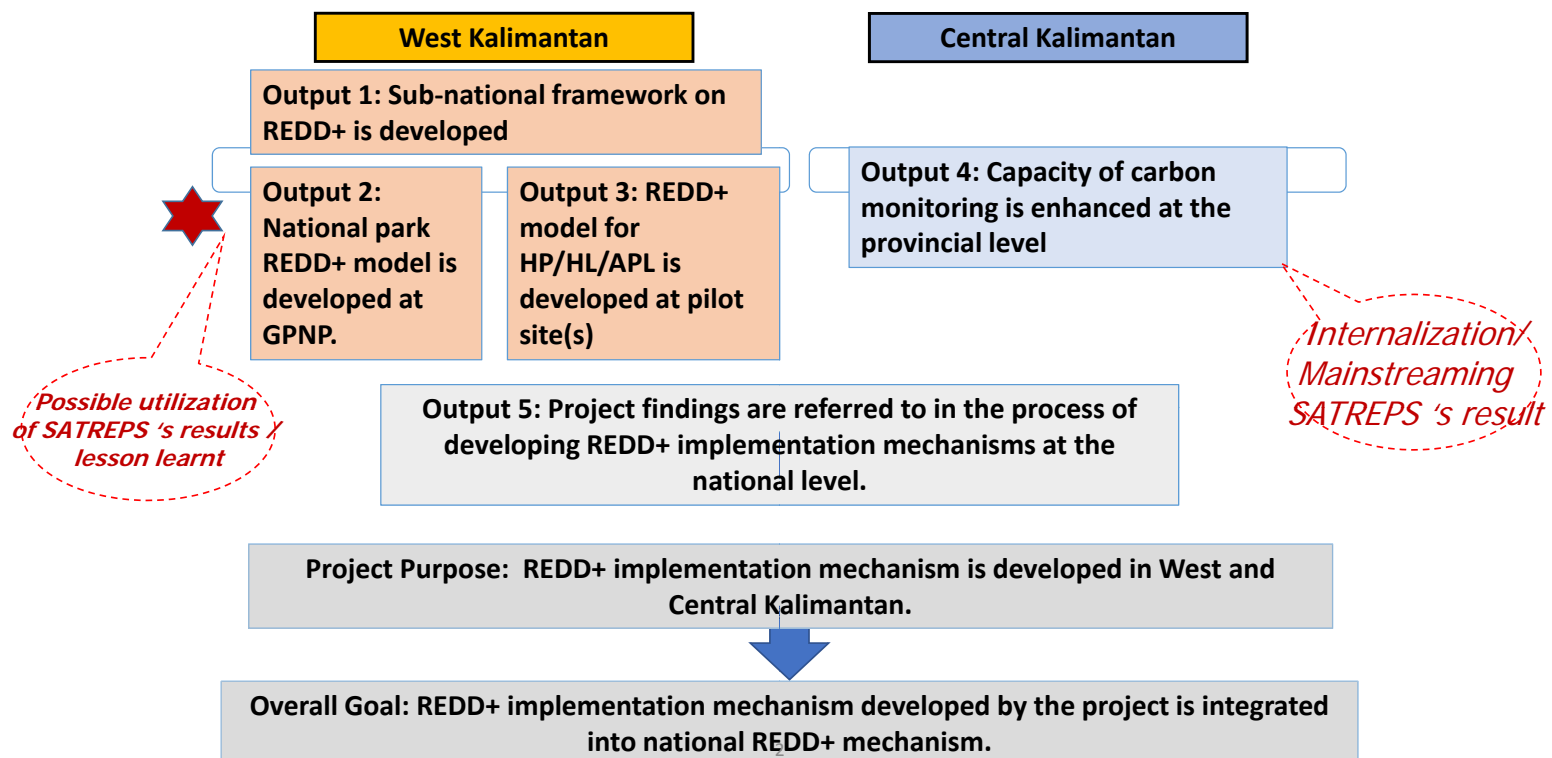# IJ-REDD+ Project and SATREPS Project

JAPANESE CONTRIBUTION TO THE DEVELOPMENT OF MRV SYSTEM ON INDONESIAN FOREST AND PEATLAND
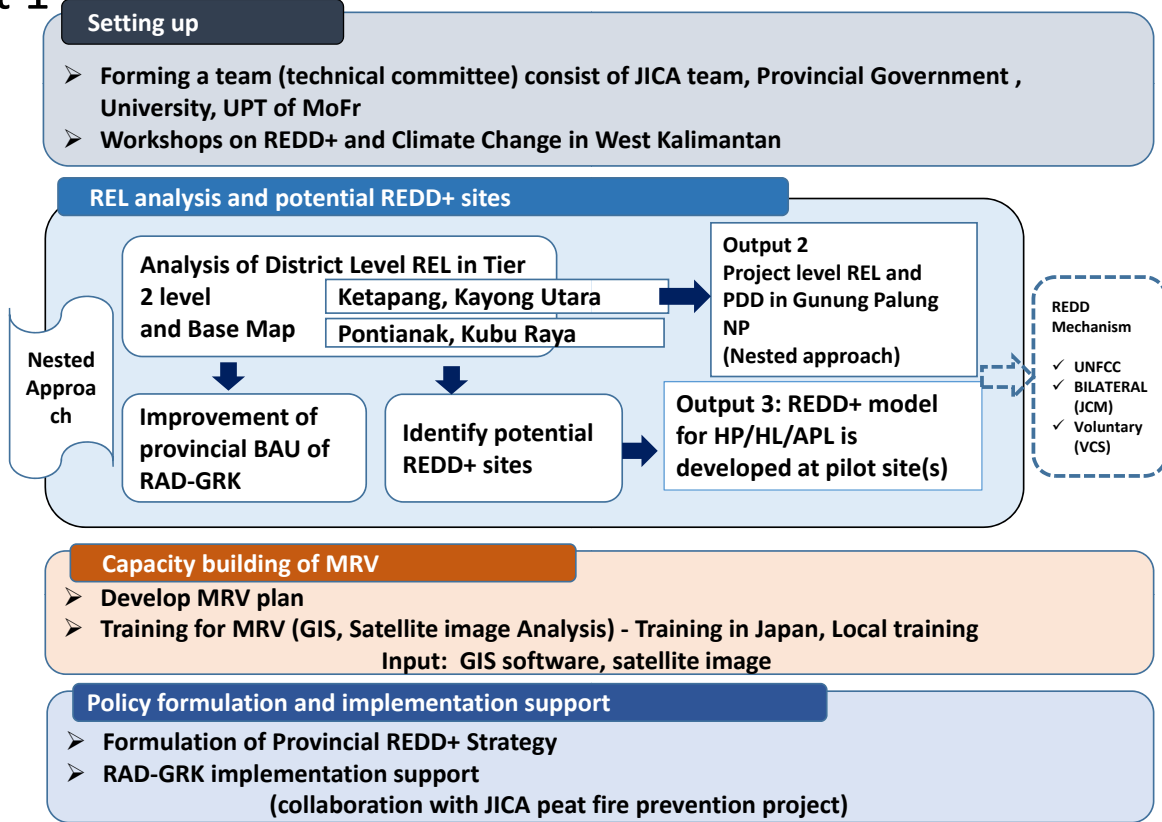
Gun Gun Hidayat, Ph.D - National Coordinator IJREDD+ Project
Prof. Mitsuru Osaki, Leader JST/JICA SATREPS Project

Presented at
Indonesian Pavilion's Seminar : The Role of Forestry Sector towards Low Carbon Development
UNFCCC COP 19 – Warsaw, Poland 14th November 2013

1

IJ-REDD+ Implementation

West Kalimantan

Central Kalimantan

Output 1: Sub-national framework on REDD+ is developed

Output 2: National park REDD+ model is developed at GPNP.

Output 3: REDD+ model for HP/HL/APL is developed at pilot site(s)

Output 4: Capacity of carbon monitoring is enhanced at the provincial level

Possible utilization of SATREPS 's results / lesson learnt

Internalization/ Mainstreaming SATREPS 's result

Output 5: Project findings are referred to in the process of developing REDD+ implementation mechanisms at the national level.

Project Purpose: REDD+ implementation mechanism is developed in West and Central Kalimantan.

Overall Goal: REDD+ implementation mechanism developed by the project is integrated into national REDD+ mechanism.

Output 1

Setting up

➤ Forming a team (technical committee) consist of JICA team, Provincial Government, University, UPT of MoFr
➤ Workshops on REDD+ and Climate Change in West Kalimantan

REL analysis and potential REDD+ sites

Nested Approach

Analysis of District Level REL in Tier 2 level and Base Map

| Ketapang, Kayong Utara |
| Pontianak, Kubu Raya |

Improvement of provincial BAU of RAD-GRK

Identify potential REDD+ sites

Output 2
Project level REL and PDD in Gunung Palung NP (Nested approach)

Output 3: REDD+ model for HP/HL/APL is developed at pilot site(s)

REDD Mechanism
✓ UNFCC
✓ BILATERAL (JCM)
✓ Voluntary (VCS)

Capacity building of MRV

➤ Develop MRV plan
➤ Training for MRV (GIS, Satellite image Analysis) - Training in Japan, Local training
　　　　　　　Input: GIS software, satellite image

Policy formulation and implementation support

➤ Formulation of Provincial REDD+ Strategy
➤ RAD-GRK implementation support
　　　　　(collaboration with JICA peat fire prevention project)

3

Output 2. National Park REDD+ Model : Gunung Palung NP

Awareness of Forest Conservation (REDD+)

Co-benefits Activities (Biodiversity & Community Livelihood)

Activities Plan of Forest Conservation (REDD+)

4

JST-JICA project on "Science and technology Research Partnership for Sustainable Development"

Wild Fire and Carbon Management in Peat-Forest in Indonesia

Estimating Carbon Fluxes and Stocks through integrated monitoring in Tropical Peatland

Mitsuru Osaki
Research Faculty of Agriculture, Hokkaido University, Japan

Key elements for integrated Monitoring-Sensing-Modeling (MSM) system of Carbon in peatland

(1) CO_2 Flux & Concentration

(2) Wildfire detection & Hotspot

1. Atmospheric Elements

CO_2 Flux

(3) Forest degradation & Species mapping

(4) Deforestation & Forest biomass change

2. Above Ground Elements (Forest Biomass)

(5) Water level, & Soil moisture

3.Water Elements

Peat (Carbon)

Drilling

Water Gauge

(6) Peat thickness & Peat dome detection

(7)Peat subsidence

(8)Water soluble organic carbon

4. Below Ground Elements (Below Ground Carbon Stock)

Slide 7

Satellite

Micro-Satellite & LCTF*4 | GOSAT (1) | Terra & Aqua MODIS (2) | Landsat, SPOT, TerraSAR, AVNIR-2, VHR*2 Sensors (3), (4) | ASTER, Hisui (3), (4), (8) | PALSAR, AMSR-E (4), (5), (6), (7)

Airborne /*UAV**

UAV*3(1), (3) | LiDAR (4), (6), (7)

Lateral CO_2 Flux

(1) CO_2 Flux & Concentration

(2) Wildfire detection & Hotspot

(3) Forest degradation & Species mapping

Vertical CO_2 Flux

Ground

Tower(1) Chamber(1)

DGPS(7)

FES-C*1 (1)

(4) Deforestation & Forest biomass change

DGPS(7)

(5)Water level, & Soil moisture

Drilling(6)

(6)Peat dome detection & Peat thickness

(7)Peat subsidence

Water Gauge(5)

(8)Water soluble organic carbon

*1:FES-C : Fiber Etalon Solar measurement of CO_2
*2:VHR : Very High Resolution Remote Sensing Data
*3:UAV: Unmanned Aerial Vehicle
*4:LCTF: Liquid Crystal Tunable Filter

Red: Instrument
Black: Target

Key Elements of Tropical Peatland MSM System

7

Slide 8

Top-down
• satellite
• airplane
• inverse model

Satellite GOSAT "IBUKI" Senescing: CO2

Column averaged dry air mole fraction distribution of carbon dioxide for the month of September, 2009, obtained from IBUKI observation data (unvalidated)   By   JAXA

Carbon-Water Simulation

DC (Drained cropland) 2.345, 114.03E
-1.5m   -0.75m   0m
UDF (Un-drained forest) 2.325, 113.90E
Drainage
GWT 250m (2007/10/10)
DF (Drained forest) 2.355, 114.00E

Integrated, practical carbon budget map

Net Primary Productivity of Terrestrial Ecosystems in Monsoon Asia

Simulator: SimCycle-Visit for East Asia

Forest Coverage

Bottom-up
• field survey
• flux obs.
• process model

Subsidence Model

Fig. B Relationship between ground water level (blue) and peat surface level (red)
Presented by Kawasaki (2012)

・Carbon Emission by Fire
・Carbon Loss through Water
・Carbon Emission by Microorganisms Degradation
・Tree Growth/Mortality
・Pest subsidence

8