

GEOSPATIAL INFORMATION AGENCY
Developing National Geospatial Thematic Information
on Land Cover/Land Use:
An Implementation of One Map Policy



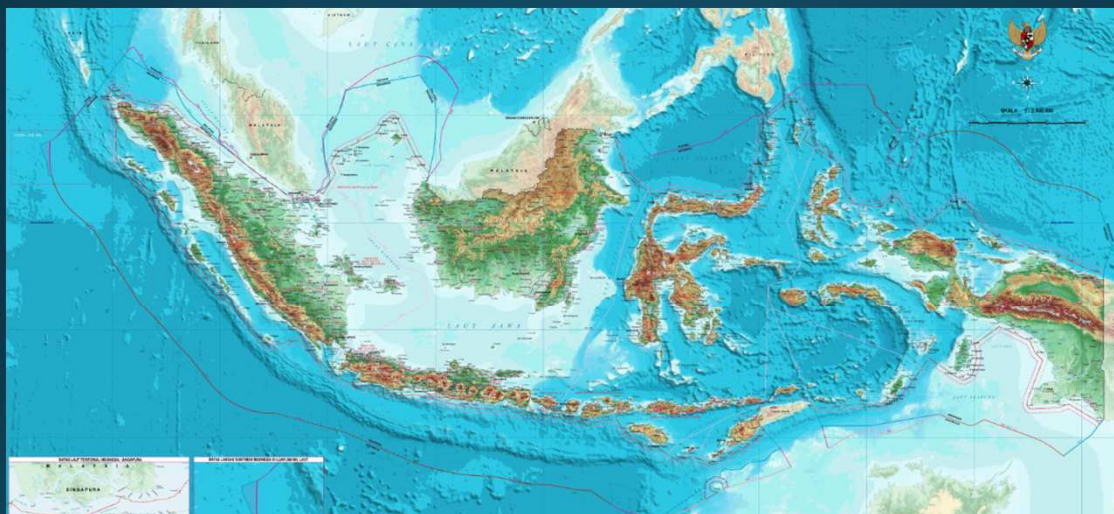
Presenter: Dheny Trie Wahyu Sampurno, M.Eng

Outline:

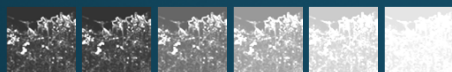
- BACKGROUND
- CONCEPT OF ONE MAP POLICY for LAND COVER/USE
- INDONESIAN NATIONAL LAND COVER/USE STANDARD
- INTEGRATION OF LAND COVER/USE MAP
- CLOSING REMARKS



INDONESIA



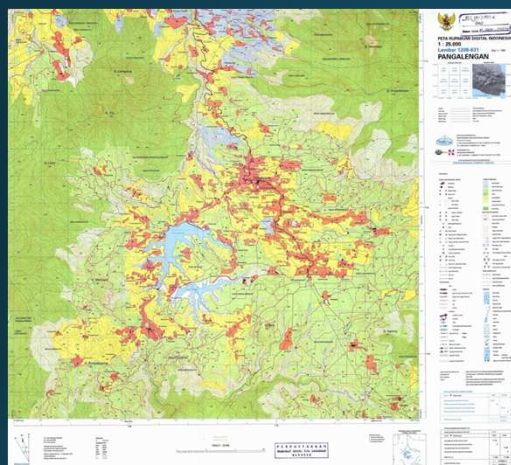
"Indonesia has **1.922.570 km²** of land and **3.257.483 km²** of sea and ocean. There are **13.466** Islands, every region has own characteristics of Land Cover/Use Patterns"



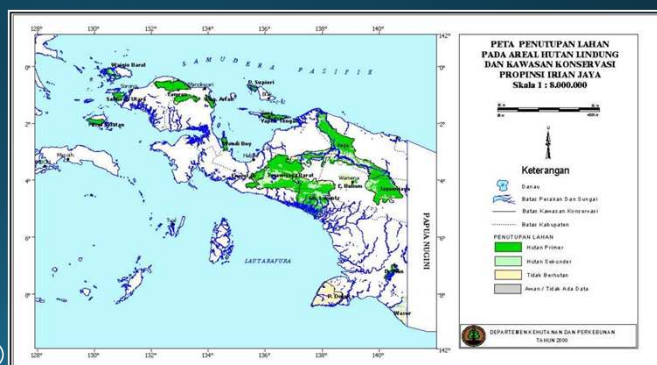
- Land Cover (physical appearance) \neq Land Use (function)
- Digital remote sensing: rapid method, generates land-cover, but not land-use. Occasionally, it can generate mixed information of land-cover and land-use
- Land-use information could be generated by integrating remote sensing and GIS, but normally at limited number of classes



Land cover ?



BASIC MAP

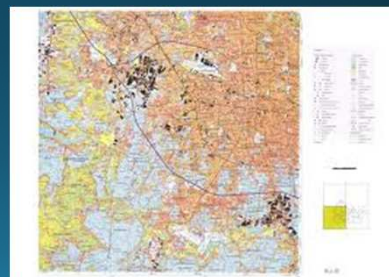


FOREST COVER MAP (LAND COVER)

LAND COVER MAP PRODUCER



- Basic Map (BIG)
- Land Cover (forest cover) (MoF)
- Land Cover (Ministry of Environment)
- Rice Field Mapping (Ministry of Agriculture)
- Cadastral Map (National Land Agency)
- Land Cover Map for Spatial Planning



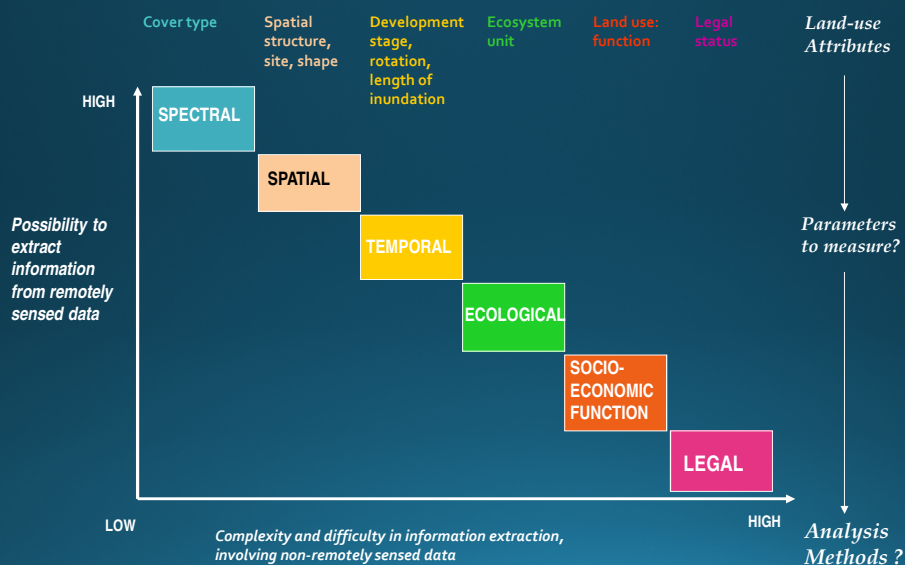
Condition of Thematic Geospatial Information (TGI)



TGI producers concern only their own tasks, leading to data/information disintegration and duplication of resource allocation



Land-use as a multidimensional concept (a remote sensing perspective)



Indonesian Land Cover/Land Use

- Multidimensional Aspect
- High Complexity of Land Cover
- Single Classification model with one type of attribute data is not suitable for multi-sector
- **Alternative for National Land Cover/Land Use Data:**
 - *Many data (Layer), many attribute; need spatial query for every sector*
 - *One Data, multi-attribute; need agreement on reference mapping unit*
 - *One Data, One attribute; Need agreement on classification, reference, time line (more controversial)*







Why One MAP??

- One Map Policy was initiated in response to the discrepancy of land cover map produced by the Ministry of Forestry (MoF) and the Ministry of Environment (MoE). Maps published by MoF and MoE show different forest coverage in the same area. Other thematic maps tend to have the same conditions.
- One Map Policy was firstly implemented by generating Map of Moratorium Forest and Peatland Concession. This effort is to support national policy to reduce carbon emission of 26 % by 2020 (Business As Usual).
- Currently, it is difficult to generate integrated thematic maps from different institutions. This condition is due to the absence of standard of data classification and geospatial reference system .

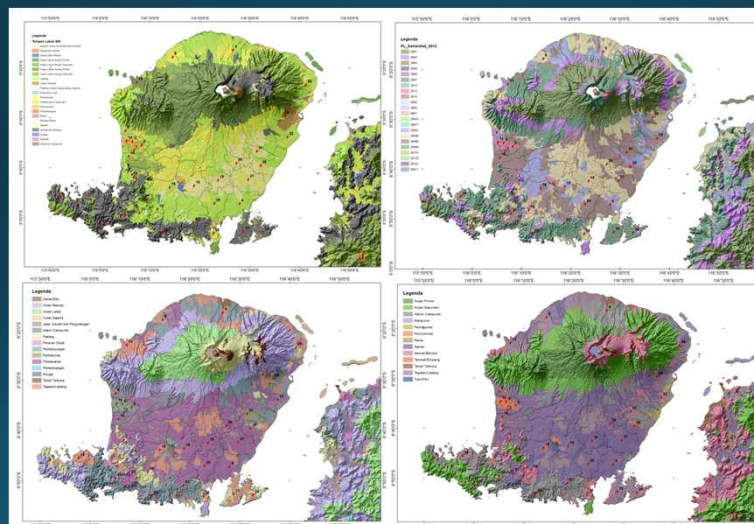


Thematic Land Cover Map Production

 <p>Ministry of Forestry</p> <ul style="list-style-type: none"> • 24 Classes • Yearly • Visual Interpretation • Main Data: Satellite Imagery 	 <p>Ministry of Environment</p> <ul style="list-style-type: none"> • 15 Classes • Visual Interpretation • Main Data: Satellite Imagery 	 <p>Ministry of Agriculture</p> <ul style="list-style-type: none"> • Mainly: Plantation and Paddy Field • Visual Interpretation • Main Data: Satellite Imagery, Terrestrial measurement 	 <p>National Land Agency</p> <ul style="list-style-type: none"> • Land Status • Mostly High Scale Land Use Map • Main Data: Satellite Imagery, Terrestrial measurement
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Land Cover Maps by Ministries



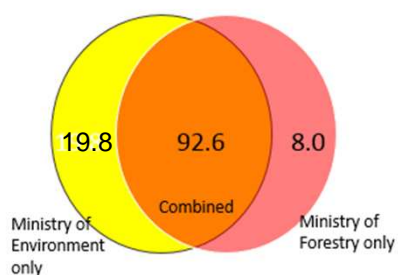
One Map Policy Issue

Forest maps, 2009

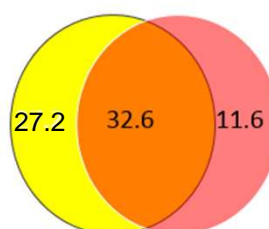
Forest in million hectares

■ Ministry of Environment
 ■ Combined
 ■ Ministry of Forestry

Primary and Secondary Forests



Primary Forest



One Map Policy



Reference

Standard

Database

Geoportal

IMPLEMENTATION OF GEOSPATIAL INFORMATION ACT LAW 4 / 2011

One Standard Land Cover/Use Classification

Standard Land Cover Classification

- Land Cover Classification System UNFAO dan ISO 19144-1 Geographic Information – Classification System
- Two separate classification: dominant vegetated area and non-dominant vegetated area
- Scale of Land Cover Map: 1:1.000.000; 1:250.000; dan 1:50.000/ 1:25.000 (now on progress 1:10.000; 1:5.000; 1:1.000)

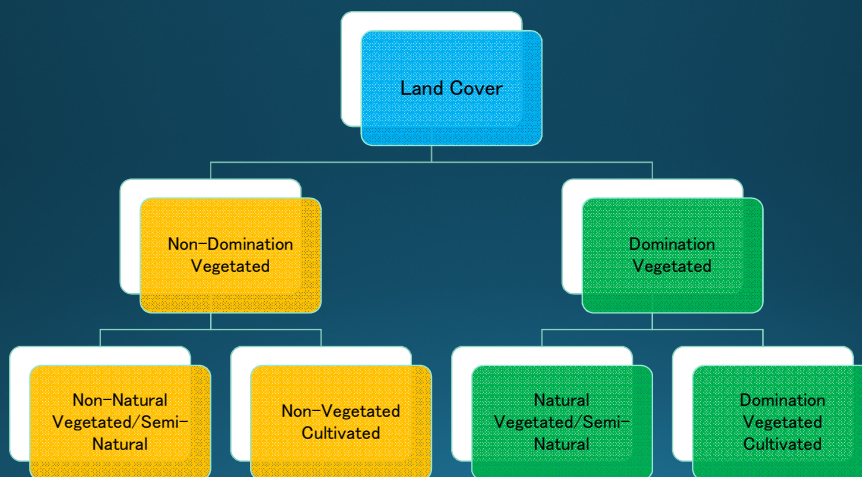


Land cover classification

- Main source data are remote sensing data which suitable with the mapping scale (spatial resolution)
- Auxiliary data are required for the class that not easy to be determined from remote sensing data
- The concept of land cover map of Indonesia regards the aspects of spatial, ecological, and legal
- Harmonized the terminology of land cover and land use in certain scale is performed to accommodate the needs/interest of ministries or agency



Revision of Indonesia Land Cover Classification



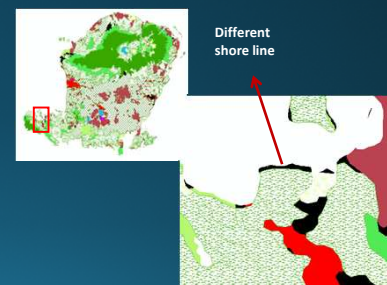
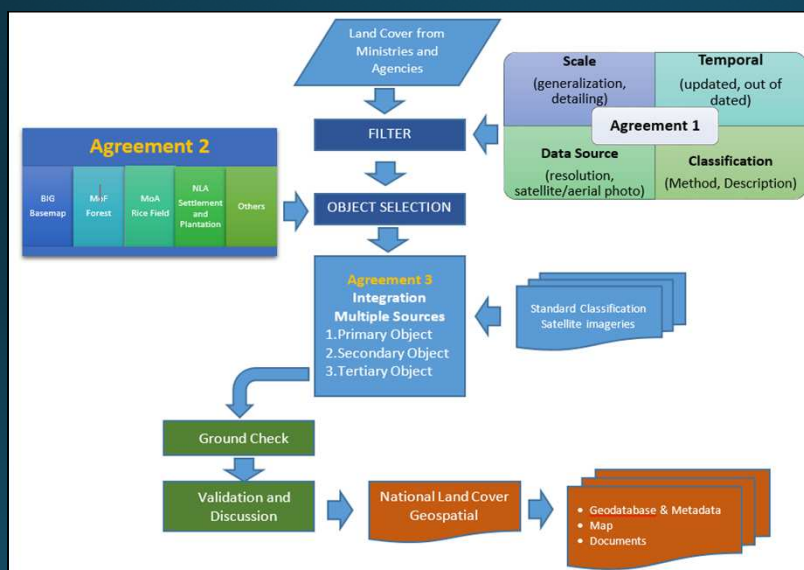
Revision of Indonesian Standard Land Cover Classification

Indonesia National Standar Land Cover Classification				
2010		2014		
Vegetated	Cultivated	Dominant Vegetation	Natural/Semi-Natural Vegetation	Forest and Natural/Semi-Natural Vegetation
	Non-Cultivated		Cultivated Vegetation	Settled Cultivated Vegetation Shifted Cultivated Vegetation
Non-Vegetated	Open Land	Non-Dominant Vegetation	Natural/Semi-Natural Non-Dominant Vegetation	Natural/Semi-natural Water Body
	Settlement and non agriculture			Natural/Semi-natural Open Land
	Water Body		Cultivated Non Vegetation	Atrificial Water Body Cultivated Open Land and emplisement Built Area



Integration of Land Cover/Use for **One Map**

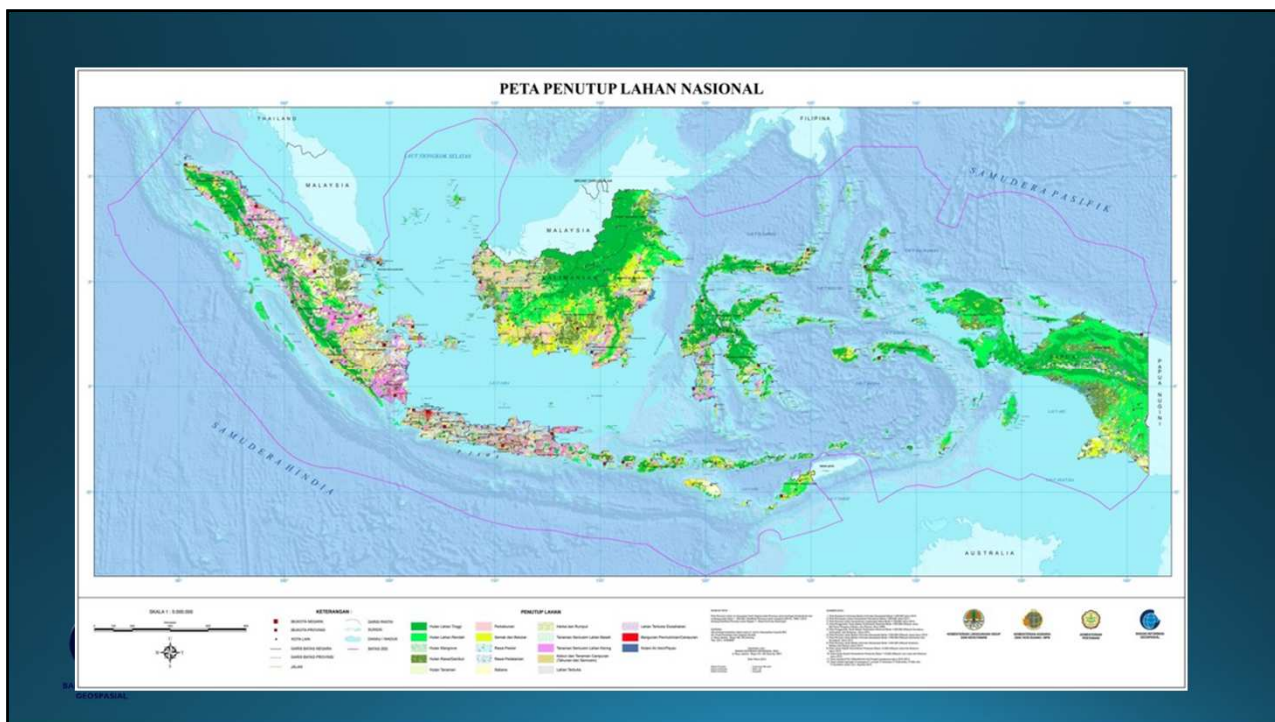
Integration of National Land Cover Map



Agreement of Land Cover/Use Classification for ONE MAP



MINISTRY OR AGENCY	ONE MAP LAND COVER CLASSIFICATION	INDONESIAN STANDARD LAND COVER CLASSIFICATION
Ministry of Forestry	Primary Dry Land Forest	High land or low land forest (cek elevation)
	Secondary Dry Land Forest	
	Primary Mangrove Forest	Mangrove Forest
	Secondary Mangrove Forest	
	Primary Wet Land Forest	Wetland and Peatland Forest
	Secondary Wet Land Forest	
	Plantation Forest	Plantation Forest
	Bush and shrubs	Bush and shrubs
Dryland Agriculture	Seasonal dry land agriculture	
Mixed Food Farm	Mixed Food farm (seasonal or annual)	
Ministry of Agriculture and National Land Agency	Rice Field	Seasonal wet land agriculture
National Land Agency	fishpond	brackish or salty water pond
National Land Agency and Ministry of Forestry	Food Estate	Food Estate
National Land Agency	Settlement/Built Area	Mixed Settlement
BIG	Airport	Built area non-settlement
BIG	Sea Port	Built area non-settlement
Ministry of Forestry	Open Land	rock/sand landscape
		beach sand
		mud flats
		other open land
National Land Agency and Ministry of Forestry	Mining Area	cultivated open land
Ministry of Forestry	Savana	savana
BIG	Lake	Lake
	River	River
	Reservoir	Reservoir
Ministry of Forestry	Swamp	Swamp



Conclusion

- One Map Policy is the key of implementation of Government Policy through the Geospatial Information (Law GI 4/2011)
- Land Cover/Use Geospatial Information is done by sectorals, and an Integration is led by BIG and approved by related Ministries and Agency



BIG

Thank you

