Land Account : Indonesia

KEMENTERIAN
LINGKUNGAN HIDUP DAN KEHUTANAN

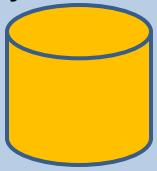
BADAN PUSAT STATISTIK

Outline

- Environmental concerns
- Approach in compiling land account
- Results: Sumatera Land Account, Experimental Estimates
- Challenges
- Policy applications
- Further work

Approach in compiling Indonesia's land account

Ministry of Environment and Forestry



Land Cover Data

KLHK business process

BPS – Statistics Indonesia

Geospatial Processing → Statistical Processing → Data Dissemination

‡Prepared Land Cover by province and year
‡Calculate Area
‡Calculate Land Cover Change

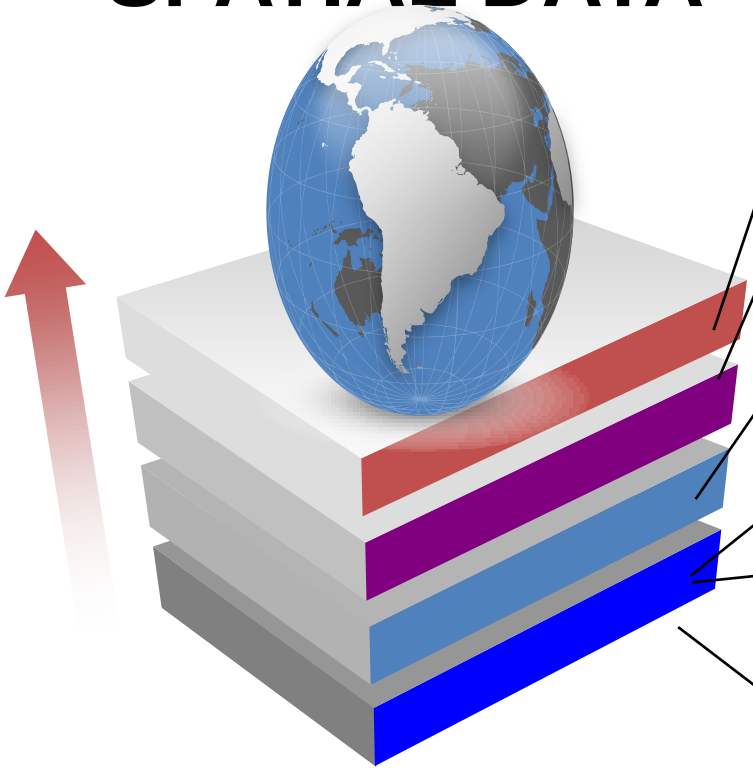
‡Calculate Gross Change tables
‡Calculate Net Change tables

KEMENTERIAN
LINGKUNGAN HIDUP DAN KEHUTANAN

Business process in Ministry of Environment and Forestry

REQUIREMENT OF GEO-SPATIAL INFORMATION :

FUCTION OF SPATIAL DATA



- To Manage of National Sovereignity
- Natural Resources Inventory
- Optimazing of Natural Resources
- Manage of HAZARDS and M itigation
- Land Use Plan
- Investment security

GEO-INFORMATION FOR INSTRUMENT OF DEVELOPMENT PLANNING

ECONOMIC . Spatial planning for invesment

ENERGY

Spatial planning renewable energy

LANDUSE & SPATIAL PLANNING

National and Sub National Landuse planing

STRATEGYC SECTOR

Agriculture, Marine, Health Planning

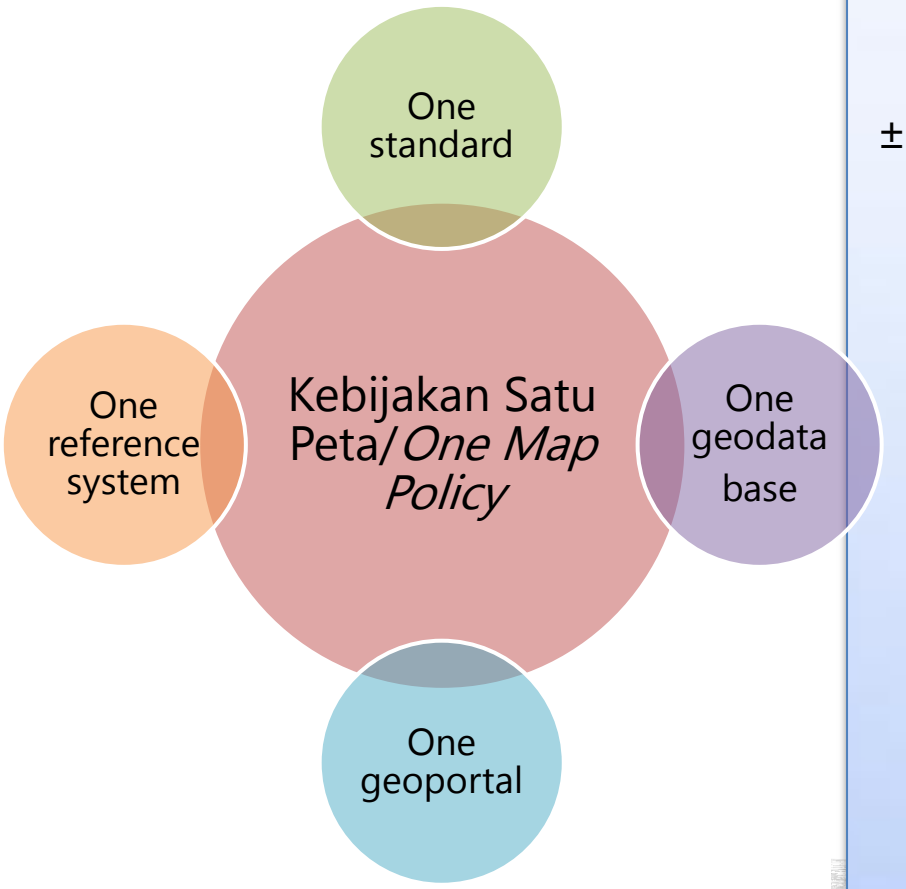
ENVIRONMENT AND FORESTRY

Management Planning

INFRASTRUKTUR

Infrastructure Planning

Regulation of Geospatial Information



- ± Law 4/2011: Geospatial Information: Article 3: This law aims to: ...

  (c) encourage the use of IG in governance and in various aspects of community life
- ± President al Regulation No 27/2014: National Geospatial Information Network: Geospatial Information (IG) ... can be used as a tool in policy formulation, decision-making, and / or implementation of activities related to earth spaces. ... making of IG conducted through Geospatial Data collection activities (DG); processing, storage, securing, dissemination of DG and IG; and use of IG. Geospatial Information Network is a system of organizing IG management collectively, orderly, measurable, integrated, and sustainable and efficient. Network node is the institution responsible for organizing the collection, maintenance, updating, exchange and dissemination of certain DG and IG. 3.
- ± Presidential Regulation no. 9/2016 on Accelerated Implementation of One Map Policy)

Road Map One Map Policy (2015-2019)

1. Finalized of Base Map 1:50.000
2. Mapping of Thematic Information
3. Sincronize of map
4. Finalized

One Map

Monitoring Evaluation

Role K/L/Pemda

The Geospatial Information Agency (BIG) completed a 1: 50,000 RBI Base Map

2015

K / L / Pemda completed mapping thematic information on RBI 1: 50.000 Basic Map

2017

Spatial data synchronization (in status) and potential land use on base map 1: 50,000

2018 Paralel

Compilation of thematic information on base map 1: 50.000

2018 Paralel

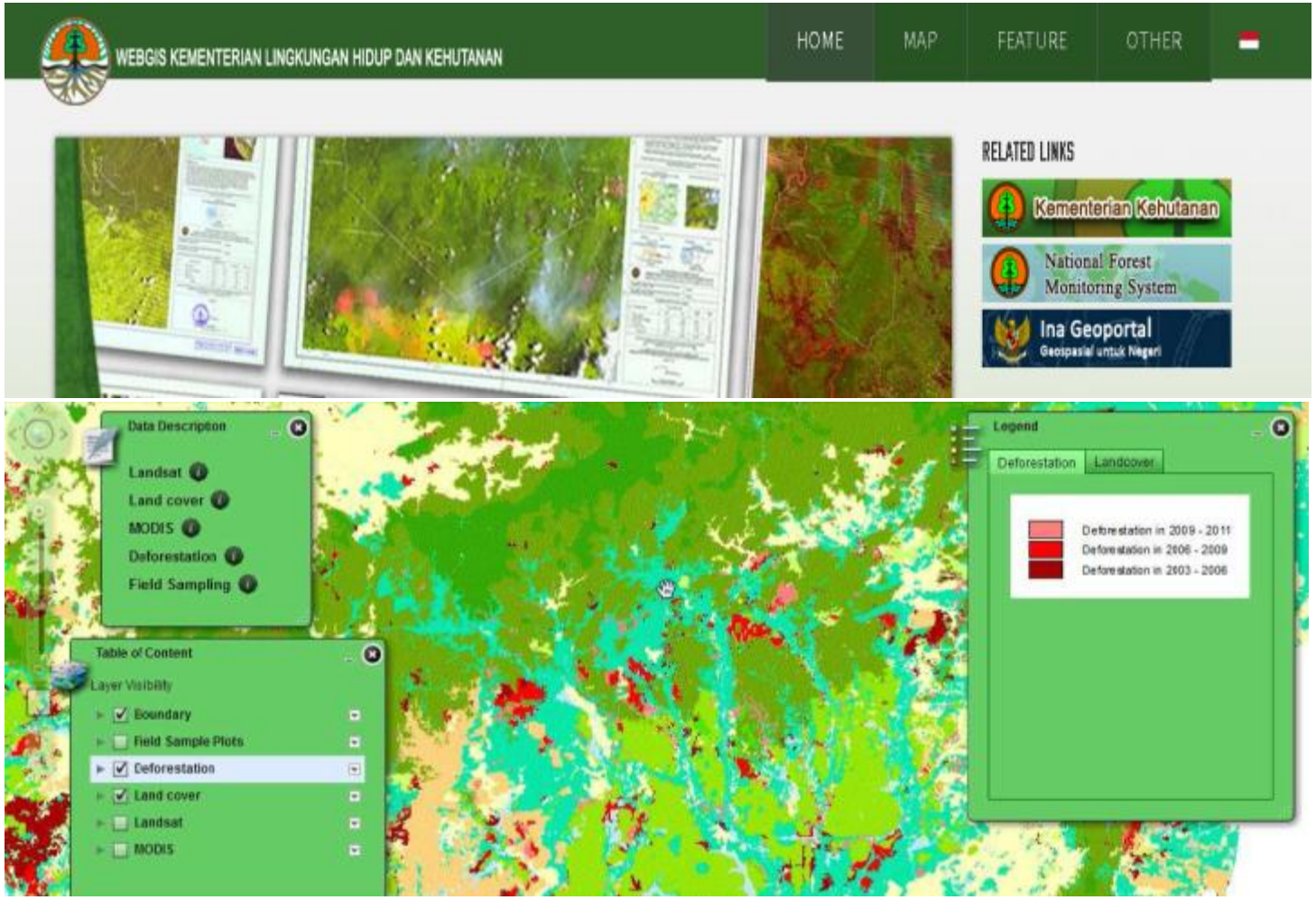
>2019

Utilization by K/L/Pemda/ public

Source: Kemenko Perekonomian, 2015

One Data Forestry and Environment

http://geoportal.menlhk.go.id



METHOD FOR LAND COVER MAP PRODUCTION

Land Cover Map (Geodatabase)

Landsat Images

Supporting data :
- MODIS
- ALOS, SPOT
- Concessions map
- etc.

Image processing (enhancement)

Visual interpretation

Ground check

Re-interpretation

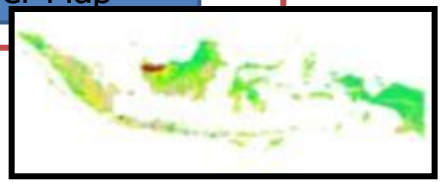
Deforestation Calculation

Deforestation Map

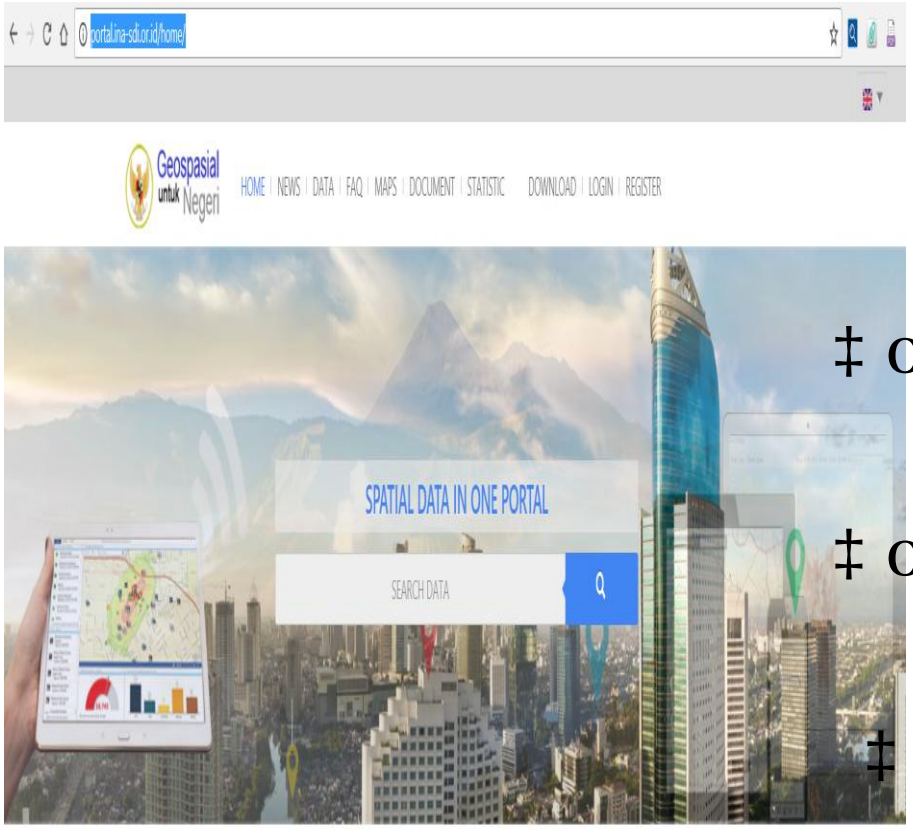
Land Cover Map

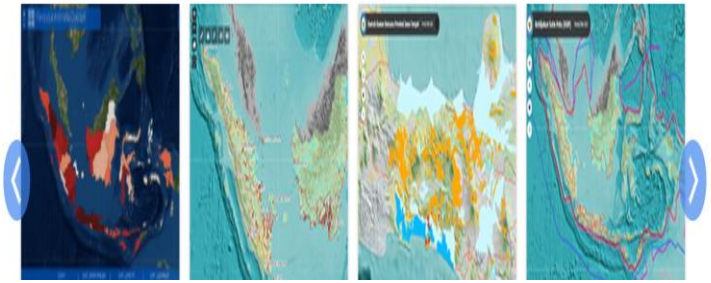
feedback

Information Dissemination (NFMS Web)



One Data in Ina Geoportal
http://portal.ina-sdi.or.id/home/





Ina-Geoportal (Indonesia-Geospatial Portal) is an Indonesian Geospatial Portal built with the participation of various ministries and institutions as well as local government in Indonesia.

‡ 01

‡ Serves as a major gateway to geospatial information access and as a means of data sharing

‡ 02

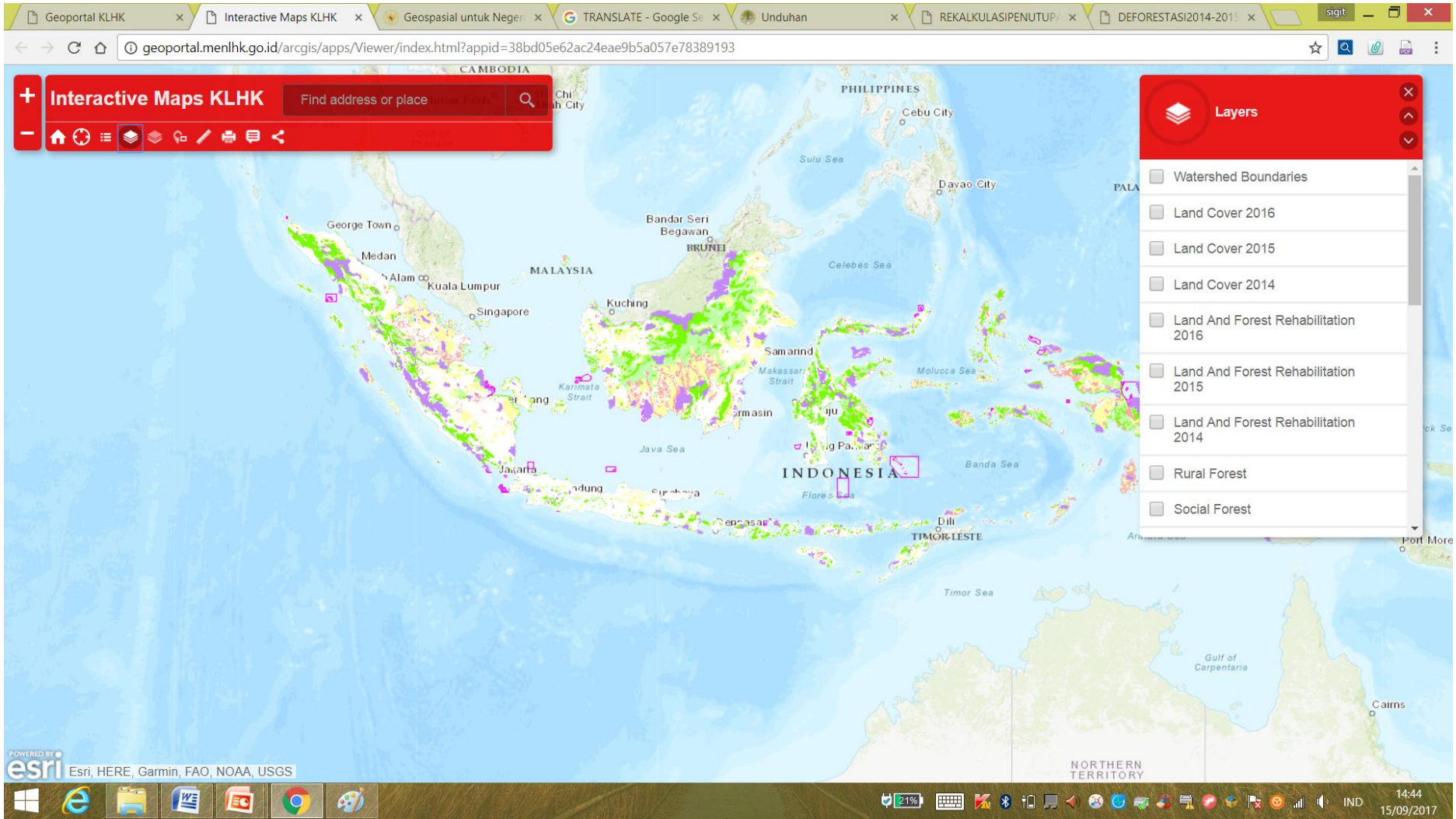
‡ As a means of searching spatial metadata and meta service

‡ 03

‡ The geospatial data search facility is distributed with technical specifications of WFS, WCS, and WMS

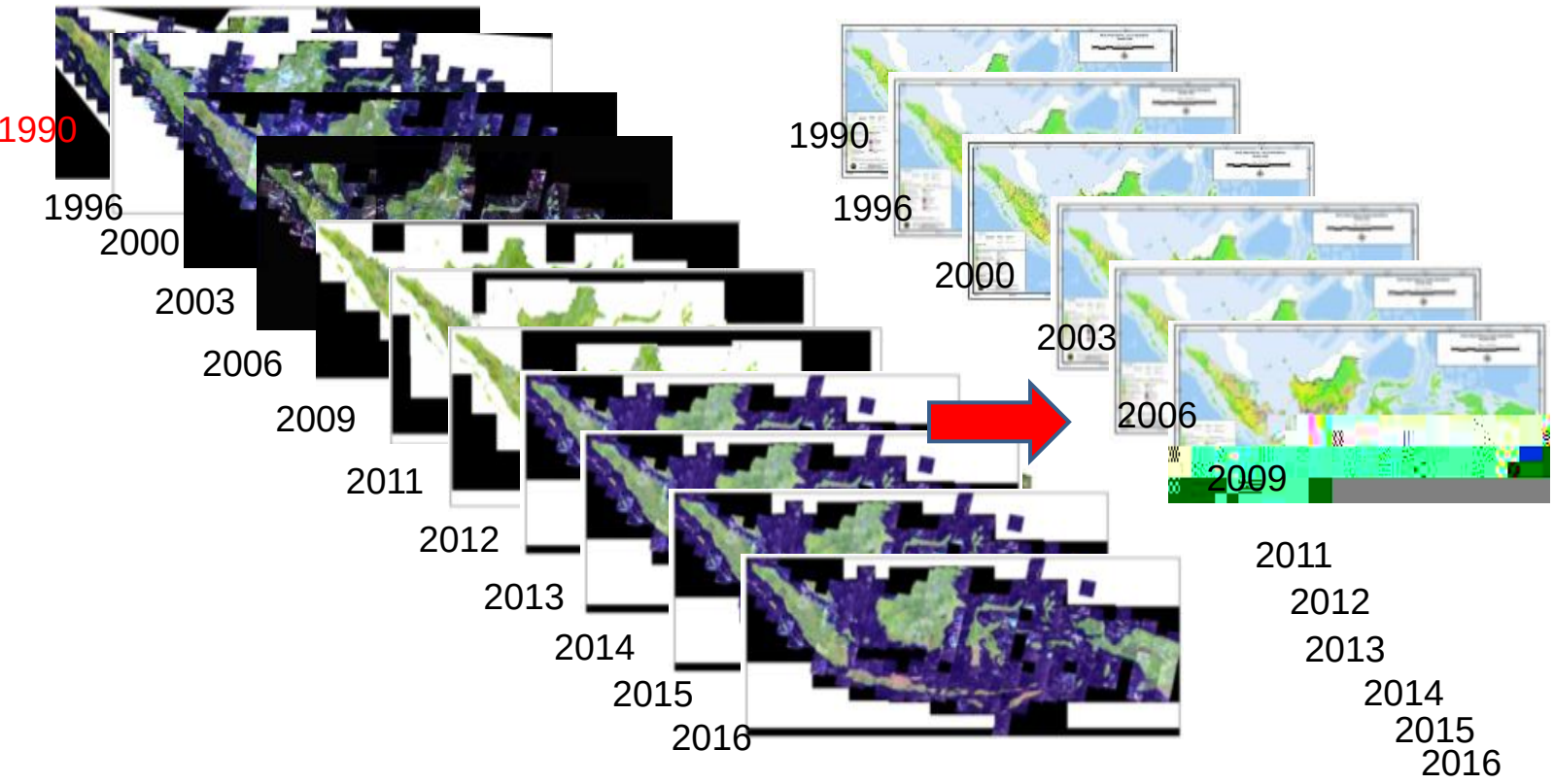
One Data Forestry and Enviroment

http://geoportal.menlhk.go.id



LAND COVER DATA

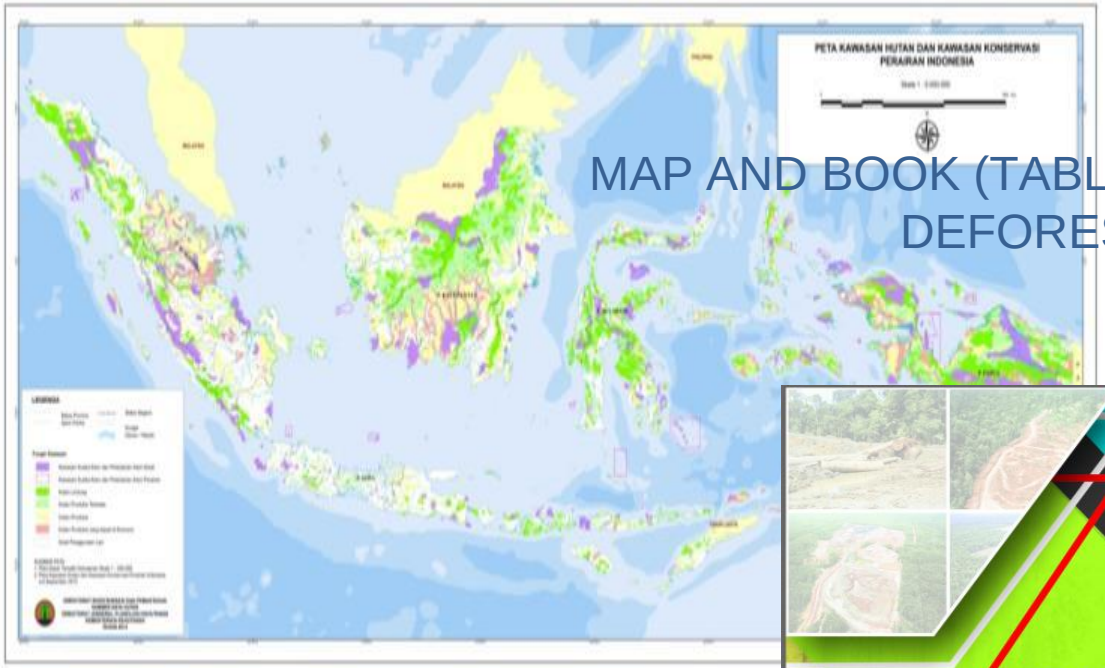
Landsat Mosaic – Landcover data since 1990 -2016



Data Source:

→ Landsat 5 TM
→ SPOT Vegetation
→ Landsat 7 ETM+
→ Landsat 8 OLI (since 2013)

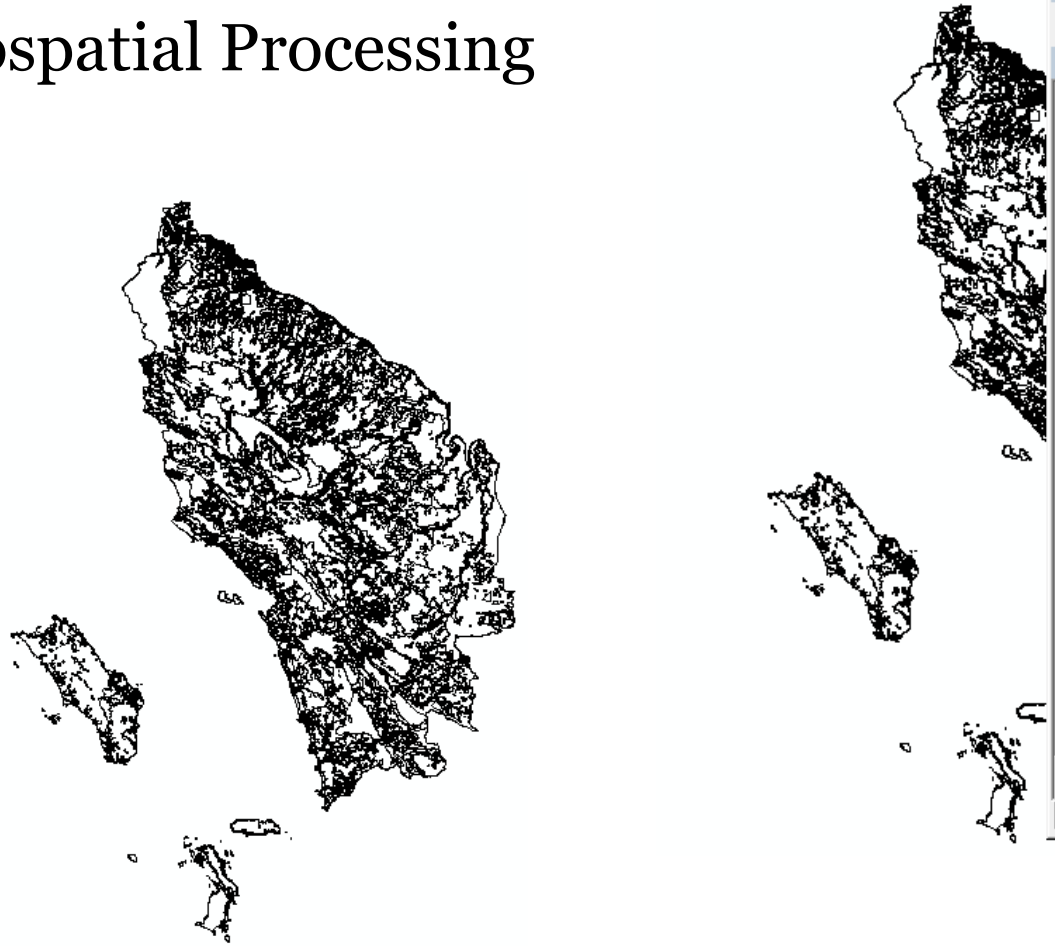
LAND COVER DATA AND MAP



MAP AND BOOK (TABLE AND DIAGRAM OF DEFORESTASTION

Business process in BPS-Statistics Indonesia

Geospatial Processing



Table

lc_sumut_09

FID	Shape *	PL09_ID	area_2009
0	Polygon ZM	2001	585189,814422
1	Polygon ZM	2002	1063689,4607
2	Polygon ZM	2004	1443,216004
3	Polygon ZM	2005	3301,403091
4	Polygon ZM	2006	149978,165972
5	Polygon ZM	2007	585330,866845
6	Polygon ZM	2010	1334082,38391
7	Polygon ZM	2012	81127,415695
8	Polygon ZM	2014	213557,927499
9	Polygon ZM	2500	10,188342
10	Polygon ZM	5001	143516,876624
11	Polygon ZM	20041	37947,957901
12	Polygon ZM	20051	92252,666326
13	Polygon ZM	20071	58176,096385
14	Polygon ZM	20091	2229183,45308
15	Polygon ZM	20092	317101,323456
16	Polygon ZM	20093	292379,42991
17	Polygon ZM	20094	25811,268461
18	Polygon ZM	20121	950,239238
19	Polygon ZM	20122	1010,316003
20	Polygon ZM	20141	24,219561
21	Polygon ZM	50011	9316,431729

1 (0 out of 22 Selected)

lc_sumut_09

Step 1a Land Cover Map by Province and Year

Step 2a Calculate Land Cover Area

Geospatial Processing (2)

Table

LC_sumut_2009_2012

FID_lc_sum	PL09_ID	area_2009	FID_lc_s_1	PL12_ID	area_2012	lc_change
0	2001	585189,814422	0	2001	582510,39331	582510,39331
0	2001	585189,814422	1	2002	1009996,54306	285,714378
0	2001	585189,814422	5	2007	606658,233601	1726,841542
0	2001	585189,814422	8	2014	252716,230064	590,79267
0	2001	585189,814422	13	20091	2227974,90649	54,836343
0	2001	585189,814422	14	20092	309854,789696	21,236179
1	2002	1063689,4607	1	2002	1009996,54306	1007754,91132
1	2002	1063689,4607	4	2006	137688,579758	1018,704519
1	2002	1063689,4607	5	2007	606658,233601	27825,078631
1	2002	1063689,4607	6	2010	1367684,9526	566,616181
1	2002	1063689,4607	8	2014	252716,230064	24454,852786
1	2002	1063689,4607	13	20091	2227974,90649	1599,572836
1	2002	1063689,4607	14	20092	309854,789696	429,860122
1	2002	1063689,4607	15	20093	291620,84381	39,864309
2	2004	1443,216004	2	2004	1443,216004	1443,216004
3	2005	3301,403091	3	2005	1646,929605	1646,929605
3	2005	3301,403091	8	2014	252716,230064	1634,008428
3	2005	3301,403091	12	20071	62526,489873	20,465058
4	2006	149978,165972	4	2006	137688,579758	123919,481794
4	2006	149978,165972	5	2007	606658,233601	2846,287813
4	2006	149978,165972	6	2010	1367684,9526	4469,264357
4	2006	149978,165972	8	2014	252716,230064	17607,830107
4	2006	149978,165972	13	20091	2227974,90649	985,348344
4	2006	149978,165972	14	20092	309854,789696	35,792038

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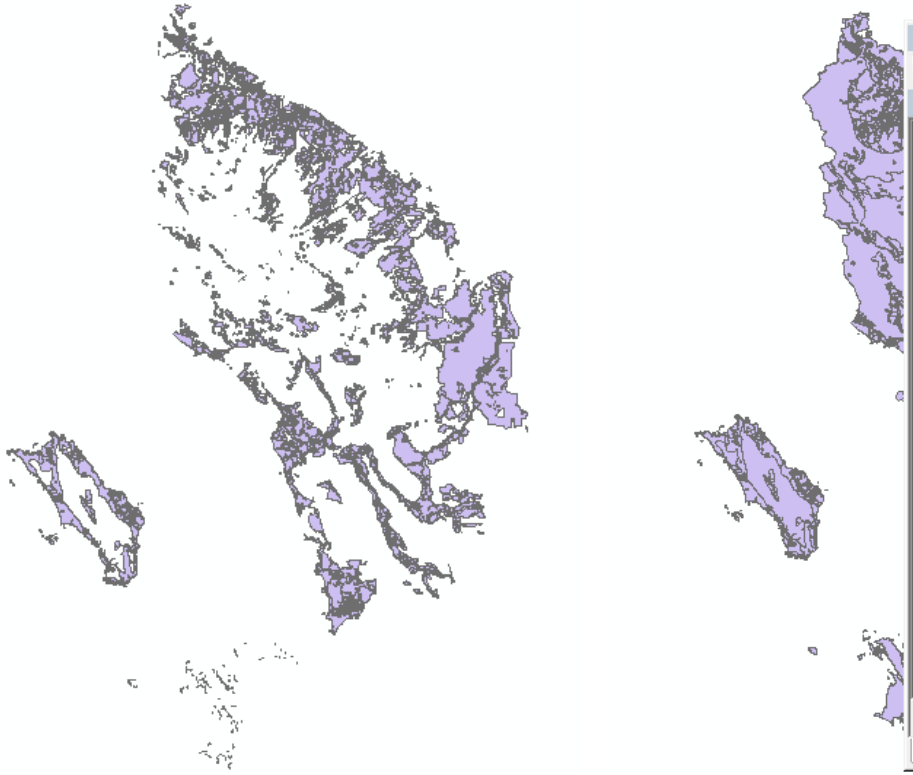
LC_sumut_2009_2012

Step 3a

Calculate Land Cover Change

Geospatial Processing (3)



Table

lu_sumut_2009_merge

FID	Shape *	PGT_09	PGT_ID	Provinsi	area_2009
0	Polygon	Hutan	9000	Sumatera Utara	38,80337
1	Polygon	Hutan	9000	Sumatera Utara	0,026136
2	Polygon	Hutan	9000	Sumatera Utara	0,47556
3	Polygon	Hutan	9000	Sumatera Utara	6,177259
4	Polygon	Hutan	9000	Sumatera Utara	10,731959
5	Polygon	Hutan	9000	Sumatera Utara	4,326985
6	Polygon	Hutan	9000	Sumatera Utara	99,36776
7	Polygon	Hutan	9000	Sumatera Utara	4,188627
8	Polygon	Hutan	9000	Sumatera Utara	12,577342
9	Polygon	Hutan	9000	Sumatera Utara	9,298908
10	Polygon	Hutan	9000	Sumatera Utara	6,728467
11	Polygon	Hutan	9000	Sumatera Utara	5,059754
12	Polygon	Hutan	9000	Sumatera Utara	12,37112
13	Polygon	Hutan	9000	Sumatera Utara	2,086826
14	Polygon	Hutan	9000	Sumatera Utara	0,98712
15	Polygon	Hutan	9000	Sumatera Utara	6,499782
16	Polygon	Hutan	9000	Sumatera Utara	5,687593
17	Polygon	Hutan	9000	Sumatera Utara	42,030115
18	Polygon	Hutan	9000	Sumatera Utara	12,518827
19	Polygon	Hutan	9000	Sumatera Utara	3,096518
20	Polygon	Padang	8000	Sumatera Utara	6,662127
21	Polygon	Padang	8000	Sumatera Utara	0,085207
22	Polygon	Padang	8000	Sumatera Utara	17,936757
23	Polygon	Padang	8000	Sumatera Utara	4,041282
24	Polygon	Padang	8000	Sumatera Utara	5,076145

0 (0 out of 3380 Selected)

lu_sumut_2009_merge

Step 1b Land Use Map by Province and Year

Step 2b Calculate Land Use Area

Geospatial Processing (4)

Step 4 Calculate Cross Classification Land Cover and Land Use Area

Challenges: User needs

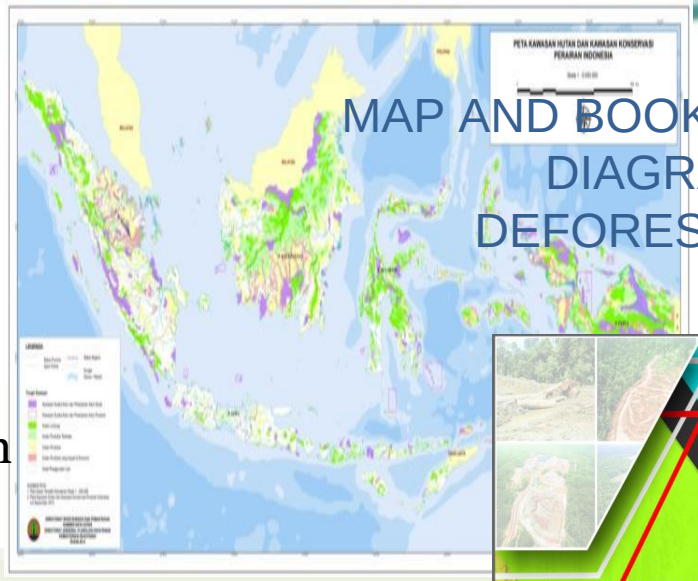
1. Ease of Access Information for government, local governments, the public and the wider community
2. Transparent and Good methods, Publications etc (image data type, delineation way, field verification, QC field

Policy application

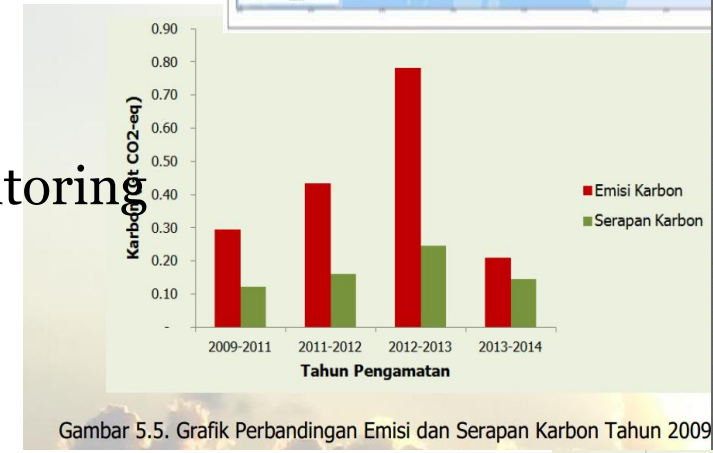
MAP AND BOOK (TABLE AND DIAGRAM OF DEFORESTASTION

‡ Forest monitoring

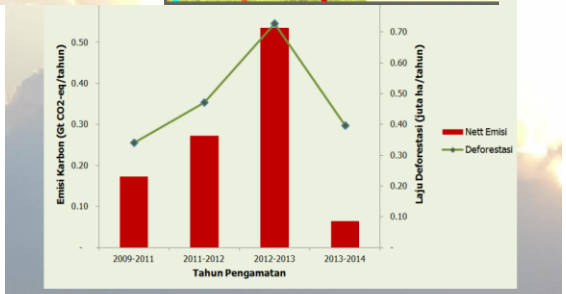
- Monitoring deforestation



‡ Emission monitoring



Gambar 5.5. Grafik Perbandingan Emisi dan Serapan Karbon Tahun 2009



Gambar 5.4. Grafik Perbandingan Emisi Karbon dan Laju Deforestasi Tahun 2009-2014

Thank you

Jointly Prepared by:

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Directorate of Inventory and Forest Resources Monitoring.
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