Dipta the Deputy Minister for Resources Research and Development for Cooperative and small and medium enterprise who is the Project Overseer had officially opened the event.

The Program was prepared to meet the objective in developing guidelines for business incubator management, strengthened the network and capacity of business incubator managers in Asia Pacific region and broadens the opportunities to find a new market and business partnership in the region for new green technology-based SMEs.

It was a three-day activity, where the workshop was organized parallel with the training. The workshop started one day earlier than the training. In the workshop, presentations on the Development of Green Technology Based SMEs from every participating economy were presented followed by Discussions on the formulation of Workshop output and presentation of Group discussion result.

In the training, a discussion on the prospect of business partnership among the participants and Developing own incubation action plan for nurturing the Green Technology Based SMEs followed by the presentation of action plan. The Workshop and Training Program is attached as Annex A, presentation from speakers is attached as Annex B, and presentation from workshop participants is attached as Annex C.

At the end of the workshop and training, a visit to I-Cell incubator and Lembah Hijau Multi Integrated Farm in Solo was carried out.

2.2. Participants

The APEC International Workshop and Training on “The Role of Business Incubators in Developing Green Technology–Based SMEs” was attended by thirty-five participants (35) coming from ten (10) APEC economies namely one each from Chile, Mexico, Peru, and Singapore, and two from China, Indonesia, Malaysia, Thailand and Viet Nam. They attended the workshop or the training session. APEC had supported ten (10) participants to attend the workshop and six (6) participants for the training. While twelve (12) workshop and seven (7) training participants were non APEC sponsored participants. They came from various government agencies, research institutions & universities, and private sectors from their respective countries. The participants who attended the training arrived on the second day of the activity. The list of the participants of the workshop and training is presented as Annexes D and E.

2.3. Speakers

There were seven (7) APEC sponsored speakers from APEC member economies, and non APEC country namely from Denmark, Indonesia, Japan, Korea, Chinese Taipei, and USA, and two (2) non APEC sponsored speakers from Indonesia. Two speakers of the workshop were also speakers in the training. The speakers were invited from Korea Institute of Science & Technology Evaluation and Planning (KISTEP), National Development Planning Agency of Indonesia (BAPPENAS), Ministry of Public Works, Republic of Indonesia, Department of Development and Planning, Aalborg University, Denmark, Industrial Technology Research Institute (ITRI), Chinese Taipei, Bethesda Green Business Incubator Program, Maryland USA, Institute for Global Environment Strategies (IGES), Japan, and Green SMEs : Orsolindo, Solo, Indonesia and Pulus Wangi, Garut, Indonesia.

Subjects presented in the workshop were entitled Setting for Green Growth Era, Identification of Green technology Area for SMEs in Respective Economies, Adaptation of Green Business by Incubator Programme, and Green Growth Planning and Development, while in the training, the subjects on Incubating Green Business SMEs, Bio Additive for Saving Petrol and Diesel Fuel, Expanding Regional Market for Green Technology Based SMEs, Green Compost and Plastic Recycle, and Zero Waste Vetiver Production were presented. The list of the speakers is presented as Annex F.

2.4. Action Plan of Training Participants

Training participants developed their action plan to be carried in the future in nurturing green technology based SMEs related with their own institution contribution to the incubation business model. Participants from China and Indonesia wrote action plan for their respective incubators, while participants from Malaysia and Viet Nam – both are green technology SMEs outlined their business plan for several years ahead. Action plan from Philippines was unique since it was made for an NGO that was supporting incubator program, while from Thailand was from a ministry office assisting SME development. The detailed action plan can be found in Annex G.

2.5. Notes of Workshop and Training Sessions

Notes of workshop and training sessions can be found in details in Annex H.

2.6. Workshop and Training in Pictures

Pictures of participants and speakers for the whole program during the opening ceremony is illustrated in Fig. 2.1., for the Workshop program in Fig.2.2., and for the Training program in Fig. 2.3. Activities during the workshop and training, and during the field trip are depicted in Fig. 2.4., and 2.5., respectively.



Figure 2.1. Participants, speakers, facilitators, and guests at the Opening Ceremony of the APEC International Workshop and Training, Yogyakarta, Indonesia, 27-29 September 2011.



Figure 2.2. Workshop participants, speakers, and facilitators, at the APEC International Workshop and Training, Yogyakarta, Indonesia, 27-29 September 2011.



Figure 2.3. Training participants, speakers, and facilitators, at the APEC International Workshop and Training, Yogyakarta, Indonesia, 27-29 September 2011.



Figure 2.4. Activities during workshop and training.



Figure 2.4. Field visit to Lembah Hijau, Solo a multi integrated farm.

III. OUTCOMES AND RECOMMENDATIONS

Some APEC economies have developed good strategies to develop green technology-based firms and can serve as role models for other APEC members and also non APEC countries, which are still at the initial stages of developing capacity to nurture and develop green technology-based SMEs. Business Incubation can be an important instrument to develop new green -based technology firms, but needs to be adapted to the special requirements. In this context, the workshop had 3 key objectives:

1. **Objective 1:** To develop recommended guidelines for business incubator management in implementing plans to nurture the new green technology –based SMEs.
2. **Objective 2:** To strengthen network and capacity of business incubator managers in the Asia Pacific region in order to provide better services to new green technology-based SMEs (tenants).
3. **Objective 3:** To broaden the opportunities for new green technology-based SMEs to find a new market and business partnership in the region.

3.1. Guidelines for business incubator management to implement plans to nurture new green technology –based SMEs

Guidelines were considered in terms of the barriers facing green technology based SMEs, strategies that are required to surmount the barriers, and which sort of bodies need to take action. For business incubation of green technology based SMEs to succeed, participants appreciated that the business environment and general awareness needs to be addressed, by a range of players. Furthermore, consideration of the topic assumed good basic technology business incubation (TBI) practices. These need to be in place, in addition to specific actions to address the unique and special needs of green technology based SMEs.

The main barriers, identified across all economies, and possible strategies are:

1. **New company financing.** Green technology commercialisation takes more time than other sectors, meaning it does not necessarily appeal to the appetites of traditional financing, and has both technology and market risks that need to be addressed, with specialised financing mechanisms and incentives. Depending on the specific economy context, these mechanisms might entail a combination of taxation incentives, to spur R&D and investment, early stage financing from government, later stage private angel investment and venture capital financing and leverage of Corporate Social and Environmentally Responsibility programs. Incubators need to develop expertise to

prepare their clients for financing (investment readiness) and to develop their own business ecosystems and specialist financing mechanisms.

As an example, Anita Firmanti, from the Ministry of Public Works, Agency of Research and Development, Research Institute for Human Settlements, noted that special incentives (tax reduction, low interest capital) would accelerate the progressive development of green-based SMEs in Indonesia.

2. **Technical barriers.** Economies are at very different stages of development. Some are developing technology to address green problems and opportunities, such as Korea with sophisticated policies to stimulate R&D and investment; others seek technology from other economies to adapt to their local needs. Potential exists to merge existing and new technology; and for some economies enforcement of patent laws is important. Technology transfer is as important as commercialisation of indigenous technology, requiring incubators to develop both sets of specialist knowledge and to be able to lever networks between different economies.

ITRI in Chinese Taipei is a globally leading example of an organization that leads the way with both commercialization of R&D, technology transfer and enhancement. Of note, the ITRI representative likened the I-Cell incubator in Solo to ITRI 40 years ago and encouraged them in their activities and to learn by doing; clearly this incubator can learn from ITRIs experience. Anita Firmanti's lessons learnt from technology transfer are that it needs intensive technical assistance; financial support for initial production; new initial markets; and stability of product quality, all of which incubation in this sector will need to address.

3. **Placing the importance of green technology on national agendas.** For many developing economies awareness of the importance of green technology is only germinal, unlike in many developed economies. Some have national green development strategies, such as Korea, which adopted as the number one priority a national green policy four years ago, with a slogan "green is life"; others do not. Given the need for multiple players to act in unison at a national level, incubators need to facilitate dialogue, develop national networks and advocate for national green development plans and specific mechanisms to address asymmetries, gaps and ecosystem developments to allow green technology based SMEs to grow. Within APEC however, some countries are role models for other to emulate, such as Singapore.

4. **Lack of competitive market demand.** Without a price on carbon, or mechanisms for including the cost of environmental remediation in current prices, or environmental standards to regulate sector development, new green technologies can be uncompetitive and therefore far more risky. Governments have a key role to play in creating new markets, by use of their regulatory powers and policy mechanism. For instance:
- a. Building standards regarding energy and water use and to minimise carbon footprints can spur the development of new technology SMEs commercialising new building products, techniques and services.
 - b. Removing fuel subsidies, which distort market mechanisms, can spur the development and competitiveness of new transport technologies and indeed technologies in other sectors benefiting from such subsidies. Morten Boje Blarke, Assoc. Prof., Dept. of Energy Technology, Aalborg University, stressed the importance of fair and transparent markets, for which incubators may be political 'smoke screens', although when markets are not completely fair and transparent, incubators have a role to play in helping level the playing field for their incubatees.
 - c. Green certification schemes can enhance emerging green markets, giving consumers and business customers' assurance as to the green credentials of what they buy.
 - d. Feed in tariffs, to create initial local markets for renewable energy, for which Denmark, Europe and similar countries in the APEC region (Australia for instance) are examples.

Governments can play a crucial role stimulating the early development of green sectors through their purchasing power and green procurement mechanisms and as early adopters of new technology. Referring to the Danish wind energy experience, Morten Blake highlighted the importance of access to new markets and inventing domestic markets before embarking on export.

Recognition and award programs play an important role in both helping raise awareness and in rewarding new green technology-based SMEs. At a sector level, specific consultancies may well be needed to analyse where the realistic opportunities and barriers exist for the development of competitive clusters within a particular industry.

Even though there is no global agreement on carbon prices yet, Clean Development Mechanism (CDM) and Carbon Credits offer opportunities for SMEs.

As Jun Ichihara, Ph. D. From the Institute for Global Environmental Strategies, Japan, noted, “Smart utilization of carbon markets could aid further introduction of green technologies, which lead to emission reduction of greenhouse gases (GHGs)”.

Incubators wanting to work in this space need to improve their knowledge and understanding of these mechanisms, so that they can introduce SMEs to the opportunities and to prepare themselves for future developments, which are likely to build on the current Kyoto mechanisms.

5. Lack of consumer demand. Consumer demand for green technologies and services in many economies is only germinal. Participants advocated education at all levels of the education system, from young to older, as a foundation for growing awareness in the future, combined with awards and certification to recognise and create role models.

The proposed guidelines, barriers, strategies and who needs to take action are outlined in Table 3.1 . Underpinning these guidelines are those that are required for more traditional forms of business incubation.

Additional guidelines, which are implicit in those above and addressed in detail below, are that incubators need to develop their capacities and relevant and extensive networks.

3.2. To strengthen network and capacity of business incubator managers in the Asia Pacific region

With a range of capabilities, ranging from people running leading green business incubators, to people with minimal business incubation capability, the overall capability gaps and strategies were addressed and are summarized in the table below.

Again, assuming basic business incubation capability upon which to build, the main capability gaps revolve around:

- a. Inadequate knowledge of green markets, technologies, financing difficulties and mechanisms and associated trends.
- b. A lack of specialised professionals, who might only be available from international sources or in larger corporations.
- c. Only a small number of green incubators globally, although this may be a new area of growth, as evidenced by the World Bank’s infoDev Climate Innovation Centre (CIC) Program, which is in the process of developing a CIC in Viet Nam. Dave Feldman the founder of Bethesda Green listed the 5 top clean technology incubators in the USA, all with a very high tech focus, although Bethesda Green, deeply rooted in the local community and with low and high tech clients may be more relevant for some of the poorer APEC economies.

Table 3.1. Proposed guidelines, barriers, strategies and institutions responsible to take action

Proposed guidelines	Specific barriers	Strategies to overcome barriers	Who needs to take action
1. Develop, and help green technology based SMEs access, specific financing mechanisms and incentives.	Financing Difficulties	<ul style="list-style-type: none"> • Tax incentives • Government financing initiatives • Private finance • Corporate Social & Environment Responsibility 	<ul style="list-style-type: none"> • Government / Legislators • TBIs • Chambers of Commerce/Business • APEC, World Bank • Angel Investors / Venture Capitalists
2. Assist entrepreneurs to overcome specific technical barriers.	Technical barriers	<ul style="list-style-type: none"> • Merge technology – new with existing • Technology transfer • Enforce protection of patents 	<ul style="list-style-type: none"> • TBIs and Accelerators • Universities • Technological (R&D) centres • Patent office
3. Advocate for and engage with national green development strategies	Lack of importance of Green industry in National Agenda	<ul style="list-style-type: none"> • International Alliances • Government Policies and Strategies 	<ul style="list-style-type: none"> • Government / Legislators • APEC • United Nations
4. Advocate for, and help green technology based SMEs, capitalize upon, specific mechanisms to develop competitive markets for green technology and services	Lack of competitive Market Demand for Green	<ul style="list-style-type: none"> • Government regulations e.g. Green Certifications • Government green procurement • Recognition /award/ certification • Consultancy – specific by focus area • Training on Clean Development Mechanism 	<ul style="list-style-type: none"> • Government / Legislators • Chambers of Commerce/Business
5. Advocate for initiatives to raise consumer awareness and help entrepreneurs capitalize upon growing consumer awareness	Lack of consumer demand for green	<ul style="list-style-type: none"> • Education from young • Recognition /award/ certification 	<ul style="list-style-type: none"> • Ministry of Education • NGOs

- d. A shortage of specialised green business infrastructure, for which a role model may be Singapore’s new Eco-business park
- e. Very limited knowledge, at least amongst the participants, of Clean Development Mechanisms and Voluntary Offset Mechanisms, even though they can assist the development and commercialisation of green technologies, as noted earlier. Since 2003, Japan has been supporting CDM capacity building in Asian countries, as the main market along with Europe, to help the establishment of institutional arrangements and procedures, and the building of capacity for implementing the CDM

A further guideline for incubators is, to address their information and capability gaps (Table 3.2).

Table 3.2. The gaps of the incubation capability and strategies to address gaps

Incubation capability gaps	Strategies to address gaps	Responsibility: incubation or other bodies
1. Lack of Knowledge on Green market / technology / financing	<ul style="list-style-type: none"> • Specialized consultancy/ Mentors • More forums / Trade fairs / seminars • Participation from players 	<ul style="list-style-type: none"> • TBIs • Constituents / Citizens • Government • World Bank
2. Lack of Green Professionals	<ul style="list-style-type: none"> • Networking / linkages, within and between countries • Alliances with corporations / associations 	<ul style="list-style-type: none"> • Incubators • Companies / Business Chambers & Associations • World Bank • Universities
3. Lack of Green incubators participants / incubatees	<ul style="list-style-type: none"> • Government incentives to foster green incubators • Alliances with corporations 	<ul style="list-style-type: none"> • TBIs • Constituents / Citizens • Government • World Bank
4. Lack of Infrastructure specific to green technology	<ul style="list-style-type: none"> • Networking / linkages • Alliances with corporations / associations • Eco-Business Parks 	<ul style="list-style-type: none"> • TBIs • Government • World Bank • Companies / Business Chambers & Associations

Incubation never succeeds in isolation and relies upon broad and deep networks. For incubation of green technology based SMEs, incubators need to involve themselves in, or facilitate, a range of networks. Again, to ensure a market orientation, participants considered the issue in the context of the services needed by green SMEs, as summarised

below (Table 3.3). These reinforce and in some ways re-iterate the proposed guidelines addressed earlier.

Table 3.3. Services required by Green SMEs and strategies for service delivery

Services needed by Green SMEs	Strategies for service delivery	Responsibility: incubation or other bodies
Availability of supportive policies: - Green industrial policy,	<ul style="list-style-type: none"> • Establishing consultative mechanism amongst the stakeholders • Establishment of related coordinating body • Provision of favorable tax regime • Government procurement 	<ul style="list-style-type: none"> • Governments (e.g, SMBA/SBC type), • Association (involving all main <i>stakeholders</i>)
Facilitation of access to market	<ul style="list-style-type: none"> • B2B networking; • Business matching forums, • Green tech-based products expo/fair/exhibition, e-marketing • Establishment and use of marketing hub 	<ul style="list-style-type: none"> • Chambers of Commerce, • Ministry of Industries and Trade, APEC • TBIs
Facilitation of access to financing	<ul style="list-style-type: none"> • Investment matching, Provision of funding schemes, R&D funding on GT • PPP mechanisms 	<ul style="list-style-type: none"> • VCs, • Banks, • Government • Angel Investors • TBIs
Facilitation of access to technology	<ul style="list-style-type: none"> • Building innovation networks • Establish favorable technology transfer mechanisms (group of IP and business experts) • Promoting favorable interaction mechanism amongst the academia and industry 	<ul style="list-style-type: none"> • APEC, • Governments • Academia • Pool of experts • TBIs

The presentation by Herry Suhermanto, Director of Cooperative and SME Empowerment, BAPPENAS Indonesia is illustrative of the roles of various players in the ecosystem (Table 3.4). As further illustration, some of the programs that have been implemented in Indonesia to assist green SMEs include examples in Table 3.5.

Table 3.4. Expected roles of stakeholders in incubators' development

GOVERNMENT	RESEARCH AND DEVELOPMENT INSTITUTIONS AND UNIVERSITIES
<ul style="list-style-type: none"> - <i>Providing affirmative actions</i> to support green business through policy and regulation; - Improving business environment; - Supporting the development of clusters and business partnership; and - Promoting and disseminating innovation/technology. 	<ul style="list-style-type: none"> - Sources of innovation and technology; - Promotion and dissemination of innovation and technology; - Implementing partners for government programs; and - Providing training for technology adoption.
PRIVATE SECTOR	CIVIL SOCIETY ORGANIZATION
<ul style="list-style-type: none"> - Source of funding, innovation and product/system development through corporate social responsibility; - Promoting and disseminating innovation/technology; - Implementing partners for government programs; and - Developing clusters and market linkages. 	<ul style="list-style-type: none"> - <i>Promotion and dissemination of innovation</i> and technology - Implementing partners for government programs; - Facilitating the link to market and financial sources; and - Providing training, coaching and consultation.
	PUBLIC-PRIVATE PARTNERSHIP
	<ul style="list-style-type: none"> - Research and development; promotion and dissemination, local capacity development, institutionalization of innovation, and network development.

Table 3.5. Example of programs supporting Green SMEs implemented in Indonesia

Institutions	Programs
Ministry of Industry & Trade (MoIT, now Ministry of Industry and Ministry of Trade)	<ul style="list-style-type: none"> - DAPATI Matching Grant (1997-2001) for technology upgrading services - TA and Training Program (TATP, 2000-2003): matching grants for increasing use of IT consulting services by SMEs - 30 One Stop Service (OSS) for business licensing registration and investment
State Ministry of Cooperatives & SMEs	<ul style="list-style-type: none"> - MAP (matching grant) program for SME cluster development; institutional strengthening 957 BDS providers (BDS-P) in 33 provinces
Ministry of Education	<ul style="list-style-type: none"> - Voucher program: grants for university students/lecturers delivering technology services to SMEs
Others (program donors and counterparts)	<ul style="list-style-type: none"> - Central Java Provincial Government (FPESD)< Bank of Indonesia (KKMB), Chambers of Commerce 9CDSME), etc - ADB, AusAID, CIDA, GTZ, IFC, Swiss Contact, The Asia Foundation, USAID, World Bank, & others

3.3. Strengthening the network and broadening the opportunities for new green technology-based SMEs to find a new market and business partnership in the region

Networks are crucial for incubation of green technology SMEs and often need to extend across borders, for access to markets and technology transfer and for access to knowledge to address information asymmetries. Participants considered this in terms of the existing networks that can be used, their strengths and weaknesses and who should be involved in actions for better networking, as outlined in Table 3.6.

Table 3.6. Existing networks for incubation of green technology SMEs, and their strengths and weaknesses

Existing networks for provision of services	Analyze strengths and weaknesses	Responsibility: incubation or other bodies
<ul style="list-style-type: none"> Local, national, and international TBI associations (e.g. regional associations - Asian Association of Business Incubators, infoDev regional networks such as APIN in the Asia Pacific) APEC 	<p>Strengths:</p> <ul style="list-style-type: none"> Availability of volunteers Good linkages amongst the networks <p>Weaknesses:</p> <ul style="list-style-type: none"> Under financed Poorly coordinated Low focal point commitment 	<ul style="list-style-type: none"> APEC, Governments, TBIs and their associations
Strengthening networks for provision of services	Strategies	Responsibility: incubation or other bodies
Increase general capacity of all related parties	<ul style="list-style-type: none"> Capacity building of network and TBI management Benchmarking Establish certification for TBI management 	<ul style="list-style-type: none"> APEC, Government TBIs
New markets	Strategies to access the markets	Responsibility: incubation or other bodies
Facilitation to access to international market	<ul style="list-style-type: none"> Market intelligence Intensify promotional programs Establish green/eco product certification 	<ul style="list-style-type: none"> APEC, Government TBIs
New partnerships	Strategies to access the partnerships	Responsibility: incubation or other bodies (specify)
Aligning potential and existing needs of SMES and business partners	<ul style="list-style-type: none"> Match making Business meetings 	<ul style="list-style-type: none"> Intermediaries, APEC TBIs

One of the overriding gaps is a lack of resources in available networks, which often do not have dedicated and committed focal points, compounded by the need to improve the capacity for general business incubation management and network management.

3.4. Follow Up: APEC Centre

I Wayan Dipta, Deputy of R&D for Cooperative and SME Resources, Ministry of Cooperatives and SMEs, Republic of Indonesia, stimulated participants in his opening address with the idea for an APEC Center for Green Technology SMEs, saying: “The establishment of an APEC Center for Green Technology Based SMEs would be an effective measure to create a joint effort in the contribution of SMEs in solving the world food and energy crisis and global warming through the adoption of green technology. It is upon you, distinguished guests and delegates, the hope to plan the center and the center programs to make the SMEs able in adopting the green technology and in contributing to food and energy sustainability for the mankind”.

Participants recognised that incubators cannot succeed if they act alone and that all players and stakeholders need to be involved in the challenge. Also, they appreciated that there is much to learn and share. They unanimously endorsed the idea for an APEC Centre. Accordingly the final workshop activity considered the desired activities of such an APEC Centre.

In addition to the strategic activities noted under the guidelines for incubator management, developing capacity, networks and opportunities for new markets and partnerships, which participants believed should become activities of the centre, the following more specific services and programs were recommended.

1. **Database.** A data base to share and collect information amongst APEC economies, stakeholders and incubators, addressing:
 - a. Benchmarks for green SMEs and incubators
 - b. Information on green technologies and trends and how to educate markets
 - c. Green Technology Incubators
 - d. KPIs for green technology incubators
 - e. Success stories to serve as role models and to stimulate action
 - f. Market Information
 - g. Green Technical Standards and Accreditation Institutions
 - h. Register of experts who can be engaged for specific training activities to improve capability and knowledge
 - i. Step by step guides for how to start and grow green technology based SMEs
 - j. FAQs about green technology based SMEs and green technology incubators

- k. Sources of funding
- l. Links to other related centres for learning, for example the World Bank's infodev Climate Innovation Centre program, www.infodev.org, where business plans for the CICs under development can be found

2. **Training programs**, to address capacity gaps and information deficits
3. **Technology Transfer programs**, although time did not allow participants to explore this important topic in detail
4. **More Networking + Follow Through**, for knowledge transfer

For this to be effective a good Public Private Partnership (PPP) Board will be necessary, as well as professional management and a dedicated secretariat, in a structure involving all APEC economies, with permanent members for continuity and maximum learning. The proposed Centre will need to start with good credibility, as a precursor to a strong reputation accrued through its activities. Commitment will be required, because impact will take time to achieve and all stakeholders and green technology incubators will need mechanisms for involvement.

Participants were well aware they do not have the authority, or position, to commit their economies to such an initiative. None the less, as well as the interest expressed from Indonesia to host the proposed Centre, participants from Singapore, Malaysia and Viet Nam noted their governments are likely to be interested also. The perspective from the Chilean representative was pragmatic and insightful, noting that what is most important is utility not location; Chile and other Latin American economies would see strategic value in such a centre as a way to reach Asia markets.

IV. PROJECT EVALUATION

The APEC questionnaires for participants and speakers and a general evaluation questionnaire were used to evaluate the project. They are addressed separately. The complete recapitulation of responses to the questionnaires is listed in Annex H.

4.1. Participant evaluation using APEC Questionnaire

With a mean rating of 4.41 (out of 5) the project met participant expectations. Follow up activities to continue learning between different member economies and their strategies and for technology transfer, market access and development of specialized incubators for green technology based SMEs is a recurring theme in the comments, focusing on development of an APEC Centre for green SME development.

Clearly participants benefited in terms of their understanding of the policies needed to foster green technology based SMEs, the challenges these businesses face and how business incubation can be used and adapted to support them. This is illustrated by the following comments:

- *Knowledge of best practices in other countries and identification of potential alliances to access to new knowledge and markets*
- *Learning about the green economies in each country and how we can potentially collaborate on new opportunities.*
- *Good lessons learned from other countries and good networking*
- *The opportunity to learn about other countries incubators and green technology initiatives has definitely benefited myself & my economy as this information/knowledge will be distributed/shared with related agencies and incubators in my economy*
- *Much information/learning, which I'll bring back home to recommend appropriate green technology and to share the learning.*

Participants indicated they gained knowledge on green-tech, how to establish green technology based SMEs, strategies to develop incubators, finding and using networks and how other countries have gone about supporting green technology based SMEs. Some the comments are as followed:

- *How to create SMEs based upon green technologies and use of networks to solve problems and gain knowledge*
- *Skills about green technology and green industry*
- *Knowledge of projects and policies to implement in my country, and knowledge of institutions with whom to develop alliances*
- *Each economy faces a vastly different set of challenges. However it is still possible to adopt and apply the thinking, models and success stories e.g. Denmark's methods of identifying wind as a key industry.*

- *How developed countries grow green technology for SME development, such as from USA, Denmark, Taiwan and Japan.*

Participants noted a range of activities, some general and others specific, they plan to implement in their economies. Most rely upon mobilizing a range of government and other stakeholders, which in itself shows how understanding has improved and that for success incubators need to work in concert with many government and other stakeholders. The following comments are illustrative:

- *Will concentrate on supporting Green technology*
- *Promote and develop more green SMEs, green entrepreneurship and institutions for green technology transfer*
- *Have our ministry work closely with the office of Higher Education and other stakeholders in establishing better incubators*
- *Help my country to change to green technology based*
- *Focus on green business incubation activities for SMEs*
- *Plan to apply to Clean Development Mechanisms (CDM)*
- *Articulation with stakeholders of the lines of action*
- *Establishment of Green SME Centre*
- *Adapt a new business model of TBI Collaboration in our institution*
- *To launch some green business incubators in Mexico*

In terms of what needs to be done next to build upon the project, the main comments relate to follow up, continued networking and sharing of knowledge with stakeholders and incubators to improve regulations and support services, and development of an APEC Centre for green SME development. Some of the comments made are:

- *Need regulation to make plans successful and also commitment*
- *Establish a network platform to support green technology and green SMEs*
- *I believe that a database containing all information regarding green industry in each country should be set up, so that we can source and match complementary skills and opportunities.*
- *Transfer the information and knowledge to incubators and other critical institutions in my country. Use the network created in this workshop.*
- *Effective networking among the countries that have specific and similar problems*
- *Follow up*
- *The idea of developing an APEC centre must be studied seriously as a proposal*
- *The project depends on developing knowledge with officials in agencies for the promotion of SMEs, using networks for them to understand the real problems and needs of green technology based business and strengthening the network of service providers to address the needs of green SMEs*

The plans noted are for both collective and individual action, with strong support for an APEC Centre for green technology based SMEs, to continue networking and learning, for

policy development, entrepreneurship education and awareness and for technology transfer and market access.

- *Programs in the Environmental Ministry*
- *Collective action: An APEC Centre initiative would be an ideal vehicle to seeing that happen*
- *Individual action: Applying success factors from other nations to our policy development*
- *Entrepreneurship education, especially at the university level*
- *I've identified possible networking project collaborations with some APEC member countries*

4.2. Speaker evaluation using APEC Questionnaire

The speaker evaluation mirrored many of the comments made by participants. Speakers felt the project met its goals and the following comments sum up speakers' thoughts about the achievements of the project:

- *Yes, the workshop provided several recommendations including guidelines for business incubator management and enhancing network and capacity development for SME.*
- *Yes, improved knowledge about incubation models, and country activities.*
- *Yes, I met many interesting potential partners and also exchanged my experience with the participants.*
- *I think the project brought together a diverse and quality group. The presentations were good and it appeared that everyone benefited from the networking and discussions. Many of the topics presented addressed incubator concepts, business support, services and opportunities. Personally I learned from the speakers and attendees.*
- *Yes, I have guidance on how to operate my business. Also I have something new to make my business better.*

Speakers supported the mix of participants noting the value of having representatives of government, the private sector and academia working together, as illustrated by the following comments:

- *Government officers, business people and academics are a good combination*
- *It is a good mix of institutional and private participants*

None the less, participation of more SMEs and more visits to SMEs was noted as a way to improve. APEC's possible role in facilitating more communication, networking and sharing between SMEs from member economies was noted. Time effective ways for participants

to get to know each other better, perhaps with short biographies circulated in advance, would improve networking in future events.

Speakers thought the project was very effective in addressing a range of interrelated issues, although much will depend on follow up, as illustrated by the comments below:

- *Highly effective*
- *As for the initial contact and information exchange, the workshop and the training were very successful. Much of the final impacts relies on follow-up*
- *I believe the program was effective on many levels. I gained a greater perspective of other countries programs. I learned many ideas about incubation that I can implement in my market.*
- *I met several people with whom I will maintain contact. I think my experience was shared by many.*

Speakers noted also the need for follow up activities and the potential of an APEC Centre for green SME development.

4.3. Participant evaluation using general evaluation questionnaire

The general evaluation questionnaire was used to specifically evaluate the workshop and training, each of which is addressed separately below.

4.3.1. Evaluation from workshop participants

On a scale of 1 (poor) to 5 (excellent), mean ratings were: the logistics 4.7, venue 4.8 and facilitation 4.5. For each of the session, the content and presenters were rated separately on the similar scale with the means ranges from 4.1 to 4.4. Learning from other participants, as opposed from speakers scored a mean of 3.9.

Specific questions were asked to help assess what participants had learned.

1. What needs to be done to grow green business and technology for SMEs and by whom?

Responses clearly show that participants learned the task is not easy and that coordinated responses are needed to draw all stakeholders together, in the context of national green development plans, with regulations and incentives to stimulate development and create markets. Furthermore, as green technology incubation is a new area, capacity building and raising awareness are also needed. Some of the illustrative comments are:

- *Creation of awareness- Government, universities, private sector, incubators*
- *All the participants in the ecosystem must get involved*
- *All the parties working together needs to be implemented to grow green business*

- *For many countries, it requires a total paradigm shift, on its views about green industry. More importance needs to be placed on industry and the corresponding policies that have to be implemented by government. Transfer of knowledge across countries is possible, but each member will have to determine what they can put on the table.*
- *Coordination of relevant stake holders, efficient and market oriented financial procurements by Governmental units/Agencies, NGOs, Universities and R&D Centres, Incubators*

Different economies are at varied stages of development and have differing capacities, which is reflected in the green technology sectors of most importance to their economies. The most common sectors for most economies are: energy, transport, water, agriculture and waste management

2.What are the main improvements incubators need to implement to incubate green SMEs in your economy?

Responses show the need for continued capacity building, focusing on particular technologies and market opportunities, specific funding of green technology incubation, activities to stimulate markets for the SMEs and the necessary policy settings. Responses indicate that participants understand that for green technology based SMEs to be competitive governments have a role to play in putting in place regulations and policies to help create markets and cultural awareness. As noted by one participant, the first step is to put in place an appropriate policy framework. The following comments are illustrative

- *Clustering towards certain market area*
- *Incubator management capability, infrastructure and funding*
- *Clearer source of funding, greater access to green information, cross border ties to make products/services exportable*
- *Marketing for green business & green technology, so incubators can create a larger market segment.*
- *At the moment there is nothing in place, so a policy in green growth is needed first.*
- *Access to market, develop market*
- *Government to promote green technology, support the development of green industry networks for resources and to develop a professional team of business mentors*
- *Education/advice regarding going green, access to funding & market*
- *Cultural change and political leadership to implement the change*
- *Cultivation of awareness among SMEs, identify & prioritize support for green technology*

At a general level as indicated in the APEC evaluation questionnaires participants appreciated the opportunity to learn from each other and from different economies and want follow up activity.

Comparing responses in the entry questionnaires and the post workshop evaluation questionnaires shows participants have improved understanding on a number of key points:

- The importance of policies that draw all players together. Incubators cannot do it on their own and in some economies a paradigm shift is needed.
- The importance of regulations and incentives to help create new markets, to allow green technology based SMEs to be competitive, and how this is approached in some economies. Mechanisms to stimulate and develop markets are as important as the technology and infrastructure.
- The importance of culture change to help create and grow emerging green consumer markets and now this can be approached
- Learning about policies in other economies has addressed some of the learning needs, but it is only a start
- Learning about green technology incubation has progressed, although participants clearly want to learn more. Furthermore some have realized they also need to improve their basic incubation capability as a foundation for green technology incubation.

4.3.2. Evaluation from training participants

On a scale of 1 (poor) to 5 (excellent), the training was rated 4.1 as to meet the need of the participants. Other mean ratings were: the logistics 4.2, venue 4.3 and facilitation 4.2. For each of the session, the content and presenters were rated separately on the similar scale with the means ranges from 3.4 to 4.5. Developing action plan was favored by the participants with a mean rating of 4.1. Learning from other participants was rated 4.0, and all the training participants recommended a similar training program for others in the future.

Specific questions were asked to help assess what participants had learned.

1. What are three most important aspects of green business SMEs

- Address challenging issues of climate change, environmental degradation, resources available.
- Viable /scalable/cost to produce technologi
- No waste residues, Good prospect in the future, Benefit of the business.
- Planning, organization, resources.
- The 3 R : Reuse, recovering and recycle.
- Use less energy from renewable resources.

- New technology, lack of financing and lack of marketing skills.
- Innovation, need supporting, low carbon.

2. Following this training what are your three most important learning needs about incubating green SMEs?

- How to improve and implement technology for SMEs.
- How to create and do the model in manage the SME.
- How to create and develop the product market.
- Green technology, Networking with other institutions, Incubation model.
- The market.
- Networking, technology transfer, supply chain.
- Mechanism to incubating new start up company.
- Knowledge about green technology, skill about how to nurture green SMEs.
- Other government policy to support Green SMEs.

3. What are your ideas for expanding the regional market for Green SMEs?

- Government role in regulation for producers, Incentivation for producers.
- Awareness raising for consumers, Promote the green tech products.
- Political will should be improved, Consumer preferences have to be built.
- Networking, Exhibition, Create a new website.
- Facilitation, financing, information.
- Expand networking and do technology transfer.
- Build up networking and exchange more information on Green Technology.
- As the incubator, we will help green SMEs to build more market channel including network.

4. Please, mention the three most important roles of an incubator in nurturing the Green SMEs

- Screening, Funding for early stage of start ups who are viable/scalable with the business plans, Access to technologies for start up companies in green. Tech. If design can be prepared to include a session and set of recommendation with face to face discussion of 2 panels (Govt. w/ SMEs & incubators).
- Management fee for tenants and incubator, How to use some experts and it's salary for their expertise, How to measure the performance of tenants to change with other new tenants.
- Government goodwill, Academic, and Enterprise.
- Government policy, entrepreneur/industry, academic.
- Facilitating, financing support, and business consultant.
- Help Green SMEs obtain financial aid, provide specialized value-added services for green SMEs, and set up a bridge between government and green SMEs.

5. What was the best aspect of the training

- ITRI experience – experts inputs – some more examples of success stories.
- Contain of presentation in doing on developign Green technology based on local source.
- Networking, Green technology and Benchmarking incubation in other country
- Meet expert and representative of APEC economies.
- The success story of incubatee that use green technology.
- Knowledge and networking.
- Informative and excellent communication.
- Learning and discussion.

6. How could the training be improved?

- The training have to be conducted continually.
- Make the training sustainable.
- More detail of training program would be appreciated.