Discussion Forum
Climate Change Working Group

11 Oct. 2017
KUBO Hideyuki

➢ Briefing on "Indonesia Japan Project for Development of REDD+ Implementation Mechanism (IJ-REDD+)"

➢ Key questions

1. How REDD+ works for conservation and sustainable management of forests?

2. How capacity development processes should be for the operationalization of REDD+ mechanism?

Indonesia Japan Project for Development of REDD+ Implementation Mechanism (IJ-REDD+)

1. Outline

Period	June 2013 – June 2018 for 5 years
Director	- Director for Environmental Service Utilization in Conservation Forest (PJLHK)
Collaborator	- Director for Control of Land and Forest Fire - Director for Green House Gas Inventory and Monitoring, Reporting & Verification - Director for Climate Change Mitigation
Purpose	Support the government for the development and operationalization of a REDD+ implementation mechanism

2. Main components

	Themes/Activities
Readiness	< West Kalimantan province > Sub-national REDD+ framework: FREL/MRV, Provincial REDD+ Strategy (SRAP), Safeguard Information System (SIS-REDD+)
	< Central Kalimantan province > Measuring method of CO_2 emissions from peat fire
	< National Level > REDD+ policies
Emission reduction	< West Kalimantan > Gunung Palung National Park: Resort Based Management – including SMART* and Forum Kabupaten Ketapang: Operationalize a community based fire prevention system

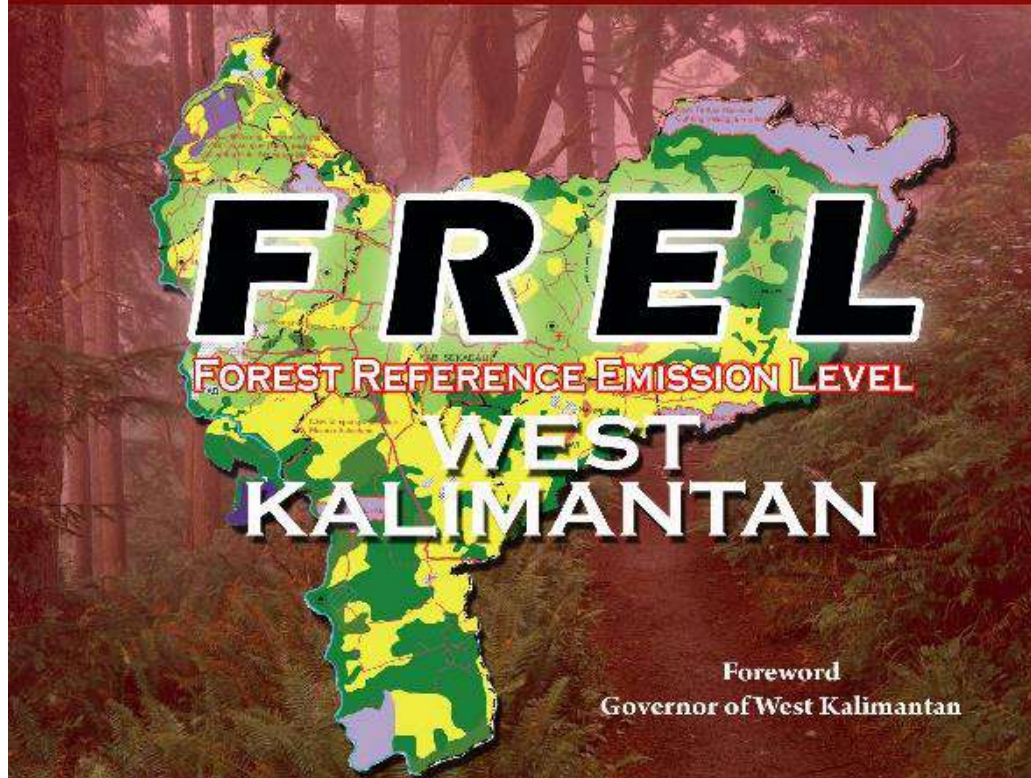* SMART: Spatial Monitoring and Reporting Tool, http://smartconservationtools.org/

3. Target by June 2018

Readiness	< West Kalimantan > Sub-national REDD+ framework: • Provincial FREL, MRV and SIS-REDD+ are established. • Monitoring reports are produced for 2016 / 2017. • Priority areas for mitigation are identified and policies and measures are proposed.
	< Central Kalimantan > MRV for peatlands: • A method of measuring GHG emissions caused by peat fire is developed.
	< National Level > • "Role of conservation" REDD+ policy is developed. • RBM guideline at national parks is developed.

< Case Example (1) >

Development of Sub-National FREL in West Kalimantan

UNU PRESS

Dr. Gusti Hardiansyah, Adi Yani, Karsono Rumawadi, Hendarto, Yenny, Etty Septia Sari, Klothilde Sikun, Eka Kurnia Pambudi, Hendra Saputra, Yuliansyah, Asih Idha Listiyowati, Joseph Adiguna Hutabarat, Stephanie Wegscheider, Dr. Rossie Widya Nusantara, Ronny Christianto, Zuhri Haryono, Sigit Normagiat, Edy Sutrisno, Syamsul Rusdi, Rosadi Jamani
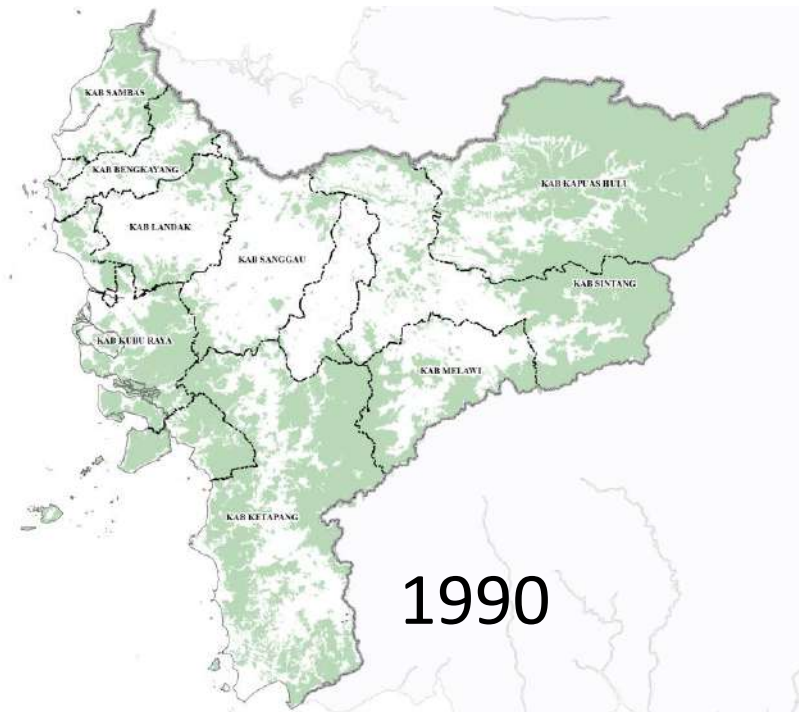
FREL

FOREST REFERENCE EMISSION LEVEL

WEST KALIMANTAN

Foreword
Governor of West Kalimantan

POKJA REDD+ KALBAR

IJ-REDD+ PROJECT
Indonesia Japan Project for Development of REDD+ Implementation Mechanism

JICA

FAUNA & FLORA INTERNATIONAL

PRCF

giz

WWF

KEHATI

BANK KALBAR

1. West Kalimantan province

Total Area: 14.7 million ha

Forest cover (1990) : 7.6 million ha (52%)

(2015) : 5.7 million ha (39%)

1990

Source: Provincial Government of West Kalimantan (2016)

Peatland area
under natural forest (1990) : 1.7 million ha

2. FREL development in West Kalimantan

< Main purpose >

◆ To support the implementation of the Low Carbon Forest Investment Strategy described in the REDD+ Strategy in West Kalimantan

◆ To promote and implement the Result-Based Payment arrangement in West Kalimantan

< Timeline >

Dec. 2015	Submission of National FREL
Feb. 2016	Start discussion on provincial FREL
Mar.	Introductory WS
May	Data sharing from MoEF
	1st technical WS
15 Aug.	7th technical WS: Finalize document
29 Aug.	Presentation in Mexico (GCF-TF)
Sep. & Oct.	Further elaboration

< Team >

Overall Coordination:

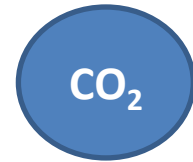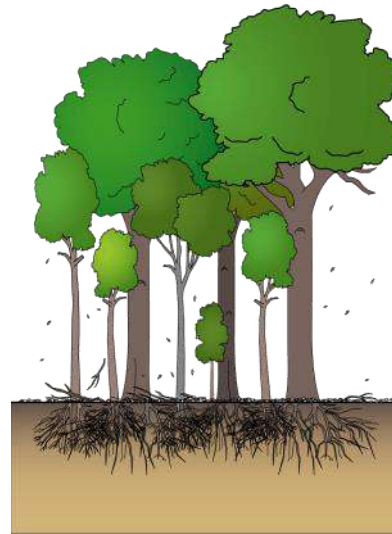　Division Head at Provincial Environment Agency

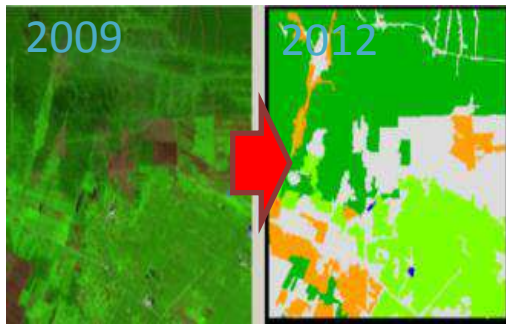　(As REDD+ Working Group secretary)

Core members:

　University of Tanjunpura, Provincial Government (Environment, Forestry, Plantation)

Advisors:

　University of Lampung, GIZ, FFI, IJ-REDD+

3. Methods, procedures and data

◆ Calculation

Land cover change data from remote sensing

Activity Data

Forest carbon stock (change) data from a forest inventory

Emission Factor

Inventory of greenhouse gas emissions from the forest sector

< Principles >

Maintain the consistency with the National FREL

      Definition

      Activities

      Carbon pools and Gases

      Baseline method and period

      Land cover data & peatland map

Elaboration of carbon stock data for Tier 3

      Local inventory data for emission factors

< Land cover classes by MoEF >

Land cover classes	Category
1. Primary dryland forest	Natural forest
2. Secondary dryland forest	Natural forest
3. Primary mangrove forest	Natural forest
4. Secondary mangrove forest	Natural forest
5. Primary swamp forest	Natural forest
6. Secondary swamp forest	Natural forest
7. Plantation forest	Plantation forest
8. Estate crop	Non forest
… …	…
23 Clouds and no data	Non forest

◆ Definitions

<u>Forest</u>: 0.25ha (area); 5m (high); 30% (canopy cover)

<u>Deforestation</u>: Conversion of natural forest cover into other land-cover categories

<u>Forest Degradation</u>: A change of primary forest classes to secondary forest classes

<u>Peatland</u>: Carbon content >=12%; Layer >=50cm;

◆ Activities

  Deforestation and Forest Degradation

◆ Carbon pools

  Above Ground Biomass (AGB)
  Soil – Emissions from peat decomposition

◆ Gases

  CO_2

◆ Baseline method and period

  Historical Emission Method: 1990-2012

◆ Land cover data

Drawn from NFMS of MoEF with 23 land cover classes:
6 classes for natural forests – Primary & Secondary
                   Dryland forests
                   Peat swamp forests
                   Mangrove forests

Dataset of 1990, 1996, 2000, 2003, 2006, 2009, 2011 and 2012

◆ Peatland map

Using peatland map of the 2011 edition at the scale of 1:250.000 (Ministry of Agriculture)
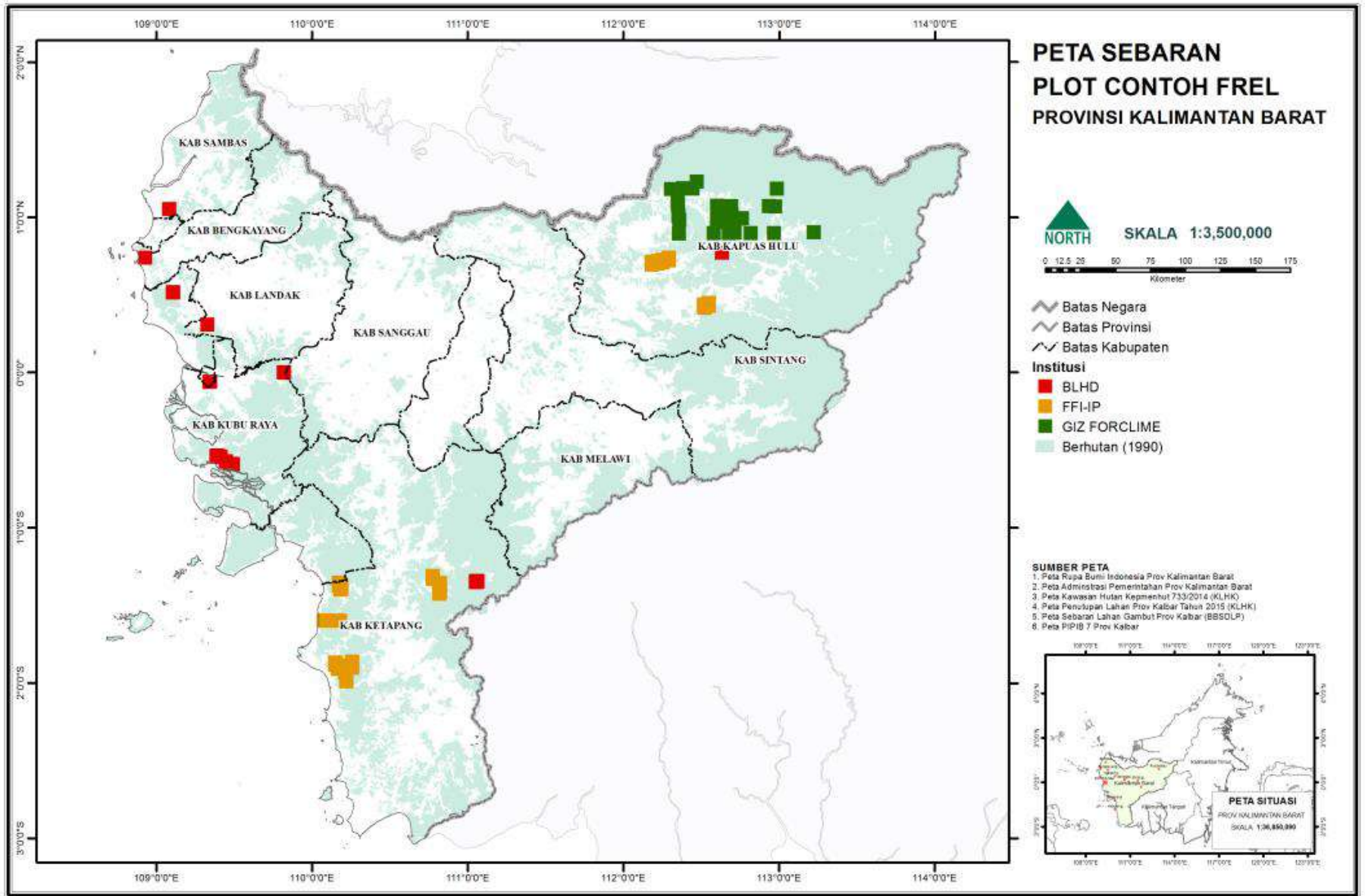
◆   Emission factors on deforestation/forest degradation

There are 186 inventory plot data in 8 districts

→ Three land cover types: Dryland forest (Pri&Sec)

Peat swamp forest (Pri&Sec)

Mangrove forest (Pri&Sec)
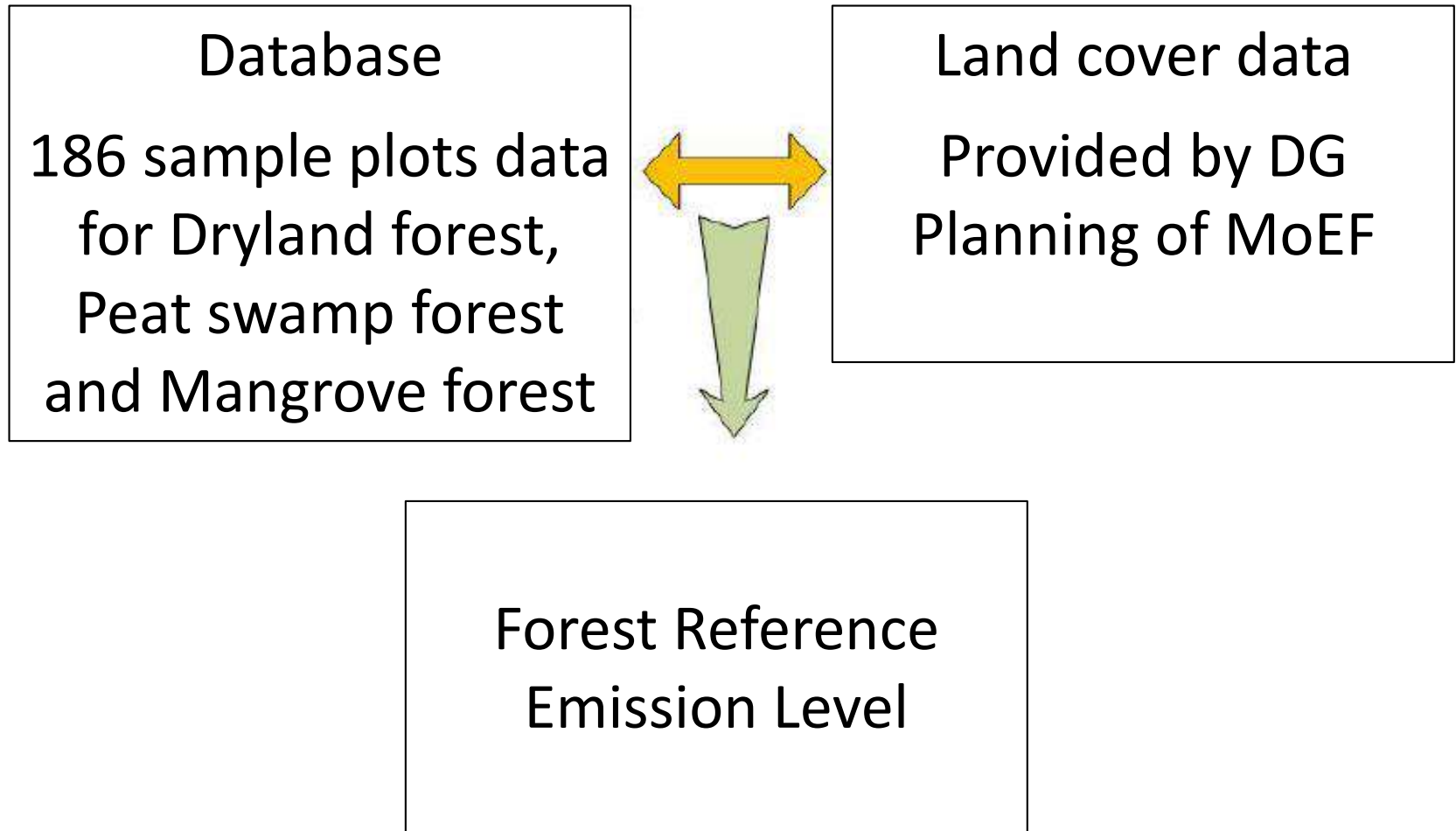
(Data from Provincial Environment Agency; GIZ; FFI)

◆   Emission factors on peatland

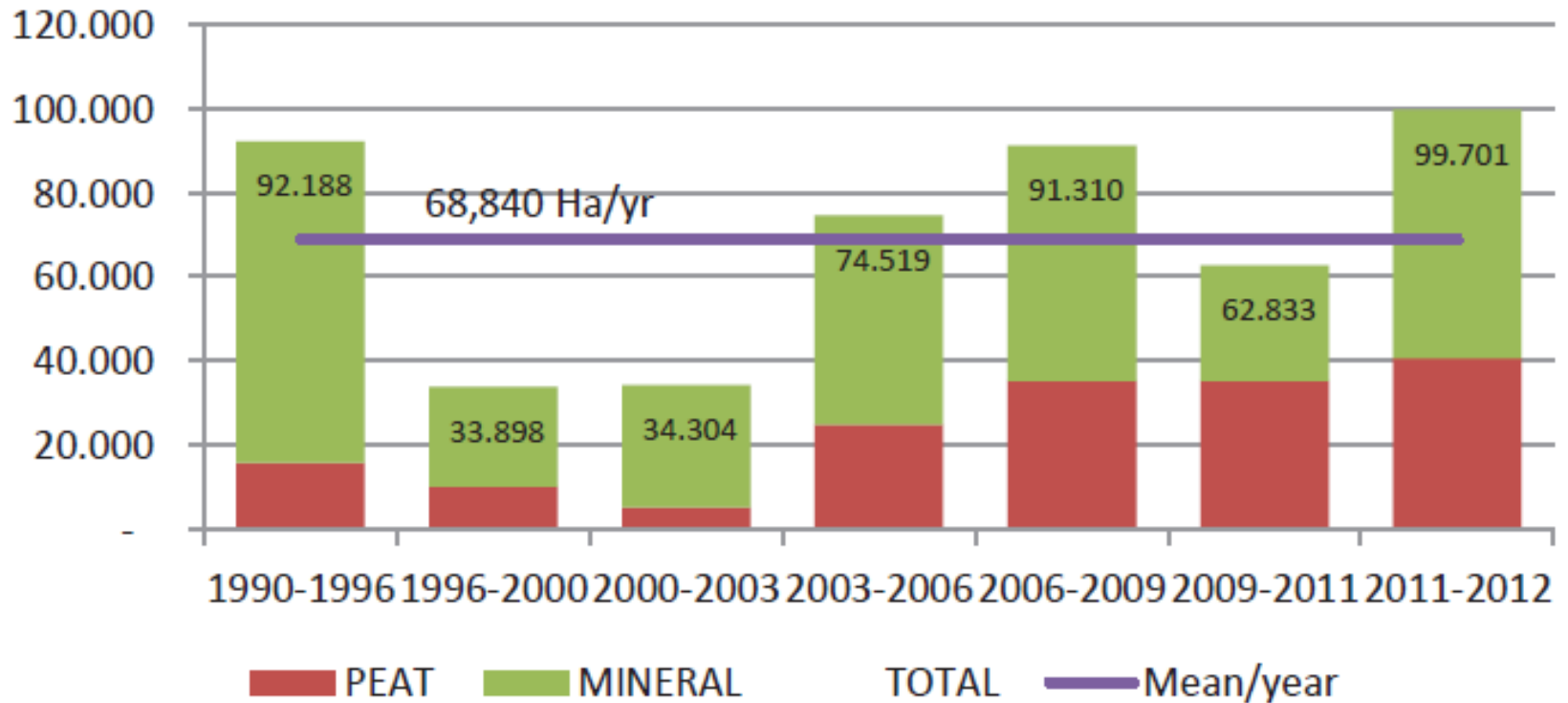Using figures presented in the "2013 Supplement to the 2006 IPCC Guidelines for National GHG Inventory: Wetlands"

Source: Provincial Government of West Kalimantan (2016)

◆ Calculation flow

Database

186 sample plots data
for Dryland forest,
Peat swamp forest
and Mangrove forest

Land cover data

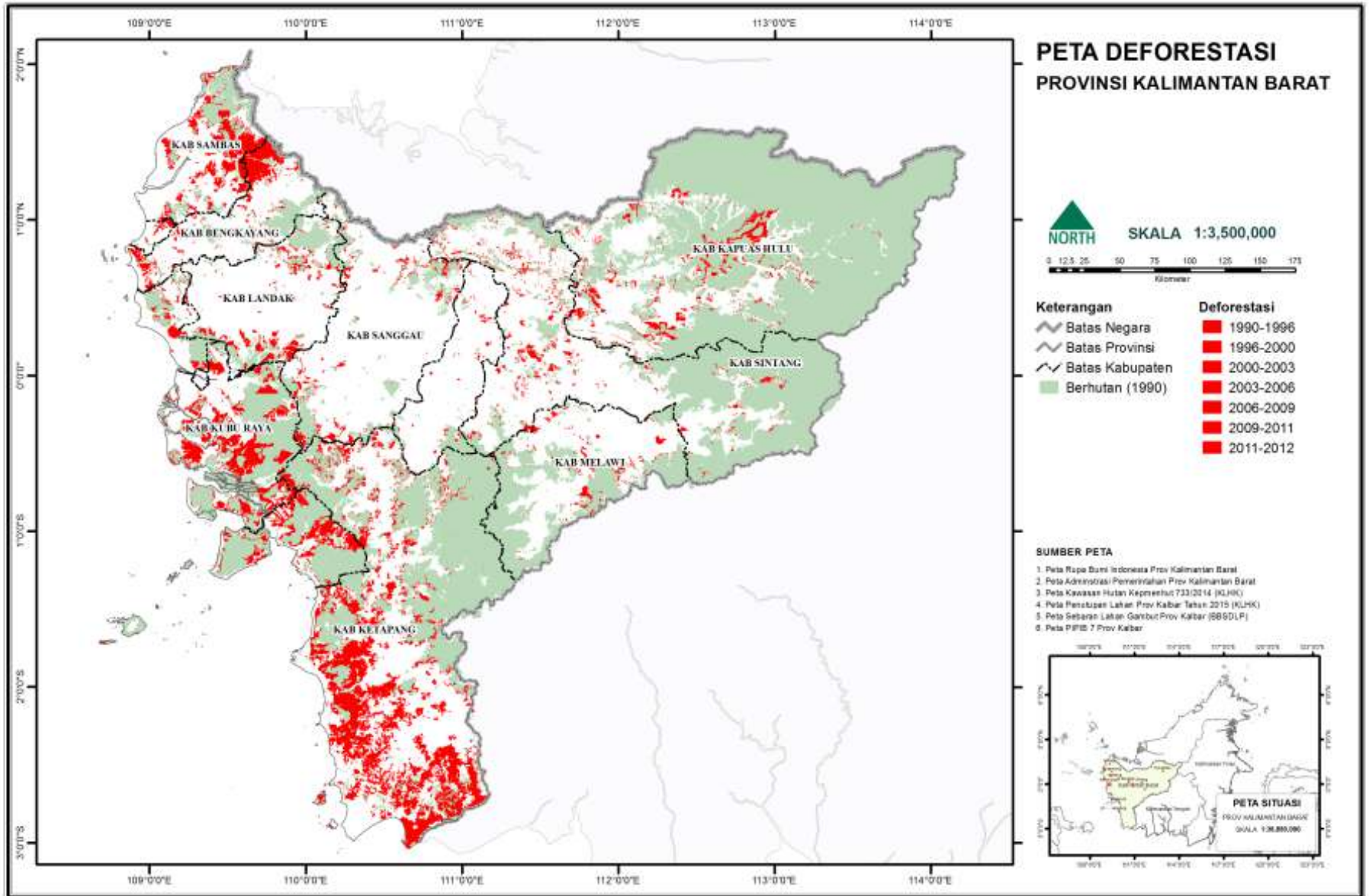Provided by DG
Planning of MoEF

Forest Reference
Emission Level

4. Results

Rate of Deforestation (1990-2012)

Source: Provincial Government of West Kalimantan (2016)

PETA DEFORESTASI
PROVINSI KALIMANTAN BARAT

NORTH   SKALA 1:3,500,000

0 12.5 25   50   75   100   125   150   175
                    Kilometer

Keterangan   Deforestasi
Batas Negara   1990-1996
Batas Provinsi   1996-2000
Batas Kabupaten   2000-2003
Berhutan (1990)   2003-2006
                              2006-2009
                              2009-2011
                              2011-2012

SUMBER PETA
1. Peta Rupa Bumi Indonesia Prov Kalimantan Barat
2. Peta Administrasi Pemerintahan Prov Kalimantan Barat
3. Peta Kawasan Hutan Kepmenhut 733/2014 (KLHK)
4. Peta Penutupan Lahan Prov Kalbar Tahun 2015 (KLHK)
5. Peta Sebaran Lahan Gambut Prov Kalbar (BBSDLP)
6. Peta PIPIB 7 Prov Kalbar

PETA SITUASI
PROV KALIMANTAN BARAT
SKALA 1:36,800,000

Source: Provincial Government of West Kalimantan (2016)

Rate of Forest Degradation (1990-2012)

	90-96	96-00	00-03	03-06	06-09	09-11	11-12
MINERAL	35.833	215	1.125	1.239	1.183	26	5.782
PEAT	947	72	4	31	–	–	–
Mean/year	10.837	10.837	10.837	10.837	10.837	10.837	10.837

10,837 Ha/yr

(Area in Ha)
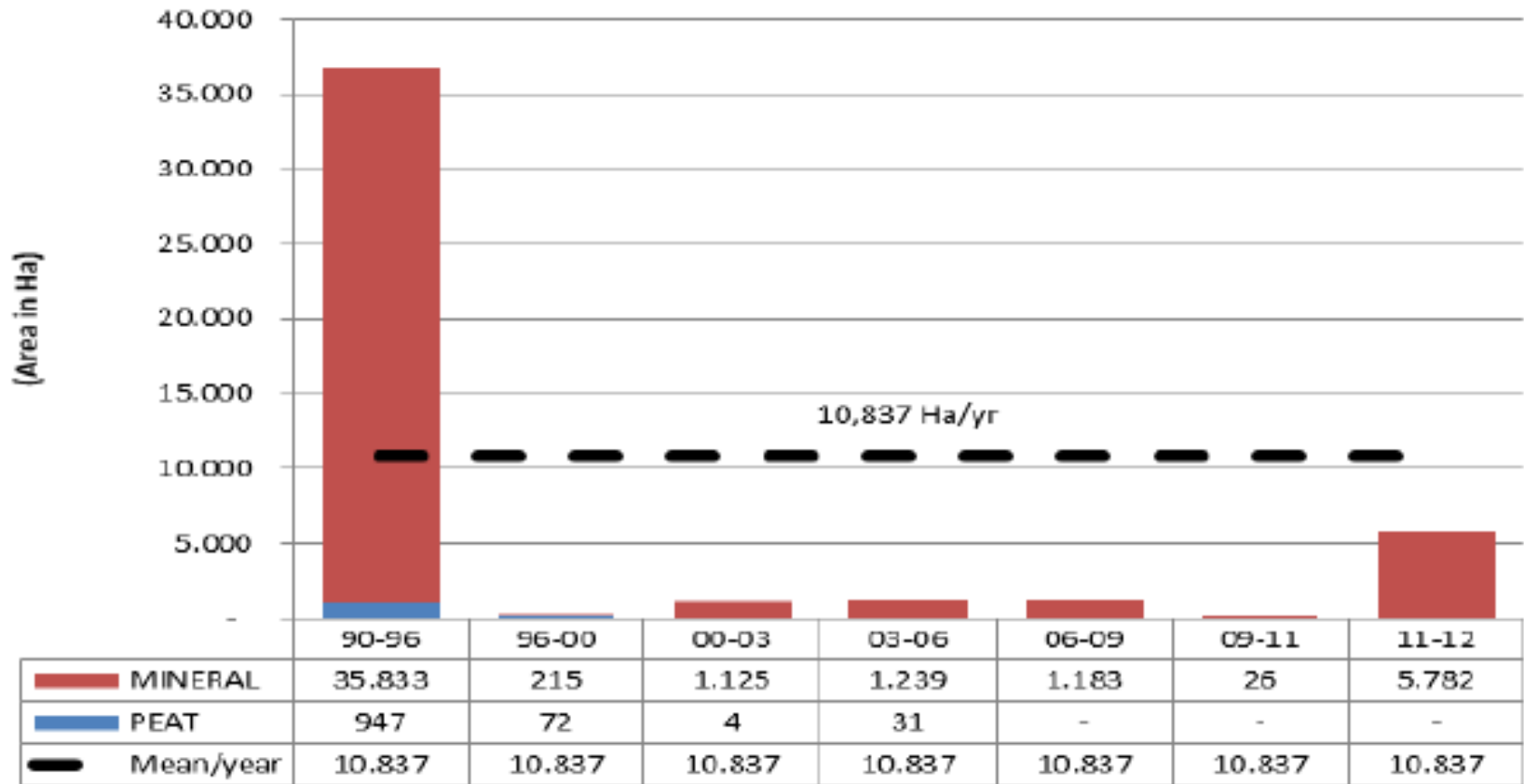
Source: Provincial Government of West Kalimantan (2016)

# Annual emissions from deforestation and forest degradation (1990-2012)

FREL Projection (2013-2020)

Year	Deforestation (tCO2e/th)	Forest Degradation (tCO2e/th)	Peat Decomposition (tCO2e/th)	Total Emissions per Year (tCO2e/th)
2013	28.604.689,79	1.810.322,76	17.326.735,00	47.741.747,55
2014	28.604.689,79	1.810.322,76	18.583.064,17	48.998.076,72
2015	28.604.689,79	1.810.322,76	19.930.487,42	50.345.499,97
2016	28.604.689,79	1.810.322,76	21.375.609,80	51.790.622,35
2017	28.604.689,79	1.810.322,76	22.925.515,31	53.340.527,86
2018	28.604.689,79	1.810.322,76	24.587.801,58	55.002.814,13
2019	28.604.689,79	1.810.322,76	26.370.617,11	56.785.629,66
2020	28.604.689,79	1.810.322,76	28.282.701,26	58.697.713,81

Source: Provincial Government of West Kalimantan (2016)

FREL Projection 2013-2030
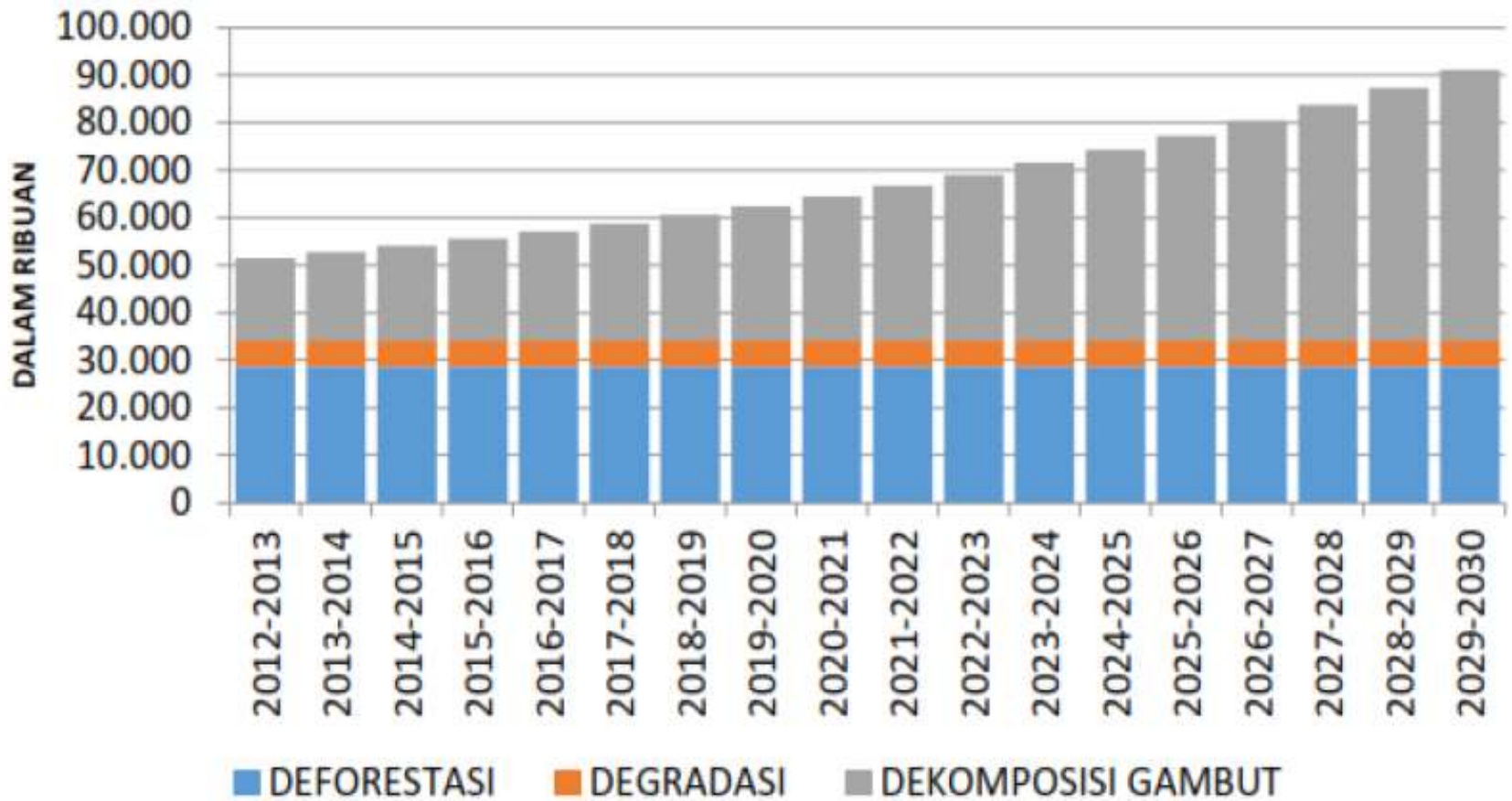
Source: Provincial Government of West Kalimantan (2016)

5. Lessons learned

◆ Collaborative effort is essential with mutual trust and understanding.

◆ The process is also capacity development for sub-national actors.

6. Next step

◆ Conduct monitoring against FREL 1990-2012

◆ Analyze causes of deforestation and forest and peatland degradation based on the monitoring result

◆ Reflect the above analysis into policy processes

3. Target by June 2018

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	< Central Kalimantan > MRV for peatlands: • A method of measuring GHG emissions caused by peat fire is developed.
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< Case Example (2) >

Development of Tier 3 level monitoring methods at peatlands

Peatland monitoring
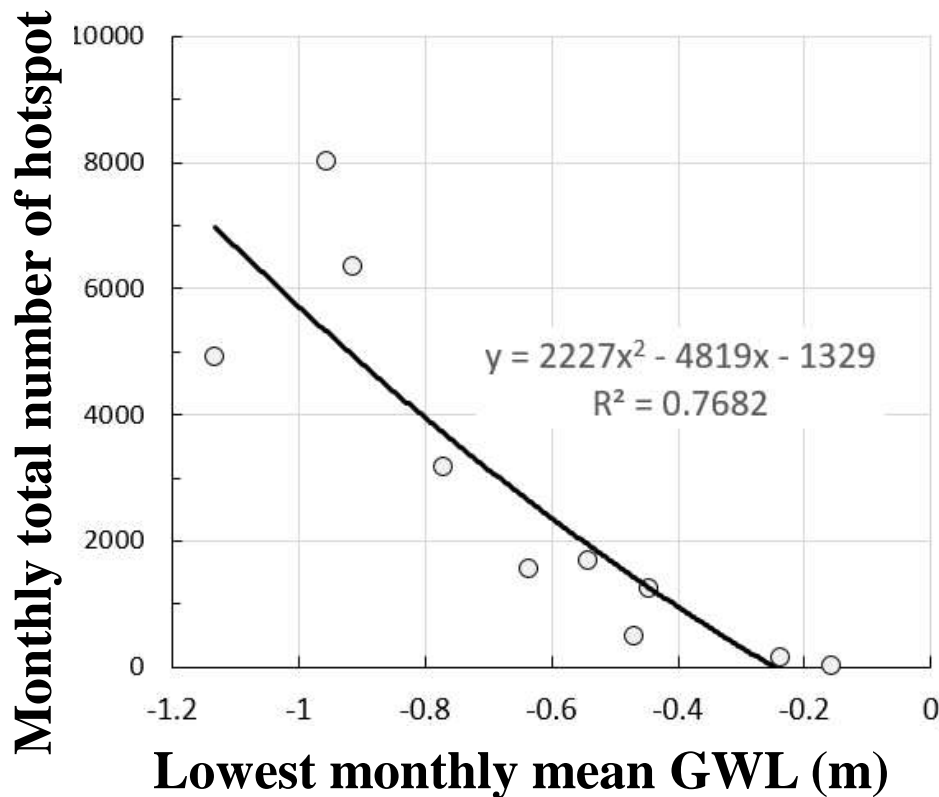
Real-time Ground Water Level (GWL)

$\rightarrow$ Fire risk alert

$\rightarrow$ CO_2 emissions from peat decomposition

CO_2 Emission Mapping

Scientific findings

➤ GWL and hotspot/fire

| **Low GWL** | → | **Dry peat** | → | **Peat fire** |

$$y = 2227x^2 - 4819x - 1329$$
$$R^2 = 0.7682$$

Monthly total number of hotspot (y-axis)
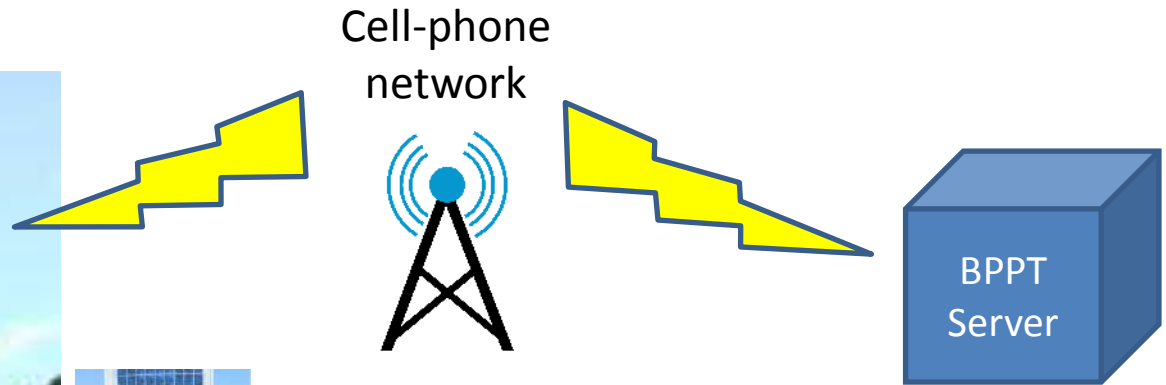Lowest monthly mean GWL (m) (x-axis)

Source: Osaki (2017)
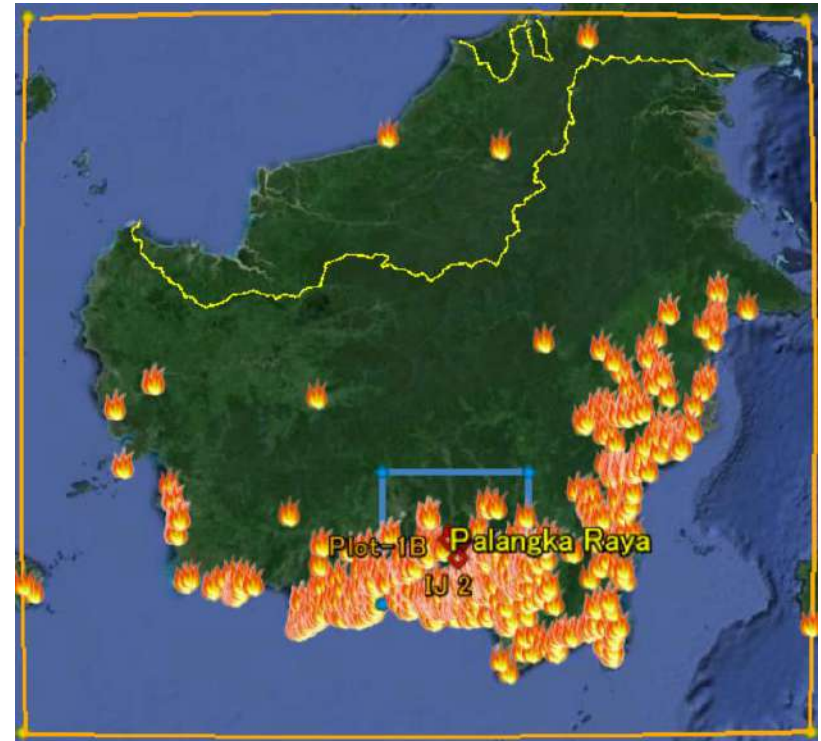
➢ GWL and CO_2 emissions
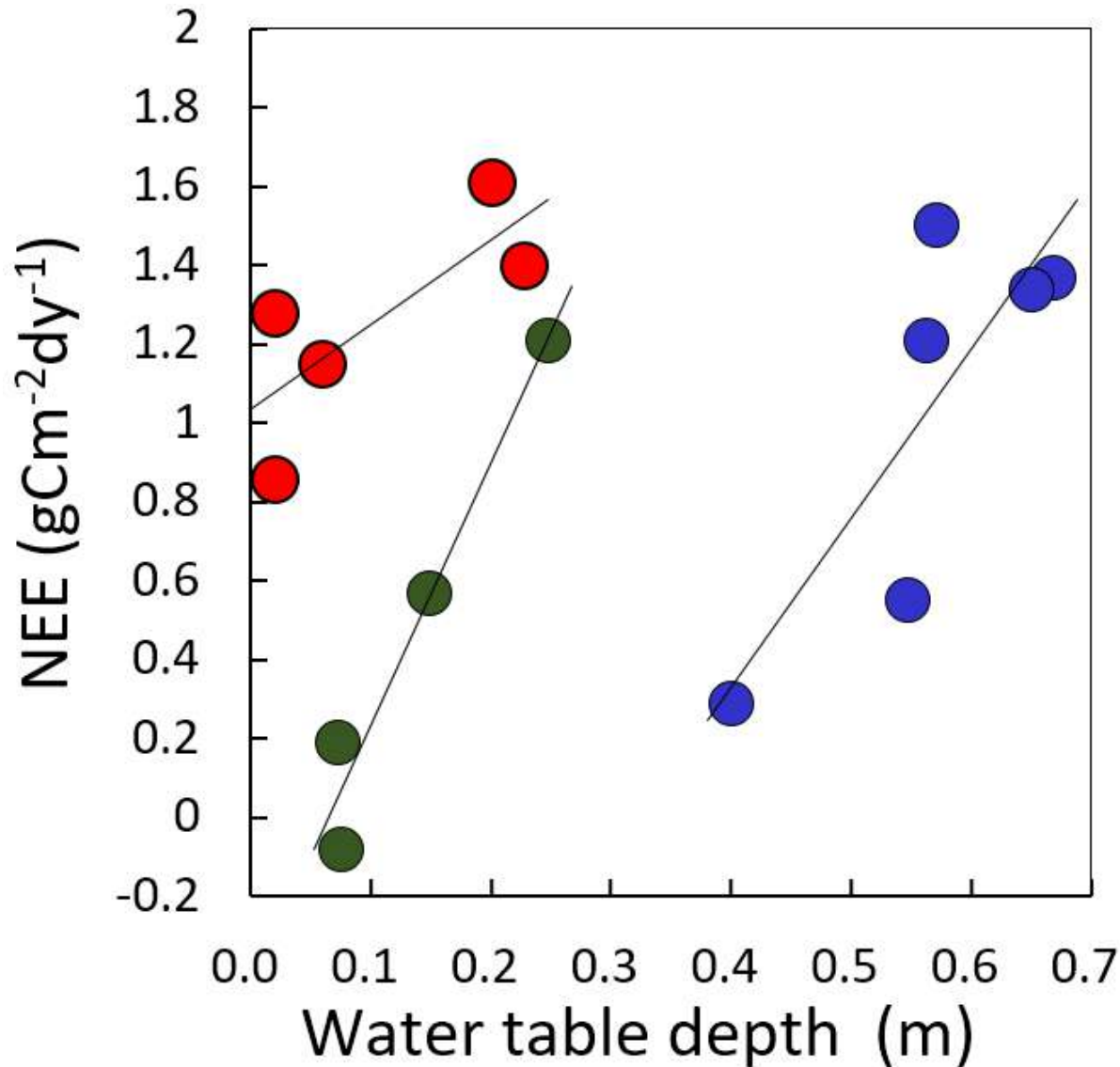
Hirano, T., et al, 2012
UF: Relatively intact swamp forest
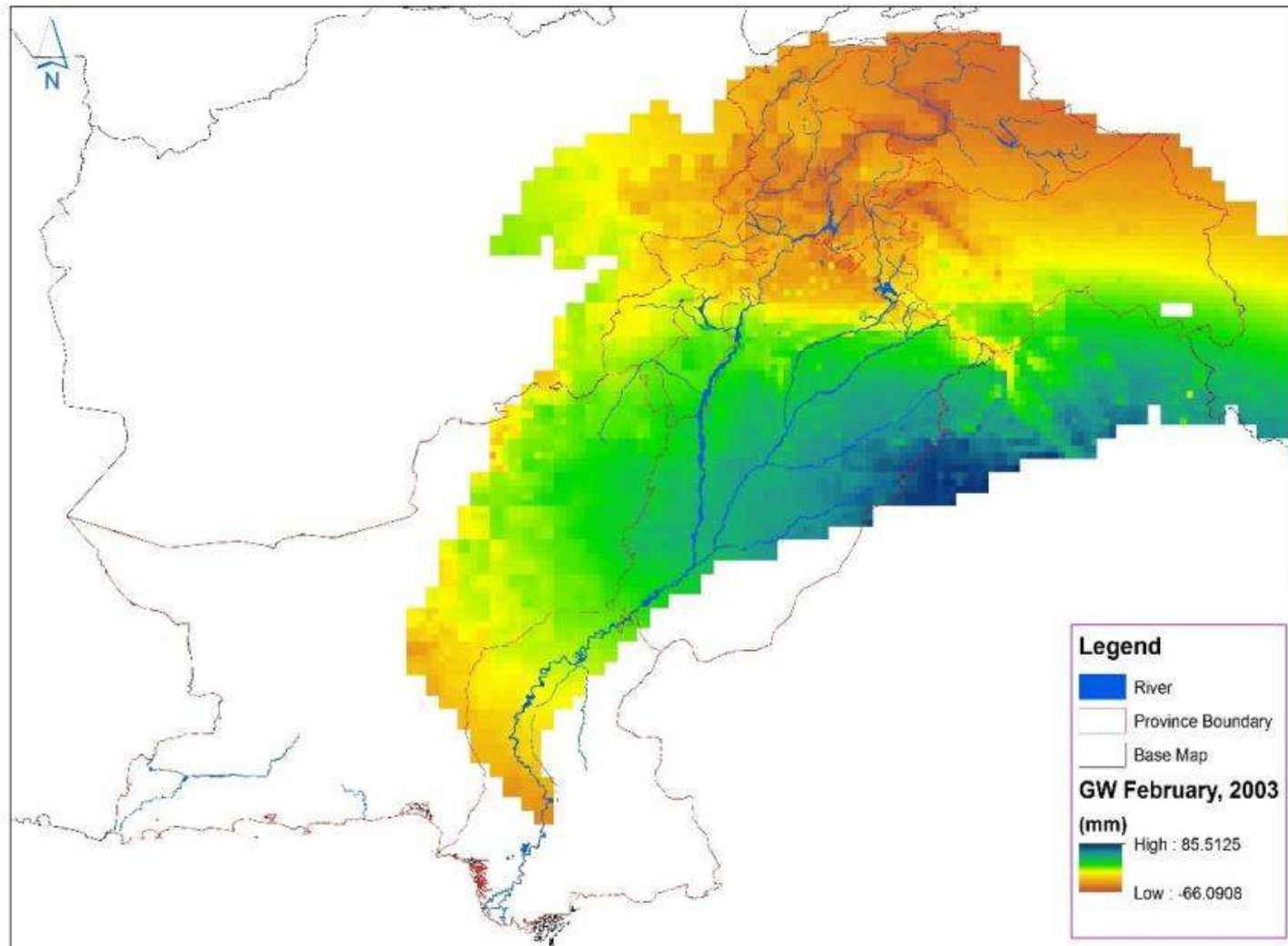DF: Drained swamp forest
DB: Drained & burned swamp forest

Source: Osaki (2017)

Field based GWL data

Cell-phone network

BPPT Server

水位

Iron pipe 5cmΦ

Ground surface level sensor

100cm

④

⑧ ⑦

00:00 13/08/16 00:00 13/08/18 00:00 13/08/20 00:00 13/08/22 00:00 13/08/24 00:00 13/08/26 00:00 13/08/28 00:00 13/08/30 00:00 13/09/01 00:00
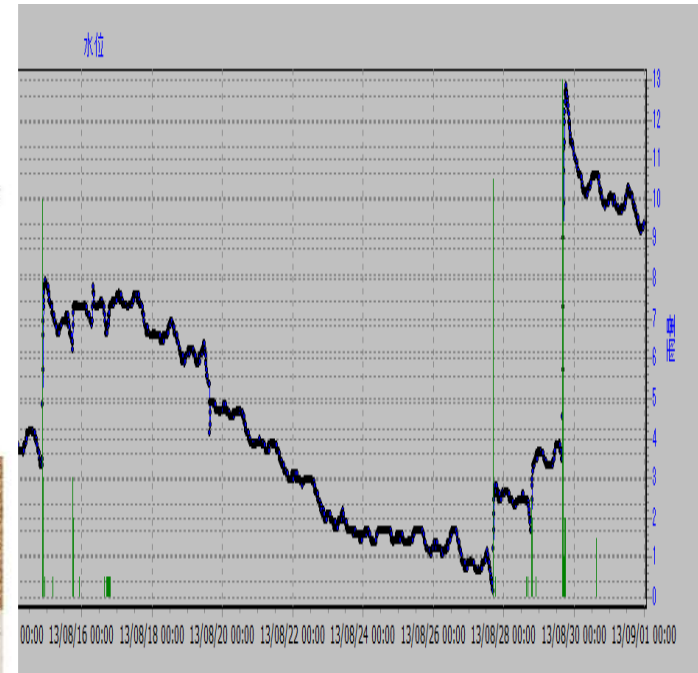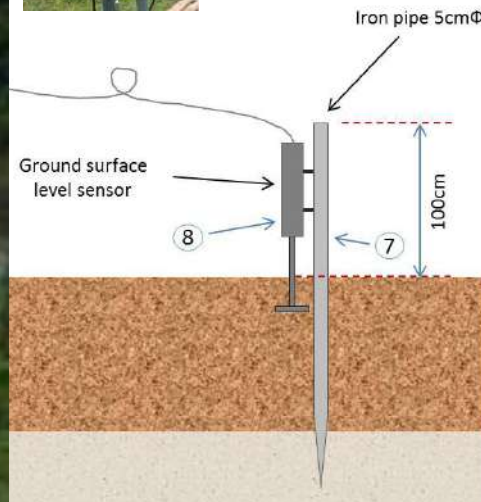
Source: Hamada (2016)

Source: Sulaiman (2017)

Satellite based GWL data

Source: Sulaiman (2017)

Immediate targets:

- Real-time GWL data throughout entire peatlands in Indonesia (Proto-type by the end of September)

  - Improved model of satellite data analysis by using field data (by early next year)

- Prediction of GWL data over the next three months

Mid-term target:

- CO_2 Emission Mapping (Peat Degradation)

- CO_2 Emission Mapping (Peat Loss by Fire)
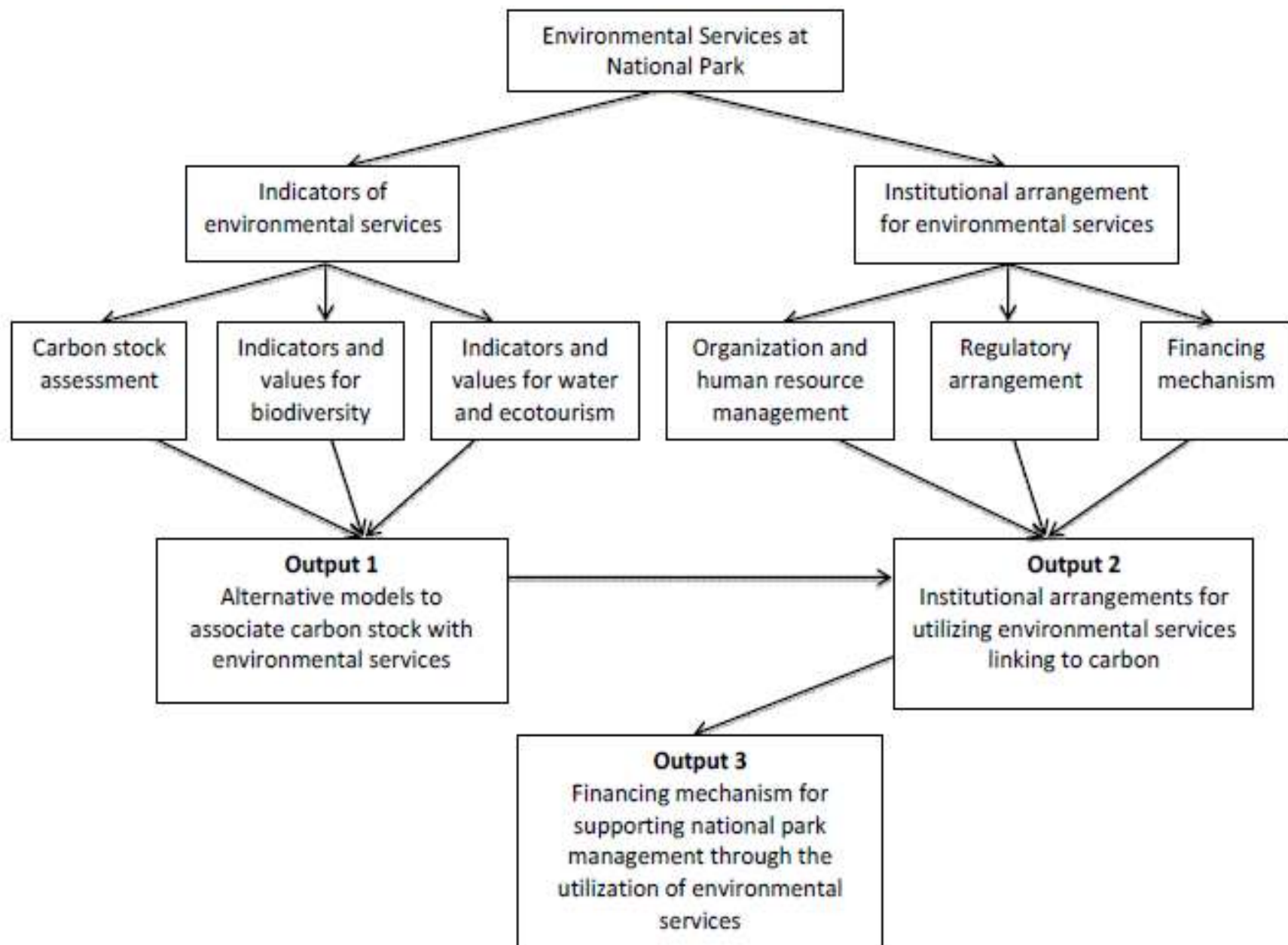
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< Case Example (3) >

Operationalizing "the role of Conservation" of REDD+

Quantification and Integration of Non-Carbon Benefits

Emission reduction	< West Kalimantan > Gunung Palung National Park: • Model : A conservation REDD+ model is operationalized in which the Resort Based Management, including the SMART system and the link to the Forum, is the major component. • MRV : Emission monitoring is conducted in collaboration with Pokja REDD+ Kalbar* • Finance : Conservation payment mechanism is developed where oil palm companies provide fund for fire prevention and initial suppression which are conducted by communities around Gunung Palung National Park.

* Pokja REDD+ Kalbar: REDD+ Working Group in West Kalimantan province

Emission reduction	Kabupaten Ketapang:
	• Model : A process model (or TPD) is operationalized in terms of changing behavior on fire use from non-controlled fire use for land preparation to controlled fire use or no fire use for land preparation.
	• Model : Lessons learned from a peatland restoration model is drawn from the Sugai Pelang experimentation.
	• MRV : Emission monitoring is conducted in collaboration with Pokja REDD+ Kalbar.

Again, the original questions

1. How REDD+ works for conservation and sustainable management of forests?

2. How capacity development processes should be for the operationalization of REDD+ mechanism?