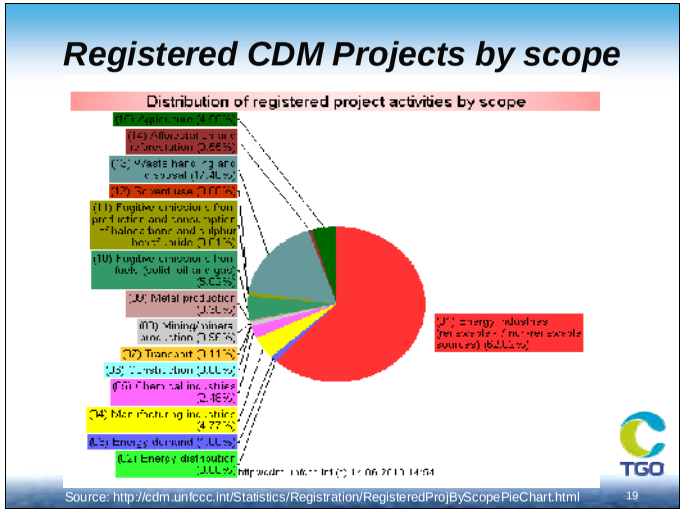
UN01-19	Target Group: G



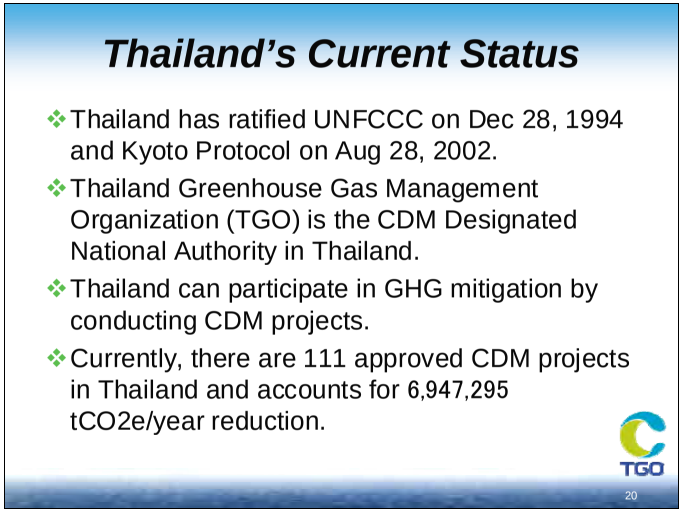
Key Points

- More than (2,000) projects have been registered as of (July 2010)

Reference and Additional Information

- CDM statistics
http://cdm.unfccc.int/Statistics/index.html
- List of registered CDM projects
http://cdm.unfccc.int/Projects/registered.html

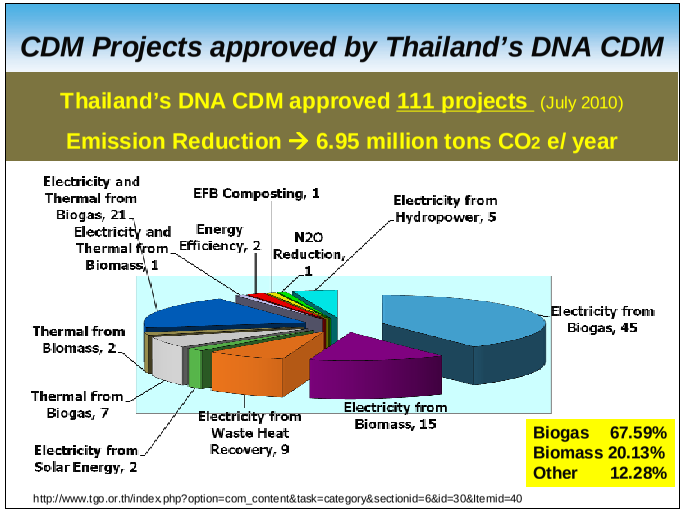
UN01-20	Target Group: G



Key Points

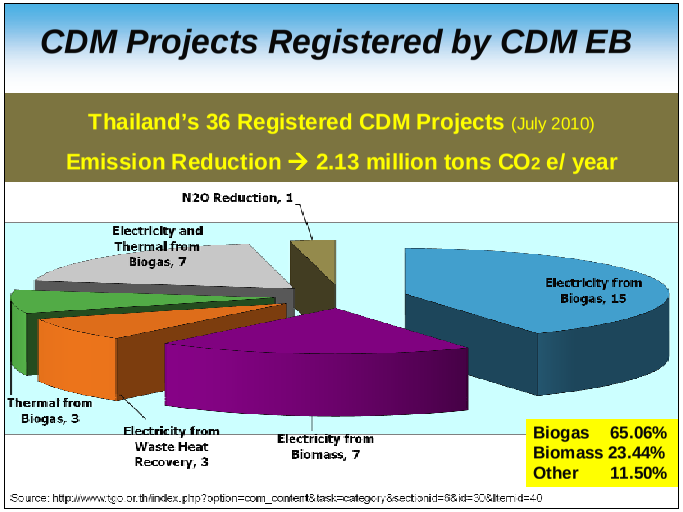
Reference and Additional Information

UN01-21	Target Group: G



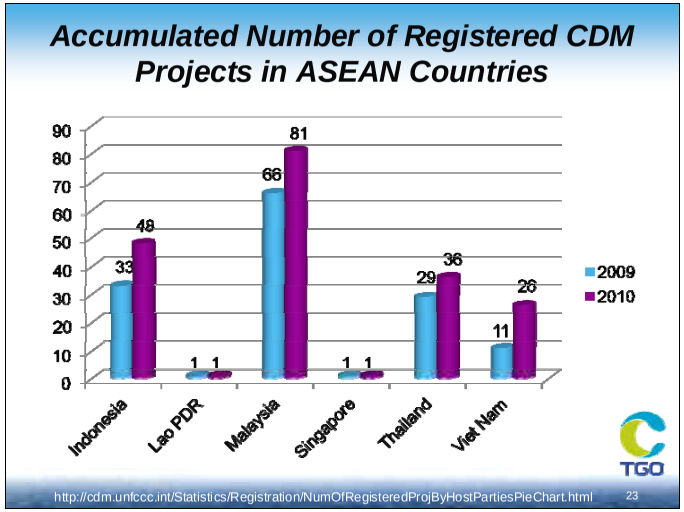
Key Points	Reference and Additional Information

UN01-22	Target Group: G



Key Points	Reference and Additional Information

UN01-23	Target Group: G



Key Points	Reference and Additional Information

UN01-24	Target Group: G

UNFCCC：Negotiations

Target Groups

Code	Target group
G	General audience and potential project proponent

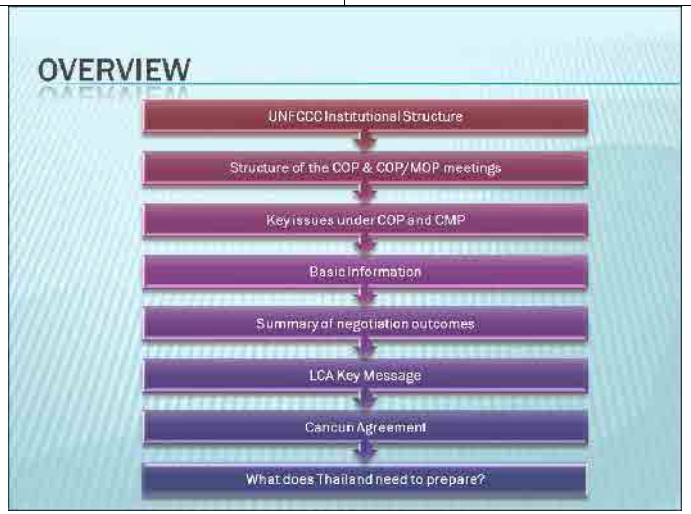
Update History

Version	Date	Update Contents
01	08/2011	Initial adoption

UN 02-01	Target Group: G

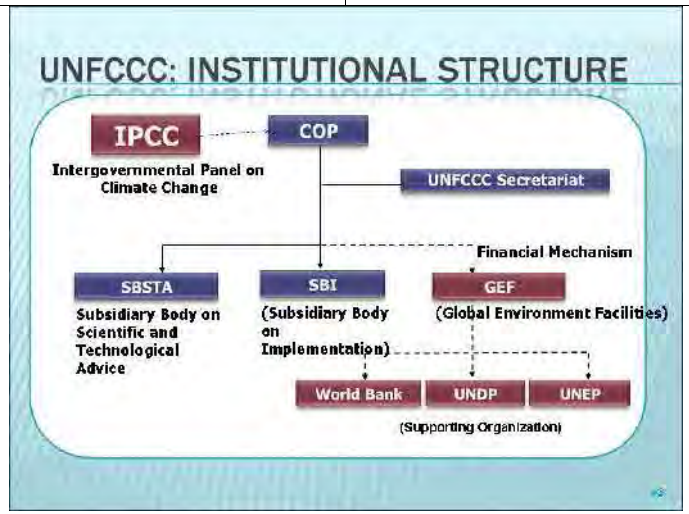
Key Points	Reference and Additional Information
-	

UN 02-02	Target Group: G



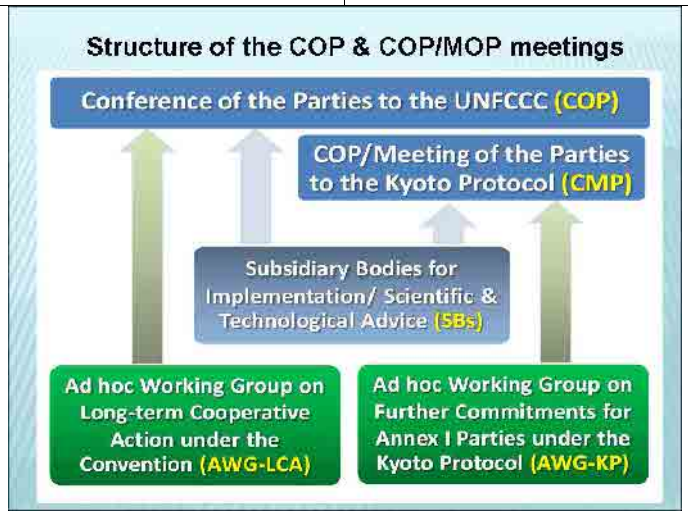
Key Points	Reference and Additional Information
-	

UN 02-03	Target Group: G



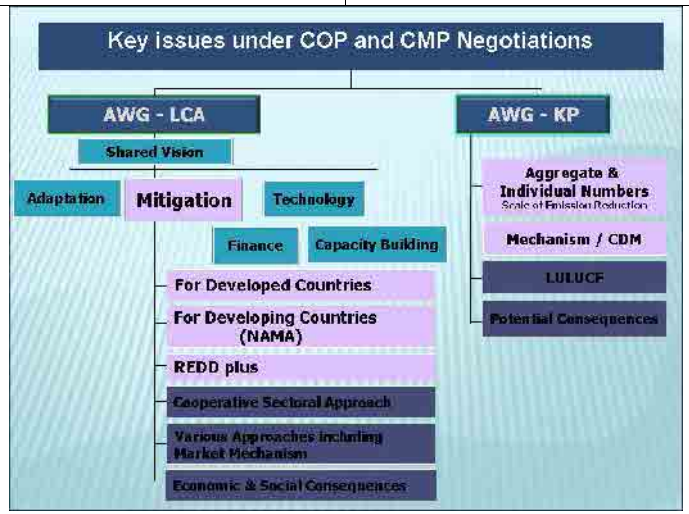
Key Points	Reference and Additional Information

UN 02-04	Target Group: G



Key Points	Reference and Additional Information

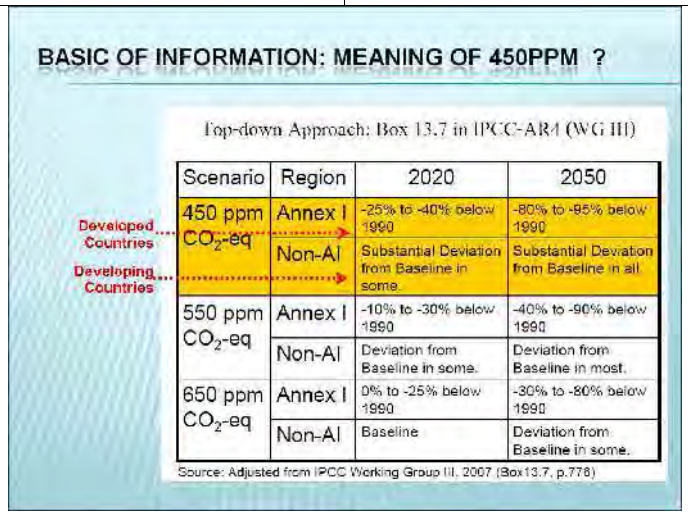
UN 02-05	Target Group: G



Key Points

-

UN 02-06	Target Group: G

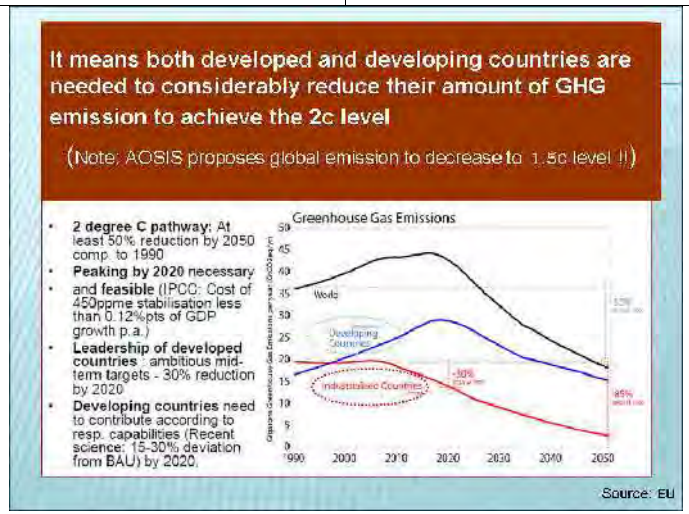


Key Points

-

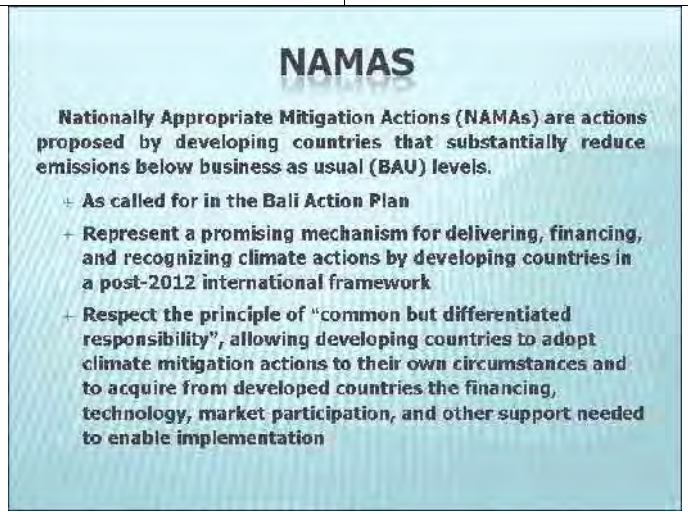
Reference and Additional Information

UN02-07	Target Group: G



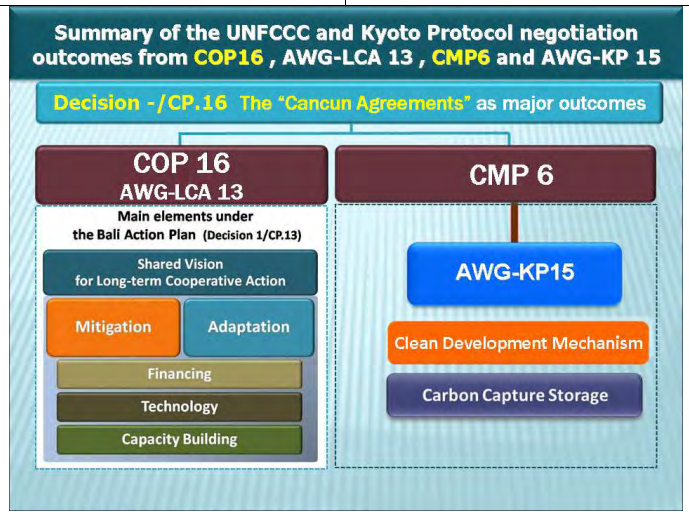
Key Points	Reference and Additional Information

UN02-08	Target Group: G



Key Points	Reference and Additional Information

UN02-09	Target Group: G

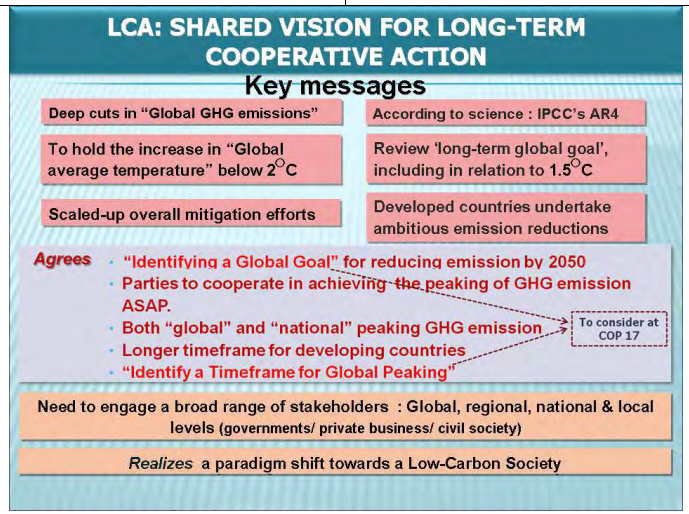


Key Points	Reference and Additional Information

UN02-10	Target Group: G

Key Points	Reference and Additional Information
-	

UN02-11	Target Group: G

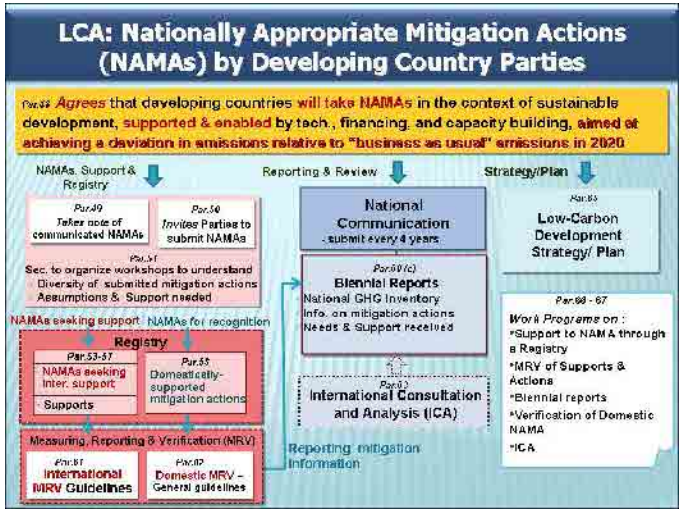


Key Points	Reference and Additional Information
-	

UN02-12	Target Group: G

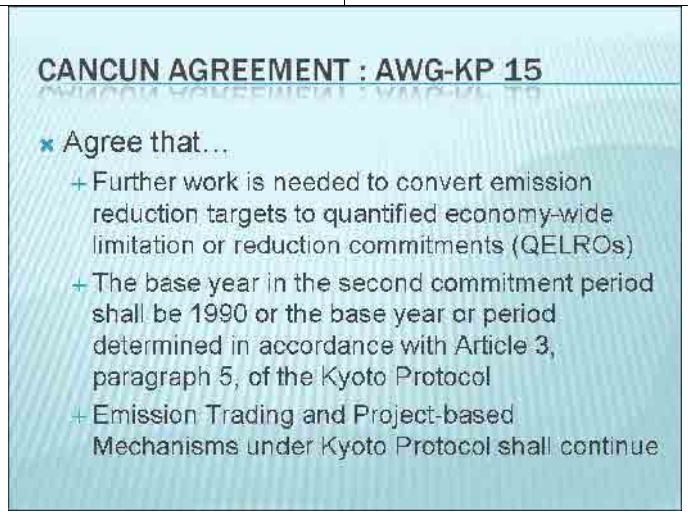
Key Points	Reference and Additional Information
-	

UN02-13	Target Group: G



Key Points	Reference and Additional Information

UN02-14	Target Group: G



Key Points	Reference and Additional Information
-	

UN02-15	Target Group: G

Key Points	Reference and Additional Information
-	

UN02-16	Target Group: G

Abbreviation	Name
AAUs	Assigned Amount Units
CCS	Carbon capture and storage
CDM	Clean Development Mechanism
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
COP	Conference of the Parties to the United Nations Framework convention on Climate Change
GHGs	Greenhouse Gases
GWP	Global Warming Potential
KP	Kyoto Protocol
LCA	Long term Cooperative Action
LDCs	Least Developed Countries
LULUCF	Land use, Land use change and Forestry
MRV	Measurable, Reportable and Verifiable
NAMAs	Nationally Appropriate Mitigation Actions
REDD plus	Reducing Emission from Deforestation and Forest Degradation in Developing countries and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
UNFCCC	United Nations Framework convention on Climate Change

Key Points	Reference and Additional Information
-	

UN02-17	Target Group: G

Key Points	Reference and Additional Information

UN-03 **Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD)**

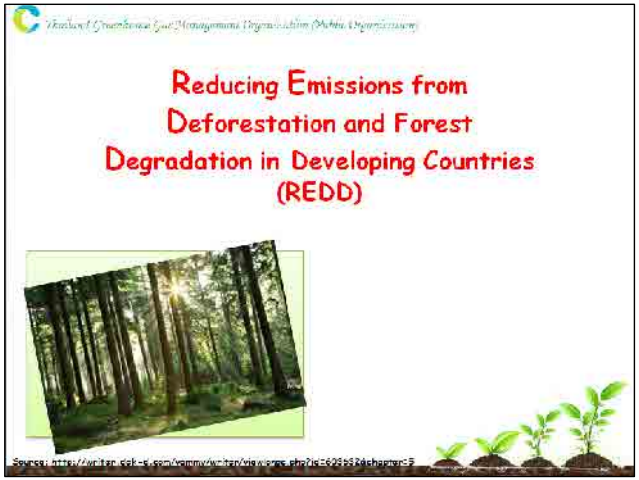
UNFCCC Structure and Negotiations (REDD)

Target Groups

Code	Target group
G	General audience

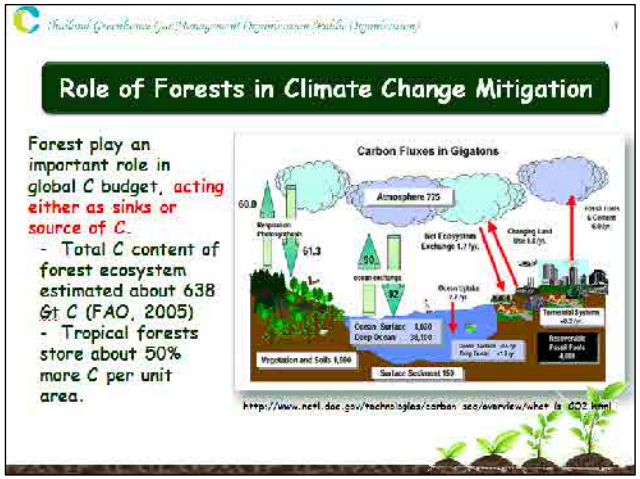
Update History

Version	Date	Update Contents
01	20/01/2011	Initial adoption

UN03-01	Target Group: G
	
Key Points	**Reference and Additional Information**

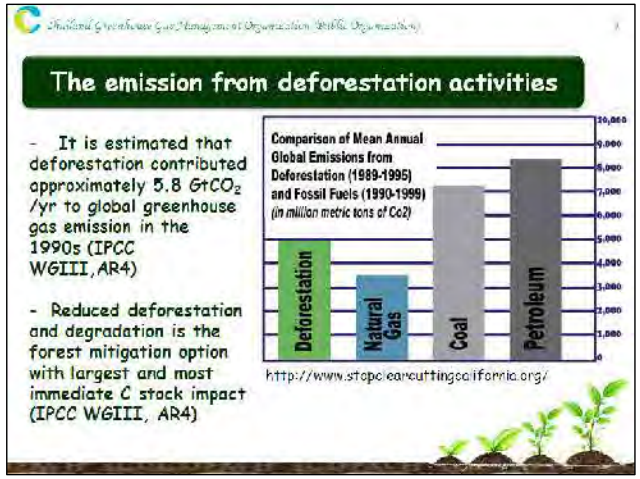
UN03-02	Target Group: G
	
Key Points	**Reference and Additional Information**

UN03-03	Target Group: G



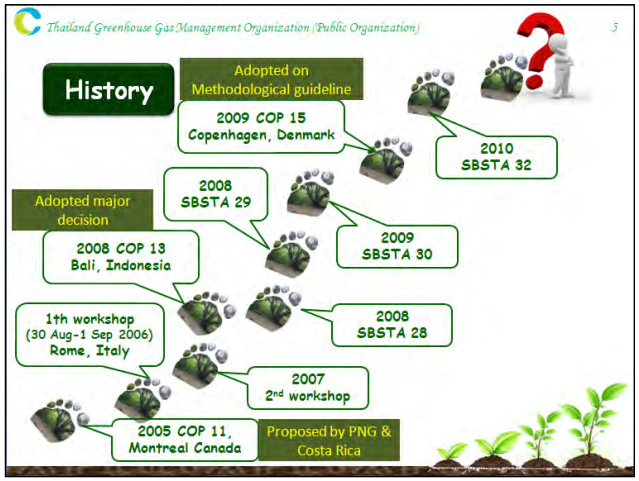
Key Points	Reference and Additional Information
- In figure, There are the balances of carbon in all natural situations. - Only in the usage of fossil fuel that emitted the carbon in the atmosphere.	

UN03-04	Target Group: G



Key Points	Reference and Additional Information

UN03-05	Target Group: G



Key Points

Cop 11: - proposed by Papua New Guinea and Costa Rica
- provided a mandate for further work by SBSTA (Subsidiary Body for Scientific and Technical and Methodologies issues

1st workshop : - scientific, socio-economic, technical and methodological issues
- policy approaches and positive incentives

2nd workshop : - ongoing and potential policy approaches
- positive intensives
- technical and methodological requirement
- assessment of results
- provision of other conventions (CBD, UNCCD, Ramsar)
- work of multilateral organizations (UNFF, ITTO, WTO)

COP 13: - adopted a major decision on REDD
* Further strengthening and supporting ongoing efforts
* Supporting capacity building, technical assistance and transfer of technology
* Explore a range of actions, identify options and undertake demonstration activities to address drivers of deforestation
* Mobilize resources

SBSTA 28: - Workshop on Methodological issue (Jun 25-27 2008, Tokyo, Japan) main issues are about forest cover, reference emission level, technology transfer and capacity building

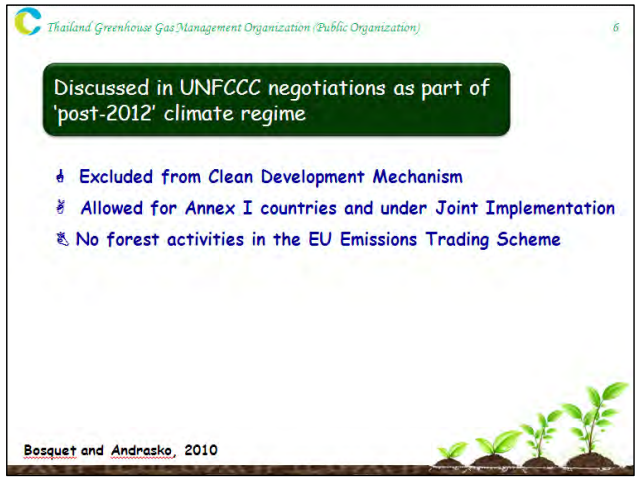
SBSTA 29: - Recommended methodological guidance (IPCC Guideline and Good Practice Guidance)

SBSTA 30: - Conducted the expert meeting on methodological issue relating to reference emission levels and reference level (23-24 March 2009 Bonn, Germany) and also

COP 15: - adopted on Methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of for forest carbon stocks in developing countries

SBSTA 32: aims of the meeting are increasing the number of experts trained in the use of the IPCC guidance and guidelines and enhancing sharing of information, experiences and lessons learned on the use of the IPCC guidance and guidelines on the UNFCCC website.

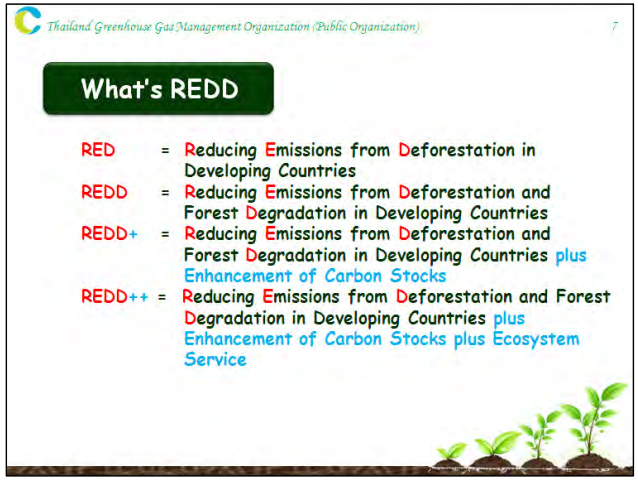
UN03-06	Target Group: G



Key Points
- The discussion before COP 15

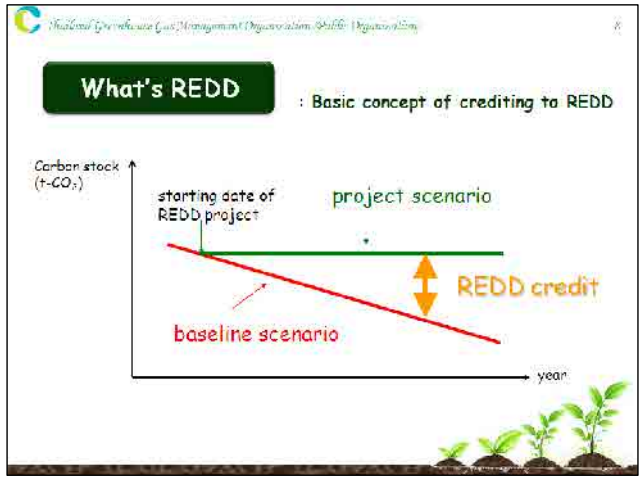
Reference and Additional Information

UN03-07	Target Group: G

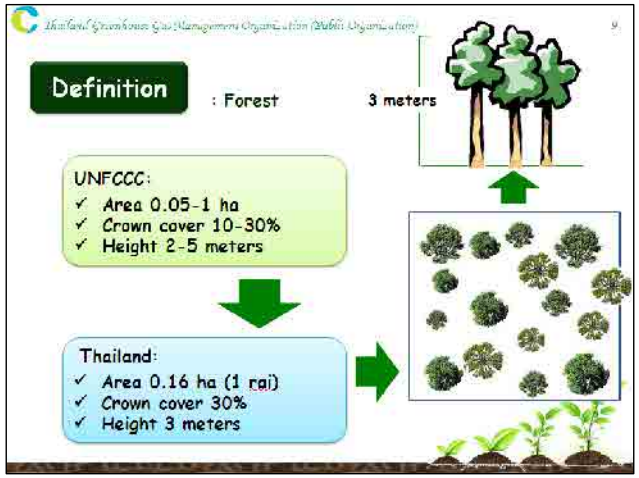


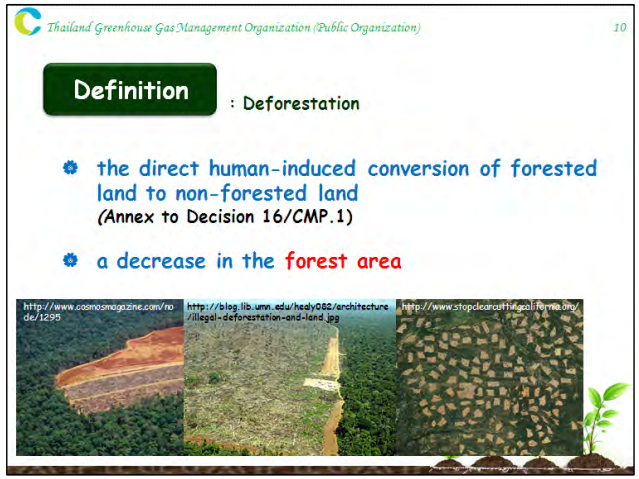
Key Points	Reference and Additional Information

UN03-08	Target Group: G



Key Points	Reference and Additional Information
- The red line is the deforestation rate of the project site before implementing project. - The green line is the deforestation rate after implementing project. - The gap between the red line and the green line is the credit from REDD project	

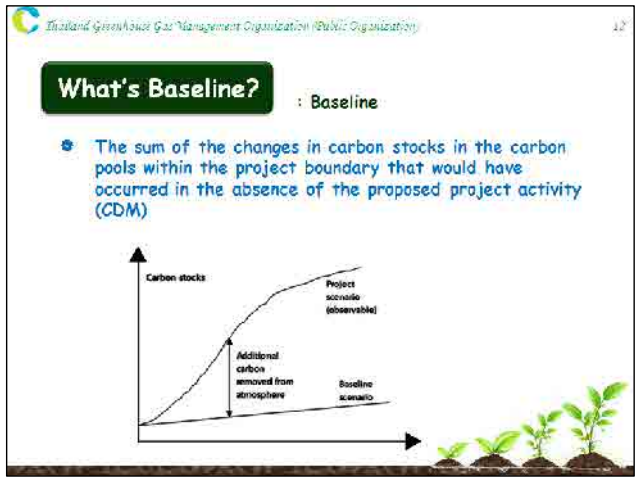
UN03-09	Target Group: G
	
Key Points	**Reference and Additional Information**

UN03-10	Target Group: G
	
Key Points	**Reference and Additional Information**

UN03-11	Target Group: G

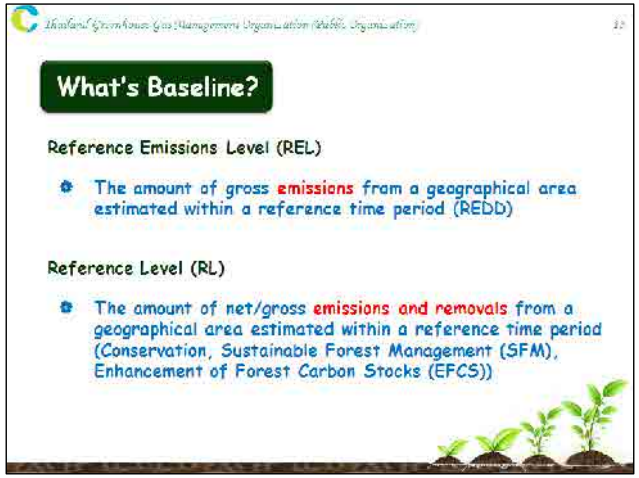
Key Points	Reference and Additional Information

UN03-12	Target Group: G



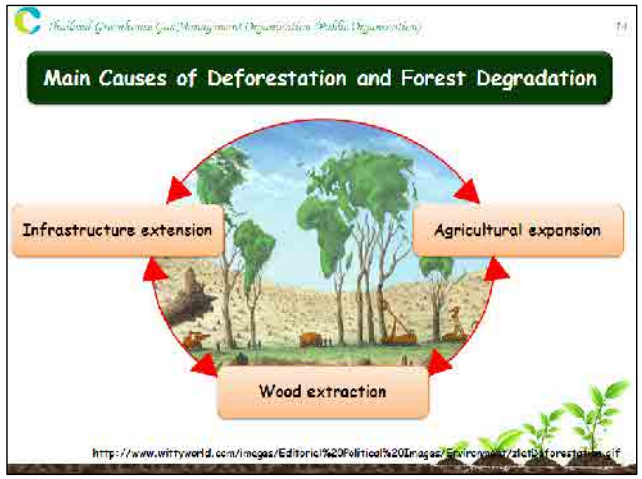
Key Points	Reference and Additional Information
- The term of baseline is usually use for CDM project.	

UN03-13	Target Group: G



Key Points	Reference and Additional Information
- For REDD mechanism, REL and RL are brought to use for assessing baseline scenario.	

UN03-14	Target Group: G

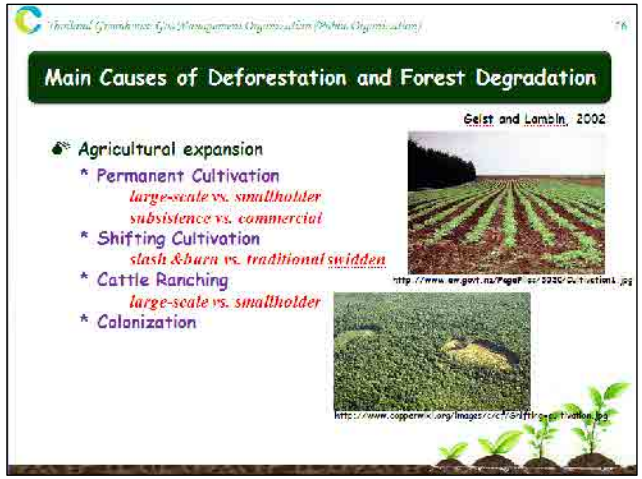


Key Points	Reference and Additional Information
- The causes relate each other.	

UN03-15	Target Group: G

Key Points	Reference and Additional Information

UN03-16	Target Group: G

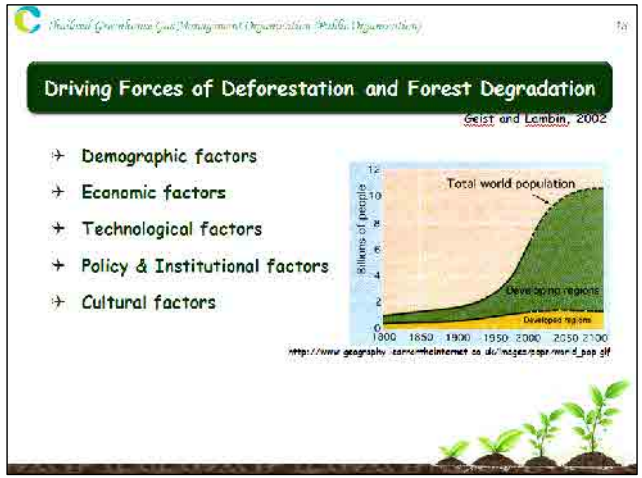


Key Points	Reference and Additional Information

UN03-17	Target Group: G

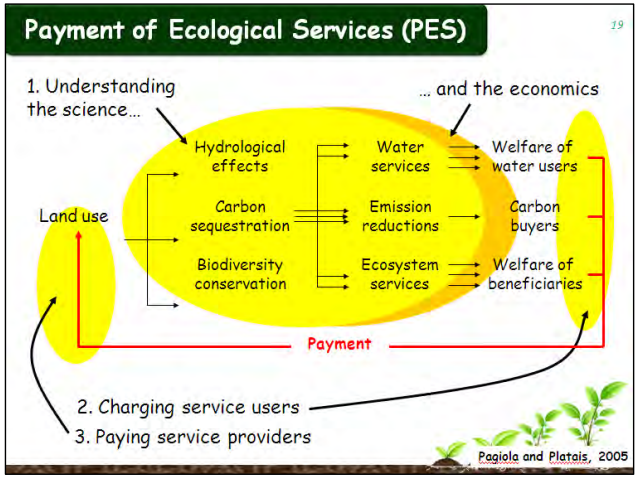
Key Points	Reference and Additional Information

UN03-18	Target Group: G



Key Points	Reference and Additional Information

UN03-19	Target Group: G

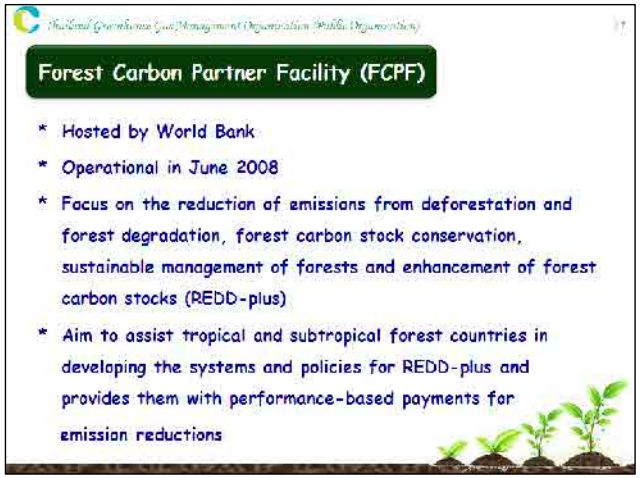


Key Points	Reference and Additional Information
- The basic concept of the PES.	

UN03-20	Target Group: G

Key Points	Reference and Additional Information

UN03-21	Target Group: G

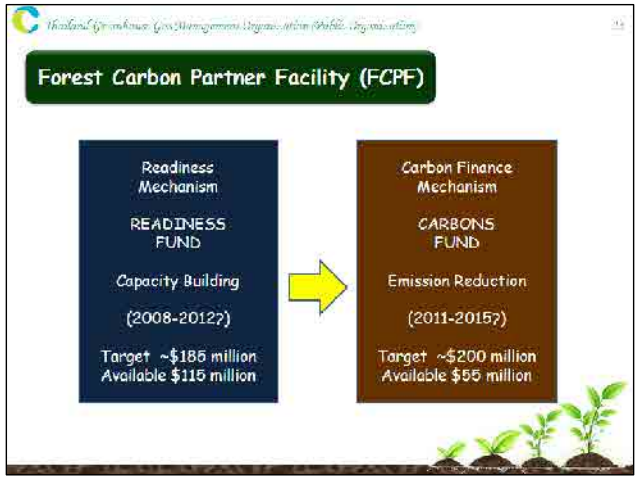


Key Points	Reference and Additional Information

UN03-22	Target Group: G

Key Points	Reference and Additional Information

UN03-23	Target Group: G

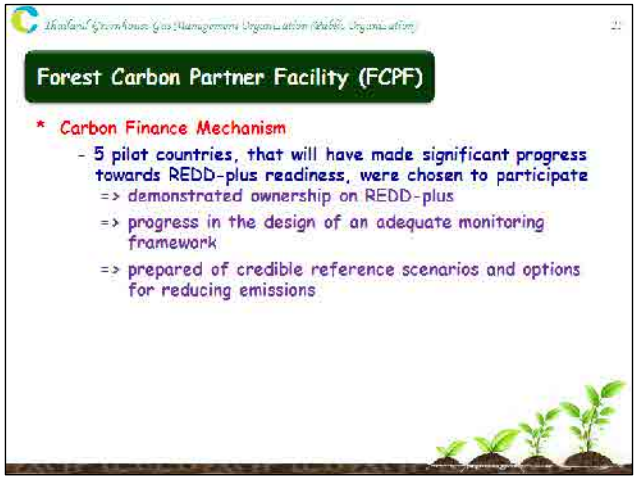


Key Points	Reference and Additional Information

UN03-24	Target Group: G

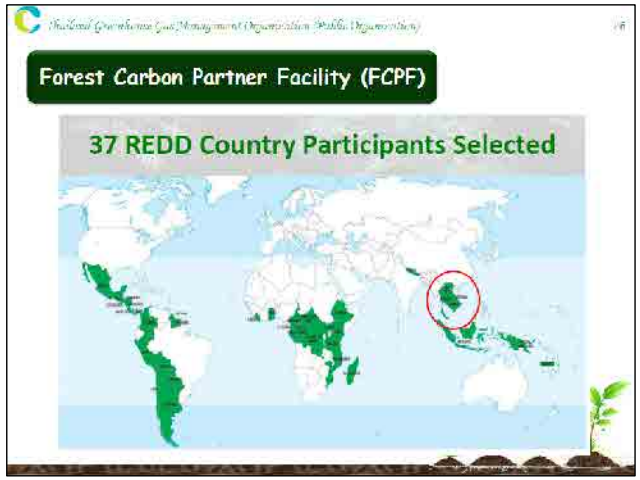
Key Points	Reference and Additional Information

UN03-25	Target Group: G



Key Points	Reference and Additional Information

UN03-26	Target Group: G



Key Points	Reference and Additional Information
- Thailand is the one of the REDD country that participated in Forest Carbon Partner Facility (FCPF) program.	

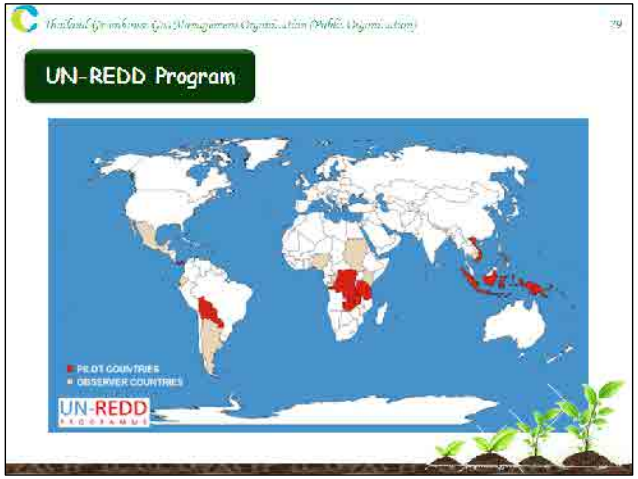
UN03-27	Target Group: G

Key Points	Reference and Additional Information

UN03-28	Target Group: G

Key Points	Reference and Additional Information

UN03-29	Target Group: G



Key Points	Reference and Additional Information

UN03-30	Target Group: G

Key Points	Reference and Additional Information

UN03-31	Target Group: G
	
Key Points - DNP is Department of Natural Parks, Wildlife and Plant Conservation.	**Reference and Additional Information**

Carbon Footprint

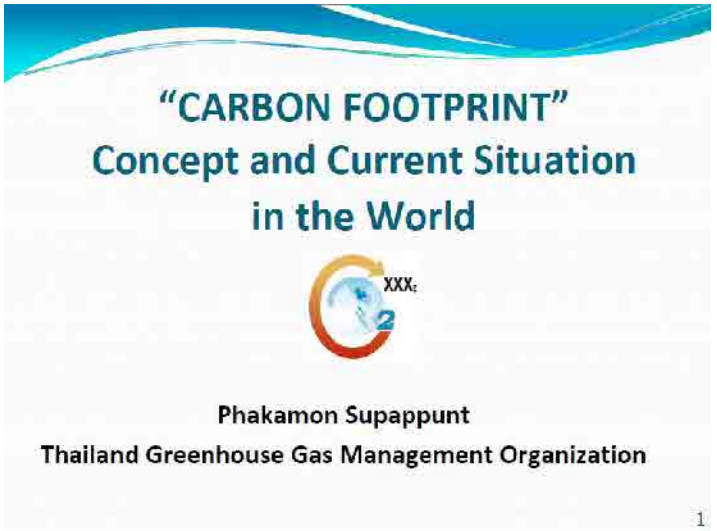
CFP-01 “Carbon Footprint” Concept and Current Situation in the World

Target Groups

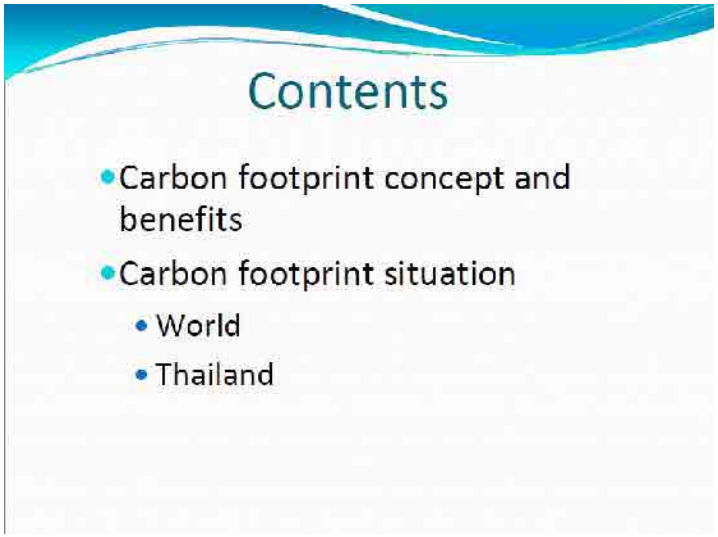
Code	Target group
G	General audience Entity who might apply to carbon footprint

Update History

Version	Date	Update Contents
01	20/01/2011	Initial adoption

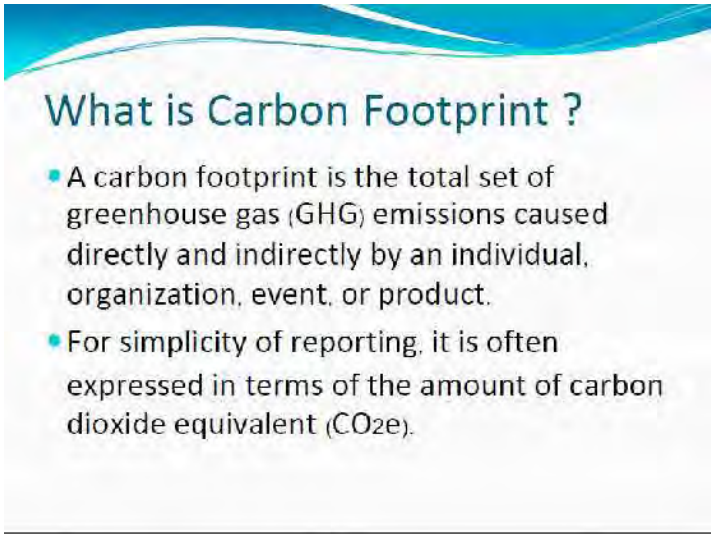
CFP01-01	Target Group: G
	

CFP01-02	Target Group: G



Key Points	Reference and Additional Information

CFP01-03	Target Group: G



Key Points	Reference and Additional Information
-	

CFP01-04	Target Group: G

Key Points	Reference and Additional Information
Carbon Footprint will give manufacturers • clear picture of product GHG life cycle • identifying GHG reductions in each life cycle stage. For consumers, • Carbon Trust study shows that nearly two thirds of UK consumers are more likely to buy from a business they think is taking action to tackle climate change (www.carbontrust.co.uk) • Consumer Survey in Japan (Mar,09) show positive answers if CFP information is available (Atsushi INABA)	

CFP01-05	Target Group: G

Key Points	Reference and Additional Information
-	

CFP01-06	Target Group: G

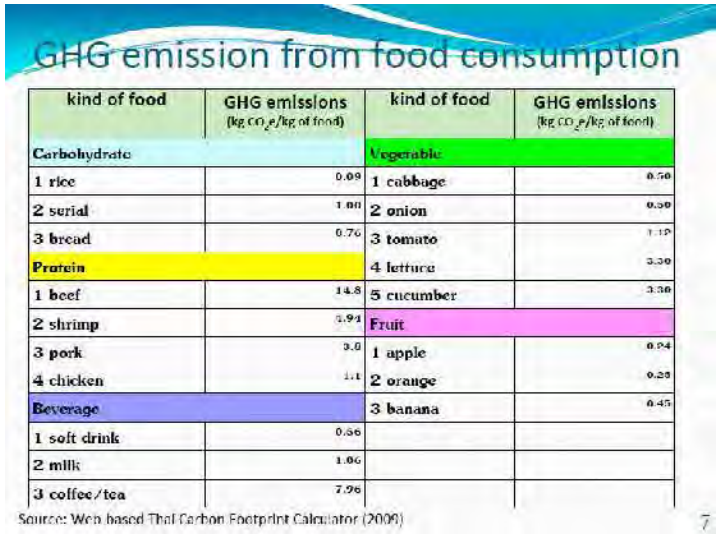
Key Points

Carbon Footprint in Daily activities: we all have carbon footprint in both household, office

- several kinds of electricity appliance products
- Carbon footprint on travelling,
- Carbon footprint on working in office
- Carbon footprint from consuming various kinds of food.

Reference and Additional Information

CFP01-07	Target Group: G



Key Points

- The estimation of Carbon footprint from food production and consumption is complicated, which involves the use of fertilizer, water, pesticide, hormone, energy. Finished food products, whether meat or grain, have to be transported, packaged, and sold.
- Meat products have a larger carbon footprint than fruits, vegetables and grains;
  - Cows, sheep, and goats naturally emit methane, a greenhouse gas 21 times more potent than carbon dioxide
  - Energy inputs associated with the production of feed for animals (very high)
  - The length of time it takes to grow animals to maturity as compared to plants (much more energy to feed them) and their weight (a factor in transport emissions).
  - Note: some environmentalists are calling for the carbon footprint of all meat sold in the UK to be shown on the label and some even think that high carbon footprint meat should attract an environmental tax. (www.carboncounted.co.uk/meat-have-high-carbon- footprint.html)

Reference and Additional Information

CFP01-08	Target Group: G

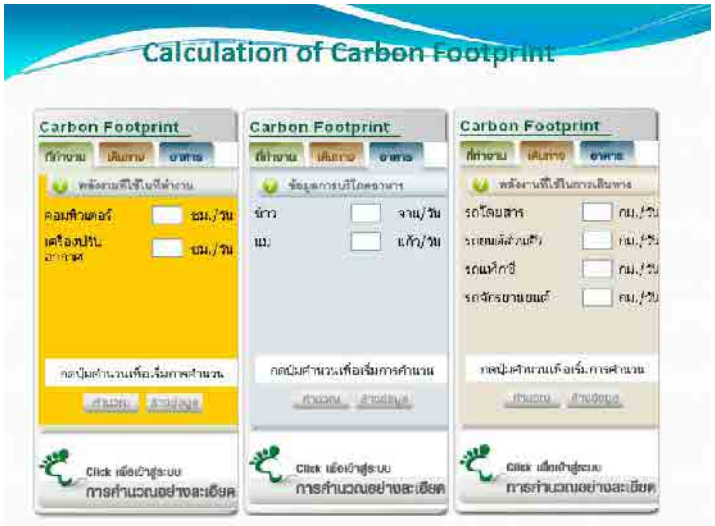
Key Points

If one wants to calculate his/ her carbon footprint - visit TGO website (www.tgo.or.th) :TGO has developed the Carbon Footprint Calculator (available in Thai only)

- To give information on person carbon footprint
- Carbon footprint calculator will ask you to input your activities data:
  - Electricity appliance products Electricity use at home and office,
  - Your travelling habits (by bus or train or car and how often to fly)
  - Your personal eating habits (meat, milk, rice, fruit etc)
- Result : amount of GHG you emit

Reference and Additional Information

CFP01-09	Target Group: G



Key Points

Website asks you to insert information about

- Amount of electricity use in the office (computer and AC use)
- Food consumption (milk and rice)
- Traveling or commuting (except airplane use)

Reference and Additional Information

CFP01-10	Target Group: G

Key Points

Also input energy consumption in your house

- what type of lighting equipment, and how long you use them

Reference and Additional Information

CFP01-11	Target Group: G

Key Points

Also input information about the energy consumption in your house: what kind of office appliances you use and for how long you use it.

Reference and Additional Information

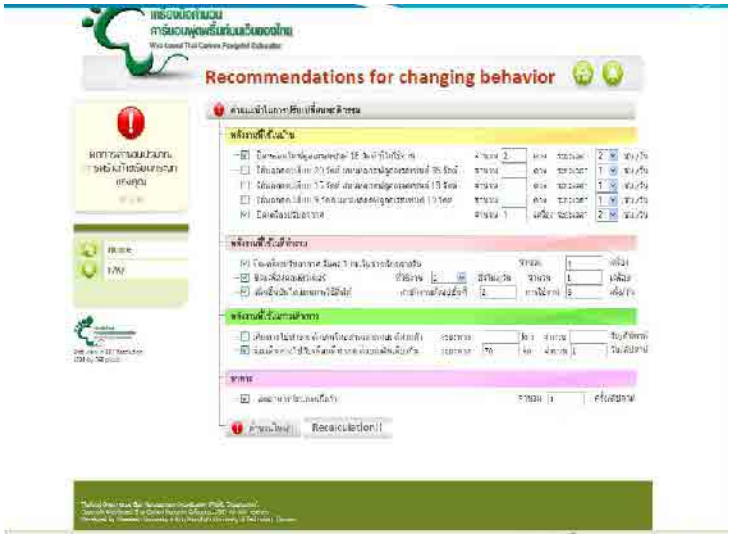
CFP01-12	Target Group: G

Key Points	Reference and Additional Information
Information on your travel, both car and airplane use will be counted	

CFP01-13	Target Group: G

Key Points	Reference and Additional Information
Finally the program will show the result • How big is your Carbon Footprint in a year • Program lets you know if you can offset your carbon footprint, using example of how much area of trees you have to plant in a year. Note - Teak plantation 1 rai can offset GHG 1.2 Ton CO_{2e}	

CFP01-14	Target Group: G



Key Points

And the program will give you recommendations on changing your behavior in order to minimize your carbon footprint

Reference and Additional Information

CFP01-15	Target Group: G

Key Points

The Greenhouse Gas Protocol (GHG Protocol) was jointly convened in 1998 by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI).

The GHG Protocol categorizes GHG emissions into 3 scopes:

Scope 1: All direct GHG emissions.
Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

Reference and Additional Information

GHG Protocol link
http://www.ghgprotocol.org/standards

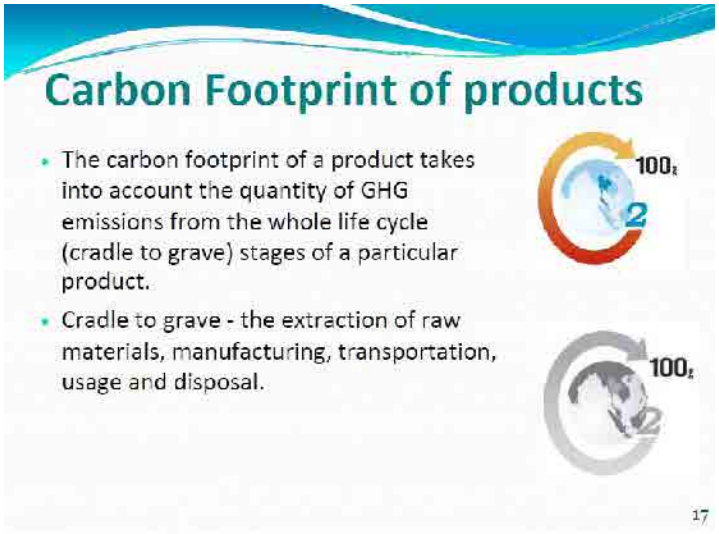
CFP01-16	Target Group: G

Key Points

Example of the carbon footprint of organization which evaluates carbon Footprint in business activity

Reference and Additional Information

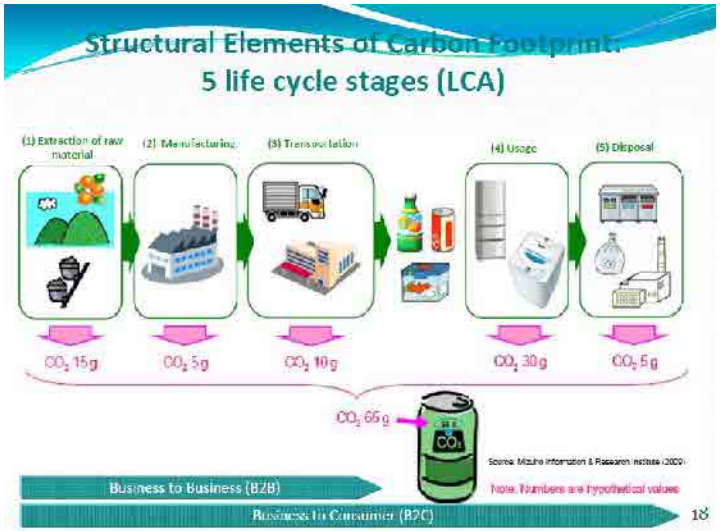
CFP01-17	Target Group: G



Key Points

Reference and Additional Information

CFP01-18	Target Group: G



Key Points

Scope of Carbon footprint calculation: 2 types of Carbon footprint.

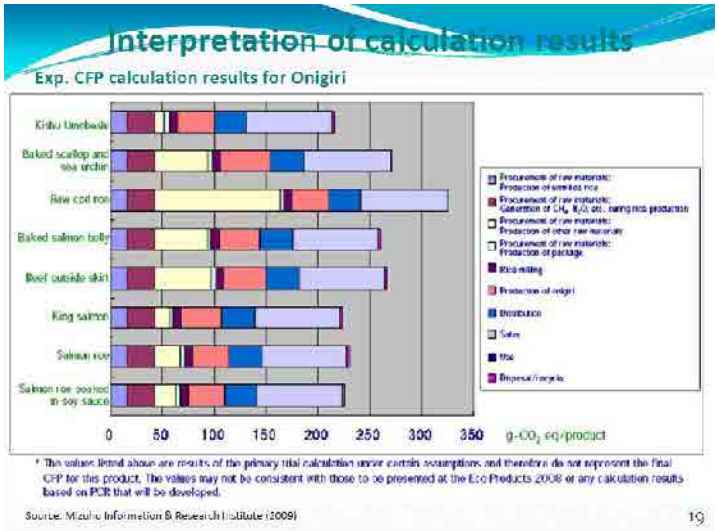
- 1. whole life cycle carbon footprint that calculates in 5 stages (extraction of raw material –disposal): called B2C or Business-to-Consumer.
- 2. calculation covers only from extraction of raw material to transportation to another business customer (3 stage): called B2B or Business-to-Business
- It will be B2B or B2C calculation, it depends on the type of product
    - end product - B2C
    - product in supply chain - B2B

For example;

- Coca Cola in can: B2C - 5 stage
- TULC can : B2B - 3 stage

Reference and Additional Information

CFP01-19	Target Group: G



Key Points

Result of Carbon Footprint calculation shows

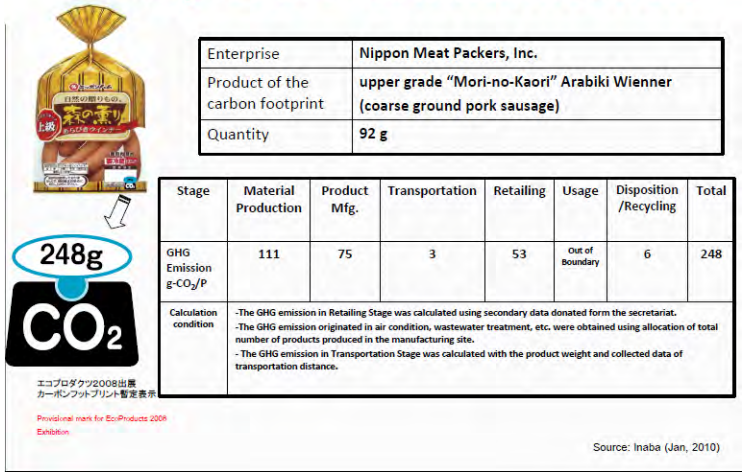
- amount of GHG emission in each product's life cycle
- identifying GHG reductions in each life cycle stage.

The slide shows the carbon footprint calculation results for Onigiri (rice ball). The result show that Raw Cod roe Onigiri is the most highest Carbon footprint from raw material. It is Cod fish stay in the deep sea so it needs to use so much energy by seagoing ship

Reference and Additional Information

CFP01-20	Target Group: G

Example: CFP communication



Enterprise	Nippon Meat Packers, Inc.
Product of the carbon footprint	upper grade "Mori-no-Kaori" Arabiki Wienner (coarse ground pork sausage)
Quantity	92 g

Stage	Material Production	Product Mfg.	Transportation	Retailing	Usage	Disposition /Recycling	Total
GHG Emission g-CO_2/P	111	75	3	53	Out of Boundary	6	248
Calculation condition	-The GHG emission in Retailing Stage was calculated using secondary data donated form the secretariat. -The GHG emission originated in air condition, wastewater treatment, etc. were obtained using allocation of total number of products produced in the manufacturing site. - The GHG emission in Transportation Stage was calculated with the product weight and collected data of transportation distance.						

Source: Inaba (Jan, 2010)

Key Points

Example of carbon footprint of pork sausage which calculated by Nippon Meat Packers. The results show the highest GHG emission come from material production stage

Reference and Additional Information

CFP01-21	Target Group: G

Carbon Footprint situation in the world

Key Points

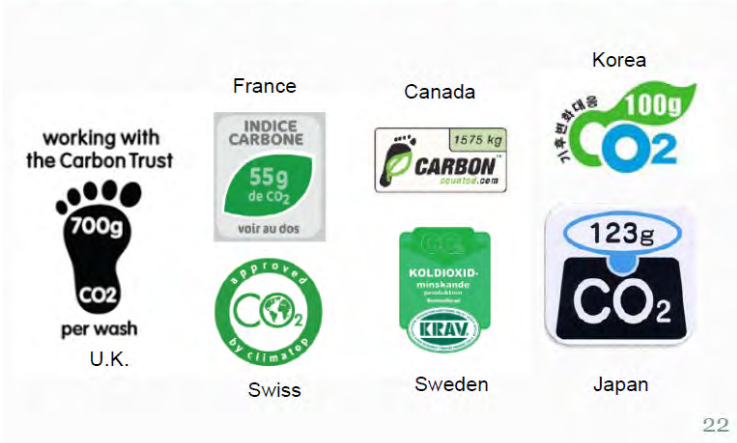
Carbon Footprint situation in the world, there are many countries which already have the Carbon Footprint registration system.

- First country in the world: France
- Second: UK (very famous)
- Each country has its own national standard

Reference and Additional Information

CFP01-22	Target Group: G

Carbon Footprint logo of countries



Key Points	Reference and Additional Information

CFP01-23	Target Group: G

French Republic

- CASINO has developed their own carbon labelling schemes : CASINO's carbon index
- About 400 certified products (June, 2010)
- The French Agency for the Environment and Energy Management (ADEME)
  - National Standard
    - Organization "Bilan Carbone"
    - Product "Bilan Produit"
  - policy on environmental information of products that will be mandatory in France by 01 Jan 2011. Carbon footprint will be one of the multiple criteria applied.

Key Points	Reference and Additional Information

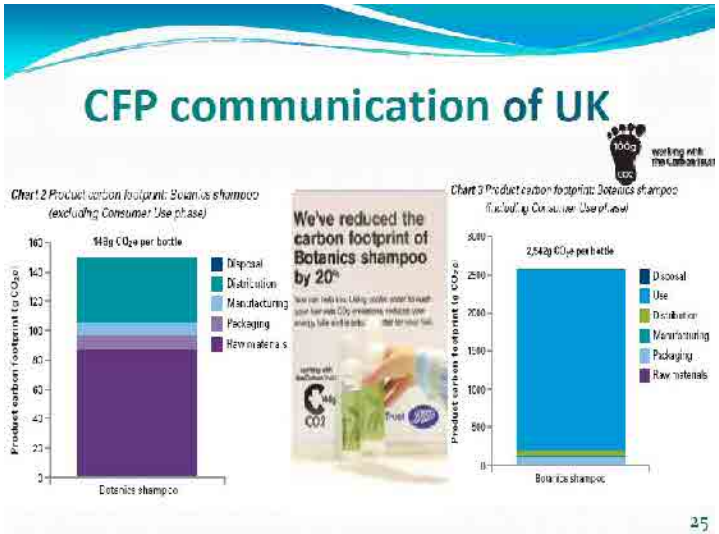
CFP01-24	Target Group: G

Key Points

Tesco asks suppliers to reduce carbon footprint. TESCO sent a letter to its major suppliers asking them to reduce their carbon footprint by 30% before 2020.

Reference and Additional Information

CFP01-25	Target Group: G



Key Points

Example of CFP communication of UK: Botanic shampoo

- Left : GHG emission of 4 life cycle stage (not including consumer use phase)
- Right: GHG emission of all life cycle stage

CFP information show:

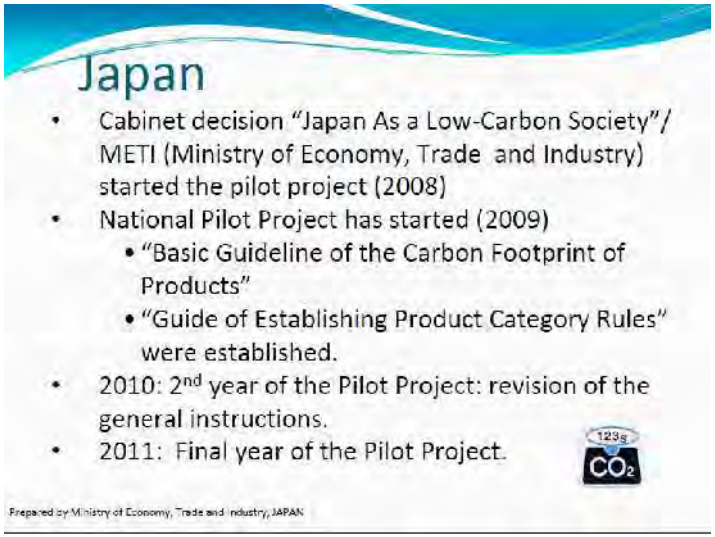
- Highest emission: use phase from electricity (warm water)
- Consumer can use this information for reduction of GHG emissions

Reference and Additional Information

CFP01-26	Target Group: G

Key Points	Reference and Additional Information

CFP01-27	Target Group: G



Key Points	Reference and Additional Information

CFP01-28	Target Group: G

Key Points

- Japan launched a three year national CFP pilot project in April 2009.
- In October 2009, the first CFP label was authorized for use.
- By 18th January 2010, 24 CFP labels had been authorized under 4 the Japanese CFP Pilot Program.

Reference and Additional Information

CFP01-29	Target Group: G

Key Points

Example pilot companies in Japan are Nestle, Panasonic, Toshiba, Lion, Lawson, Seiyu, Calbee

Reference and Additional Information

CFP01-30	Target Group: G

Key Points

There are many Carbon Footprint of Product standards.

National standard:

- PAS 2050: 2008 (Specification for the assessment of the life cycle greenhouse gas emissions of goods and services (U.K., 2008)
- Technical Specification: General principles for the assessment and labelling of Carbon Footprint of Products (Japan, 2009)
- Climate Labeling of Food (Sweden)
- Bilan Carbone (France)
- Korean Guideline (Korea)

International standard

- ISO 14067: Carbon Footprint of Products (Part I: Quantification; Part II: Communication) (tentative 2011)

Reference and Additional Information

CFP01-31	Target Group: G

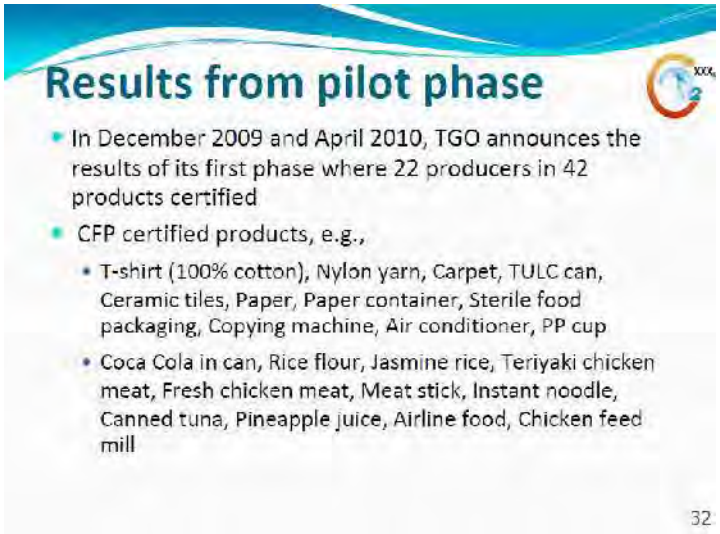
Key Points

TGO, in response to climate change negotiations, must take part in promoting a low carbon society.

One of the tools we have developed along with MTEC is the Carbon Footprint of Products Project in Thailand since 2009.

Reference and Additional Information

CFP01-32	Target Group: G



Key Points

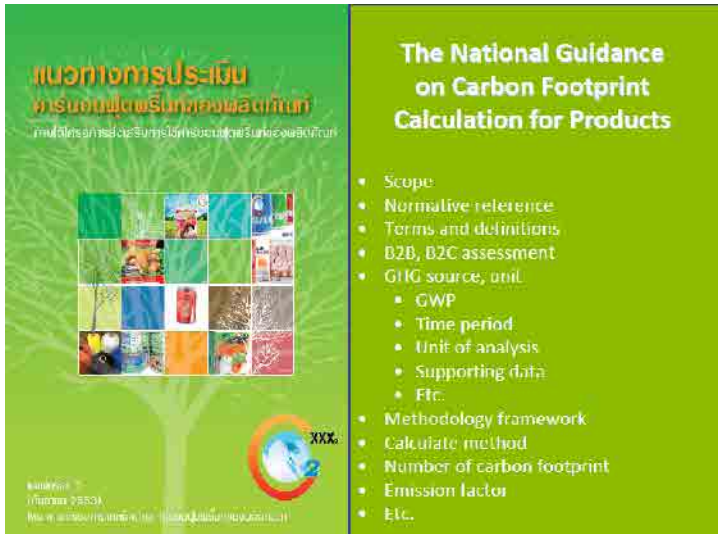
Key results from the pilot phase:

- In November 2009, TGO announced the results of its first pilot phase (dating from April to November 2009),
- The certified products from the pilot phase include a wide variety of products, such as:

T-shirt (100% cotton), Nylon yarn, Carpet, TULC can, Ceramic tiles, Paper, Paper container, Sterile food packaging, Plastic-fiber pellet, Copying machine, Air conditioner, Tire, PP cup, Coke can, Rice flour, Jasmine rice (2), Teriyaki chicken meat, Fresh chicken meat, Meat stick, Instant noodle, Canned tuna, Pineapple juice, Airline food, Chicken feed mill

Reference and Additional Information

CFP01-33	Target Group: G



Key Points

- During the pilot project, TGO developed The National Guidance on Carbon Footprint Calculation for Products, which includes the carbon footprint calculation methodology consisting of the framework, data collection, and supporting data, among others.
- Companies, who would like to apply for CFP, can use the National Guidance for calculation of carbon footprint of their products
- The guidance can be downloaded for free from the TGO website (www.tgo.or.th) (both in Thai and English version)

Reference and Additional Information

CFP01-34	Target Group: G

Key Points

This is about the LOGO and labeling of CFP.

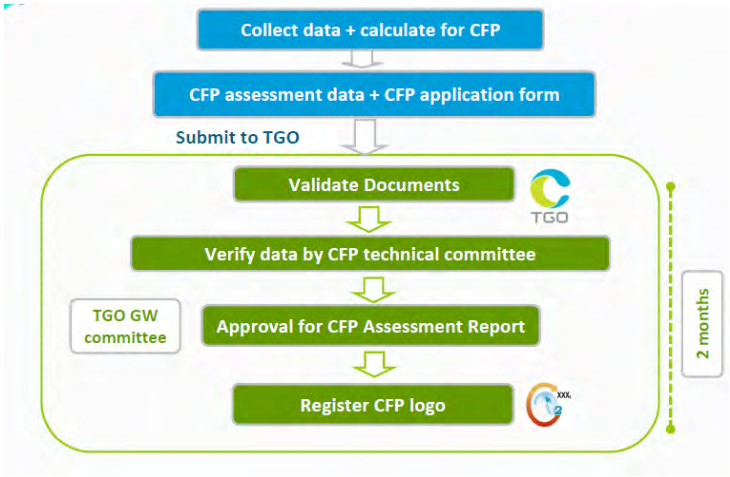
Criteria of the carbon footprint of product logo was developed at the same time as National Guidance on Carbon Footprint Calculation for Products.

Each product that applies for the carbon footprint label is charged 50,000 THB;

- application form 500 THB
- Administrative 10,000 THB
- CFP logo 4,000 THB/product

Reference and Additional Information

CFP01-35	Target Group: G



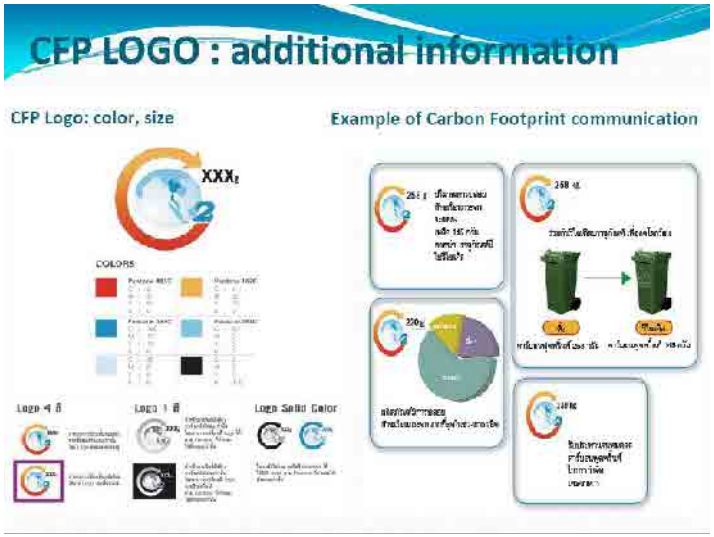
Key Points

Non CFP experience

A manufacturer may pay CFP consultant for consulting service (around 8,000-12,000 THB/ day) depending on type of products and further requirements from manufacturer.

Reference and Additional Information

CFP01-36	Target Group: G

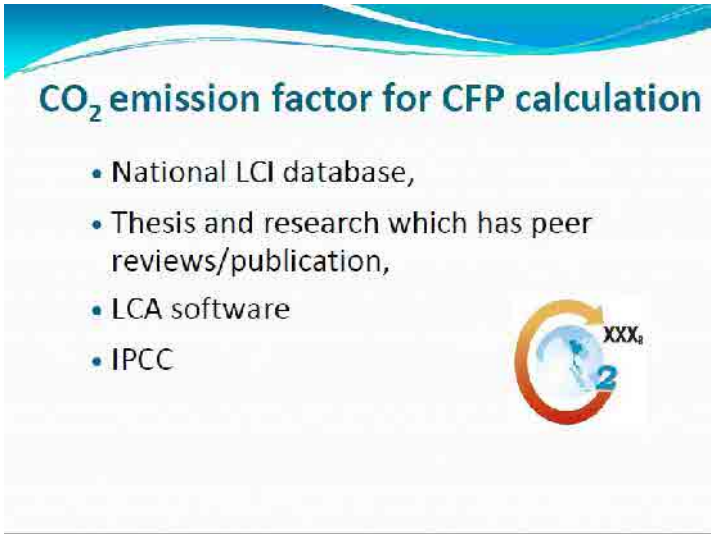


Key Points

For specific products, such as for canned Coca Cola,
the CFP logo illustrates that the GHG emissions will reduce from 258 grams to 145 grams if the consumer recycles the can.

Reference and Additional Information

CFP01-37	Target Group: G



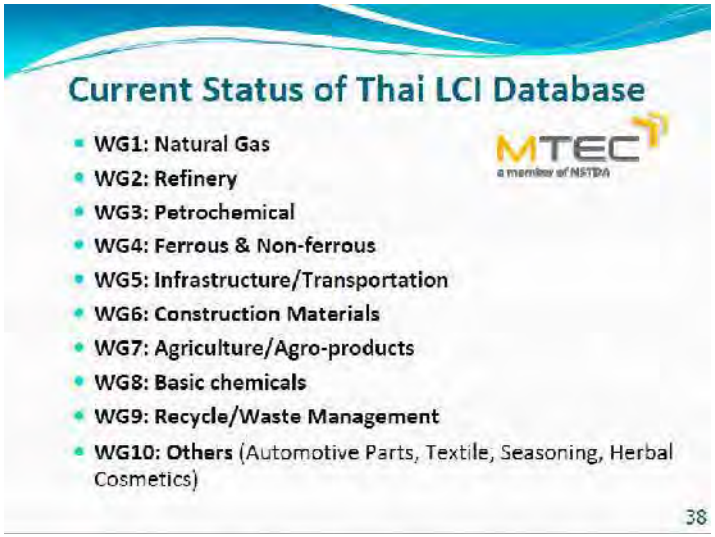
Key Points

For carbon footprint calculation,

- we will use data from National LCI Database for Thailand, which is a database of emission factors for calculating the carbon footprint,
- if there is no national data we will use data from thesis and research which has peer reviews and publication, or LCA software.
- If we have no data from the Thai LCI database, from research or from LCA software, we will use data from IPCC.

Reference and Additional Information

CFP01-38	Target Group: G



Key Points

LCI= Life Cycle Inventory

Reference and Additional Information

CFP01-39	Target Group: G

Key Points

Reference and Additional Information

CFP01-40	Target Group: G

Key Points

TGO held a Carbon Footprint exhibition on 25 Dec, 2009 and on 9 April 2010 to promote the products that carry the CFP logo and to inform manufacturers in Thailand about the importance of a CFP for their products.

Reference and Additional Information

CFP01-41	Target Group: G

Key Points

Reference and Additional Information

CFP01-42	Target Group: G

CFP Pilot companies/products of Thailand

Key Points

Some examples of products that have a CFP label in Thailand

Reference and Additional Information

CFP01-43	Target Group: G

Verification Sheet (1)

1	Form	Details of the product.	Code Form: Fr-01
	Document name	Staff TGO.	
	Document number	Staff TGO.	
	Company name		
	Product name		

Note : to provide information related to the product e.g., functional unit, reference specifications, PCR etc.

Application for registration of a product

Image of products

Company name	
Address	
Product name and Model	
Production capacity per year	
Technical information	
Reference PCR	
Date for registration	

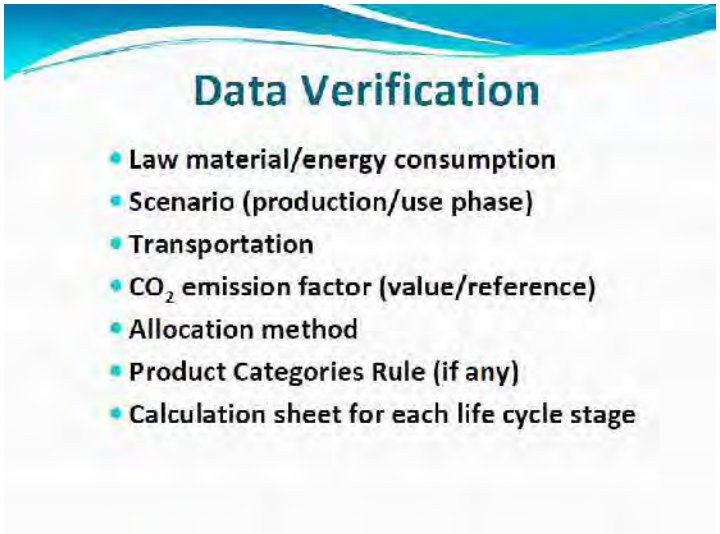
Key Points

TGO developed the verification sheet:

- Manufacturers can use this sheet for CFP calculations
- And it can be downloaded from TGO's website

Reference and Additional Information

CFP01-44	Target Group: G



Key Points

Data, which manufacturers have to fill in the verification sheet for CFP calculation, consists of

- Raw material use/ energy consumption
- Scenario (production/ use phase)
- Transportation
- CO2 emission factor (value/ reference)
- Allocation method
- Product Categories Rule (if any)
- Calculation sheet for each life cycle stage

Reference and Additional Information

CFP01-45	Target Group: G

Key Points

After fill in data, it will show manufacturers the amount of carbon Footprint of their product automatically.

Reference and Additional Information

CFP01-46	Target Group: G

Key Points	Reference and Additional Information

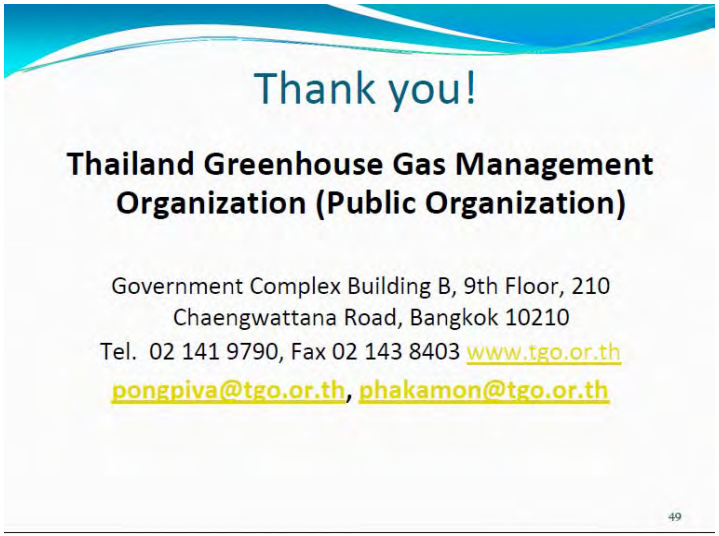
CFP01-47	Target Group: G

Key Points	Reference and Additional Information
• Charoen Pokphand Foods Group (largest agribusiness, known has the slogan "Kitchen of the World") after their Teriyaki, fresh chicken meat, Chada Jasmine rice CFP logo. Companies plan to implement the carbon footprint to others 200 products. • Thai Airways International Airline which already got certification for "Kiew-Wan Chicken Curry with steamed rice and Chicken Curry Mussaman with steamed rice, now they are calculating Carbon Footprint other passenger meals such as Fried Chicken with Basil Leaves, Ruby Fish in Red Curry With Coconut Milk	

CFP01-48	Target Group: G

Key Points	Reference and Additional Information

CFP01-49	Target Group: G



CFP-02 LCA related issues & Calculation of carbon footprint

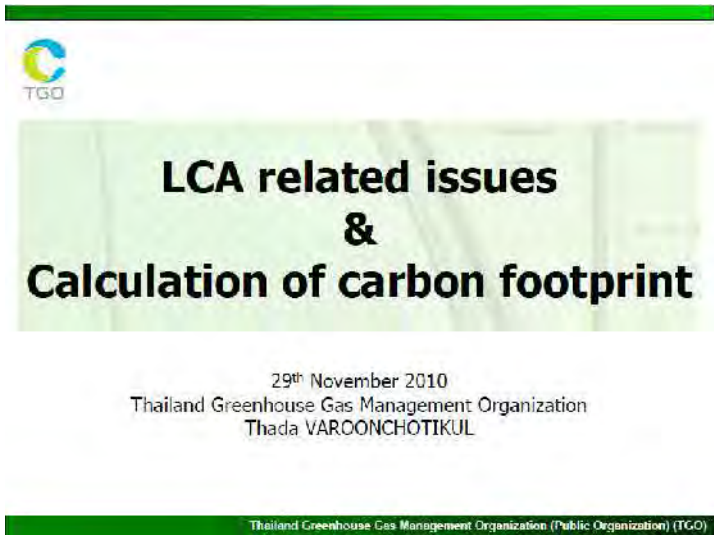
Target Groups

Code	Target group
G	Entity who might apply to carbon footprint

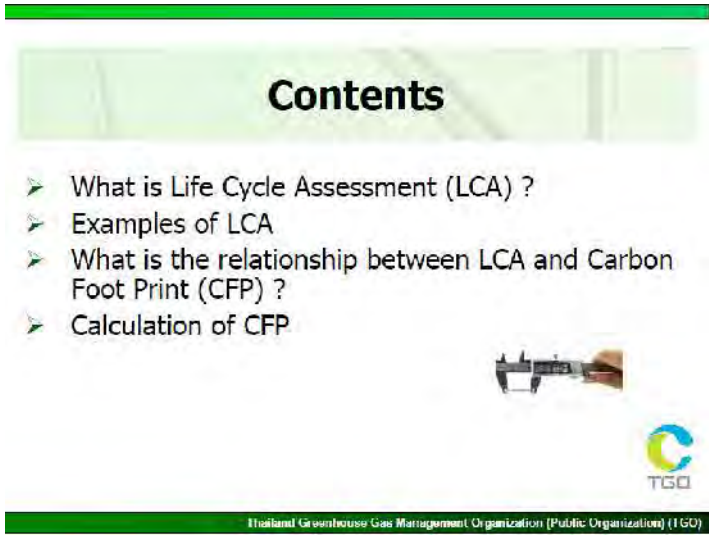
Update History

Version	Date	Update Contents
01	20/01/2011	Initial adoption

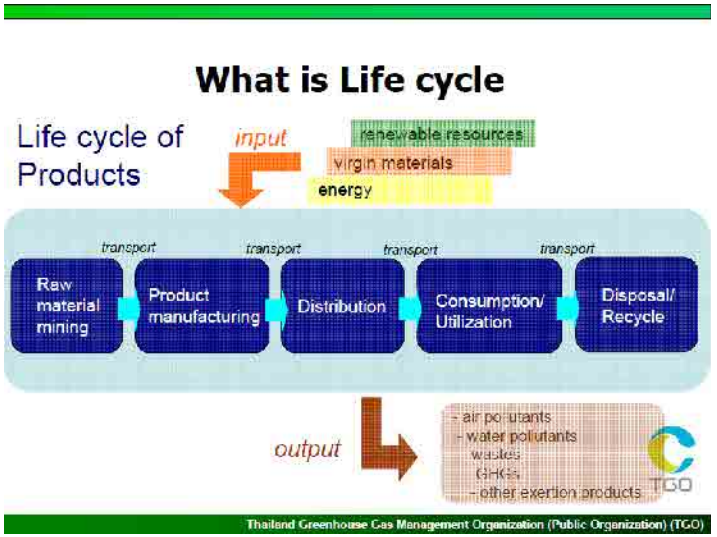
CFP02-01	Target Group



CFP02-02	Target Group: G



CFP02-03	Target Group: G



Key Points

There are 5 stages in the LCA to measure the impact assessment of the Life Cycle of products.

1 Raw material mining

2 Product manufacturing

3 Distribution

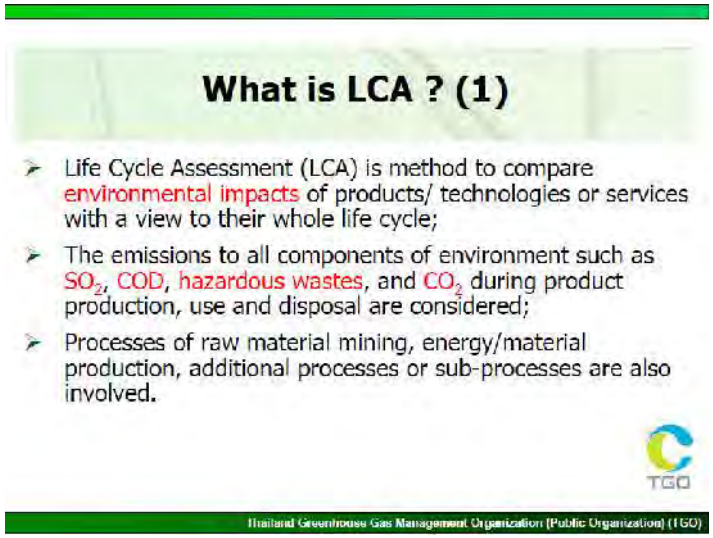
4 Consumption/Utilization

5 Disposal/Recycle

By considering data input/ output from all stages, LCA looks at Life Cycle Assessment of the product involved in the process, which gives an overview of the impact of the product.

Reference and Additional Information

CFP02-04	Target Group: G



Key Points

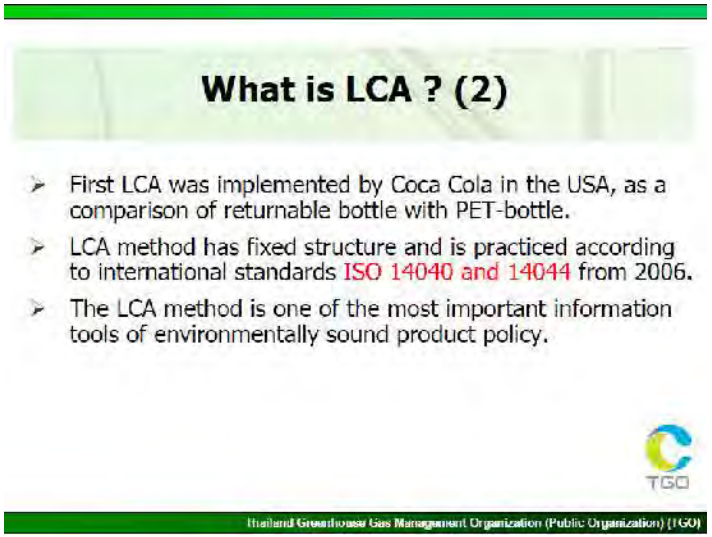
For consumer:

LCA is used for selecting products or technologies by comparing the environmental impact of a product.

The purpose of LCA is to get the product or technology that is the most environmentally friendly. LCA is used to know the impact of each component in the process so that all the processes involved reduce the environmental impacts.

Reference and Additional Information

CFP02-05	Target Group: G



Key Points

For companies:

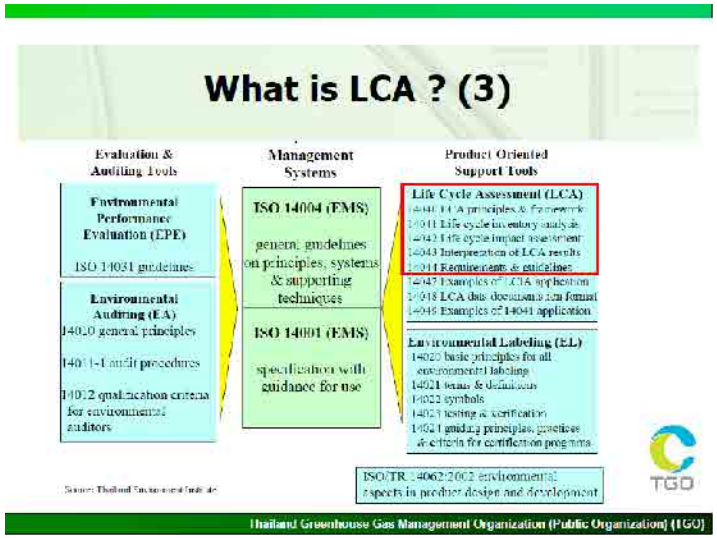
Companies using LCA have used it to compare the environmental impacts among different products.

LCA is the standard series ISO14040-14044 from 2006.

LCA is used to determine the company's environmental policy

Reference and Additional Information

CFP02-06	Target Group: G



Key Points

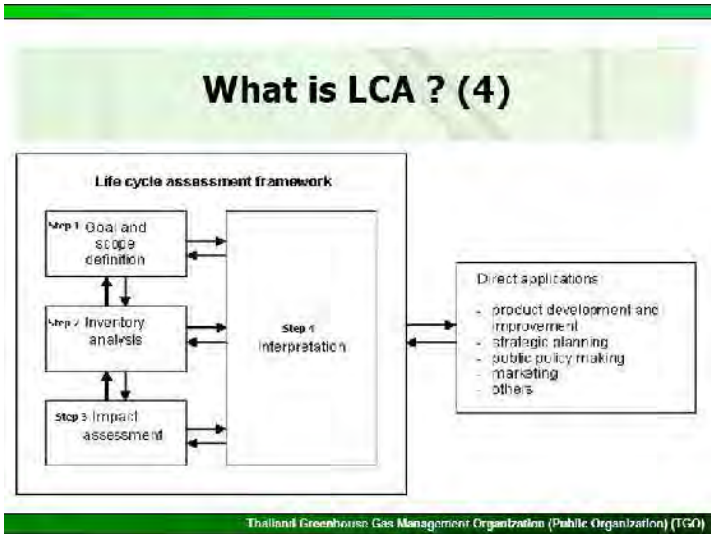
Picture shows ISO associated with LCA Life cycle assessment framework

- first step Goal and Scope definition
- second step Inventory analysis
- third step Impact assessment
- last step interpretation.

Result can be used for:
Product development.
Environmental strategy.
Policies of other marketing purposes.

Reference and Additional Information

CFP02-07	Target Group: G



Key Points

The First step of framework LCA is to define the Goal and Scope in order to evaluate the impact of the product or to compare the effects between product A and product B.

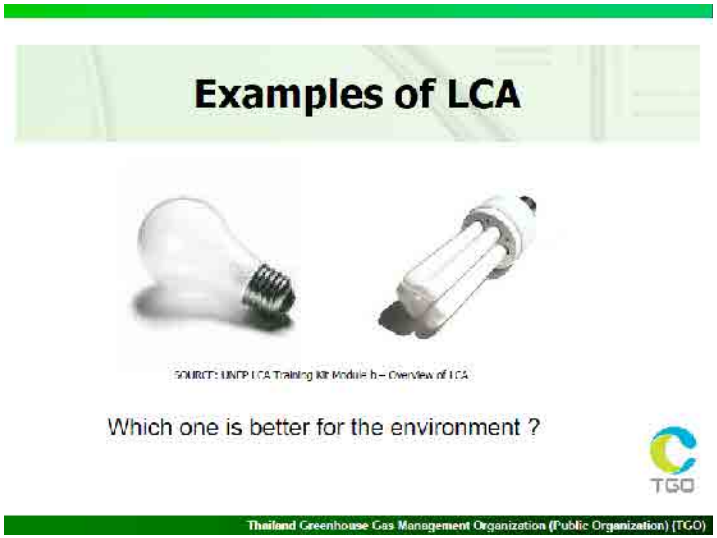
The second step is Inventory analysis, which is the data collection and involves listing the material input and output such as energy, raw materials pollution, waste, etc.

The Third step is the Impact assessment which uses the data from step 2. The goal is to measure the Impact on global warming, such as acid rain or ozone layer destruction.

The Last step is the interpretation of data. This helps to reduce emissions in processes.

Reference and Additional Information

CFP02-08	Target Group: G



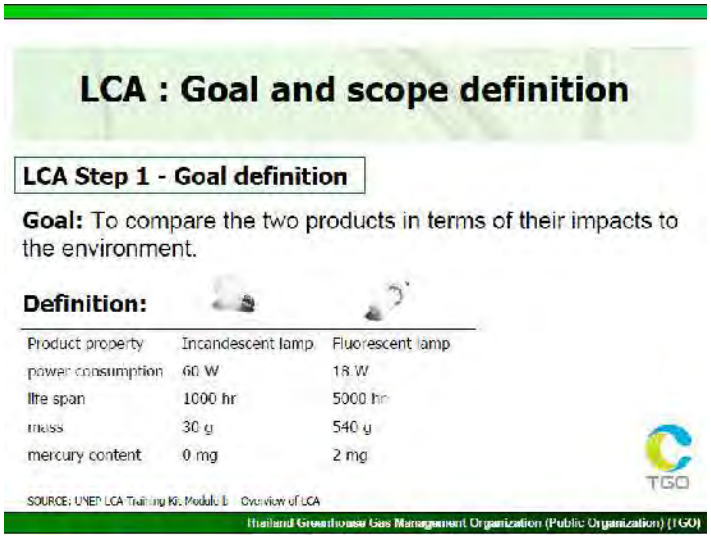
Key Points

Slides from here show an example the Goal of life cycle assessment to compare the effects between products Incandescent lamp and Fluorescent lamp

Which one is better for the environment?

Reference and Additional Information

CFP02-09	Target Group: G

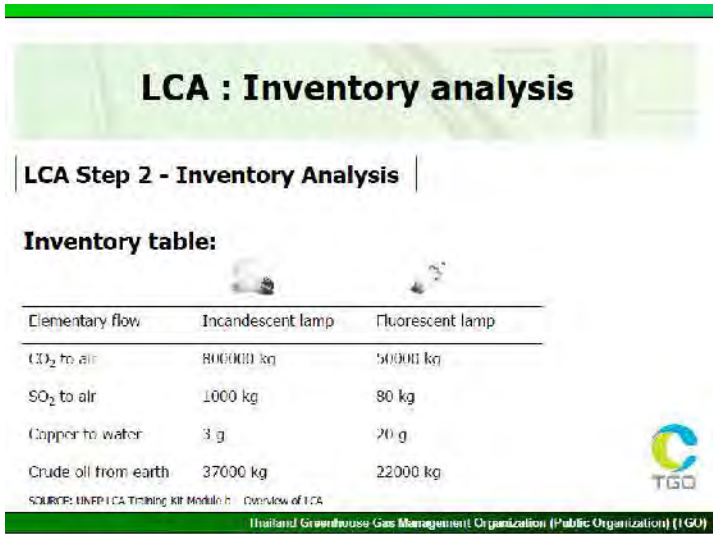


Key Points

The slide shows an example the Goal of life cycle assessment to compare the effects between products Incandescent lamp and Fluorescent lamp that Which one is better for the environment?

Reference and Additional Information

CFP02-10	Target Group: G



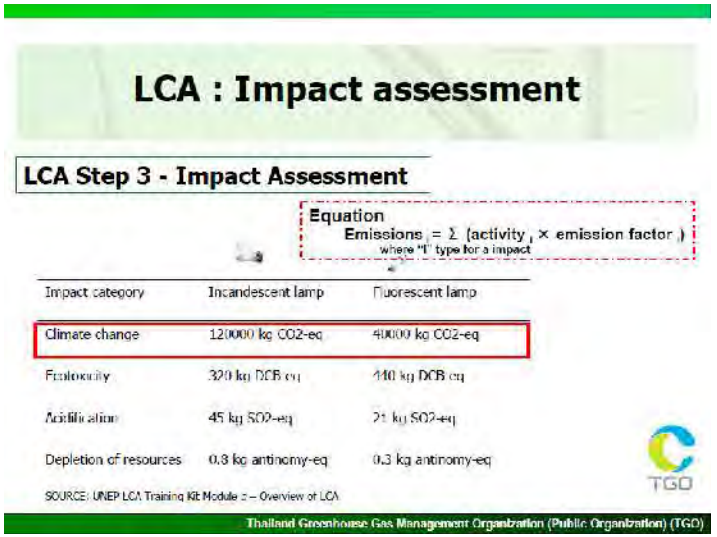
Key Points

Step 2 Inventory Analysis

the data collection items in the environment throughout the life cycle of products that use energy, raw materials, waste and emission in process

Reference and Additional Information

CFP02-11	Target Group: G



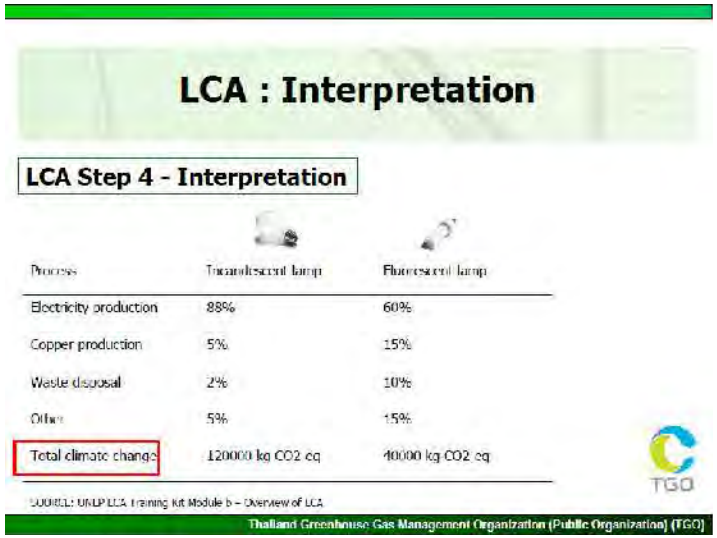
Key Points

Step 3 is the Impact Assessment

list of environmental information to calculate the environmental impact such as the Impact of the Climate change category, Eco toxicity, Acidfication, and the Depletion of resources.

Reference and Additional Information

CFP02-12	Target Group: G



Key Points

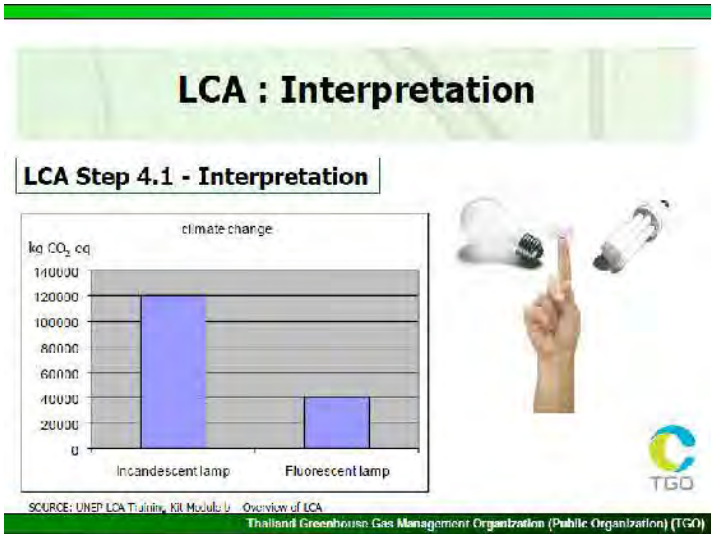
Step 4 shows the areas with the greatest impact to climate change.

One example is the impact caused by the use of electricity from production processes.

Incandescent lamps have more impact on the environment than the Fluorescent lamp, so it can reduce the energy consumption from manufacturing.

Reference and Additional Information

CFP02-13	Target Group: G

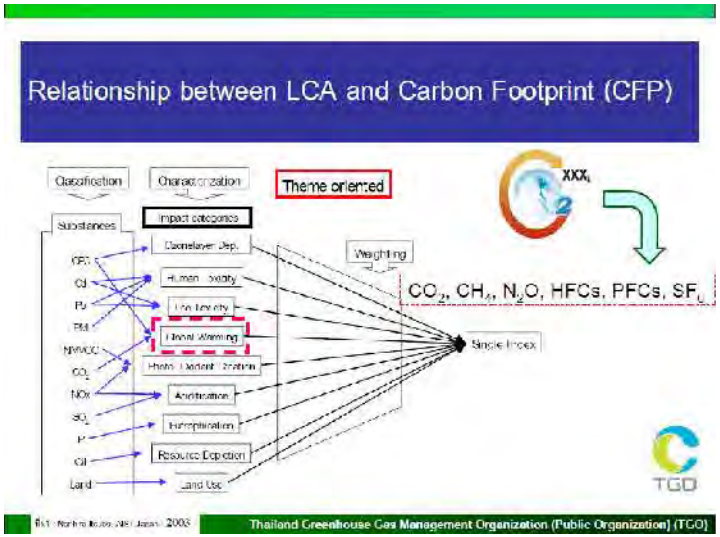


Key Points

This slide shows the impact of climate change for two products.

Reference and Additional Information

CFP02-14	Target Group: G

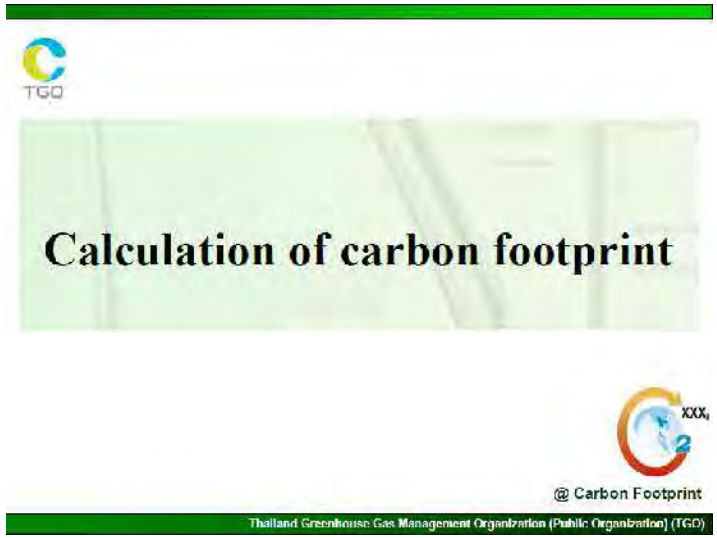


Key Points

LCA evaluates the different types of impacts. Carbon footprint, but will select only the impact on Global Warming is the main word of emissions from CO2, CH4, N2O, HFCs, PFCs, SF6 under the Kyoto Protocol.

Reference and Additional Information

CFP02-15	Target Group: G

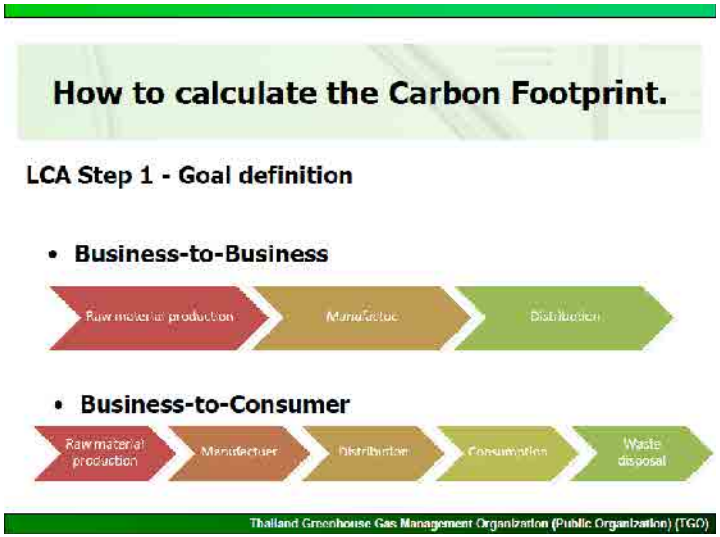


Key Points

A carbon footprint is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide

Reference and Additional Information

CFP02-16	Target Group: G



Key Points

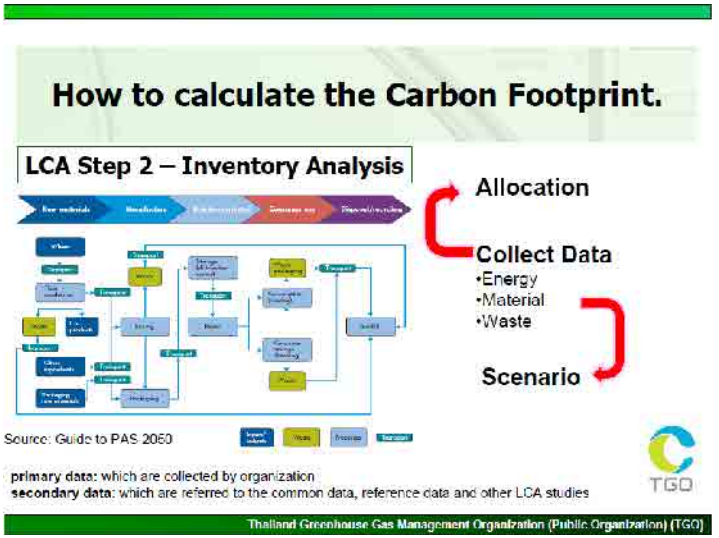
Calculation of carbon footprint with 2 scopes depending on the nature of the product. And the needs of producers, including

1.**Business to Business** keep the data specific Cradle to gate (Factory)

2.**Business to Consumer** keep the data specific Cradle to grave

Reference and Additional Information

CFP02-17	Target Group: G

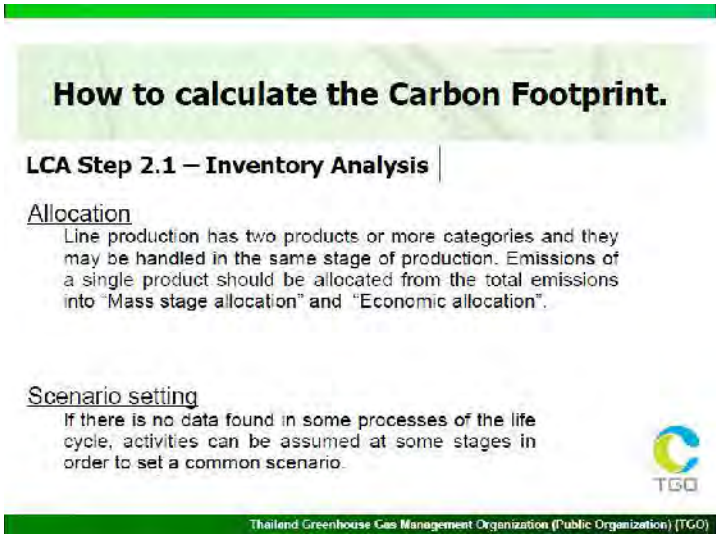


Key Points

Next step is the data collection of material input, output from the process and substance. But what is important to keep the two issues together, the data is to Allocation and Scenario data.

Reference and Additional Information

CFP02-18	Target Group: G

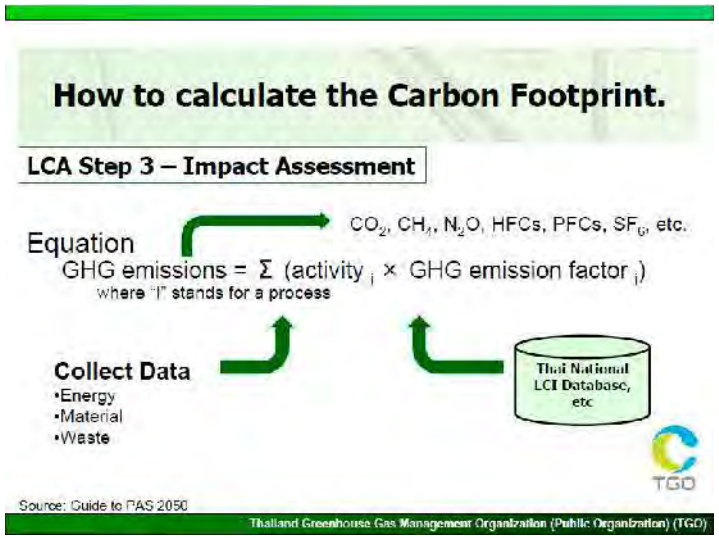


Key Points

Allocation for line production has two or more categories and Scenario setting is when there is not enough data in some processes for instance in beverage companies, if there is no data regarding the use phase, it can be assumed as 2 hours in the fridge.

Reference and Additional Information

CFP02-19	Target Group: G



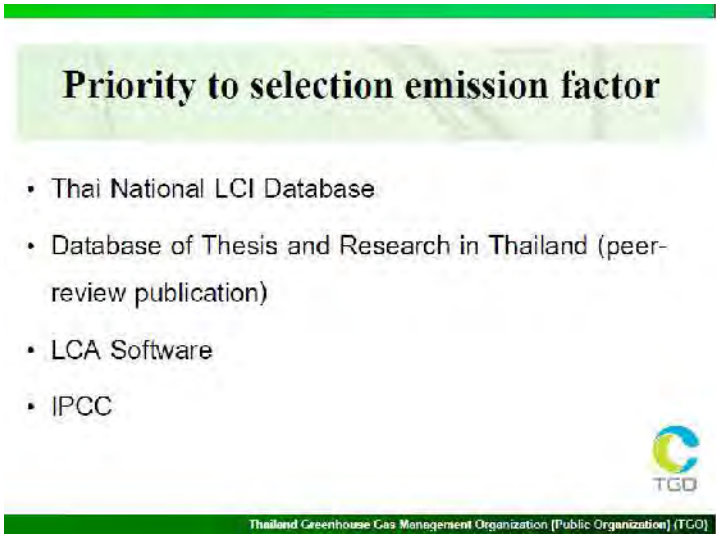
Key Points

Next step is to calculate carbon footprint using specific equations. The activity data such as energy consumption or raw material use or amount of waste is multiplied by the EF

Thai National LCI Database should be applied , but if there is no data available, data from study/ research or secondary data can be applied.

Reference and Additional Information

CFP02-20	Target Group: G

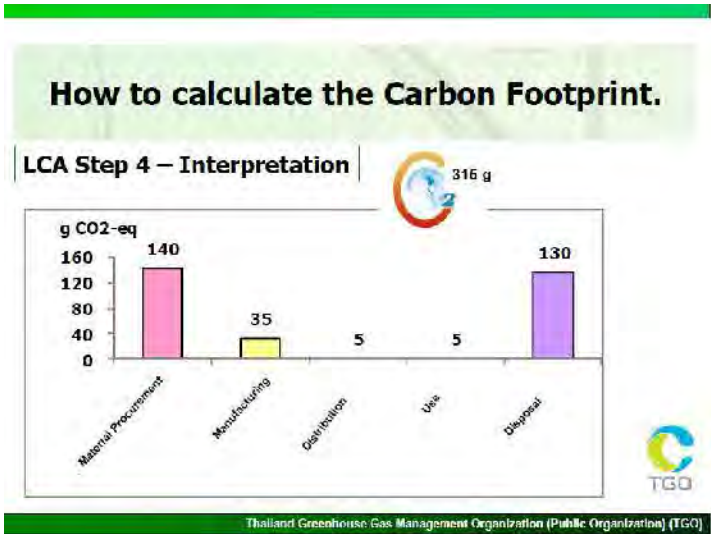


Key Points

Priority in the selection of the EF.

Reference and Additional Information

CFP02-21	Target Group: G



Key Points

This graph shows CFP of a hypothetical example product.

It can be seen that the CO2 emissions from two stages are quite high, i.e. Material procurement and Disposal stages, which can be main targets to reduce climate change impact.

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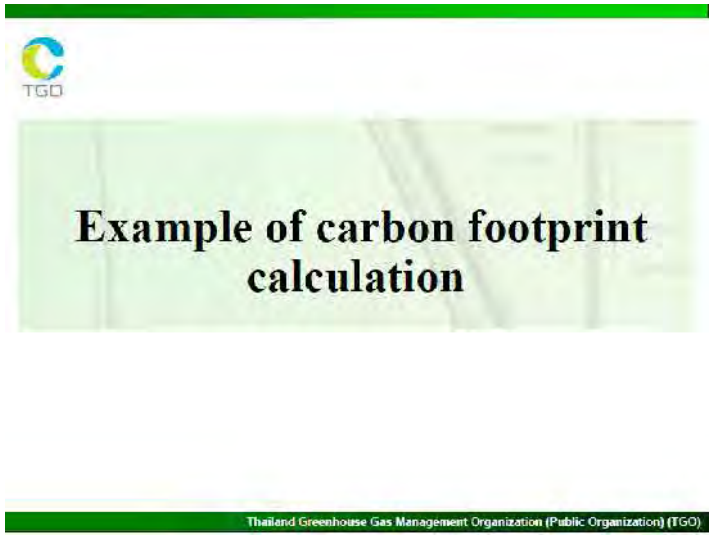
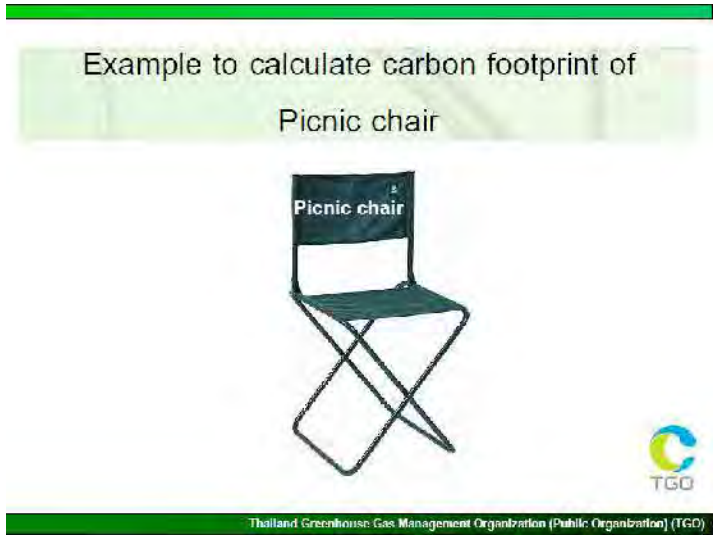
Reference and Additional Information

CFP02-22	Target Group: G



CFP02-23	Target Group: G



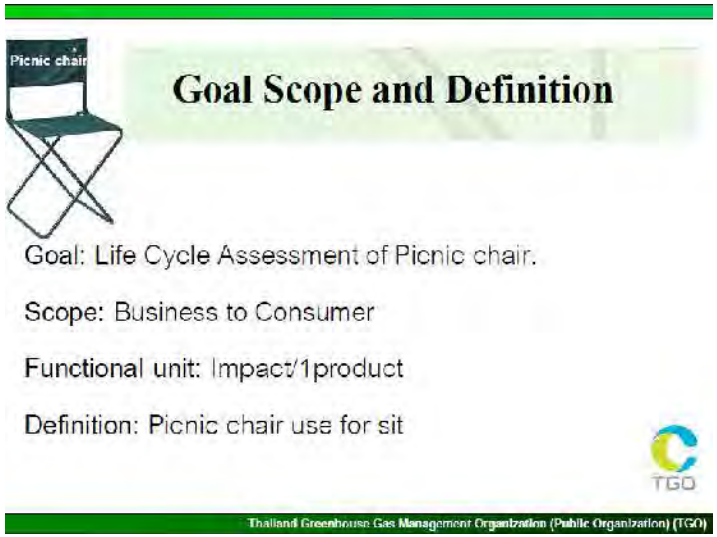
Key Points

Following slides show actual calculation processes. Example is taken for a product of picnic chair.

Note that all data is not actual since the actual data is usually confidential

Reference and Additional Information

CFP02-24	Target Group: G



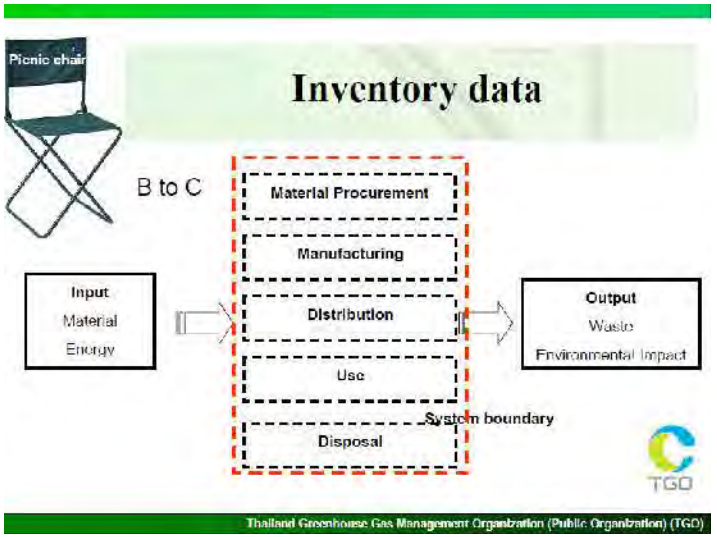
Key Points

Scope 1 CFP to Goal Scope and Definition it same step on LCA but CFP specific Global warming

- **Goal** of picnic chair is Life Cycle Assessment of Picnic chair
- **Scope:** Business to Consumer use five process
- **Functional unit:** Impact/1product
- **Definition:** Picnic chair use for sit

Reference and Additional Information

CFP02-25	Target Group: G

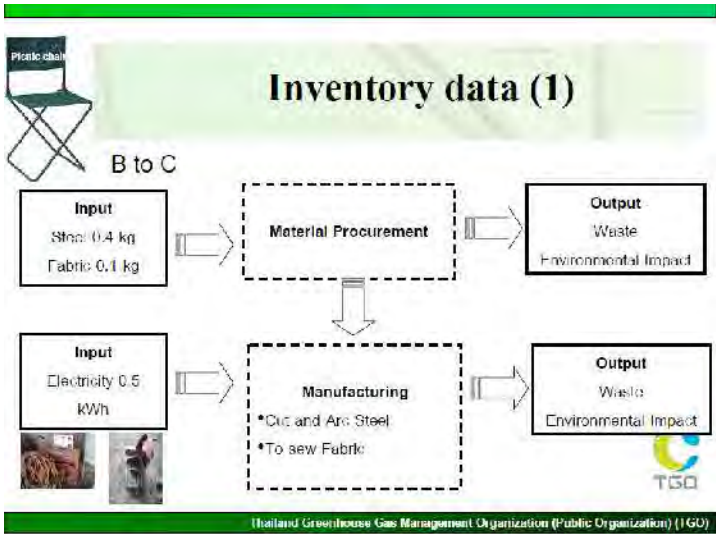


Key Points

Obtain and input inventory data in each stage from Material procurement, Manufacturing, Distribution Use Disposal. Common data includes Energy, material, waste.

Reference and Additional Information

CFP02-26	Target Group: G



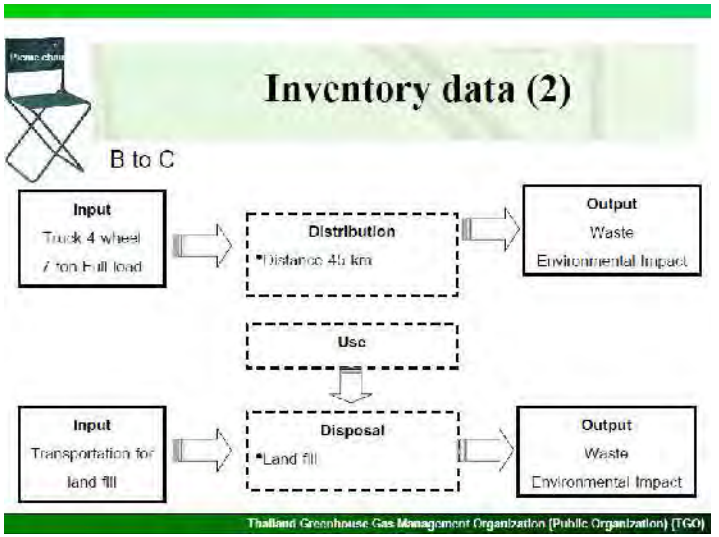
Key Points

Input data in process

- **Material Procurement** involves use of Steel and Fabric
- **Manufacturing** has some sub processes Cut and Arc Steel To sew Fabric use electricity energy

Reference and Additional Information

CFP02-27	Target Group: G



Key Points

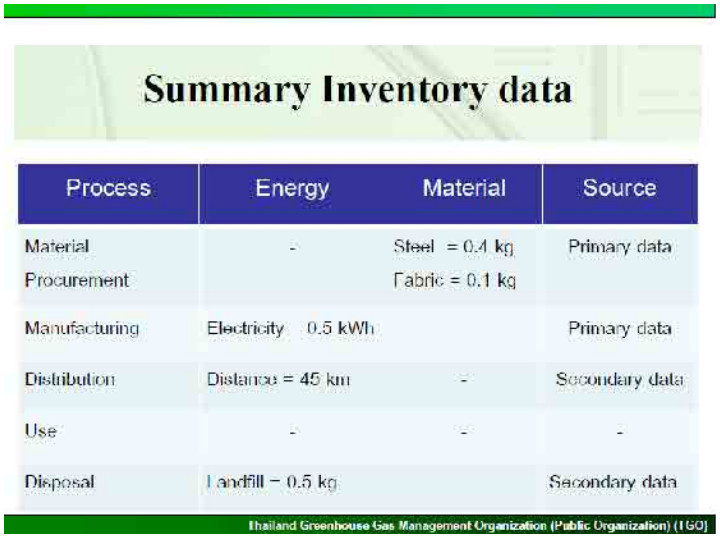
Input data in process **Distribution** is the fuel consumption for transportation Truck (4 wheel 7 ton Full load)

Use not use energy and material

The last Process **Disposal** use Energy for land use in scenario.

Reference and Additional Information

CFP02-28	Target Group: G



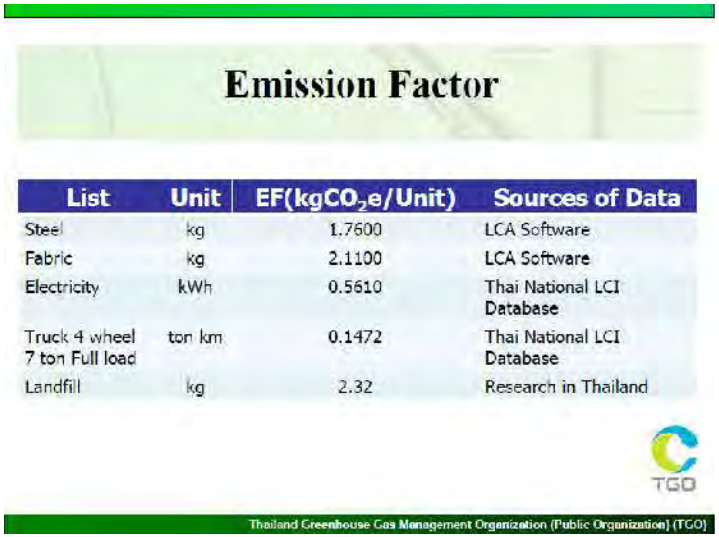
Key Points

Summary Inventory data

- Process Material Procurement Use Material ; Steel and Fabric
- Process Manufacturing Use Energy Electricity
- Process Distribution Use Energy Fuel from Truck
- Process Use not use energy and material
- Process Disposal Use Energy Fuel from Truck

Reference and Additional Information

CFP02-29	Target Group: G



Key Points

Now the activity data is prepared.

Next step is to identify the EF values of data items to calculate the carbon footprint.

Reference and Additional Information

CFP02-30	Target Group: G

Calculation

Equation

Σ (activity$_i$ × emission factor$_i$) = Emissions$_i$

Process	Name	Volume (Unit)	EF ($kgCO_2e$/Unit)	Volume ($kgCO_2e$)
Material Procurement	Steel	0.4 kg	1.7600	**0.70**
	Fabric	0.1 kg	2.1100	**0.21**
Manufacturing	Electricity	0.5 kWh	0.5610	**0.28**
Distribution	Truck	0.0225 ton km	0.1472	**0.003**
Use	-	-	-	-
Disposal	Landfill	0.5 kg	2.32	**1.16**
	All			**2.35**

Thailand Greenhouse Gas Management Organization (Public Organization) (TGO)

Key Points

Table shows the calculated carbon foot print.

Reference and Additional Information

CFP02-31	Target Group: G

Calculation result

Product Picnic chair is released Greenhouse gases equal to 2.35 $kgCO_2e$

Key Points

Show result calculated carbon footprint to three significant numbers.

Reference and Additional Information