Development of Sub-National FREL in West Kalimantan

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

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FREL
FOREST REFERENCE EMISSION LEVEL
WEST KALIMANTAN
Foreword
Governor of West Kalimantan
POKJA REDD+ KALBAR
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Presentation

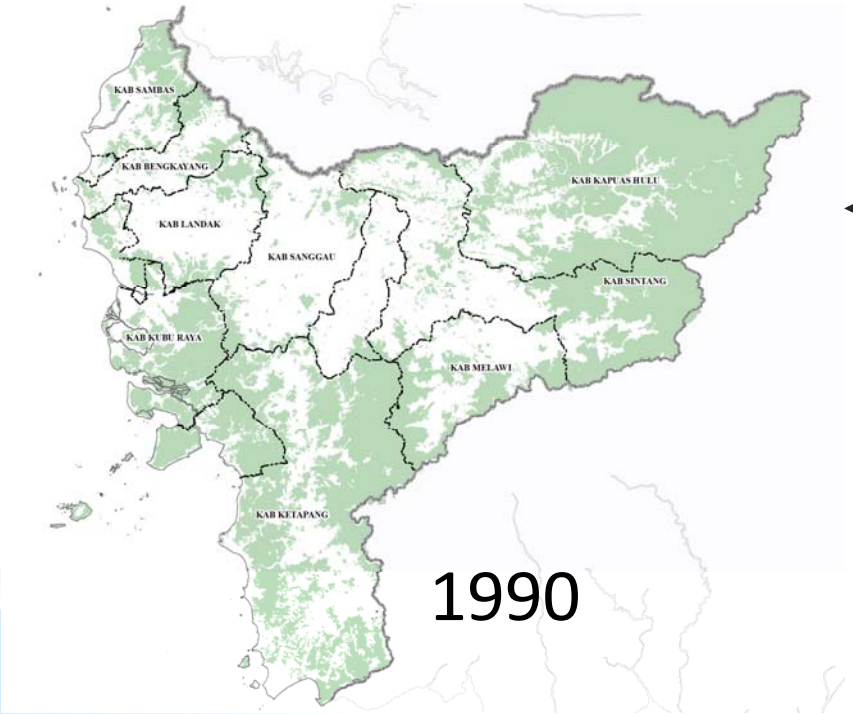
1. West Kalimantan province
2. FREL development in West Kalimantan
3. Methods, procedures and data
4. Results
5. Lessons learned
6. Next step

1. West Kalimantan province

Total Area: 14.7 million ha

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

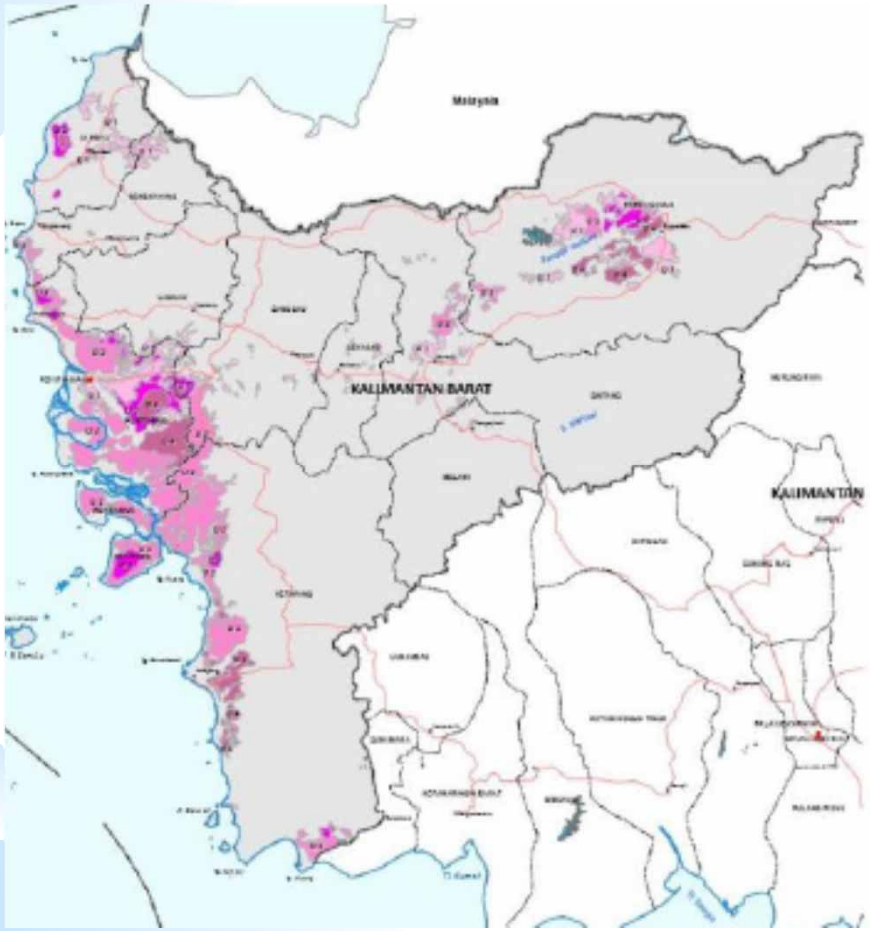
(2015) : 5.7 million ha (39%)



1990

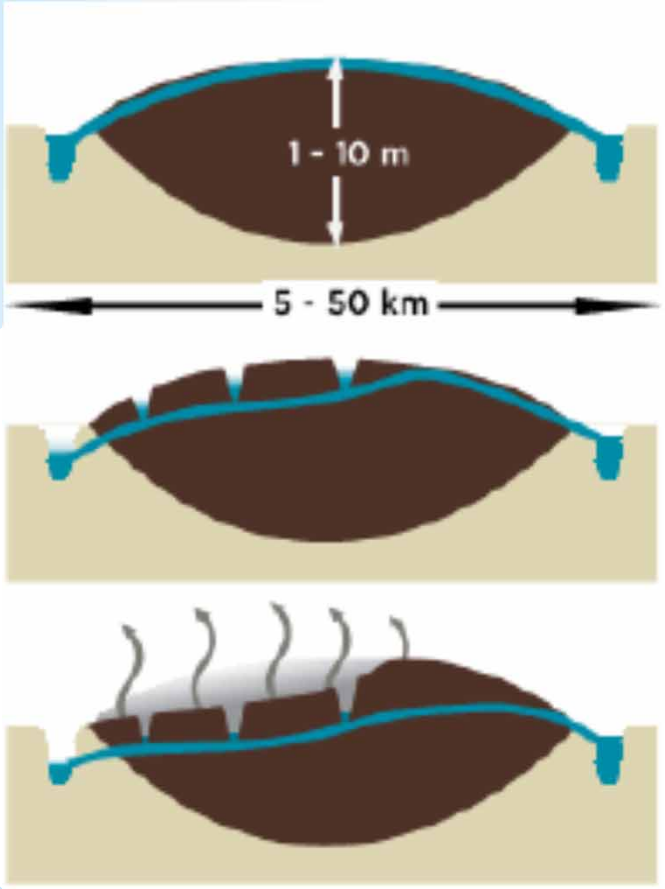
Source: Provincial Government of West Kalimantan (2016)

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



Source: Provincial Government of West Kalimantan (2016)

Emissions from peatland



<Natural situation>
Water table close to surface

<Drainage>
Water table lowered
CO_2 emission starts

<Continued drainage>
Peat surface subsidence

Source: Page et al. (2011)

Emission: Deforestation + Peat decomposition

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 >

Nov. 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:

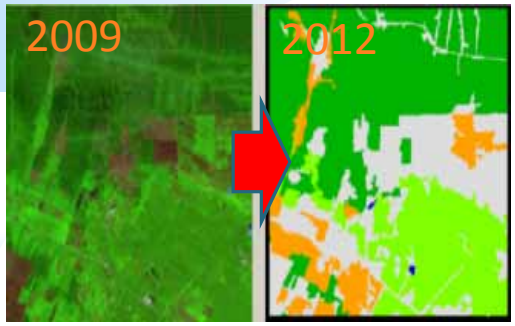
University of Tanjunpura, Provincial Government
(Environment, Forestry, Plantation)

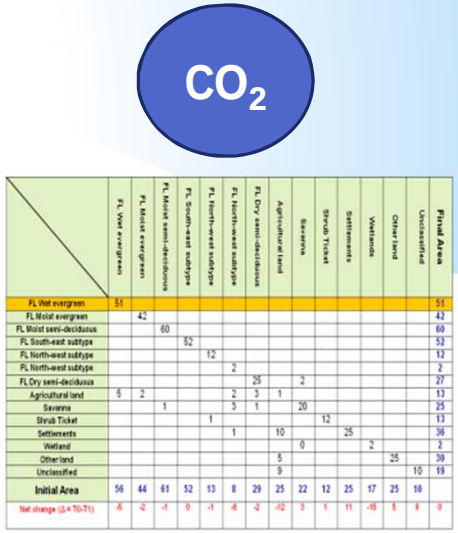
Advisors:

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

3. Methods, procedures and data

- Calculation





	FL Wet evergreen	FL Moist evergreen	FL Moist semi-deciduous	FL South-east subtype	FL North-west subtype	FL Dry semi-deciduous	Agricultural land	Savanna	Shrub Ticket	Settlements	Wetland	Other land	Unclassified	Final Area
FL Wet evergreen	51													51
FL Moist evergreen		42												42
FL Moist semi-deciduous			60											60
FL South-east subtype				52										52
FL North-west subtype					12									12
FL North-west subtype						2								2
FL Dry semi-deciduous							26	2						27
Agricultural land	5	2				2	3	1						13
Savanna			1			3	1		20					25
Shrub Ticket					1					12				13
Settlements						1		10			25			36
Wetland									0			2		2
Other land								5					25	30
Unclassified								9					10	19
Initial Area	56	44	61	52	13	8	29	25	22	12	25	17	25	10	
Net change (Δ = T0-T1)	-5	-2	-1	0	-1	-6	-3	-12	3	1	11	-15	5	9	0

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

Forest: 0.25ha (area); 5m (high); 30% (canopy cover)

Deforestation: Conversion of natural forest cover into other land-cover categories

Forest Degradation: A change of primary forest classes to secondary forest classes

Peatland: 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

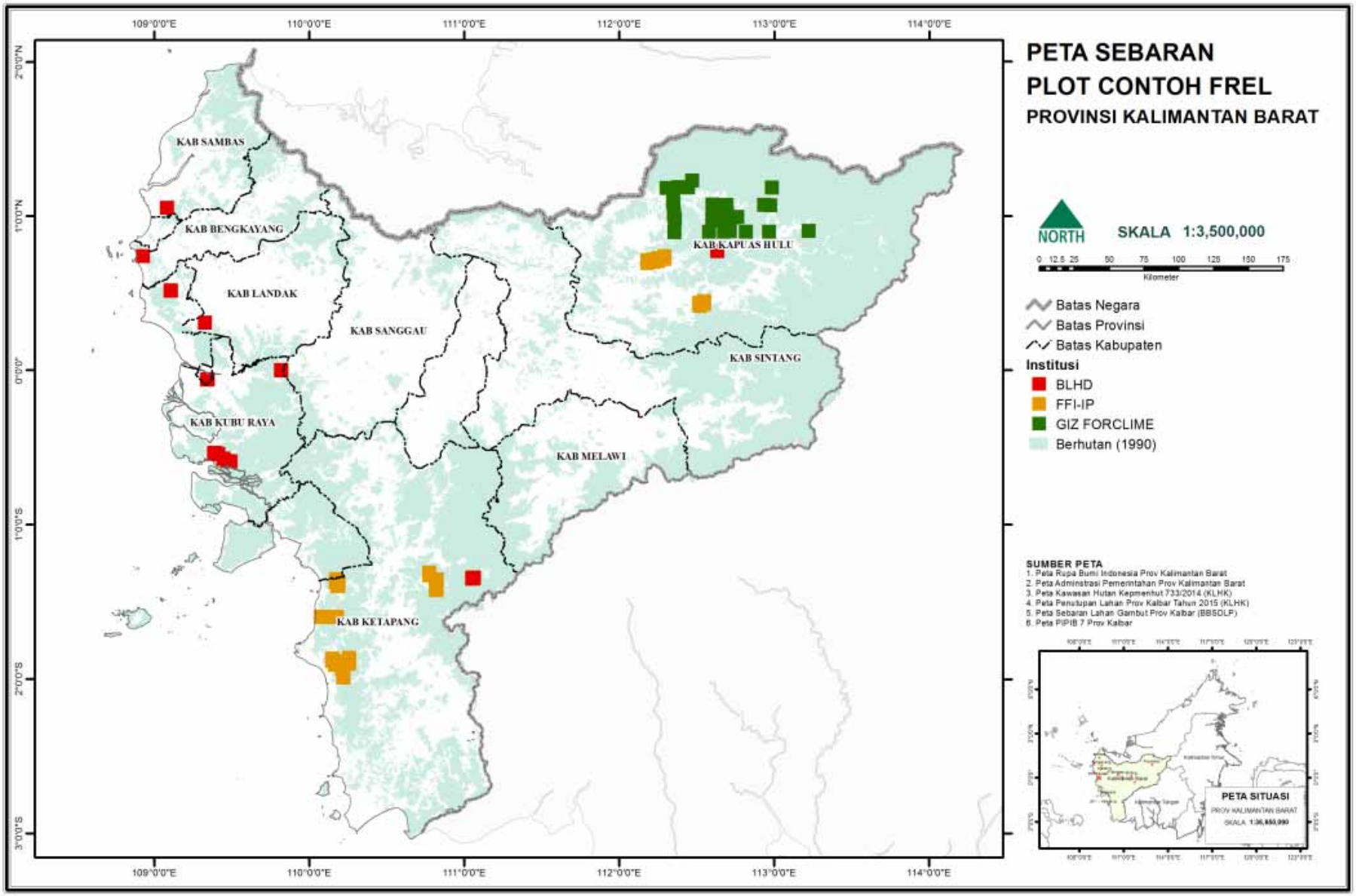
There are 186 inventory plot data in 8 districts

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

(Data from Provincial Environment Agency; GIZ; FFI)

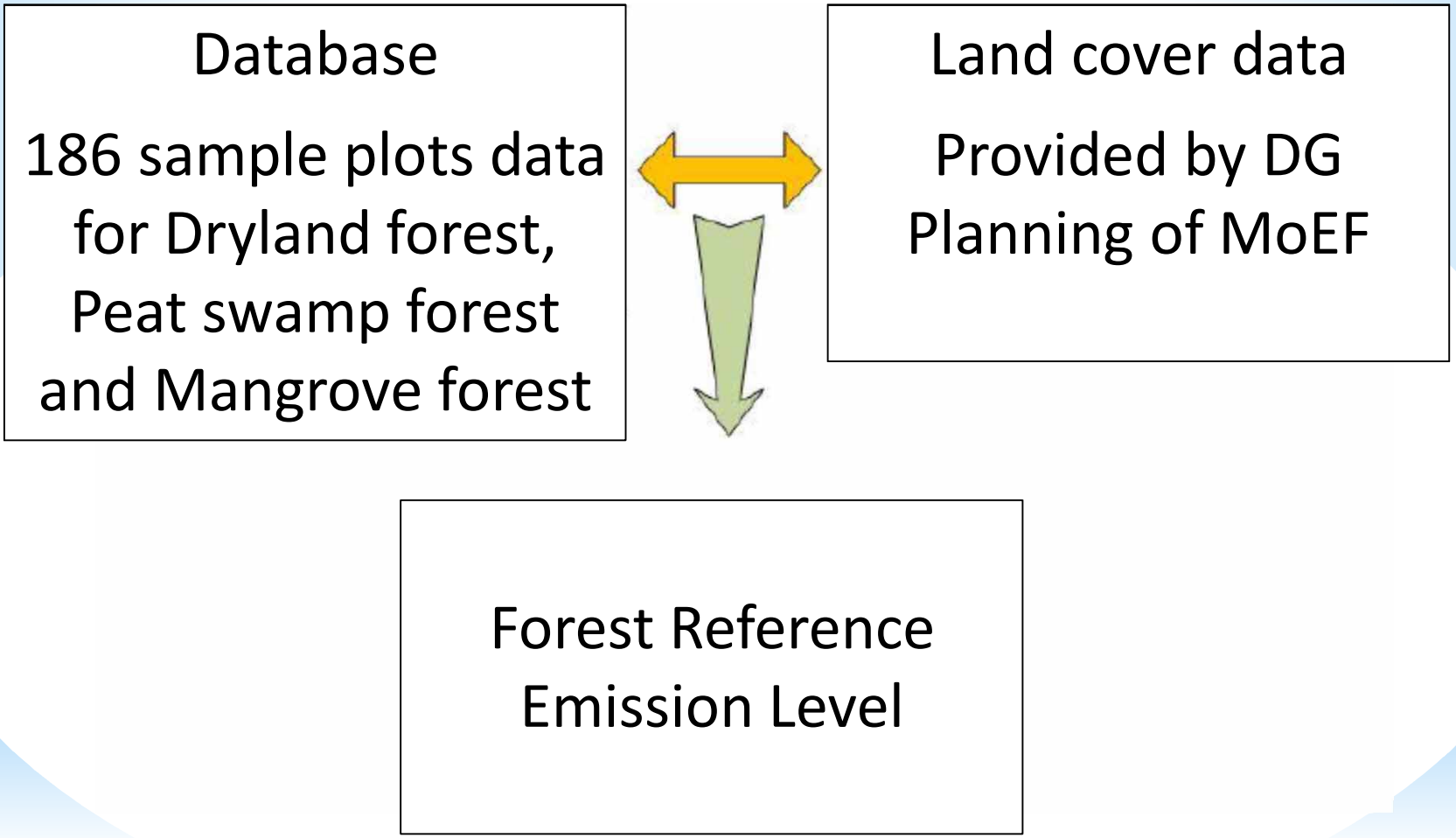
- Emission factors on peatland

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



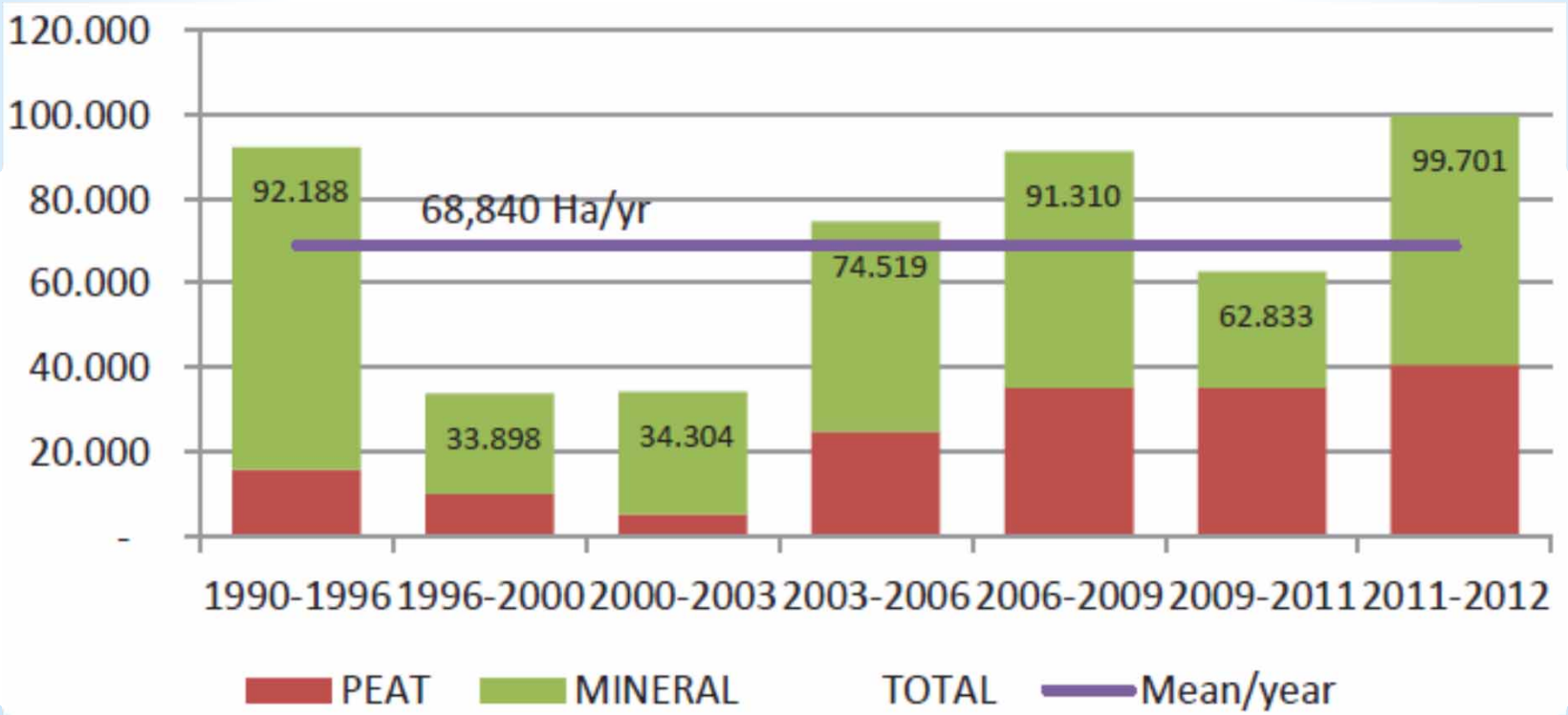
Source: Provincial Government of West Kalimantan (2016)

- Calculation flow



4. Results

Rate of Deforestation (1990-2012)



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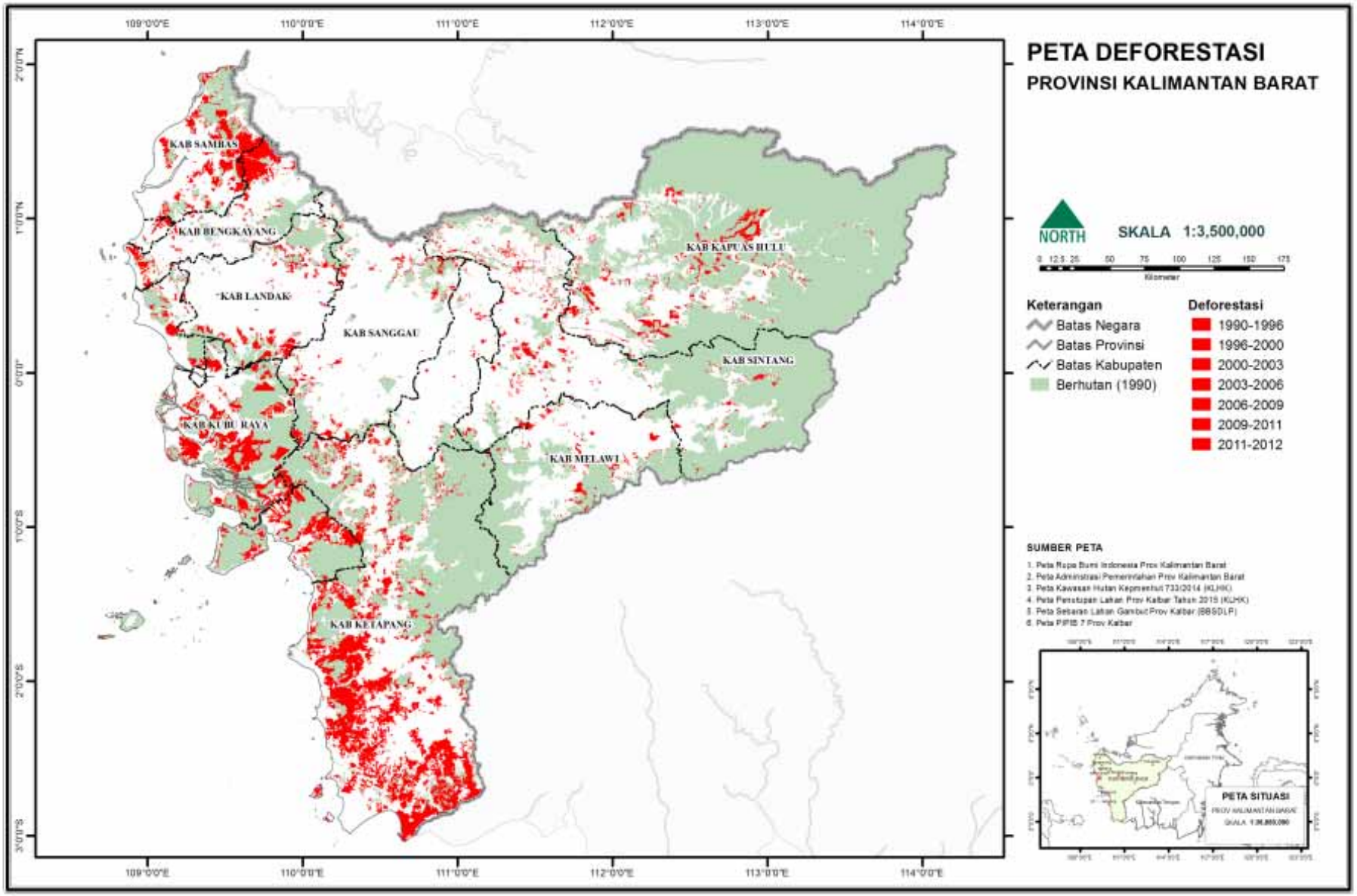
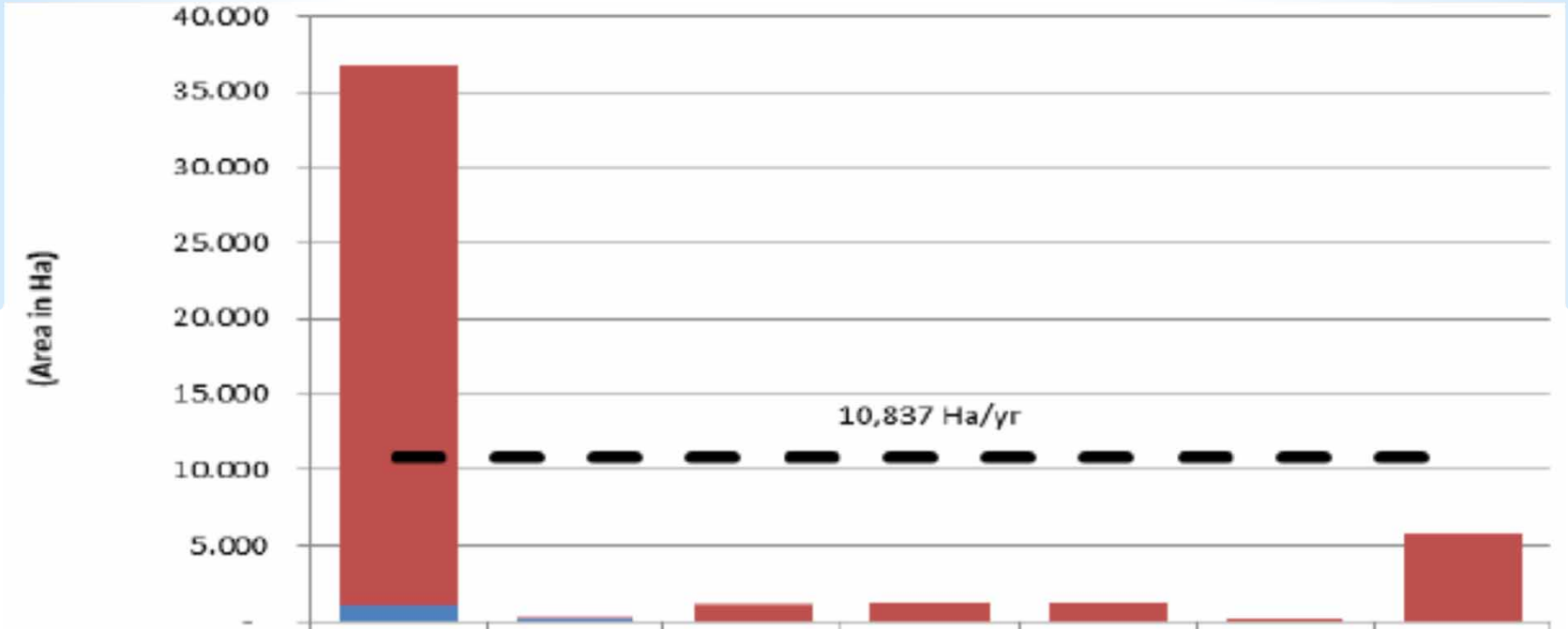


Source: Provincial Government of West Kalimantan (2016)

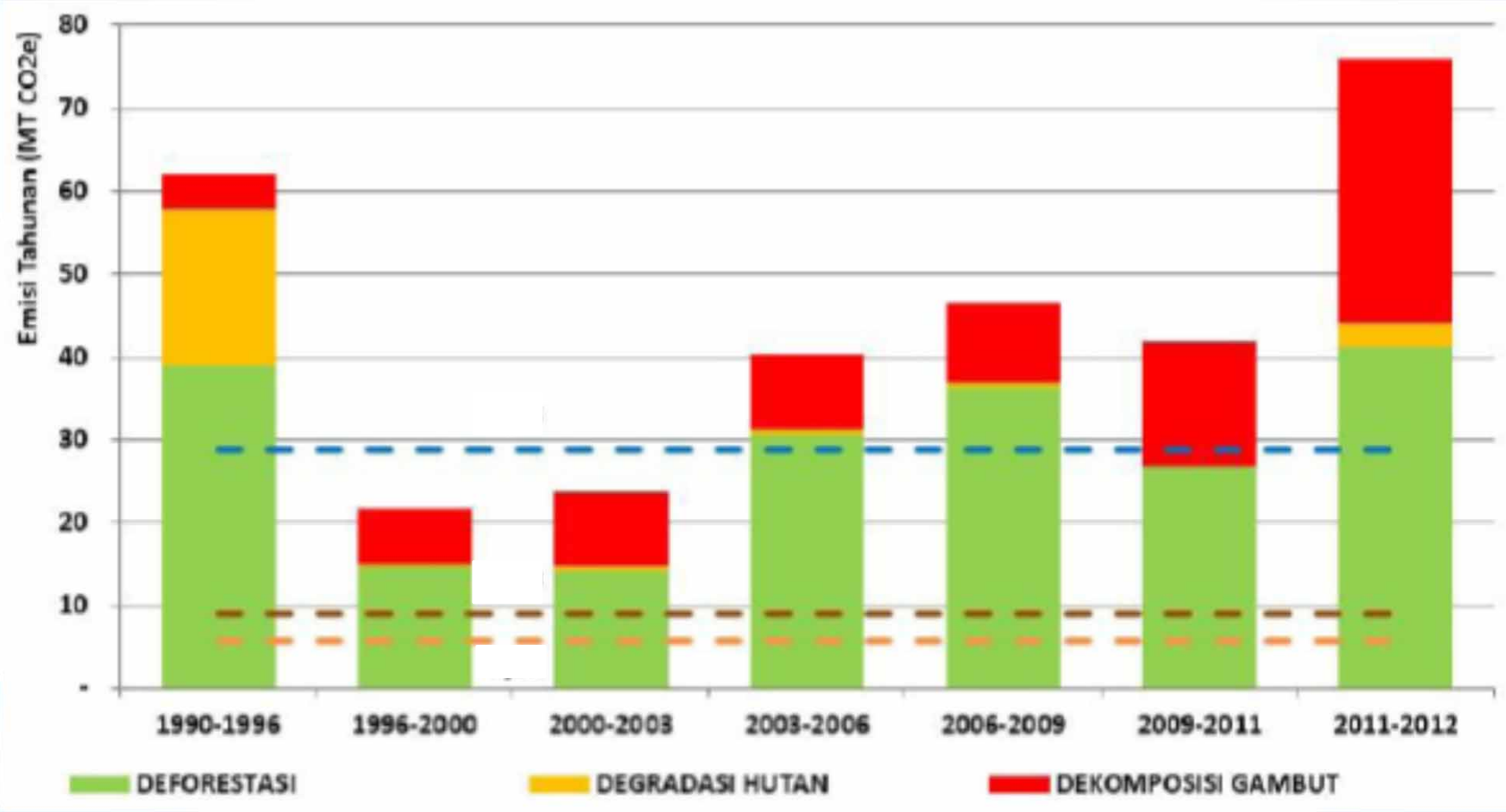
Rate of Forest Degradation (1990-2012)



	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

Source: Provincial Government of West Kalimantan (2016)

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



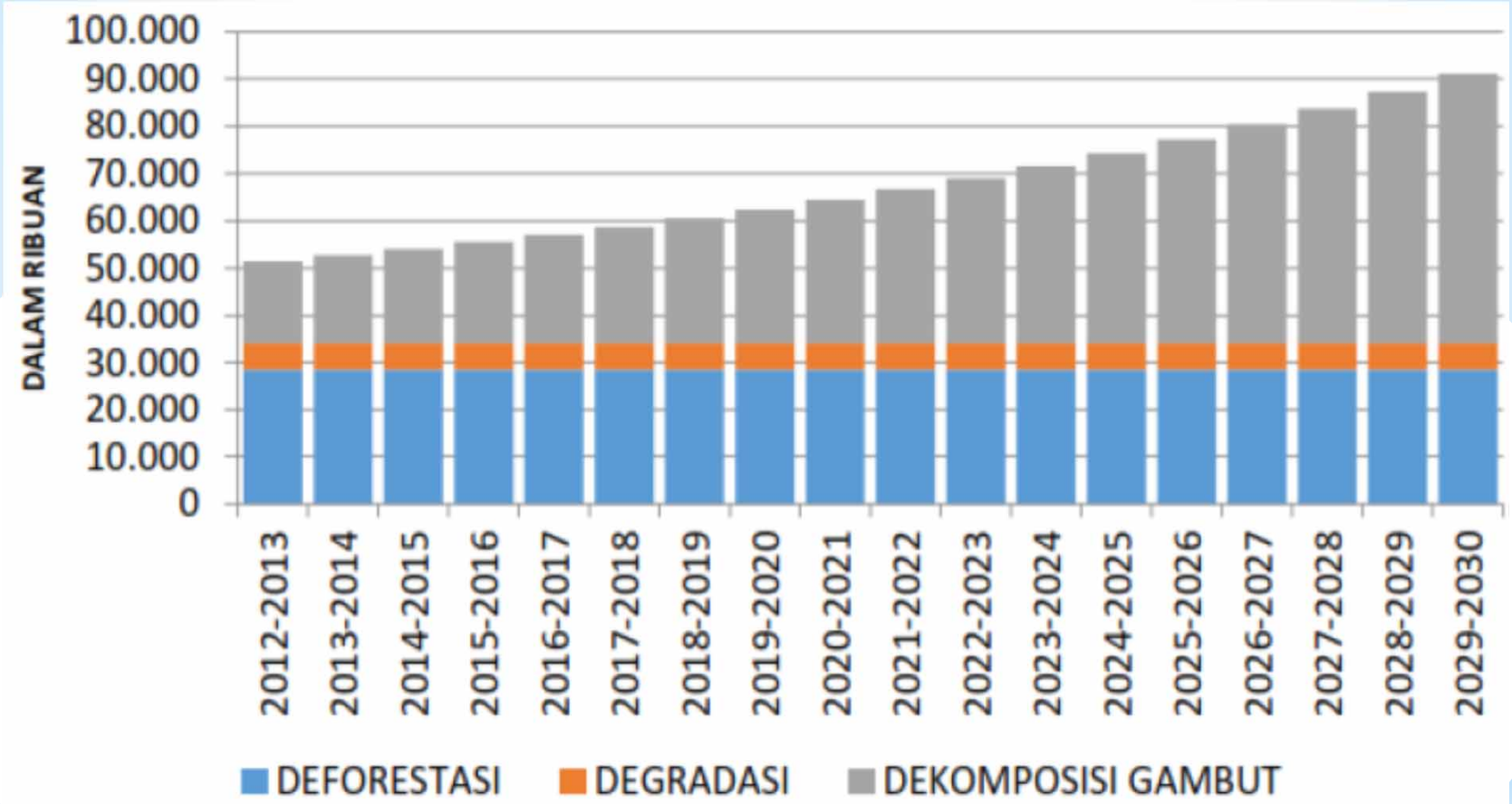
Source: Provincial Government of West Kalimantan (2016)

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


Thank you
for your attention!