International Conference on Wood-based Bioenergy

Hannover, Germany, 17-19 May 2007

Challenges for sustainable tropical timber industry: utilization of wood residues and waste



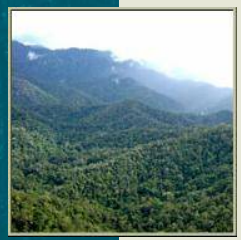

PRESENTED BY: Hwan Ok Ma, Projects Manager

INTERNATIONAL TROPICAL TIMBER ORGANIZATION (ITTO)

Presentation Outline

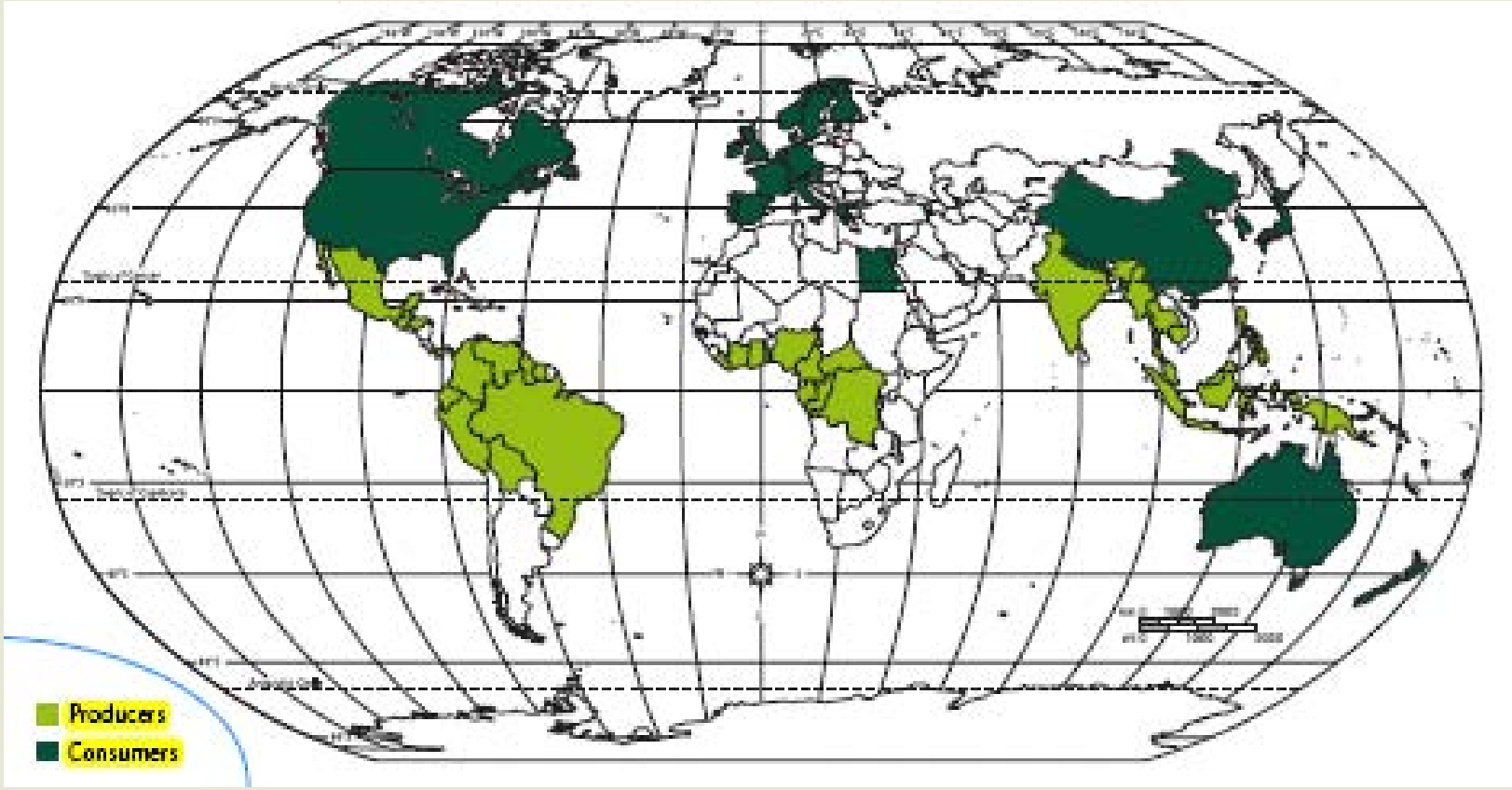
- Brief Introduction to ITTO
- Key findings of *Status of Tropical Forest Management 2005*
- Wood residues and waste generation in the tropical timber industry – Brazil and Malaysia
- Main constraints and opportunities for wood residues and waste utilization
- Conclusion and recommendations for future action

The International Tropical Timber Organization (ITTO)



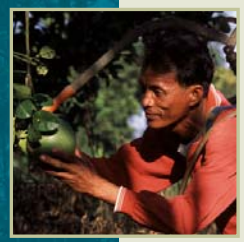
- an intergovernmental organization created by the ITTA (1983) in 1986
- has a secretariat of 35 people based in Yokohama, Japan
- is governed by the ITTC and associated committees

ITTO members (60)



- 80% of the world's tropical forests
- 90% of the world's tropical timber trade

The ITTO mandate



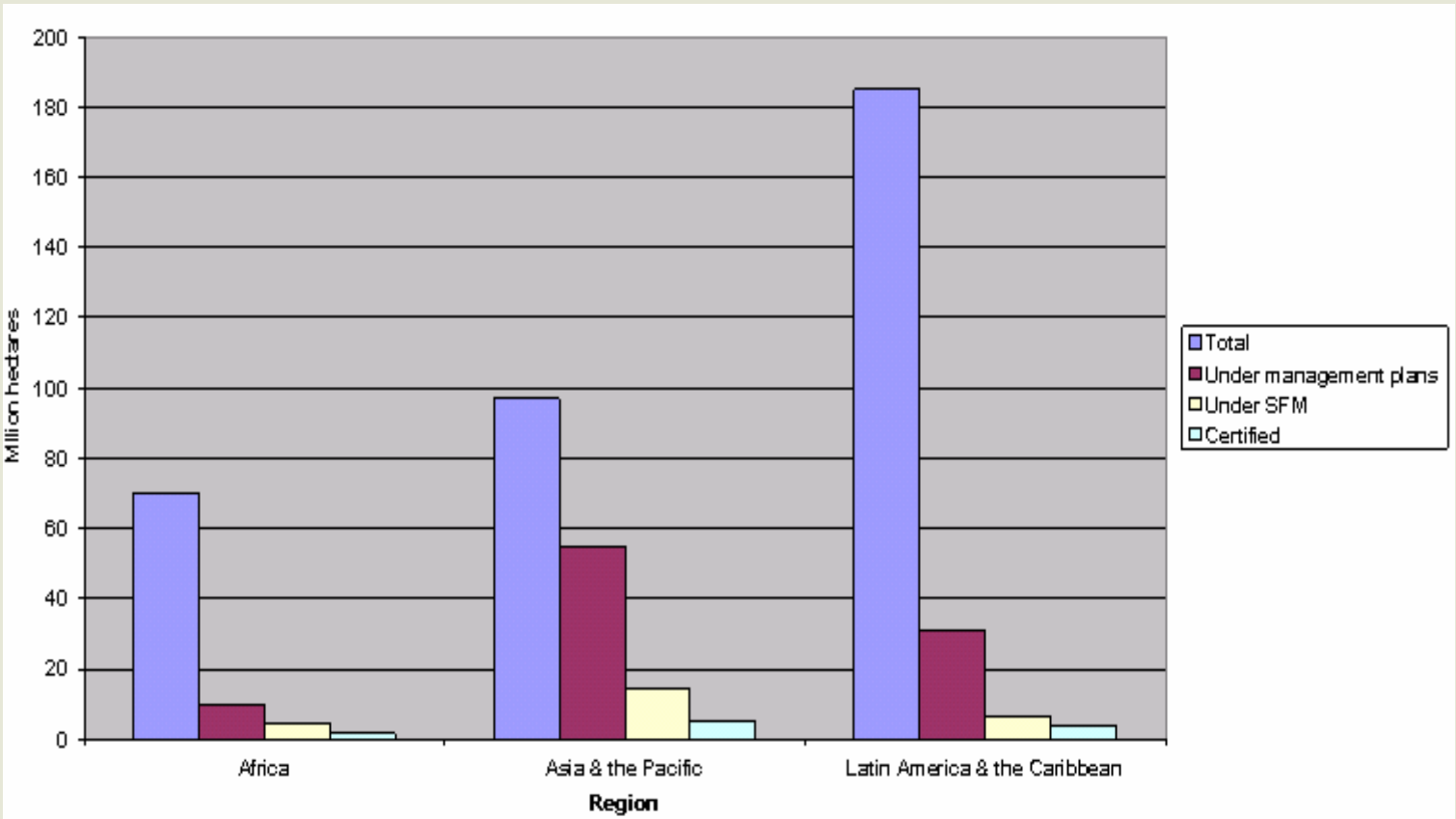
Promoting sustainable development through trade, conservation and best-practice forest management

ITTO project portfolio

- provided grants worth more than US$300 million to apply forest policies at field level
- more than 400 projects funded
- about 150 projects under implementation
- more than 500 local, full-time professionals employed in the tropics
- Nearly all ongoing projects include capacity building activities, many have a training component

Key findings of *Status of Tropical Forest Management 2005*

- SFM is spread in the tropics but the work is far from finished
- The overall proportion of the permanent forest estate under sustainable management remains very low, at less than 5% of the total



Source: ITTO 2006. *Status of Tropical Forest Management 2005*.

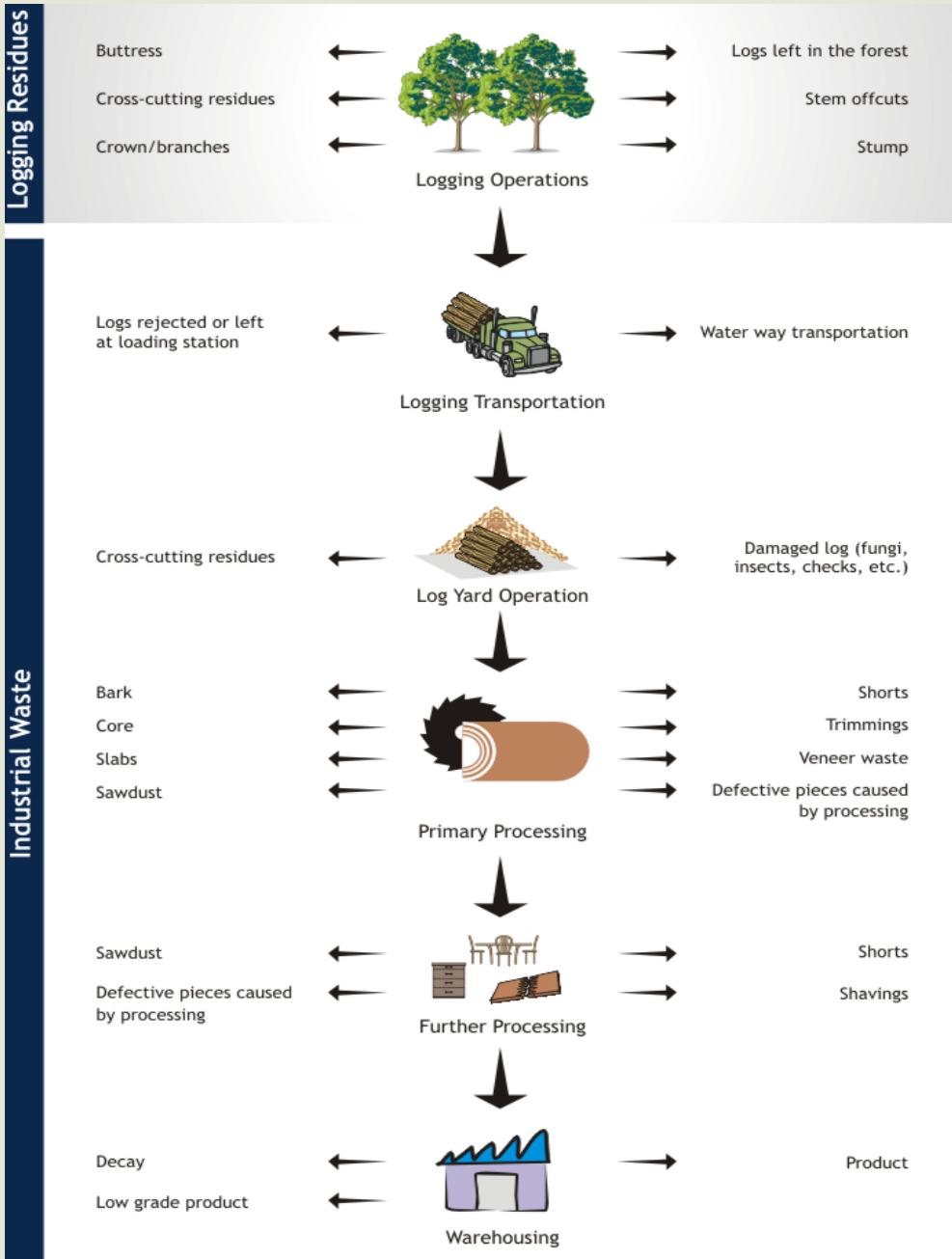
Changing nature of the tropical timber industry

ITTO producer member countries face many challenges in the sustainable management of their forest resources

The sustainable development of the tropical timber industry is extremely important for attaining SFM in the tropics

- → **To ensure that it maximizes its role in economic development while ensuring the sustainability of the resource base**
- → **To improve the efficiency of tropical timber from sustainable sources and the access of such products to high-value export markets**
  - **- Utilization efficiency**
  - **- Energy efficiency**

Waste flow generation in tropical timber production chain



Logging residues and wood waste generation by tropical timber industry in the Amazon region

Type of residue	Volume million m^3	Share (%)
Logging residues	28.0	57
Wood waste		
- Sawmills	20.0	40
- Plywood plants	1.2	2
- Other processing plants	0.5	1
	21.7	43
Total	**49.7**	**100**

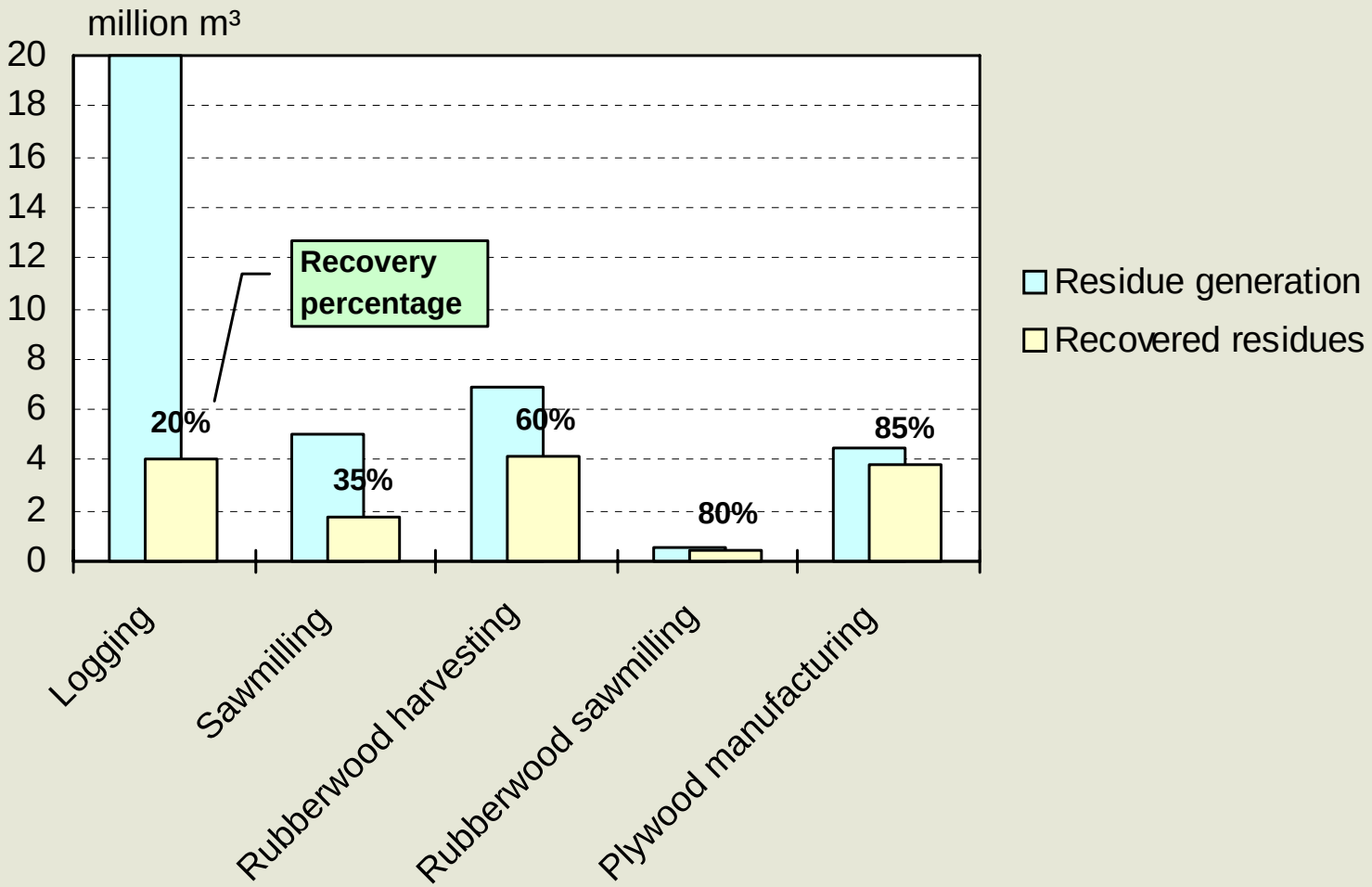
Source: ITTO 2002. ***Increasing timber processing, utilization efficiency and reducing waste (PPD 66/02 (I))***

Economic losses with non-utilization of wood residues in Brazil

Wood waste utilization	Total volume generated	Potential for use	Yield	Economic losses
	million m^3/yr		%	USD million
Logging residues				
for chipping	18	9	90	81
for sawing/peeling	10	5	50	375
	28	14		456
Wood waste				
for chipping	14.1	9.9	90	89
for further processing	7.6	5.3	50	663
	21.7	15.2		752
Total	**49.7**	**29.2**		**1,208**

Source: ITTO 2002. ***Increasing timber processing, utilization efficiency and reducing waste (PPD 66/02 (I))***

Generation and recovery of wood residues in Malaysia



Source: ITTO 2002. *Increasing timber processing, utilization efficiency and reducing waste (PPD 66/02 (I))*

Generation and recovery of wood residues in Malaysia in 2002

Sector	Total residues	Un-utilized	Un-utilized residues	Share
	million m^3	%	million m^3	%
Logging	20	80	16	70
Sawmilling	5	65	3.3	14
Rubberwood harvesting	6.9	60	2.7	12
Rubberwood sawmilling	0.6	20	0.1	1
Plywood making	4.5	15	0.7	3
Total	**37**	**62**	**22.8**	**100**

Source: ITTO 2002. ***Increasing timber processing, utilization efficiency and reducing waste (PPD 66/02 (I))***

Main constraints limiting wood residues and waste utilization

- The economic returns
- Production sites far from possible markets
- Lack of incentives for wood-waste utilization
- Lack of know-how on residue and waste utilization knowledge and technologies
- Inadequate enforcement of environmental regulations
- Lack of vertical and horizontal integration in business strategies
- Lack of adoption of sustainable forest management practices

Energy production from wood residues and waste

Conversion of wood to different types of bioenergy through direct combustion, pyrolysis, densification, gasification and ethanol production

- → Charcoal
- → Pellets and briquettes
- → Energy production at sawmills
- → Energy production in co-generation plants
- → Biofuels

A Warming Trend for Putting Wood Waste to Work as Fuel

Climate Concerns Spur New Interest In 'Bio-Oil' Efforts

Washington Post
Friday, April 20, 2007; Page A25

http://www.washingtonpost.com/wp-dyn/content/article/2007/04/19/AR2007041902519.html

Utilization of wood waste in Brazil

Most wood residues and waste generated at the tropical timber industry in Brazil is burnt or accumulated at mill sites.

Improvements on waste utilization:

- generating thermal energy is increasing at medium and large-sized mills
- independent power producers using wood waste are increasing to produce and sell electricity South-South cooperation
- many timber industries are using wood waste for their own electricity - replacement of diesel (small diesel generators) by wood waste

  - costs of electricity (around USD 0.11 per kWh-diesel, USD0.04 per kWh-wood waste)

  - carbon credits under the Kyoto Protocol

→ Energy generation not only makes electricity but also contributes to improving environmental conditions – smoke reduction, avoiding rivers and soil pollution

Opportunities for production of celluosic ethanol in the tropics?

Research is underway in developed countries to turn green plants into fuels

Bad, good and best ethanol

Corn-based ethanol is neither cheap nor green. Needs much energy to produce

Sugar ethanol is good. It produces far more energy than is needed to grow it.

→ **There is a brighter prospect: cellulosic ethanol**. It is made from feedstocks rich in cellulose such as wood, …..

→ Cellulosic ethanol would be more energy-efficient to produce than sugar ethanol

The Economist: April 7th 2007; Page12

http://www.ornl.gov/info/ornlreview/v40_1_07/cover_story.shtml

Conclusion

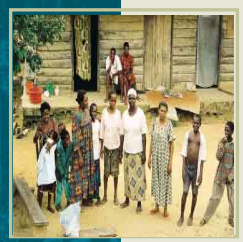
- → Bioenergy offers a number of opportunities to the tropical timber industry sector
- → Wood residues and waste should be considered valuable by-products to capture the environmental and financial benefits of bioenergy

Recommendations for further action (1)

- Policy development
  - Assist in the formulation and implementation of appropriate policies and strategies to support the establishment of a sustainable wood-based bioenergy sector
- Technology transfer
  - Support transfer of wood-based bioenergy generation and energy saving and efficiency technologies within the framework of North-South and South-South cooperation
- Integrated tropical timber industries
  - Support the creation of integrated tropical timber industries which would generate thermal energy for their operational needs and electricity for local communities
- Market development
  - Identify local and export markets of refined wood energy products such as charcoals, pellets and briquettes and support the certification of these products for exports

Recommendations for further action (2)

- Carbon markets development
  - Identify carbon financing opportunities for the tropical timber industry by replacing fossil fuels with wood under the Clean Development Mechanism of the Kyoto Protocol
- Support to R&D
  - Support research and development studies and projects to produce bioeneargy including wood cellulose-based ethanol
- Information collection and sharing
  - Support the sharing of information, knowledge and technology to facilitate the efficient and diversified utilization of wood residues and waste for bioenergy production
- Regional fora and demonstration projects
  - Convene regional forums and support demonstration projects to facilitate the creation of a wood-based bioenergy sector



Thank you for your attention!

http://www.itto.or.jp

ma@itto.or.jp