

Integrated MRV system using Monitoring-Sensing-Modeling in Tropical Peatland and Wet/lowland

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The Earth's remaining tropical forests are found mainly in the peatlands of the Amazon, Central Africa, and Southeast Asia, especially in regions of Kalimantan, Sumatra, and Papua New Guinea, where rich biodiversity can still be found and large amounts of carbon are stored in peat soils. Also, Wet/low-land where locate especially in South-East Asia is globally one of most important Bioproduction Ecosystem on food production, livelihood, mitigation and adaptation on climate change. This kind of Bioproduction Ecosystem have been supporting to feed large population, because of sustainability of soil fertility and nature friendly production system, calling as human-nature coexistence such as Satoyama in Japan. This human-nature coexistence Ecosystem (Satoyama Ecosystem) in wet/low-land is widely distributed in South-East Asia and South Asia, such as Cambodia, Thailand, Myanmar, Malaysia, Indonesia, Philippines and Bangladesh. Thus, peatland and wet/low-land Ecosystem has a role to stock large amount of Carbon, especially in peat and organic soils, and Mangrove soil. However, this human-nature coexistence Ecosystem (Satoyama Ecosystem) has been gradually or quality degrading and breaking down because of human-impact and climate change. Thus Sustainability of this human-nature coexistence Ecosystem (Satoyama Ecosystem) is one of key issue in not only regional, but also global. As SBSTA38 and Workshop of UNFCCC in 2013 have been focusing on "Ecosystem of High Carbon Reservoirs" such as peatland, costal ecosystem including Mangrove and Coral, and Permafrost, South-East Asia is key in this aspect.

Focusing on carbon emission estimation related with the REDD (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) Mechanism, at COP15 in Copenhagen, MRV (Measurement, Reporting and Verification) focused on establishing reference emission levels, national monitoring systems. At COP15 of Copenhagen, it was declared that an MRV system that should be coupled with two components ? satellite sensing and grand truth- is urgently required. Presently, our JST-JICA Project (SATREPS) on "Wild Fire and Carbon Management in Peat-Forest in Indonesia" is the only project in the world to propose all aspects of MRV in tropical peatlands, enabling it to contribute significantly to also in tropical wet/low-land. Actually, carbon stock mapping and carbon flux mapping in peatland were obtained. Therefore, this paper describes our MRV system as a sensing standard for REDD+, biodiversity, and LLULUCF in tropical peatland and Wet/low lands.

Keywords: Satoyama Ecosystem, MRV, REDD+, Tropical peatland, Wet/low lands, High Carbon Reservoir Ecosystem