

PEATLAND RESTORATION IN INDONESIA TO MITIGATE CO2 EMISSIONS

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Extensive degradation of Indonesian peatlands by deforestation, drainage and recurrent fires causes release of huge amounts of peat soil carbon to the atmosphere. Lowering groundwater levels, which naturally are close to the peat surface throughout the year, increases CO₂ emissions by peat oxidation (decomposition). Moreover, once groundwater levels fall below a critical threshold of -40 cm, the dry peat surface becomes susceptible to fire. Complete rewetting by blocking drainage canals by dams to raise groundwater levels is the only way to prevent fires and peat oxidation. An efficient and cost-effective methodology was developed to plan hydrological restoration of disturbed tropical peatlands in the Sebangau catchment in Central Kalimantan under supervision of the World Wildlife Fund (WWF). Field inventory and remote sensing data are used to generate a detailed 3D model of the peat dome and a hydrological model predicts the rise in groundwater levels once dams have been constructed. Successful rewetting of a 590 km² large area of drained peat swamp forest could result in mitigated emissions of 1.4-1.6 Mt CO₂ yearly. This equates to 6% of the CO₂ emissions by civil aviation in the European Union in 2006, thus significant emissions reduction can be achieved. The Indonesian system of long-term ecosystem restoration concessions provides prospects for both private sector and local communities to engage in peatland restoration and may provide an attractive alternative to large scale unsustainable peatland developments.