

Green Productivity for Green, Inclusive Development: A Commitment Today for a Greener Tomorrow

APO 3rd World Conference on Green Productivity
APO Center of Excellence on Green Productivity: Milestone of APO movement



Achievements of Green Factory Promotion



Speaker:



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Deputy Project Manager of Foundation of Taiwan Industry Service

2014.11.04

Background of Green Factory Corps

Green Productivity for Green, Inclusive Development:
A Commitment Today for a Greener Tomorrow

-The Technical Services of APO COE GP

2013 APO COE GP hosted the *Workshop on Development of Model Project for Green productivity and Research on Needs Assessment of Member Countries* in Taipei

- Assess and document the extent of implementation and adoption of GP in member countries and identify emerging areas where GP needs to be focused to support member countries' needs.
- Help the COE GP and the APO in designing and implementing GP activities that are relevant and attuned to the needs of member countries, focusing on the following 4 models to provide technical services:



Center of Excellence on Green Productivity
Asian Productivity Organization



Green Factory



Green Energy



Resource Recycling



Eco-agriculture

-Foundation of Taiwan Industry Service (FTIS)

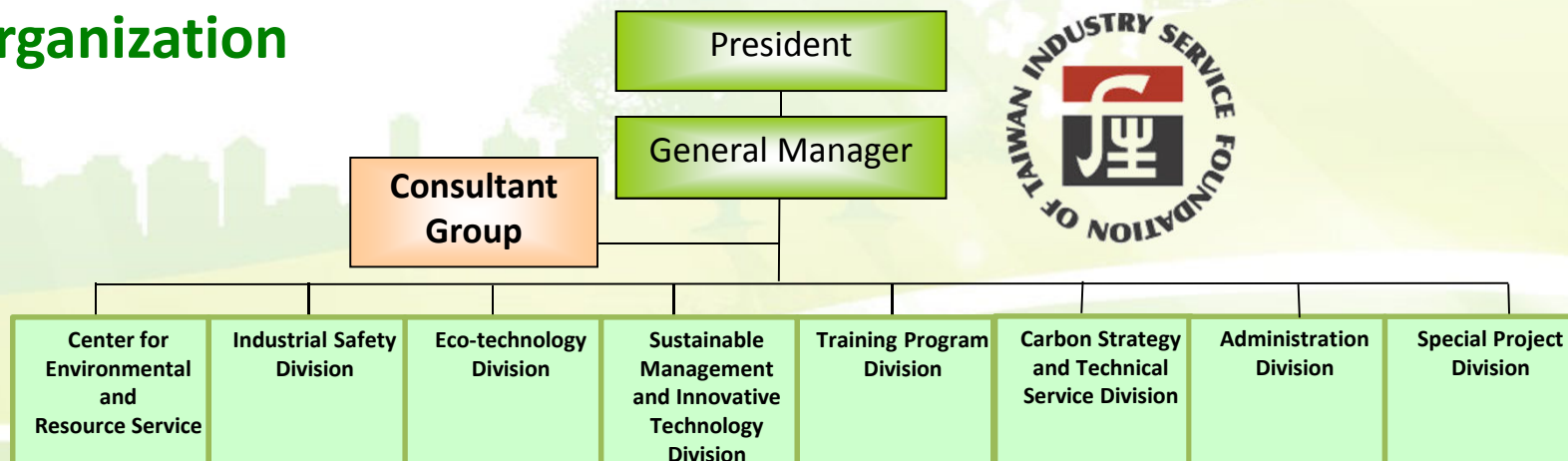
◆ Introduction

- FTIS was established in 1998, aiming to **improve industrial safety, environmental protection, and sustainable competitiveness** of industries in Taiwan. There are around **300** employees in FTIS.
- FTIS is entrusted from the **Industrial Development Bureau**, Bureau of Energy, EPA, and Water Resources Agency to **conduct strategic planning, counseling, guidance and training programs** regarding sustainable issues.

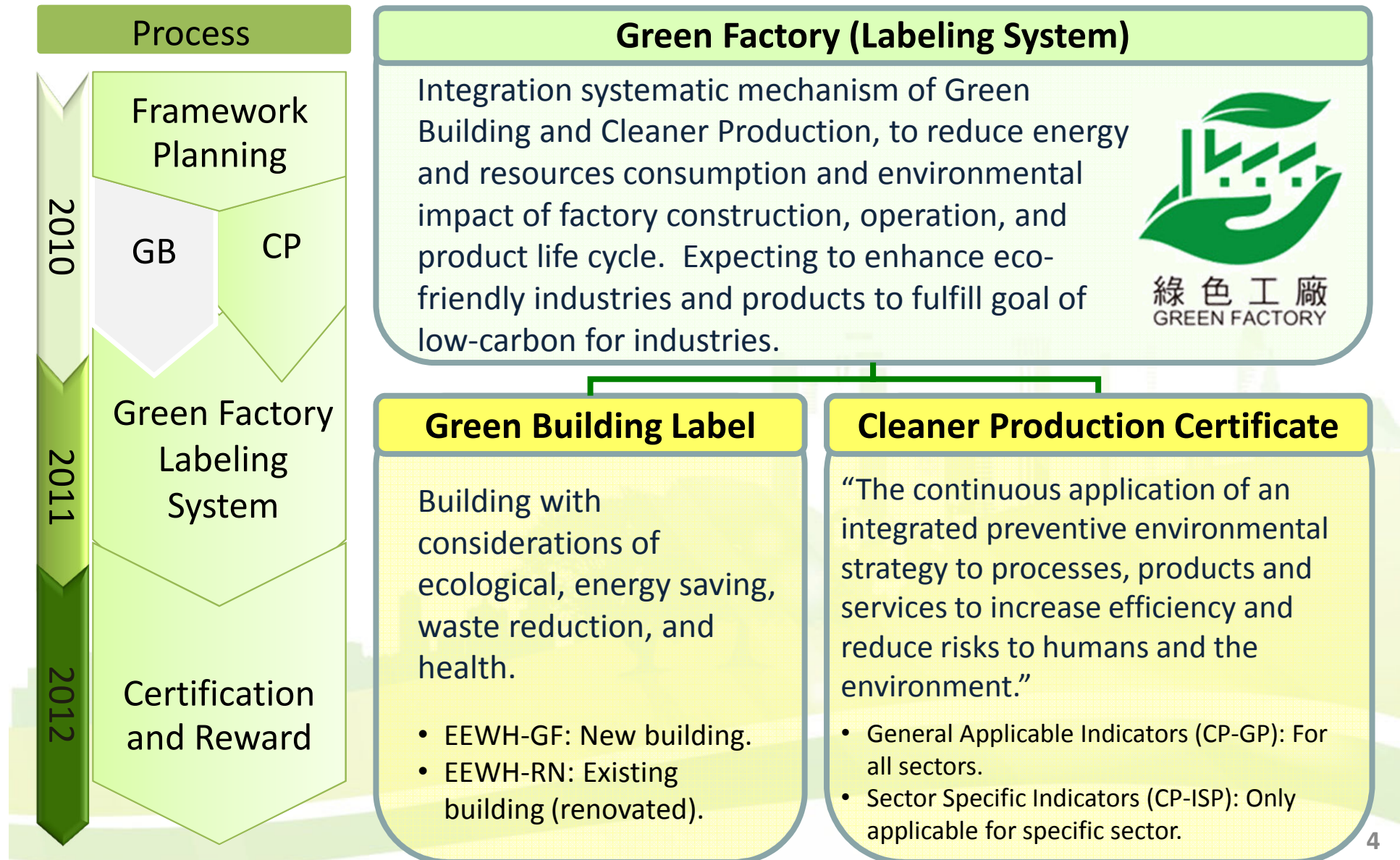
◆ Fields of Specialty



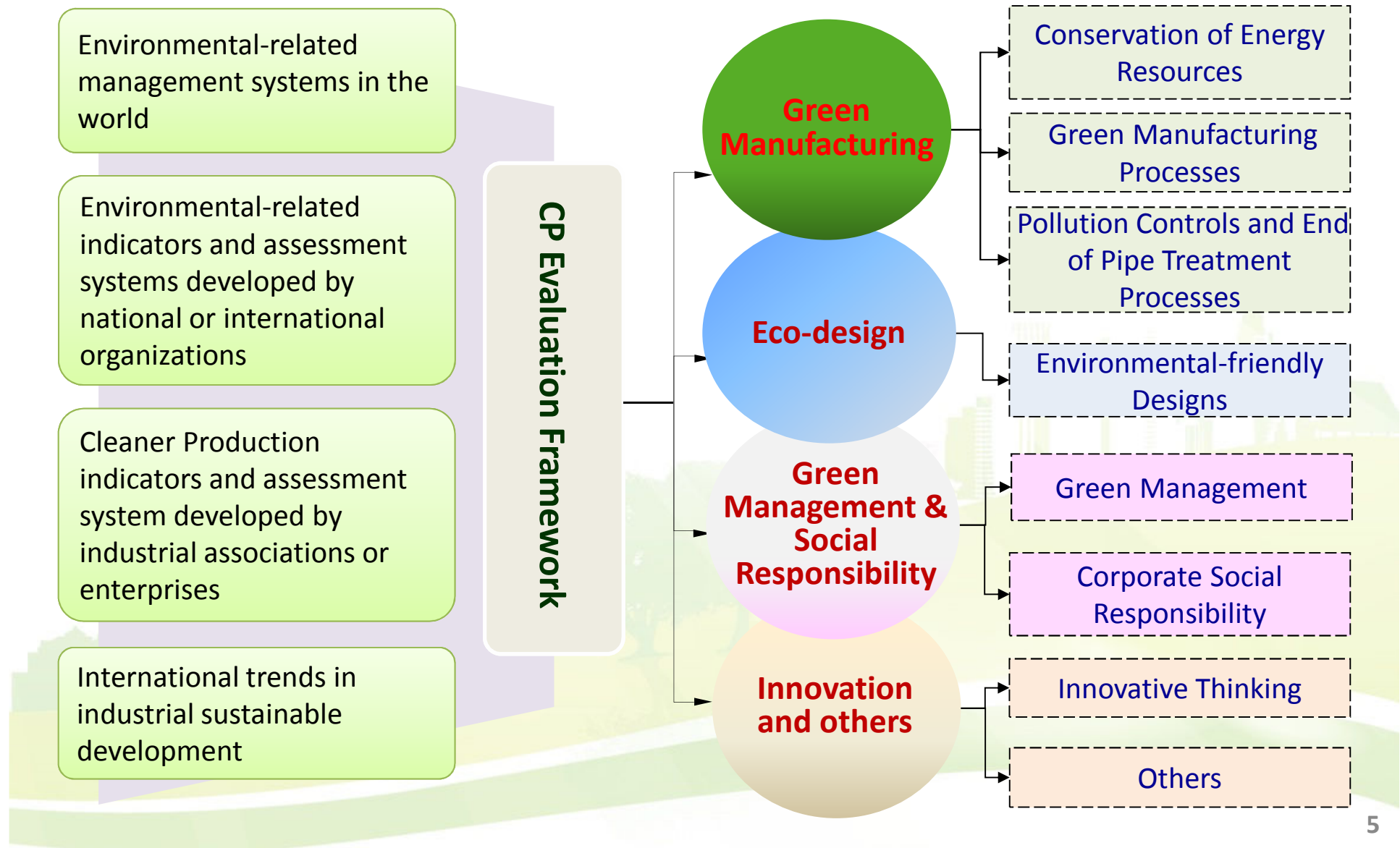
◆ Organization



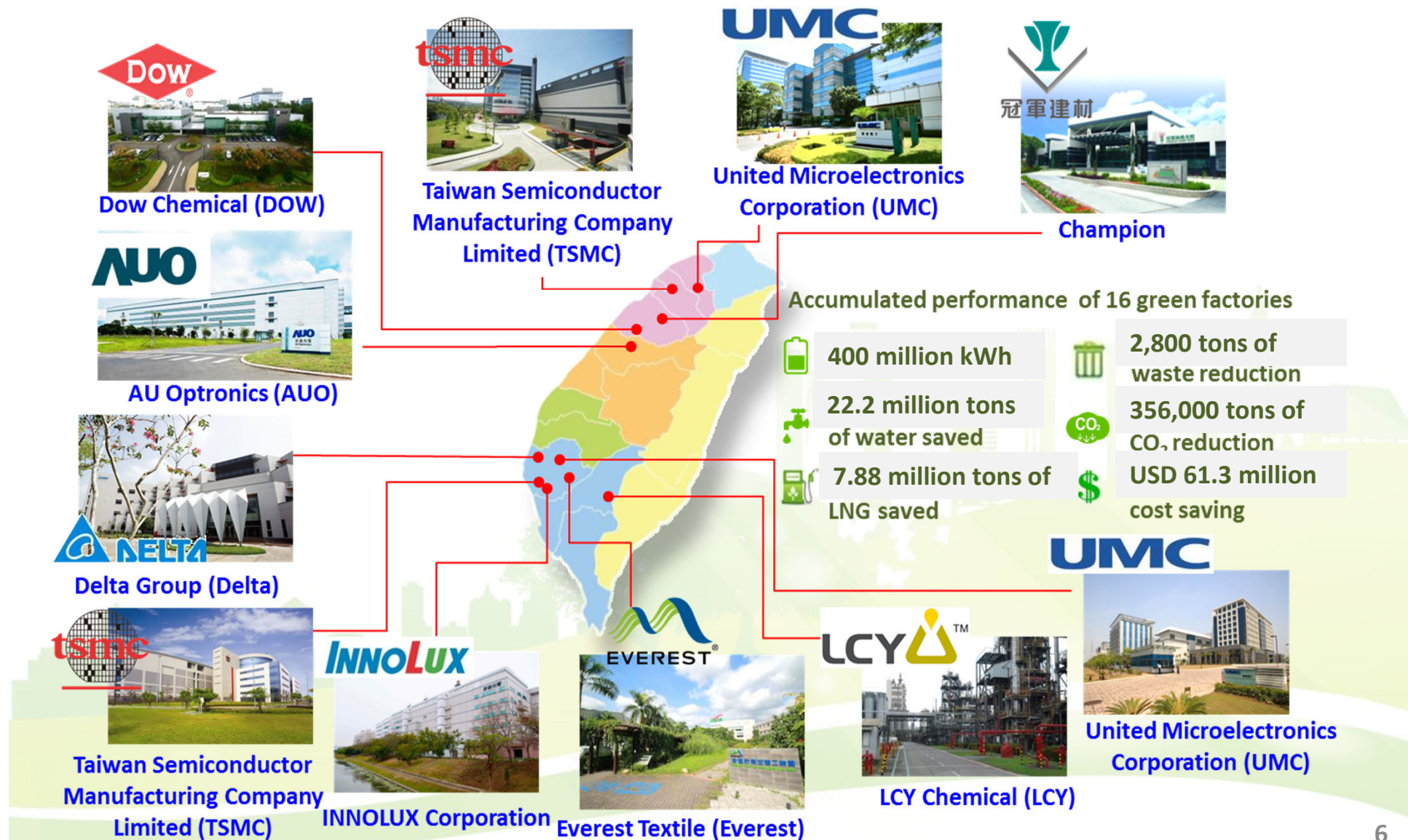
-Framework and Definition of Green Factory (GF)



- Cleaner Production Framework



-Total Benefits of Green Factories in R.O.C.



Achievements in 2013

Green Productivity for Green, Inclusive Development:
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-Overview

• GF Experts Database

- Compile international and domestic experts' information including Cleaner Production, Green Building, Green Building Material, Green Factory etc.
- Establish **GF Experts Database**.

• International Workshop

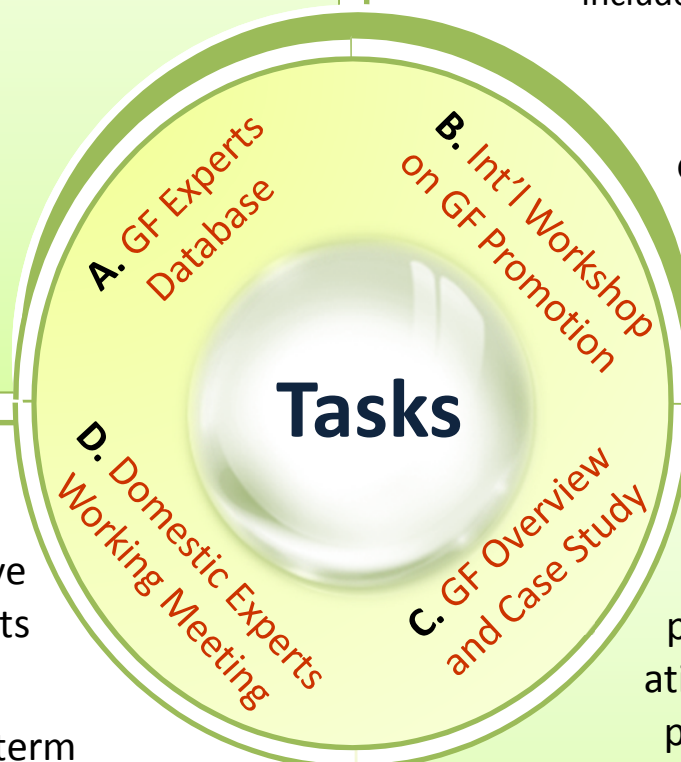
- Organize 12 domestic experts whose specialty includes Green Factory into **GF Green Corps**.
- Hold Workshop on GF Innovative Practice Promotion, and invite GF Green Corps members, 1 Indian expert and 5 member country delegates (Indonesia, India, Nepal, Malaysia and Pakistan) to participate in.

• Future Plan

- Define the target cooperative countries in Domestic Experts Working Meeting
- Set up the short-term, mid-term and long-term promotion goals.
- Invite officers from Indonesia to join the workshop, and discuss the future cooperation.

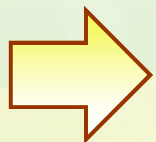
• Publication

- The case studies of the best practices on GF policy implementation and technology application of public and private establishments.
- Compile domestic GF practical technology cases to finish **Overview and Case Studies on Green Factory in R.O.C. 2013**.



-A. Green Factory Experts Database Establishment

GF-related Technology	Number of Experts
Green Building (Material)	6
Energy and Resource Saving	11
Green Manufacture	66
End-of-pipe Treatment	14
Eco-friendly Design	12
Green Management and Social Responsibility	11
Innovative Thinking	2
Total	122



Green Factory Database includes **107 domestic experts** and **15 international experts**.

-B. International Workshop (1/2)

DATE: 2013/11/4~11/8

Domestic Expert' Speech



Int'l Expert' Speech



Site Visiting-TSMC



Site Visiting-Champion



Day	Content
Day 1	<ul style="list-style-type: none"> • Opening • International Experts' Speech
Day 2	<ul style="list-style-type: none"> • Domestic Experts' Speech • 2013 Green Production International Forum & APO COE GP Starting Ceremony
Day 3	<ul style="list-style-type: none"> • Case Study of Green Factory Building in R.O.C. • Visit Intelligent Living Space in Taipei • Experience Sharing on Green Factory Label Awarding • Visit Champion Building Materials Co., Ltd.
Day 4	<ul style="list-style-type: none"> • Visit TSMC Fab 15 • Visit Theme Pavilion of Green Building Materials
Day 5	<ul style="list-style-type: none"> • Discussion of Cooperative Strategies and Opinion Exchanges • Awarding Presentation and Closing Ceremony

-B. International Workshop (2/2)

◆ Group Discussion

- Establish GF Promotion team
- Discuss on incentives of GF system
- Hold GF seminar and workshop
- Demonstrate GF programs
- Carry out int'l exporters interactions
- Interact with APO member countries on GF issues

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-C. Publication



CONTENTS

Overview and Case Studies on Green Factory in R.O.C. 2013

APO Center of Excellence on Green Productivity



Publisher: Industrial Development Bureau, Ministry of Economic Affairs, R.O.C.
Editor: Center of Excellence on Green Productivity, Asian Productivity Organization
Foundation of Taiwan Industry Service

Publication Date: December 15, 2013

Project: 3-Way VOC Recycle

Company: United Microelectronics Corporation (UMC)/Semiconductor Manufacturer

In general, a 2-stage way is used in the incineration process for recycling volatile organic compounds (VOC) for heat recovery, which elevates end-of-process gas and air temperature. UMC adds a third-

stage exhaust gas recycling to increase the temperature of the exhaust gas into the burner, saving cost by USD 130,000 annually as well as reducing the temperature of the waste heat emissions.



3-Way VOC Recycling Equipment
(Source: Green Factory Label, 2013)

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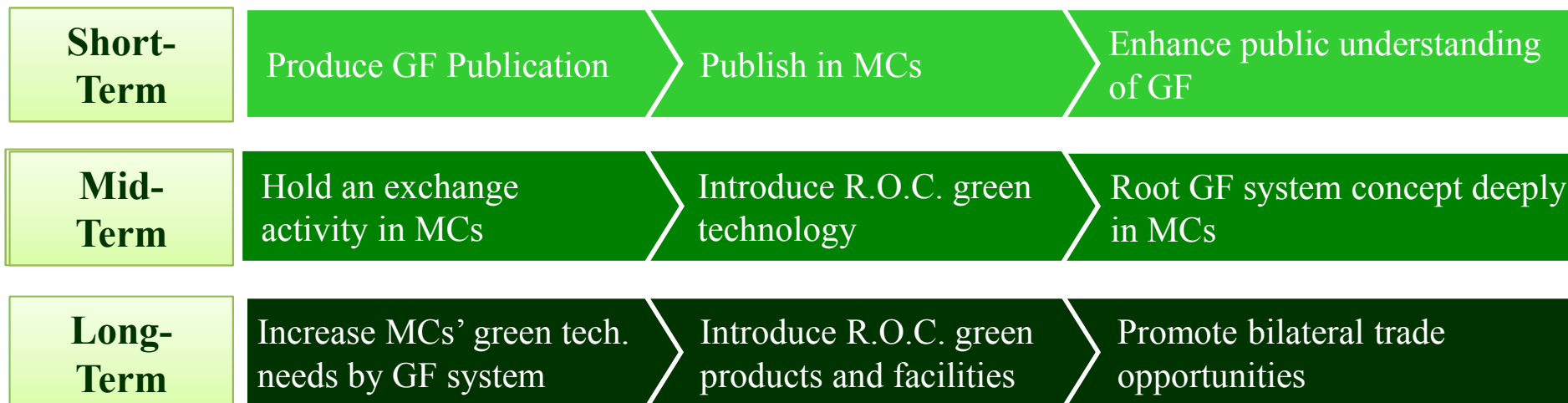
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-D. Future Plan



Domestic Experts
Working Meeting



GF Green Corps Members



Achievements in 2014

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-Technical Service Exchange Activity -- Green Factory

◆ Project Collaboration Partners



- R.O.C. Central Government: Industrial Development Bureau (IDB), MOEA, R.O.C.



- APO & APO Agency in R.O.C. (China Productivity Center, CPC)



- Foundation of Taiwan Industry Service (FTIS)



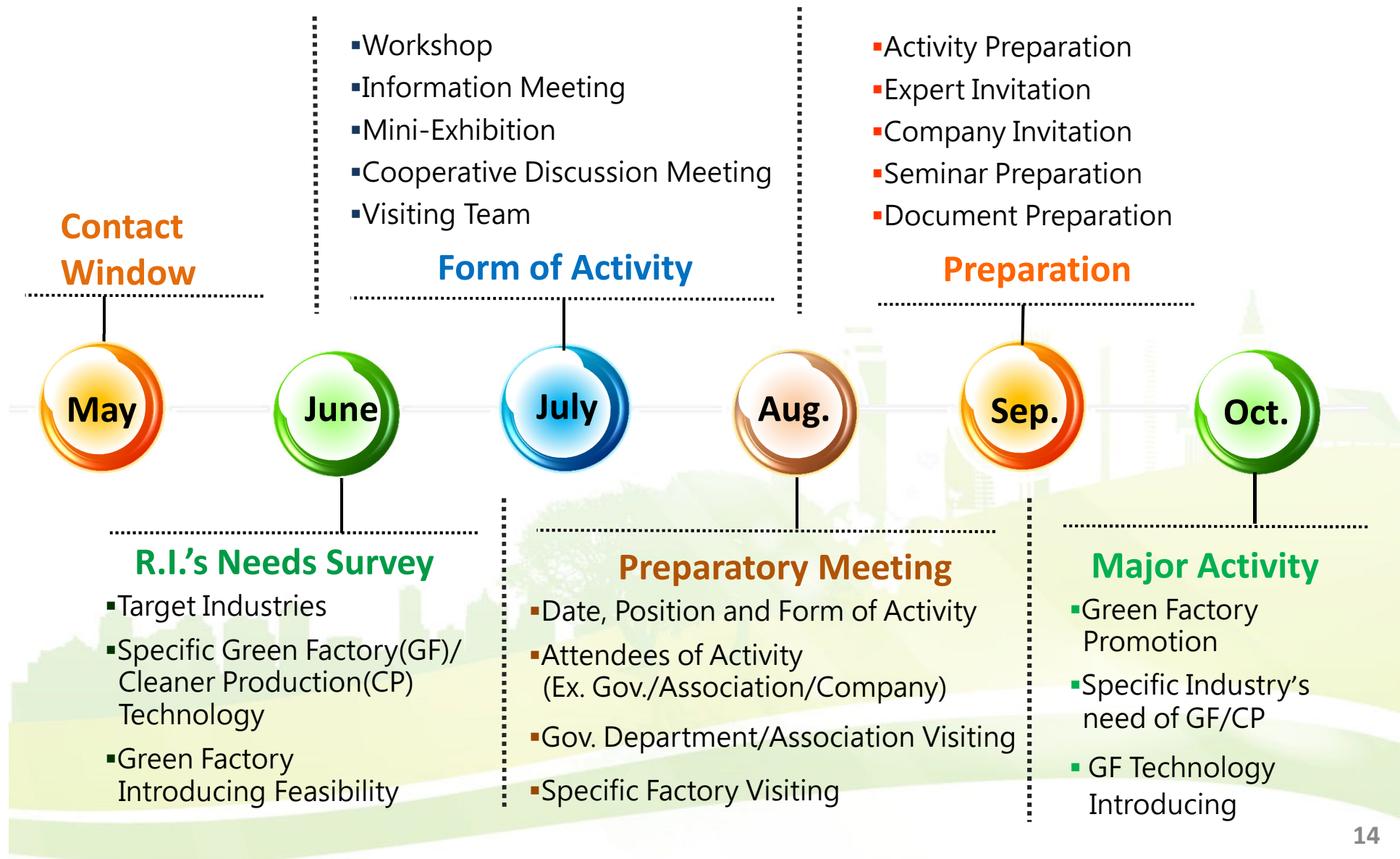
- The Centre of Public Communication Division, Ministry of Industry (MOI), **Republic of Indonesia (R.I.)**

◆ Plan

- Preparatory Meeting (August)
- GF Green Corps Technical Service Exchange Activity (October)



-Schedule of Implement



-GF Green Technical Service Corps Members (1/2)

No.	Company	Name	Title	Specialty	Technology & Product & Service	
1	Sustainable Development Division, IDB, MOEA, R.O.C. 經濟部工業局永續發展組	Dr. Liang-Tung Chen 陳良棟	Deputy Chief 副組長	Green Factory	<ul style="list-style-type: none"> Green Factory Labelling System Gov. industrial project management 	<ul style="list-style-type: none"> Sustainable development promotion
2	Taiwan Energy Service Association 台灣能源技術服務產業發展協會	Mr. Hung-Yao Chao 趙宏耀	Executive Director 常務理事	Energy efficiency management	<ul style="list-style-type: none"> ESCO Energy management 	<ul style="list-style-type: none"> Energy saving technologies
3	Lnd Education System, Zero-Carbon 零碳行動有限公司	Mr. Vincent Y. Chen 陳揚文	CEO 執行長	Green building	<ul style="list-style-type: none"> LEED certification Environmental education 	<ul style="list-style-type: none"> ISO 50001 certification
4	Sustainable Environmental Technology and Management Co., Ltd. 永發環境(股)公司	Mr. Chih-Ku Chen 陳致谷	Managing Director 總經理	Product environmental management	<ul style="list-style-type: none"> Product Life Cycle Assessment Product environmental impact assessment tool development 	<ul style="list-style-type: none"> Product environmental management strategy assessment
5	G&F Environmental Technology Inc. 進方環保科技有限公司	Mr. Wen-Shan Wang 王文山	General Manager 總經理	Pollution Control	<ul style="list-style-type: none"> Drinking water treatment Waste treatment 	<ul style="list-style-type: none"> Waste water treatment Waste gas treatment

-GF Green Technical Service Corps Members (2/2)

No.	Company	Name	Title	Specialty	Technology & Product & Service	
6	Ship and Ocean Industries R&D Center 船舶暨海洋產業研發中心	Mr. Shih-Hsien Lee 李思賢	Engineer 工程師	Green building	■ Building energy management	■ Wind power assessment
7	Cheng-Long Intelligent Engineering Co., Ltd. 承隆智能(股)公司	Mr. Yang Chung 鍾裕揚	Business Manager 業務經理	Energy Efficiency Management	■ ESCO application ■ Energy management	■ Energy saving technologies
8	Foundation of Taiwan Industry Service (財)台灣產業服務基金會	Mr. Sandy Shen 沈坤伸	Manager 經理	Cleaner Production	■ Industrial sustainable development ■ Cleaner production consultancy	■ Environmental label ■ Chemical engineering
9	Foundation of Taiwan Industry Service (財)台灣產業服務基金會	Ms. Dinah Tai 戴茱帆	Project Deputy Manager 專案副理	Sustainable development	■ Sustainable issue consultancy ■ Green Factory promotion	■ CSR report consultancy ■ Carbon neutral and reduction
10	Foundation of Taiwan Industry Service (財)台灣產業服務基金會	Ms. Nelly Chen 陳念妤	Engineer 工程師	Green Factory	■ APO Project Execution	■ Wastewater Reuse
11	National Taiwan University 國立台灣大學	Mr. Paul Liu 劉展嘉	Observer 觀察員	Environmental management	■ Material flow analysis	

-GF Green Corps Technical Service Exchange Activity

DATE	ACTIVITY
10/13 (Mon)	<ul style="list-style-type: none"> • GF Green Corps Departure • Preparatory Meeting • Welcome Dinner
10/14 (Tue)	<ul style="list-style-type: none"> • National Seminar -Policy -Technology
10/15 (Wed)	<ul style="list-style-type: none"> • Site Technical Consultancy - PT. Pindo Deli Pulp and Paper Mills - PT. Lucky Textile Group
10/16 (Thr)	<ul style="list-style-type: none"> • Cooperation Meeting
10/17 (Fri)	<ul style="list-style-type: none"> • GF Green Corps Departure



Welcome Dinner



National Day Celebration



National Seminar

◆ National Seminar

Green Productivity for Green, Inclusive Development:
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National Seminar on Green Industry with theme: Green Industry as a World Trendy to Better Achievement



Green Factory Label
(R.O.C)



Green Industry Award
(R.I.)

Policy

Technology

Energy Saving

Green Building

Waste Management

Pollution Control

R.I. & R.O.C.



Mr. Ansari Bukhari
General Secretary
MOI, R.I.



Mr. Arryanto Sagala
Director General of BPKIMI
MOI, R.I.



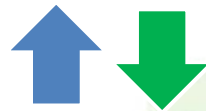
Dr. Liang-Tung Chen
Deputy Chief
IDB, MOEA

◆ National Seminar: Policy

Representatives of R.O.C. and R.I. gov.:
Policy and experience exchanging on promoting
R.O.C. GF system and R.I. green industry.

Green Factory Label (R.O.C.)

- **Authority:** IDB, MOEA
- **Purpose:** Intergrade Green Building and Cleaner Production, to reduce energy and resources consumption and environmental impact of a factory manufacturing life cycle, to fulfill goal of low-carbon for industries which conform the global tendency.



Green Industry Award (R.I.)

- **Authority:** MOI, R.I.
- **Purpose:** Focus on upgrade the SMI' competitiveness, producing efficiency and market acceptance, R.I. initiate this award to encourage best enterprises which implement better practices on resources and energy using, waste minimization and sustainable production.



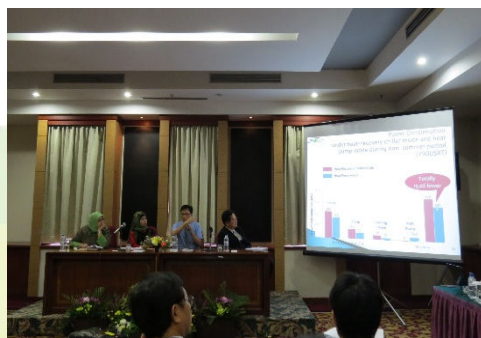
Green Productivity for Green, Inclusive Development:
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◆ National Seminar: Technology

Green Productivity for Green, Inclusive Development:
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- Experience sharing on technical aspects of green building energy saving, cleaner production, resource and energy saving, green production, waste minimization and waste water treatment.
- Holding the bilateral interaction on green industry and technology which could provide new green concepts to RI industries and introduce R.O.C. green technologies to R.I. The deeper future cooperation is expectable.



Topic	Speaker
Comprehensive Energy Efficiency Service in HVAC System	Hung-Yao Chao Executive Director of Taiwan Energy Service Association (R.O.C.)
How Could "Green Productivity" Make Money? Our Experience of Green Building and Energy Management System	Vincent Y. Chen CEO of CarbonZero Too, Co., Ltd. (R.O.C.)
Cleaner Production Application and Waste Water Treatment Technologies	Wen-Shan Wang General Manager of G&F Environmental Technology Inc. (R.O.C.)
Unlocking the Economic Potential of Waste Prevention of Industrial Sector in R.O.C.	Chih-Ku Chen Managing Director of Sustainable Environmental Technology and Management Co., Ltd. (R.O.C.)

◆ Site Technical Consultancy : PT. Pindo Deli Pulp and Paper Mills

Company Profile

PT Pindo Deli Pulp & Paper (PDPP) – affiliate with **Asia Pulp & Paper (APP)**, is one of the *world's leading group a wide range* of paper, extends from commodity base paper to value added art paper, that includes *cast coated paper, tissue, specialty paper, carbonless paper and office products*, with multi-locational manufacturing facilities in **Karawang** (West Java) & Perawang (Riau).

Discussion

Pindo Deli has been awarded the **Green Industry Award**, and achieved the ISO 14001 and ISO 9001:2000 certification for its activities in Environmental Management System and Quality Management System. PDPP *shared their strategies* on environmental protection as well as the saving plan on energy and resource consumption.

Perambulation

Improvement of Natural Ventilation

About the ventilation equipment, PDPP has installed several *wind forced balls* on the roof of factory buildings. GF Green Corps experts suggested that PDPP could use green building concept of nature wind flow to modify the building. By improving the ventilation of better quality of indoor air, it would also benefit the employees' health.

Company Introduction



Manufacturing Facilities



Storage Environment



◆ Site Technical Consultancy : PT. Lucky Textile Group

Company Profile

PT. Lucky Textile Group (LTG) was established in 1989 together with in-house **Weaving, Dyeing, Printing and Finishing** facilities. The unit is spread over an area of 13 hectares at **Cikarang Barat**, about 35 Kms from Jakarta. This company's production takes place **24 hour a day, 7 days a week**, with an installed capacity of 70,000 spindles and an output of more than 1200 tons of yarn per month.

Company Introduction



Discussion

The company has achieved the ISO 9001:2000 certification for its activities in Environmental Management System and Quality Management System, "OKOTEX" Certification for harmful Substances etc. For further improvement, LTG addressed their need about end-of-pipe treatment system to GF Green Corps members.

Wastewater Treatment



Perambulation

Improvement of Wastewater Treatment System

Lucky Print's anaerobic treatment process should improve removal performance. There are 2 suggestion from GF Green Corps members:
1) trace and detect the target substance from manufacturing process;
2) add nutrient source to promote anaerobic bacteria grown.

Air Pressure System



◆ Cooperation Meeting (1/2)

Green Productivity for Green, Inclusive Development:
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• Participants:

- Mr. Yang Yang Setiawan, Secretary of Agency for Industrial Policy, Business Climate and Quality Assessment (BPKIMI), MOI, R.I.
- Dr. Ngakan Timur Antara, Director of the Center for Green Industry and Environment Assessment, MOI, R.I.
- GF Green Corps members (e.g. Dr. Liang-Tung Chen, Deputy Chief of Sustainable Development Division, IDB, MOEA, R.O.C.)

• Purposes:

- Holding bilateral cooperation meeting with deep discussion on future cooperation plans.



◆ Cooperation Meeting (2/2)

Green Productivity for Green, Inclusive Development:
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Formations of Future Cooperation

Training Courses of GF Labeling System

Workshop on Green Technology

Green Factory Demonstration Project

Expectations

- Increase the visibility and awareness of both **Green Industry Award** and **Green Factory Label**.
- Learning from R.O.C. GF experiences and using R.O.C. green technology to help the industrial development in R.I..



Cooperation Routes

Via the platform of APO projects, sending R.I. representatives to R.O.C. to join the GF evaluation process or participating GF training courses.

Invite R.O.C. GF related experts to R.I. to share the experiences or carry out the project of GF demonstration projects.

Expected Benefits

◆ Green Factory Label System Introduction

Introduce the Green Factory Label System concept into Indonesia, and diffuse to other countries.

Base on the Green Factory Label System introducing, bilateral industries could exchange the related technologies/ services/ products/training courses and create more green business opportunities.

◆ Cleaner Production Technologies Promotion

Help local companies solve the environmental problems by cleaner production technologies such as energy saving and pollution control, etc.

◆ Business Opportunities Seeking and Exchanging

Green business opportunities will be brought by exchanging activities and cooperative meetings for both side.

go!
Green opportunities

*Green Factory
Green Future!*

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Thank you for your attention



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