



SUSTAINABLE FOREST BIOMASS ENERGY: Green Architecture & a New Potential

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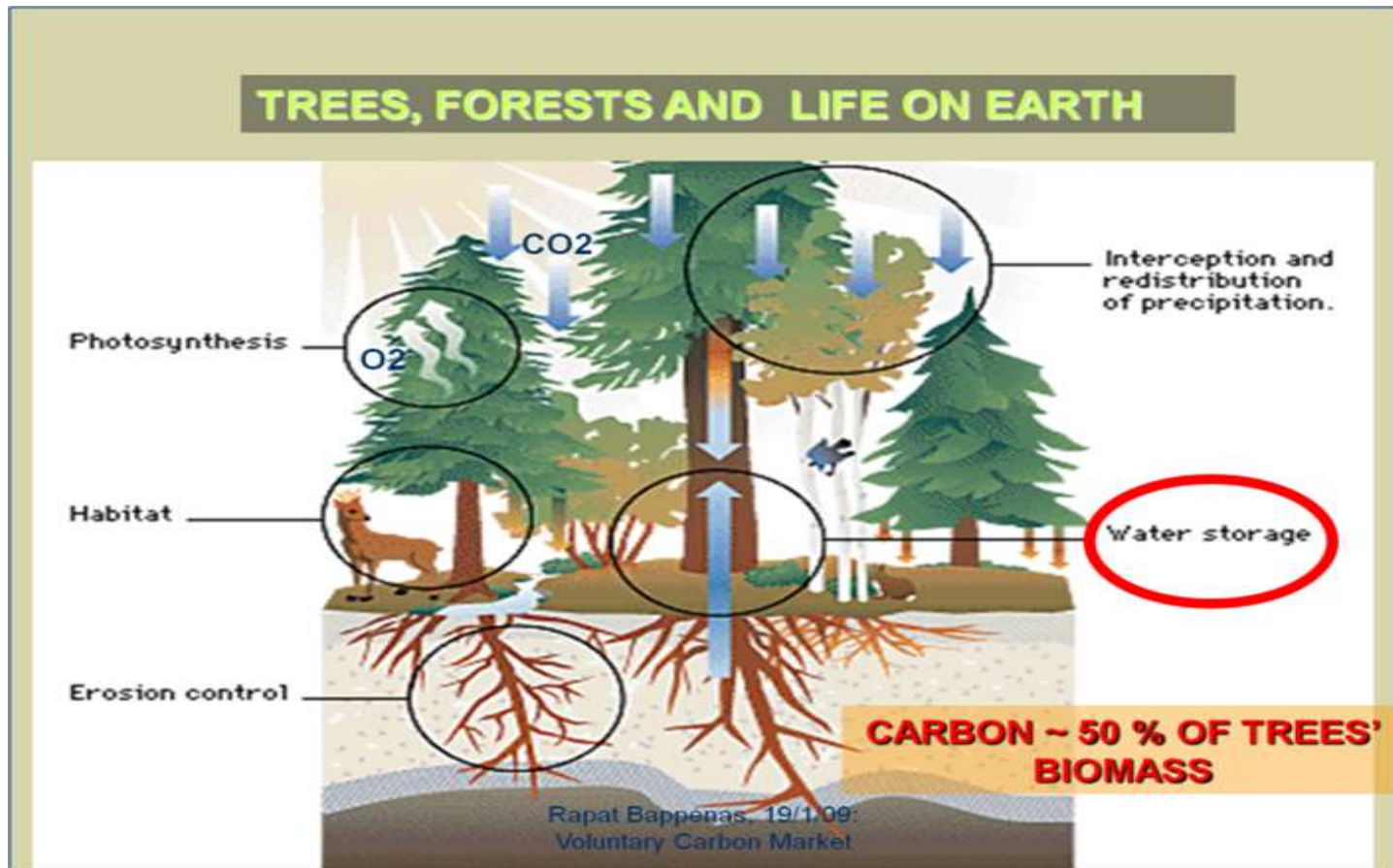
www.forestforlife.web.id

Presented at The Global Bioenergy Partnership
Workshop on Sustainable Bioenergy in Asia
Medan 26 May, 2015

Trees and Forest:

Do you know that Trees eat **CO₂**

- Planting degraded land + certification
- manage until optimum growth



Why Bioenergy ?

- Sustainable biomass can provide a significant fraction of reducing CO₂ GHG emissions.
- Biomass sources generally maintain or even increase the stocks of carbon stored in soil or plants.
- Biomass displace carbon emissions from fossil fuels, burning of which adds new and additional carbon to the atmosphere and causes global warming.

Next..Why

- Tropical Countries could contribute to high growth and yield of biomass (absorbing GHG CO2 faster)
- Provide biomass energy for domestic (reduce fossil fuel gov subsidy)
- Rich on experiences on fuel wood -kayu bakar (research and implementation)
- Provide supply of wood biomass energy based, for global partners
- Towards Transfer Technology and New Market Mechanism (UNFCCC perspective)

COMPANIONSHIPS FOR BETTER WORLD,
LONGGER LIFE OF MOTHER EARTH

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TS #1: ENERGY

Room 1

Achieving global net zero emissions well before the end of the century requires a deep transformation of all energy systems. How can we scale up renewable energy and encourage companies to commit to procure 100% of their electricity from renewable sources in the shortest practical timescale? How will we decarbonise the energy sector in a way that ensures economic growth?

Speakers:

Daniel Benes

Chairman of the Board & CEO, CEZ

Vidar Helgesen

Ministry of European Economic Affairs & European Union Affairs, Norway

Rudy Provoost

CEO, Rexel

Christian Rynning-Tønnesen

CEO, Statkraft

Tulsi Tanti

Chairman and Managing Director, Suzlon

Philippe Varin

Chairman of the Board, Areva

Challenger:

Jean-Marc Jancovici

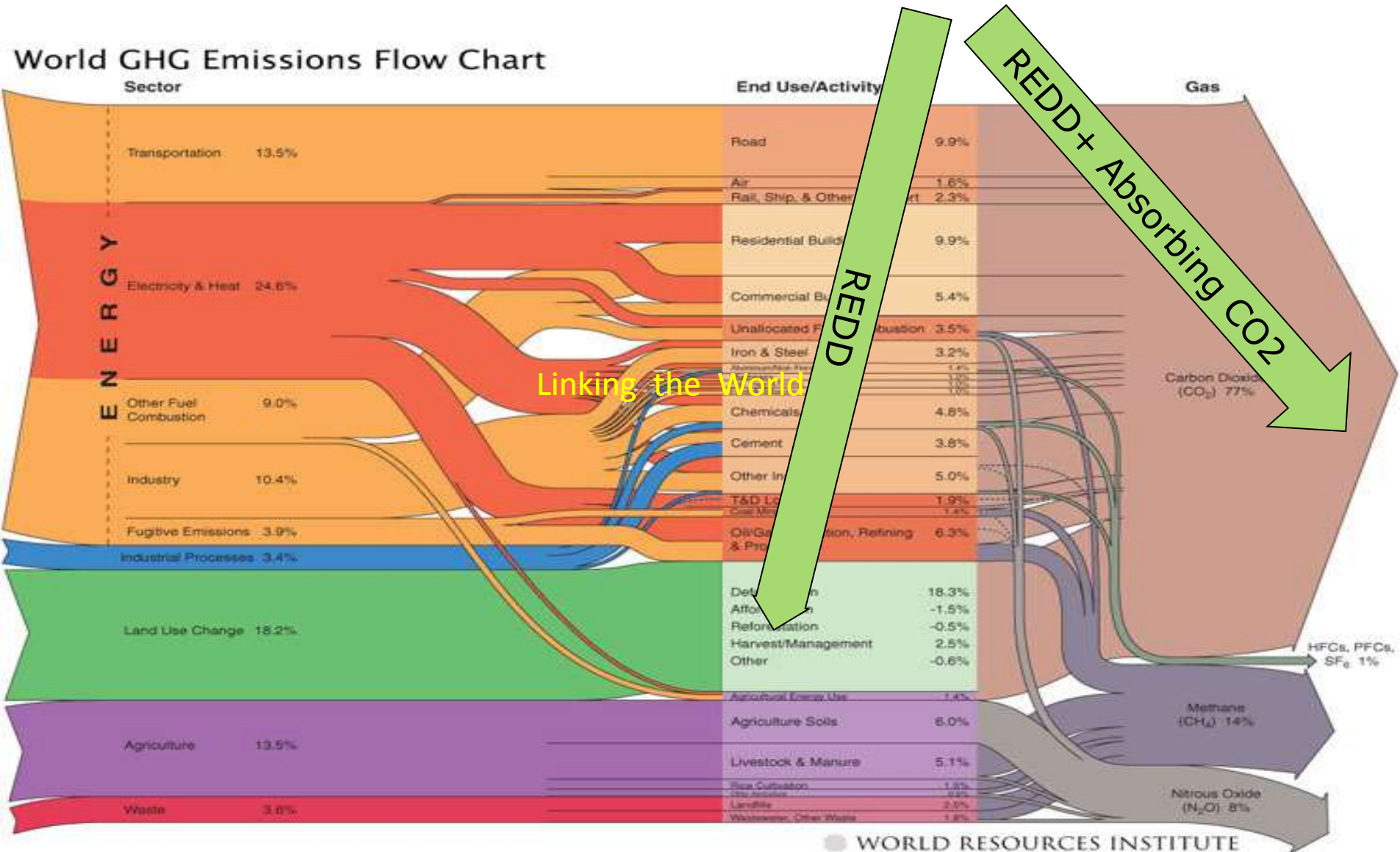
President, The Shift Project

Moderator:

Philippe Joubert

Senior Adviser, WBCSD

Basic data/idea: Linking the World



Conversion vector of Tree's biomass - CO₂eq:

Tree's biomass to carbon ~ 0.5

Carbon to CO₂ ~ 3.7

Biomass to CO₂ ~ 1.83

Berlin Conference 11-12 June 2013:
Forests for Future Generations –
Public and Private Responsibility for Sustainability

Managing Forest Resources for Sustainable Development

300 years of scientific forestry: And the next 300 years?



Jürgen Blaser

Based on the Paper: *Forests in the next 300 years*
Prepared by J. Blaser and H. Gregersen
UNASYLVA 240, Vol. 64: 61-73, 2013

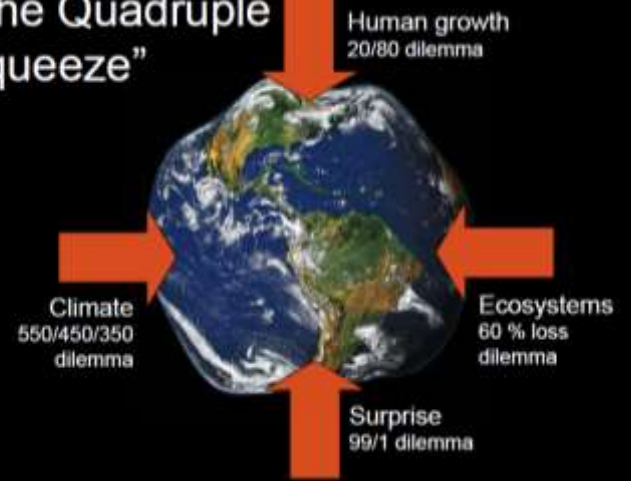
Source: Jürgen Blaser, 2013

FOREST 300 YEARS AGO

&

FOREST 300 YEARS IN THE FUTURE

"The Quadruple
Squeeze"



Forest Management Goals of the Future

- Ecosystem services
- Permanence of carbon pools
- Wood fibres



THE FUTURE: FORESTS FOR GREEN LIVING PLANET

Need for materials - Raise of Wood Fibre: Tree cracking – from macro to mini scale



Intelligent
wood
structures



Packaging



Pharmaceutical
s & Well-being



Energy and
biofuels



Composites



Next
generation
wood and
paper
products



Biochemicals



Biopolymers



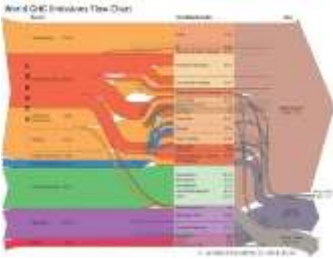
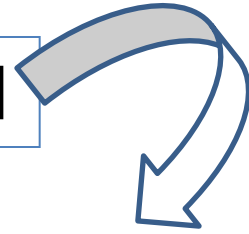
Clothing



© Ohto Nuottamo, modified

Source: Jurgen Blaser, 2013

CLIMATE CHANGE AND CARBON



FORESTS AND CARBON

- Natural process: Carbon dioxide from the atmosphere + sunlight => a chemical reaction => oxygen and glucose.
- Carbon dioxide from the atmosphere effectively captured in the structure of tree (carbon about 50% of tree's biomass).

the Future of **Indonesia Forest** (11 hours sunshine a day)

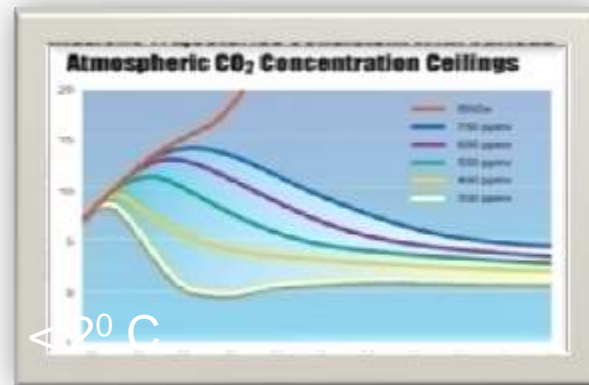
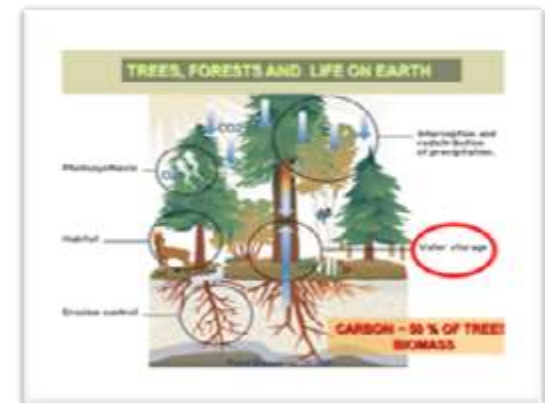
- Local, nation wide, and global
- Mitigation and adaptation to **Climate Change**,



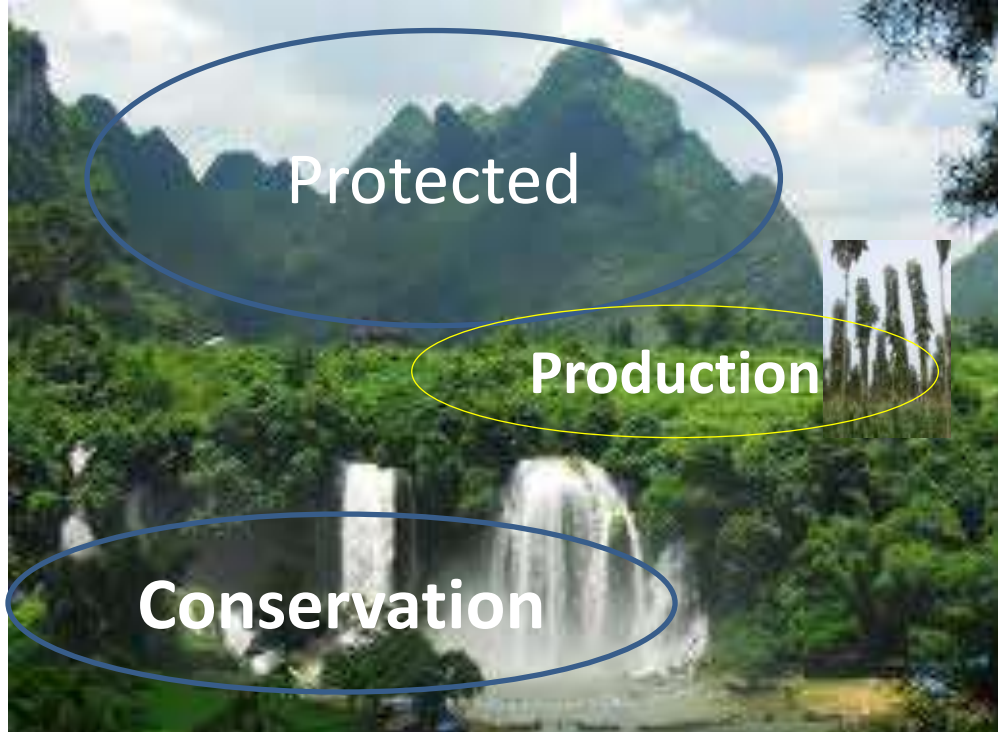
CARBON CYCLE

WATER CYCLE

REDD+



CCS



Protected and Conservation Forests:

- Carbon Stocks
- Ecosystem

Production Forest:

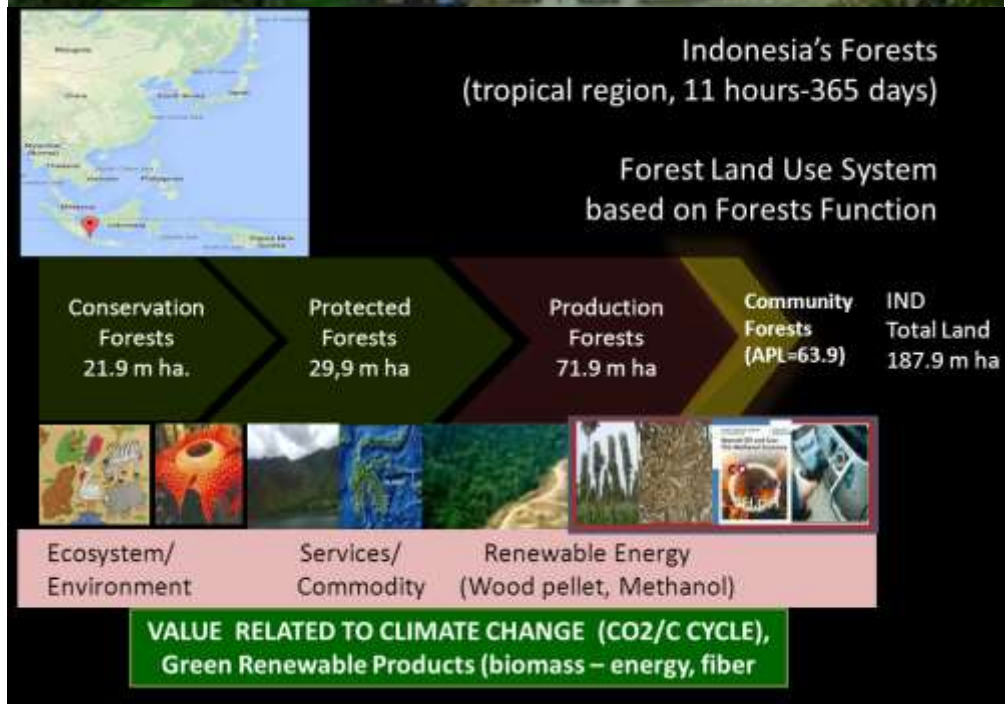
- CO2 Removals
- Green Products

- Value of Carbon Stock
(non Kyoto~REDD+)

- Baseline based on Stock & Change

- Sustainable Management F

- Enhancing FC



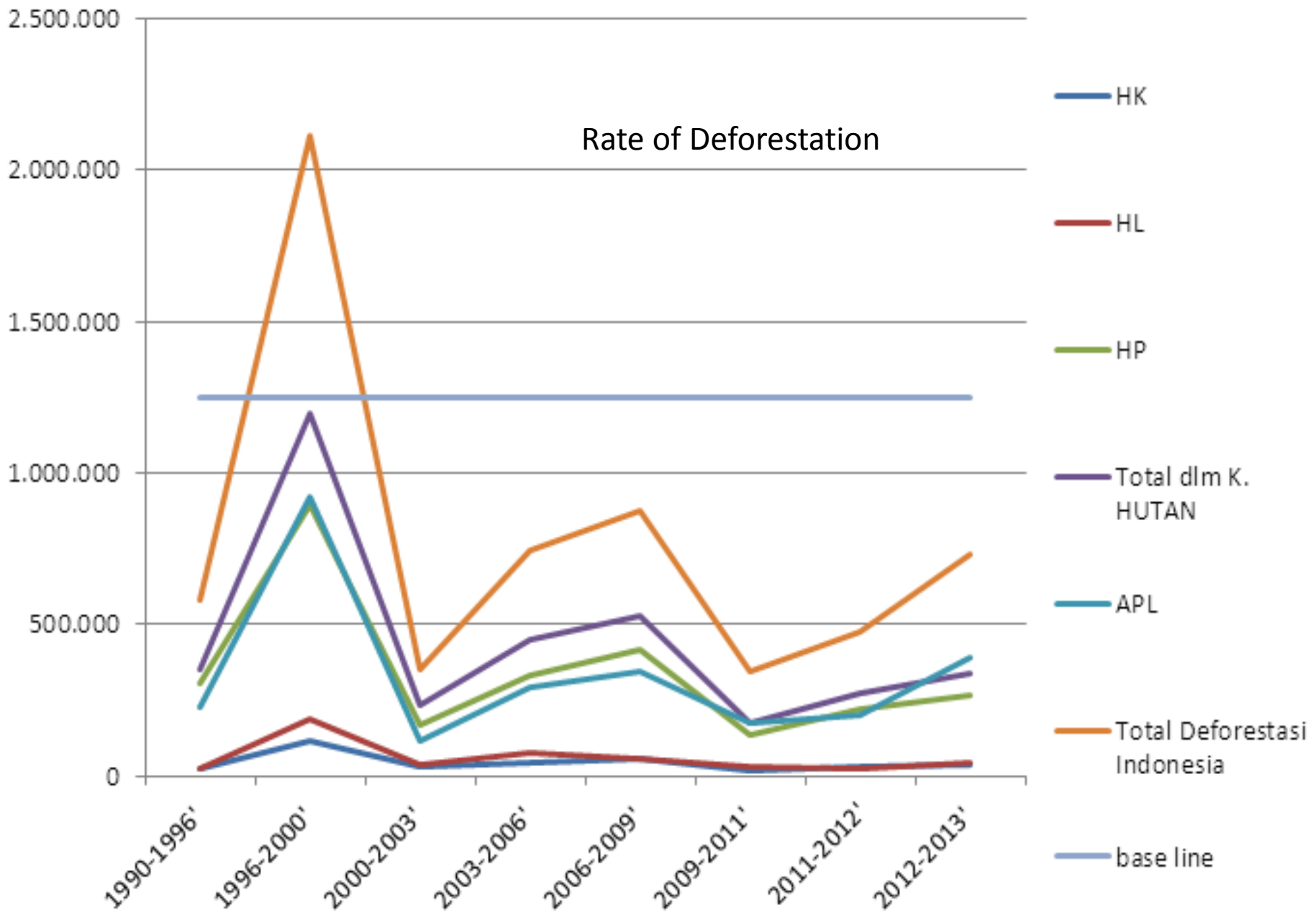
Doha COP 18, Forest Day CIFOR by ITTO & IUCN: Panel on Forest Landscape Restoration “Indonesia’s Forests Land Used System since 1967, **but not well known by global**” (Yetti Rusli)



YouTube: <http://www.forestforlife.web.id/2012/12/forest-landscape-restoration-enhancing.html>

Indonesia Forests: Progress related to CC

- More than 15 years Rate Deforestation & detect drivers; Least cost (not low hanging fruit); scaling up best practices (innovation Green Energy/SFM+ Tech, Agroforestry.—CO2 removal, C Stock, Green Products)
- Forests, Climate Change, REDD+ (Bali Action Plan), Commitment of reducing emission, and promote potential of green development (by 2020: 26%-41%)..
- VAP with EU Signed, Brussels, 30 Sept 2013...governance's tool



*Climate Change
Challenge:*

SHOULD BE THE CHANGING
GLOBAL DEMANDS AND
EXPECTATION FROM
FORESTS
("REPACKAGING")

Green Economy

(UNEP 2011, Towards a Green Economy)

- “Results in improved human well-being and social equity, while significantly reducing environmental risk and ecological scarcities”
- “REDD+ regime may be the best current opportunity to facilitate the transition to a green economy **for (from)** forestry”
- investing 0.03% of GDP b/w 2011-2050 to conserve forests & private investment for reforestation → >20% increase value added in forest industry compare to BAU

TOWARD PARIS COP 21

Best practices
sharing examples of
REDD+

Low Carbon and Green development
benefits to local, national, global

Innovation on Fuel Wood Plantation with Certification:

Short Rotation Coppice System

Age 1 Year: for 1st harvest

Next harvest every year for up to 20-30 years



7 bulan



Red Calliandra Short Rotation Coppice System)

(*calliandra callothyrsus*)

ICCTF Bangkalan Madura, Indonesia, start planting in year 2012



4 bulan

DO MORE FOR & BY PEOPLE WITH GLOBAL INSIGHT

SRC introduced to strengthen Successful of Local (Madura Island, East Java) Supporting Modern green life, GREEN PLANET

National Reward Kalpataru 2010



Minister of Forestry Indonesia, 2011



Community Forests in 1970's

Green ecosystem, trees, Fruit, wheels, livestock, biogas

Use of Local knowledge started y 70's

Community Forests Green Certification (LEI, 2011)



Short Rotation Coppice for Pellet (>200 ha Jan 2013)

Small Scale Community Pellet Processing Plant



Start here

CURRENT USE OF WOOD PELLET

<http://www.pelletclub.jp/en/pellet/use.html>

300MW boiler facility

Tanker, which brings wood pellets for facility. (Sweden)

Source: Pamphlet of Birka Energy

15-40kW wood gas boiler (Sweden)

Made in Japan

WOOD (GASIFIER) STOVE

Made in Sweden

Wood Gas Stove

FOREST BIOMASS AND FUTURE RENEWABLE ENERGY...

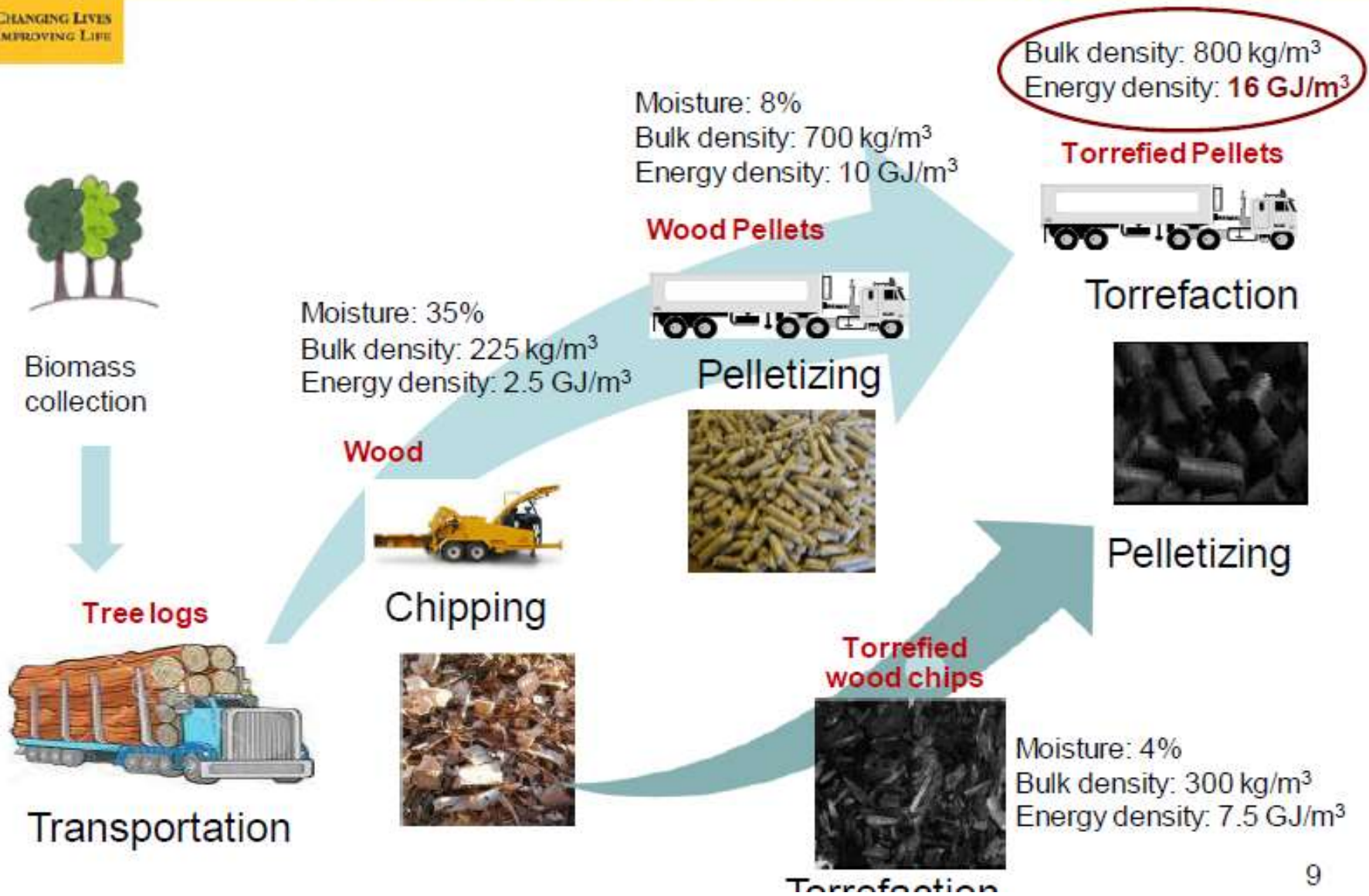
GreenJet Fuel

Green Fuel A Honeywell UOP technician holds a vial of the company's "green fuel"—a diesel equivalent that actually delivers more power and can be made from a variety of oils

WOOD and its wastes can be converted to aviation fuels, diesel, and methanol.

Source: Univ of Washington & MoF, Jakarta 17 Nov 2011

TORREFACTION-PELLETIZATION



Example Japan Domestic Market

- Defining/selecting best practices for operationalizing the concept of common but differentiated responsibilities ..

IGES Institute for Global Environmental Strategies
Forests Sustainable Management

**Japan's Domestic Offset Mechanism:
 Japan Verified Emission Reduction (J-VER)**

4 November 2011
 Workshop for New Market Mechanism in Mongolia
 at Ulaanbaatar

Yuriko KOYANAGI
 Assistant Researcher, Market Mechanism Group, IGES

**JAPAN DOMESTIC:
 J-VER established 2008**

- ◆ Credits are issued for the period from 2008 to 2012.
- ◆ Certified credit amount is about 140,000t-CO₂.
- ◆ 80% of total credits come from forestry projects.
- ◆ 160 project are registered as of October 2011.

Approved Methodologies

E001	Biomass boiler use
E002	Biomass pellet boiler use
E003	Biomass pellet stove use
E004	Biodiesel use (made from waste edible oil)
E005	Sewage biosolid use
E006	Exhaust heat recovering and use
E007	Wood stove use
E008	Efficiency delivery system through Information and Communication Technology (ICT)
E009	Intelligent gas meter (ICT)
E010	High efficient light
E011	High efficient boiler
E012	High efficient air-conditioning (ex. heat pump)
E013	Energy saving through free cooling
E014	High efficient iron
E015	Small hydroelectric generation
E016	Cogeneration

E017	High efficient fan and pump and inverter
E018	Biogas use (made from waste)
E019	Heat pump
E020	Refuse paper & plastic fuel (RPF)
E021	Oil and gas use made from waste
E022	Heat recovery from waste combustor
E23	Eco-drive equipment
E24	Photovoltaic generation
E25	Fuel switch to biomass in cement kiln
E26	Energy saving through green roof
R001	Sequestration through thinning
R002	Sequestration through sustainable forestry
R003	Sequestration through afforestation
L001	Nitrous oxide emission reduction through use of low protein feed for stock
L002	Methane avoidance through manure management

As of Oct. 2011. Updated list can be found in: http://www.4cj.org/iver/system_doc/methodology.html

INNOVATION “TPTJ/SILIN” ON SFM NATURAL FORESTS

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TPTJ: Tebang Pilih Tanaman Jarak 択伐列状植栽法



Line planting with 20 m to 25 m interval
20メートルから25メートル間隔に設置される植栽列



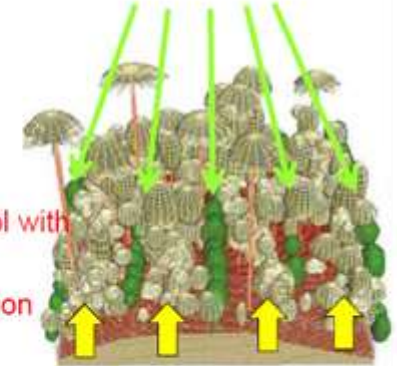
Photo by PT Sari Bumi Kusuma

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Forest under TPTJ system 択伐列状植栽林



Planting line:
For timber production



Residue belt:
For carbon, biodiversity and genetic resources

Conclusion

TPTJ system

- (1) Sustainable forestry system
- (2) High efficiency as carbon pool with rapid sequestration rate
- (3) High potential as REDD+ option

京都大学



Creation of a Paradigm for the Sustainable Use of
Tropical Rainforest with
Intensive Forest Management and
Advanced Utilization of Forest Resources



Mamoru Kanzaki

(Graduate School of Agriculture, Kyoto University)

and colleagues in Kyoto University, Utsunomiya University, Indonesian Institute of Sciences, Gadjah Mada University, Tanjungpura University, Research Institute of Human Settlement, Bogor Agricultural University

New Government, Nat Target NRE



VISION AND MISSION 2015-2019



VISION:

INDONESIA: SOVEREIGNTY, SELF RELIANT AND "GOTONG ROYONG"

MISSION:

1. National security to maintain territorial sovereignty, support self-reliant in economy, through securing maritime resources as reflection of Indonesia as archipelago country
2. Developed, equitable and democratic society based on law.
3. Independent and active foreign policy and strengthening the identity as a maritime country
4. Better quality of life, progressing and prosperity
5. Competitive nation
6. Pursuing a strong and independent maritime country based on national goal
7. Community which based on national personality and culture

Source: BAPPENAS, 30 Jan 2015



9 DEVELOPMENT AGENDA



1. State existence to protect dan provide safety for the citizen
2. Government existence in developing clean, effective, democratic and trusted governance.
3. Develop country from the frontier and strengthening regons and villages in Indonesia unity.
4. Strong state role in reforming into a free of corruption, dignity and trusted of system and law enforcement.
5. Improving better human quality of life
6. Increasing people's productivity and competitiveness in international market
7. Self reliant in economy by mobiliiing staretgic sector in domestic economy
8. Nation character building
9. Strengthening unity in diversity and social restoration.

Source: BAPPENAS, 30 Jan 2015

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RPJMN 2015-2019

BOOK I

- Sustainable development: balancing social-economy-environment development
- CC and post 015 – sdg – startegic factors (along with demographic bonus, the changing of geopolitics and geo-economy in the region and global)
 - 3 agenda and 7 strategic issues:
 - 4. Combating illegal fishing, illegal logging and illegal mining
 - 6. Economy of NRE based part to economic competitiveness (JCI Economy of Env. Services and Biodiversity)
 - 7. Food Security and Sovereignty
 - Water Security
 - Energy Security and Sovereignty
 - NR Conservation, Environment and Disater Management
 - Ocean and Maritime

BOOK II:

- Sustainable Development mainstreaming policy
- Climate Change: cross sectoral program
- Chapter 10. Natural Resources and Environment

BOOK III:

- Locus of activities in the regions – following the regional development strategy.

Source: BAPPENAS, 30 Jan 2015

NATIONAL TARGETS RELATED WITH NRE

Strategic Issues	Indicators	In 2019
1. Food Security	Food production/availability	Rice, maize, sugar, meat an fish
	Food Consumption	Calorie: 2150 kcal
	Nutrition Status - PPH	92.5 (score of PPH)
2. Energy Security	Energy availability	Oil, gas, coal and bioenergy
	Electricity access	96.6-100%
	RE share	10-16%
3. Water Security	Watershed Conservastion	4 DAS, 26 others
	Water availability	118 m3/second
	Access to drinking water	100%
	Sanitation	100%
4. Environment	GHG Emission	26%
	Environment Quality Index (IKLH)	66.5-68.5
	Forest rehabilitation	Additional 750 thousand ha (forest area)
5. Ocean and Maritime	Program for small outer island	31 islands
	Lines for outer an small island	75 units
	Ports Development	59 units
	Marine conservation	20 mill ha

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WOOD BIOMASS FEED STOCK
could be prepared & ready in 1-2 years

FURTHER NEED
for Wood Biomass Energy

- Transfer Technology.. market ready (market proven)
- Market for Green Product
- Wood Biomass Energy “end user” identification & program for domestic and international



Thank you
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