



BADAN INFORMASI
GEOSPASIAL

The Application of Geospatial Information for Natural Resources Management in Indonesia

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Head

Geospatial Information Agency of Indonesia (BIG)

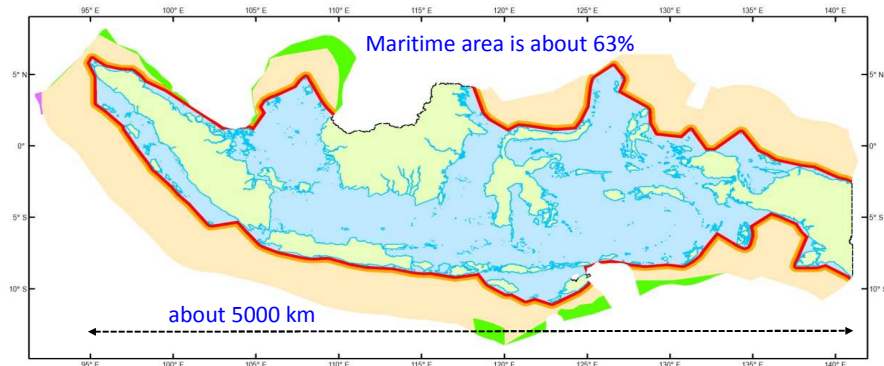


Presented at the United Nations
World Geospatial Information Congress (UNWGC)
Deqing, Zhejiang Province, China
19-21 November 2018

Maritime Continent of Indonesia

Indonesia
has abundant
LAND and
MARINE natural
resources

Geospatial
Information is
compulsory for
managing these
natural resources



SOVERIGNTY ZONE		in km ²
1. Internal Waters and Island		3.092.085
2. Territorial Waters		282.583
SOVERIGN RIGHT ZONE		in km ²
1. Economic Exclusive Zone		2.936.345
2. Continental Zone		2.749.001
Continental Zone > 200 nm		4.209
Maritime Area (km²)		3.223.137
Land Area (km²)		1.890.739

Keterangan

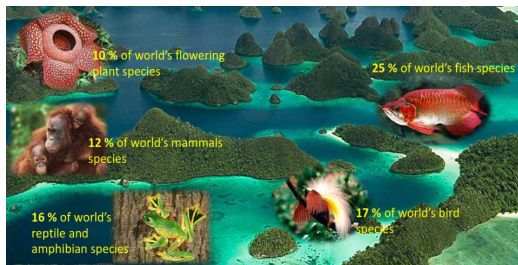
- Batas Darat
- Garis Pantai
- Darat
- Perairan Pedalaman & Kepulauan
- Laut Territorial
- Zona Tambahan
- Landas Kontinen (LK) tidak bertampalan
- Zona Ekonomi Eksklusif (ZEE) tidak bertampalan
- LK & ZEE bertampalan



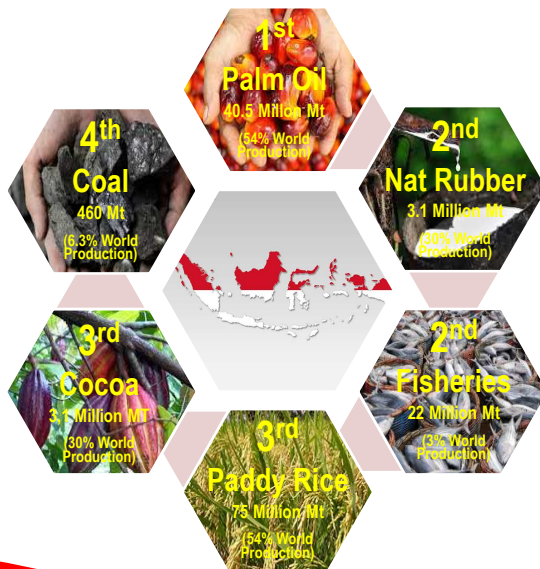
Natural Resources of Indonesia



- ✓ Fertile Soils
- ✓ Vast Marine Areas
- ✓ Oil and Natural Gas
- ✓ Mining, Metals and Minerals
- ✓ Forest Resources
- ✓ Marine Resources
- ✓ Plantation
- ✓ Biodiversity
- ✓ Etc.



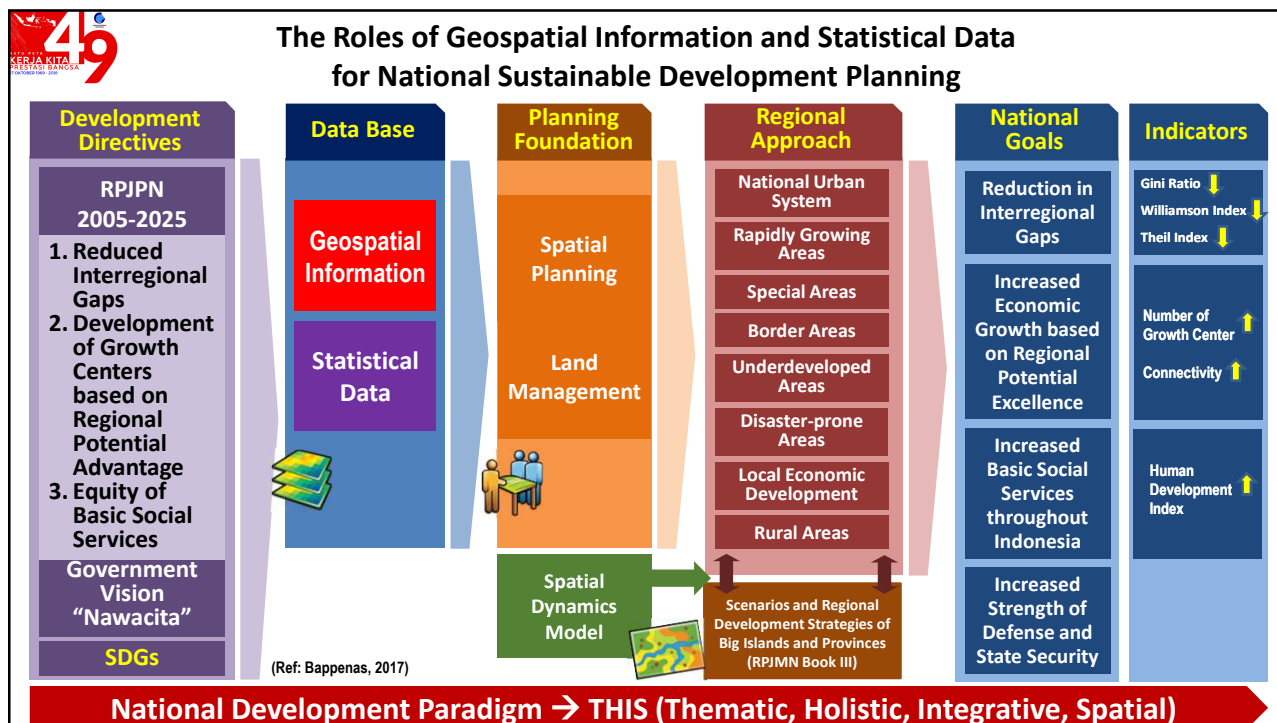
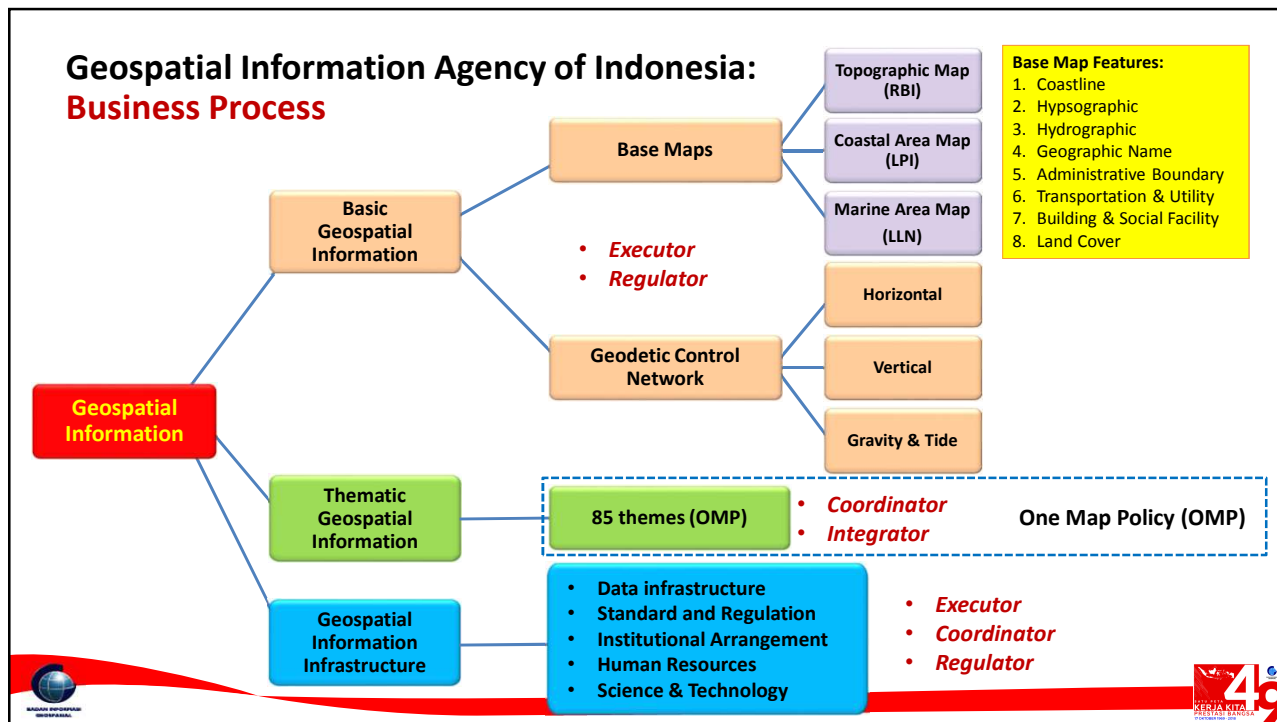
Ranking of Indonesian Natural Resources Products in the World



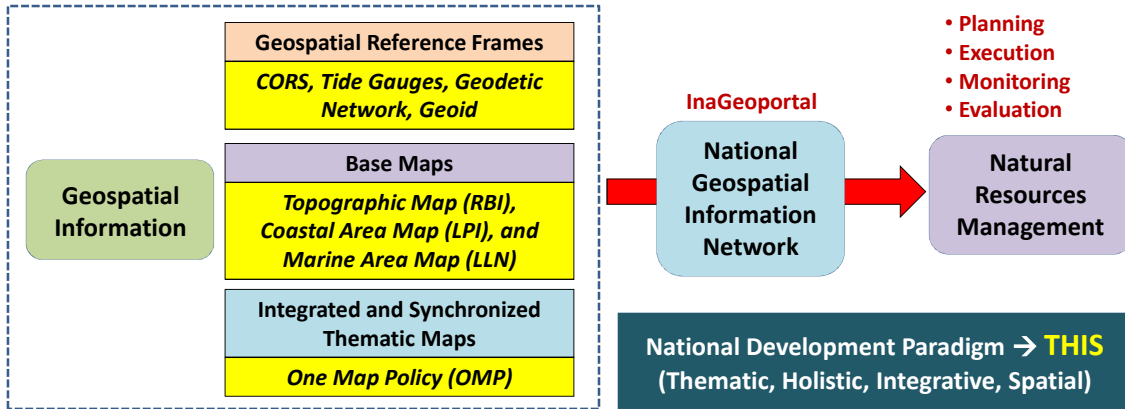
Indonesian Area

- **63%** Water
- **37%** Land, consists of:
 - **64%** Forest Area
 - **36%** Non Forest Area
 - **17504** Islands
 - **263** Million of population



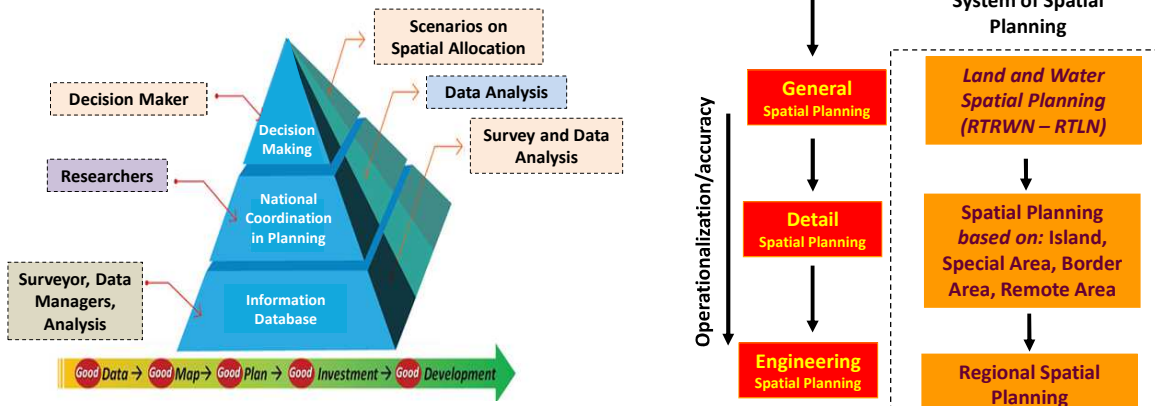


Geospatial Information for Natural Resources Management (Indonesian Case)



Spatial Planning Systems

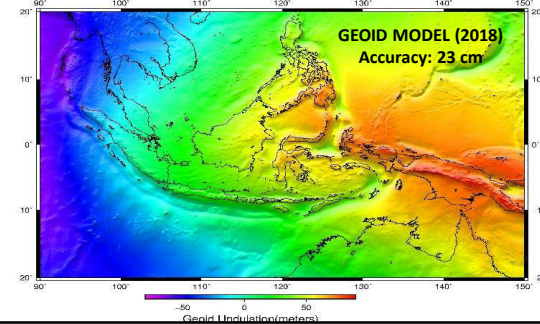
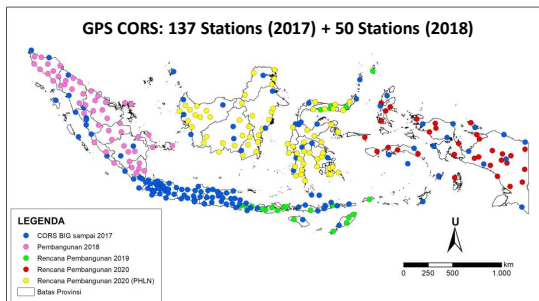
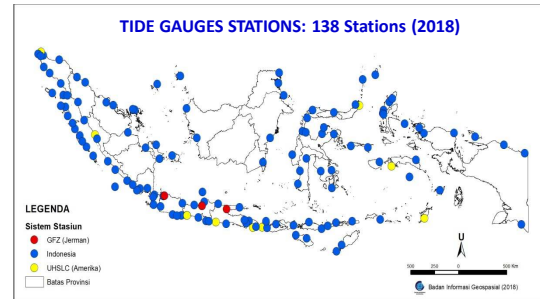
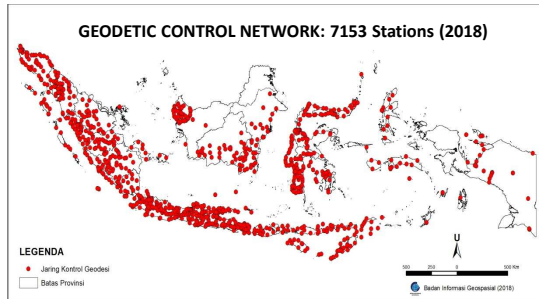
Tool for Natural Resource Management in Indonesia



Require Base and Thematic Maps

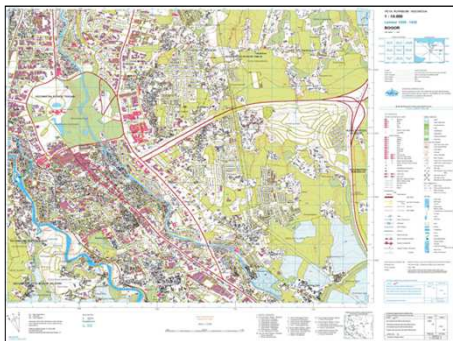


Geospatial Reference Frames of Indonesia



Basemaps of Indonesia

- Topographic Map
 - Coastal Area Map
 - Marine Area Map
- ➔ Scales of 1:1,000 to 1:1,000,000



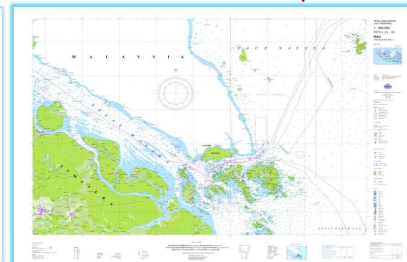
Topographic Map

Topographic layers:

1. Coastline
2. Hipsography
3. Hidrography
4. Topographic names
5. Administrative boundary
6. Transportation and utility
7. Building and public facility
8. Land cover



Coastal Area Map



Marine Area Map



Typical Requirement of Base Map in Indonesia

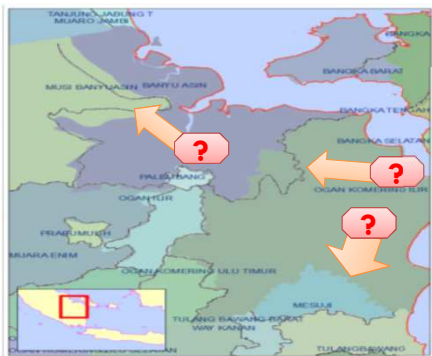
Program	Required Base Maps
One Map Policy	1 : 50.000
New Harbour Development (Maritime Toll Road)	1 : 10.000
Village Mapping	1 : 5.000
Detail Spatial Planning (RDTR)	1 : 5.000
Peatland Management	1 : 2.500
Development of Special Economic Zone and Industrial Zone	1 : 1.000
Smart City Development	1 : 1.000
Acceleration of Land Registration	1 : 500 - 1 : 5.000
Hazard Mitigation and Adaptation	1 : 1000 – 1 : 5000



One Map Policy (OMP) Background

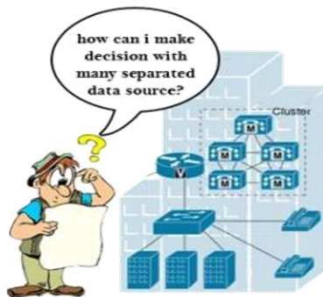
Geospatial Information issues in Indonesia:

Many Layers and Many Actors



- ❖ More than one institutions produced and published the same map without coordination;
- ❖ Several maps were not created by authorized institutions;
- ❖ Different geospatial information was published such as the number of islands and the size of forest areas;
- ❖ Overlaps of land uses permits (licenses);
- ❖ Basic Geospatial Information was rarely used as the basis for creating maps;
- ❖ Satellite imageries for the same area were purchased by more than one institutions.

how can i make decision with many separated data source?



THE PROBLEMS OF GEOSPATIAL DATA :

- ❖ *Non-Uniform Georeference.*
- ❖ *Limited Data Availability.*
- ❖ *Out of date and Inaccurate.*
- ❖ *Difficult Accessibility.*
- ❖ *No Optimum Utilization, etc.*

Low quality decision making process and consequently degrade the achievement of the national development goals

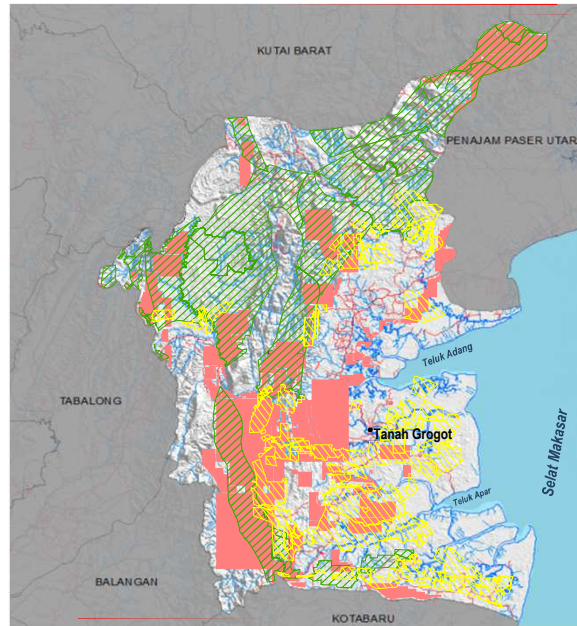


Example of Overlapping Permits due to Non Unified Maps

- Topographic Map (RBI)
- Permits of Mining Sector
- Permits of Forestry Sector
- Permits of Cadastral Sector

CREATING LEGAL, SOCIAL & ECONOMIC CONFLICTS :

- ✓ Lead to unattractive investment condition
- ✓ Hampering the development process
- ✓ Delaying the project completion
- ✓ Wasting the energy of development



PRESIDENTIAL REGULATION
NO. 9 YEAR 2016

Regarding the acceleration of implementation of **One Map Policy** on 1:50.000 scale map accuracy

Issued on 4 February 2016

ONE MAP POLICY

ONE MAP POLICY GOALS



1 GEOREFERENCE STANDARD DATA BASE GEOPORTAL

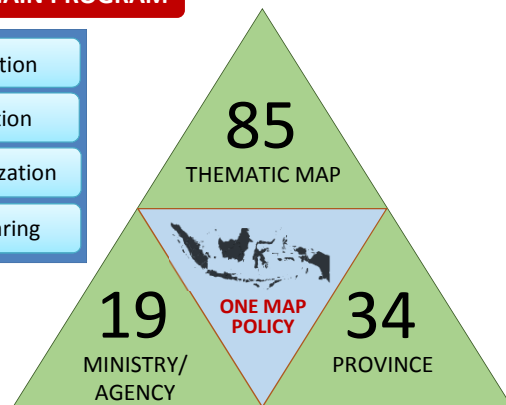
ONE MAP POLICY UTILITY

As Reference for Improving the quality of :

- Spatial Planning
- National Resources Management
- Sustainable Development
- Disaster Risk Reduction Management
- Policy and Decision Making

ONE MAP POLICY MAIN PROGRAM

- Compilation
- Integration
- Synchronization
- Data Sharing



ONE MAP POLICY

19 Ministries and 85 Thematic Maps

Involving
85
Thematic Maps



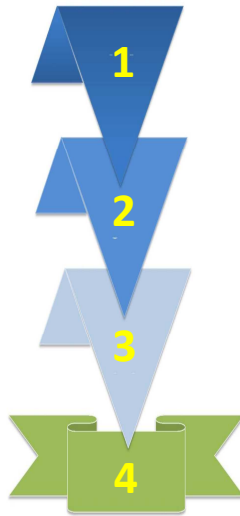
85 Thematic Maps of OMP Program

1	Peta Penetapan Kawasan Hutan (hasil Tata Batas), minimal pada skala 1:50.000	KLHK
2	Peta Izin Pemanfaatan Kawasan Hutan (IUPHHK-HA, IUPHHK-HT & IUPHHK-KLHK)	KLHK
3	Peta Hutan Tanaman Rakyat (HTR), minimal pada skala 1:50.000	KLHK
4	Peta Kawasan Hutan dengan Tujuan Khusus, minimal pada skala 1:50.000	KLHK
5	Peta Izin Usaha Pertambangan skala 1:50.000	ESDM
6	Peta Wilayah Kerja Migas skala 1:50.000	ESDM
7	Peta Hak Guna Usaha, minimal pada skala 1:50.000	ATR/BPN
8	Peta Hak Pengelolaan, minimal pada skala 1:50.000	ATR/BPN
9	Peta Hak Guna Bangunan, minimal pada skala 1:50.000	ATR/BPN
10	Peta Perda Tanah Ulayat, minimal pada skala 1:50.000	Kemendagri
11	Peta Izin Lokasi, minimal pada skala 1:50.000	ATR/BPN
12	Peta penetapan Kawasan Ekonomi Khusus (KEK), minimal pada skala 1:50.000	Kemendagri
13	Peta Kawasan Industri Eksisting skala 1:50.000	Kemendagri & Kemendagri
14	Peta Rencana Kawasan Industri skala 1:50.000	Kemendagri & Kemendagri
15	Peta Kawasan Perdagangan Bebas dan Pelabuhan Bebas (KPBB), minimal pada skala 1:50.000	ATR/BPN
16	Peta Persebaran Lokasi Transmigrasi skala 1:50.000	KPDT
17	Peta Persebaran Kawasan Transmigrasi skala 1:50.000	KPDT
18	Peta PP RTRWN skala 1:1.000.000	ATR/BPN
19	Peta Perda RTRW Provinsi skala 1:250.000	ATR/BPN
20	Peta Perda RTRW Kabupaten skala 1:50.000 dan Perda RTRW Kota skala 1:250.000	ATR/BPN
21	Peta Rencana Pembangunan Jangka Menengah Nasional skala 1:250.000	PPN/BAPPENAS
22	Peta RKP skala 1:250.000	PPN/BAPPENAS
23	Peta Penutup Lahan skala 1:50.000	BIG
24	Peta Perpres RTR KSN skala 1:50.000	ATR/BPN
25	Peta kawasan Wilayah Pertahanan skala 1:1.000.000	Kemendagri
26	Peta Rinci Wilayah Pertahanan skala 1:50.000	Kemendagri
27	Peta RZWP3K Provinsi skala 1:250.000	KKP
28	Peta Bagian RZWP3K skala 1:50.000	KKP
29	Peta Rencana Tata Ruang Laut Nasional skala 1:1.000.000	KKP
30	Peta Lokasi Pelabuhan perikanan skala 1:50.000	KKP
31	Peta Sebaran Pelabuhan Umum skala 1:50.000	Kemendagri
32	Peta Sebaran Pelabuhan Penyeberangan skala 1:50.000	Kemendagri
33	Peta Sebaran Terminal Khusus skala 1:50.000	Kemendagri
34	Peta Sebaran Bandara skala 1:50.000	Kemendagri
35	Peta Sebaran Jaringan Rel dan Stasiun KA skala 1:50.000	Kemendagri
36	Peta jaringan listrik skala 1:50.000	ESDM
37	Peta sebaran lokasi gardu induk skala 1:50.000	ESDM
38	Peta lokasi Pembangkit Listrik skala 1:50.000	ESDM
39	Peta sebaran Pembangkit Listrik skala 1:50.000	ESDM
40	Peta Jaringan Pipa Migas skala 1:50.000	ESDM

41	Peta Jaringan Serat Optik, skala 1:50.000	Kemkominfo
42	Peta Jalan Nasional, Jalan Tol, Jalan Provinsi, dan Jalan Kabupaten skala 1:50.000	PUPR
43	Peta Sebaran Lokasi Tempat Pembuangan Akhir (TPA) skala 1:50.000	PUPR
44	Peta Sebaran Lokasi Instalasi Pengolahan Air Limbah (IPAL) dan Instalasi Pengolahan Air Bersih (IPAB) skala 1:50.000	PUPR
45	Peta Sebaran Lokasi SPAM skala 1:50.000	PUPR
46	Peta sebaran lokasi Bendungan skala 1:50.000	PUPR
47	Peta Daerah Irigasi Permukiman skala 1:50.000	PUPR
48	Peta Sebaran Lokasi Sabo DAM skala 1:50.000	PUPR
49	Peta Sebaran Lokasi Pengaman Pantai skala 1:50.000	PUPR
50	Peta Sebaran Lokasi Rusunawa skala 1:50.000	PUPR
51	Peta Air Tanah skala 1:50.000	PUPR
52	Peta Ketersediaan Air skala 1:250.000	PUPR
53	Peta Penggunaan Tanah skala 1:50.000	ATR/BPN
54	Peta Lahan Gambut skala 1:50.000	Kemendagri
55	Peta Neraca SD Hutan skala 1:250.000	KLHK
56	Peta Daerah Aliran Sungai (DAS) skala 1:50.000	KLHK
57	Peta Geologi skala 1:100.000	ESDM
58	Peta Kawasan rawan Bencana Gunung Api skala 1:50.000	ESDM
59	Peta Kawasan Rawan Bencana Gempa Bumi skala 1:50.000	ESDM
60	Peta Kawasan Rawan Bencana Zona Kerentanan Gerakan Tanah skala 1:50.000	ESDM
61	Peta Kawasan Rawan Bencana Tsunami skala 1:50.000	ESDM
62	Peta Hidrogeologi skala 1:100.000	ESDM
63	Peta Tanah Semi-detil skala 1:50.000	Kemendagri
64	Peta Curah Hujan dan Hari Hujan skala 1:50.000	BMKG
65	Peta Potensi Energi Matahari dan Angin skala 1:250.000	BMKG
66	Peta Lahan Sawah skala 1:50.000	ATR/BPN
67	Peta Lahan Sawah skala 1:50.000	Kemendagri
68	Peta Wilayah Pengelolaan Perikanan Negara Republik Indonesia (WPPNRI) 1:KPP	Kemendagri
69	Peta Jenis dan Kekayaan Perikanan tangkap di WPPNRI skala 1:250.000	Kemendagri
70	Peta Kawasan Bentang Alam Karst skala 1:50.000	ESDM
71	Peta Sumberdaya Mineral skala 1:50.000	ESDM
72	Peta Sumberdaya Batubara skala 1:50.000	ESDM
73	Peta Sumberdaya Panasbumi skala 1:50.000	ESDM
74	Peta Sistem Lahan (Morfologi) skala 1:50.000	BIG
75	Peta Morfometri Bentang Lahan skala 1:50.000	BIG
76	Peta Batas Administrasi Provinsi skala 1:50.000	Kemendagri
77	Peta Batas Administrasi Kabupaten/Kota skala 1:50.000	Kemendagri
78	Peta Batas Administrasi Desa/kelurahan skala 1:10.000	Kemendagri
79	Peta Batas Darat Negara skala 1:25.000	Kemendagri
80	Peta Batas Laut Negara skala 1:1.000.000	Kemendagri
81	Peta Potensi Desa (sosial-ekonomi), minimal pada skala 1:50.000	BPS
82	Peta kawasan Cagar Budaya skala 1:50.000	Kemendagri
83	Peta Sebaran Lokasi Cagar Budaya, skala 1:50.000	Kemendagri
84	Peta Penunjukkan Kawasan Hutan skala 1:250.000	KLHK
85	Peta Zonasi Kawasan Konservasi skala 1:50.000	KLHK
86	Peta Zonasi Kawasan Konservasi Perairan skala 1:50.000	KLHK dan KKP



Steps of One Map Policy Activity



COMPILATION

Thematic data collection from Ministries/Agencies as Data Producer (Custodian) .



1
GEOREFERENCE
STANDARD
DATA BASE
GEOPORTAL

INTEGRATION

Thematic data integration processes which refer to the National Standard Base Map produced by BIG .

SYNCHRONIZATION

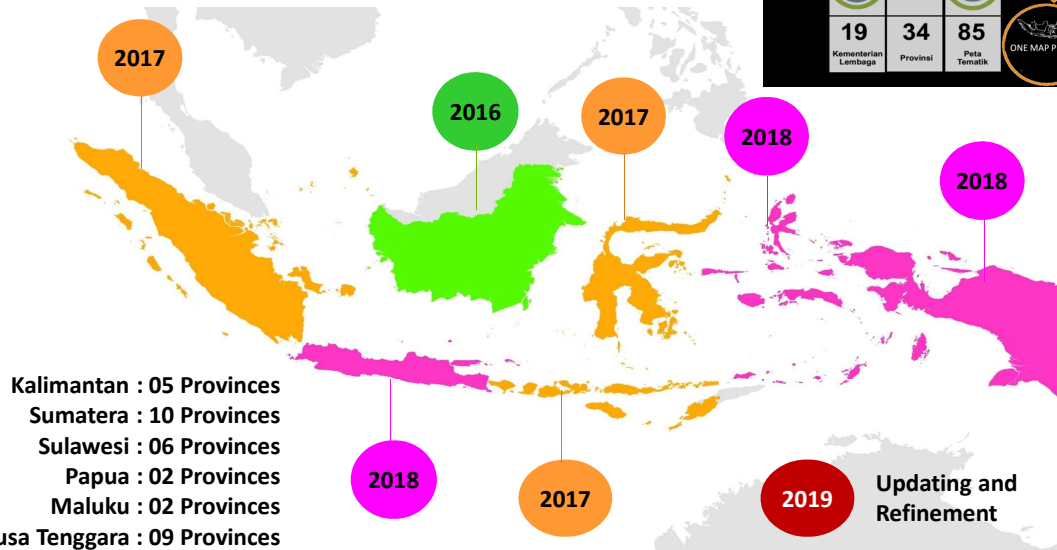
Synchronizing thematic maps among ministries/agencies which include solving land use conflicts.

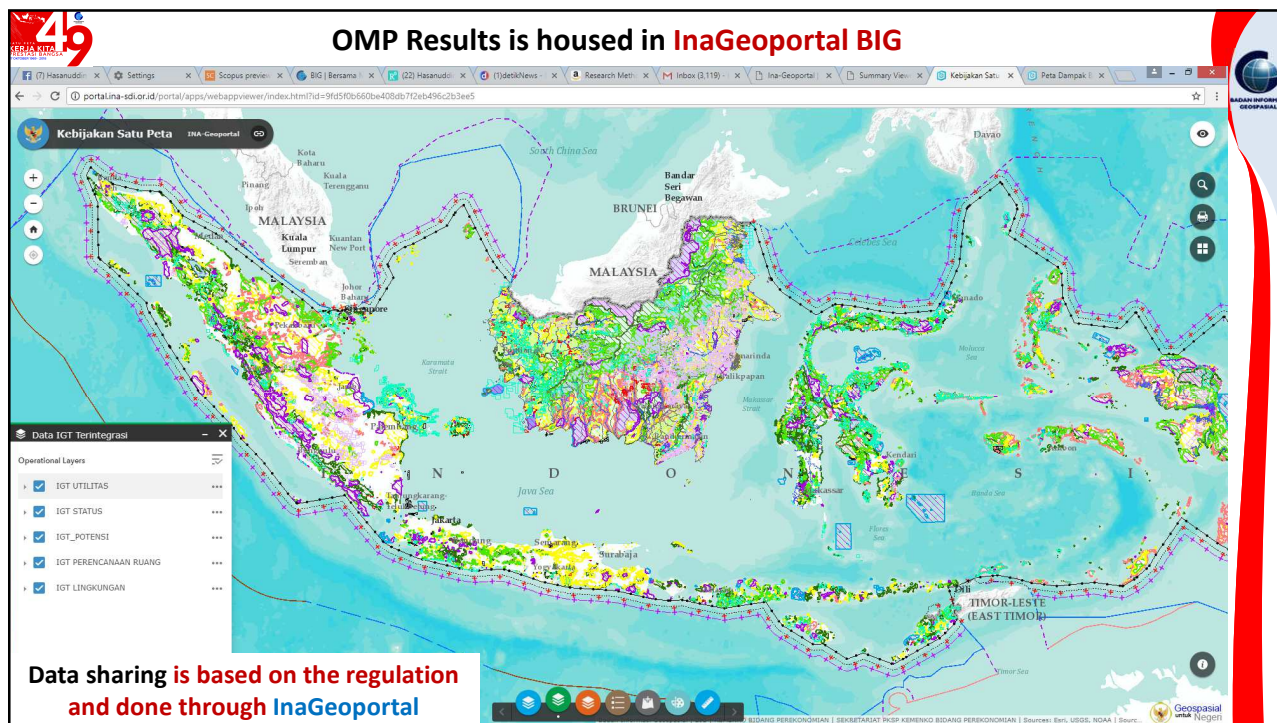
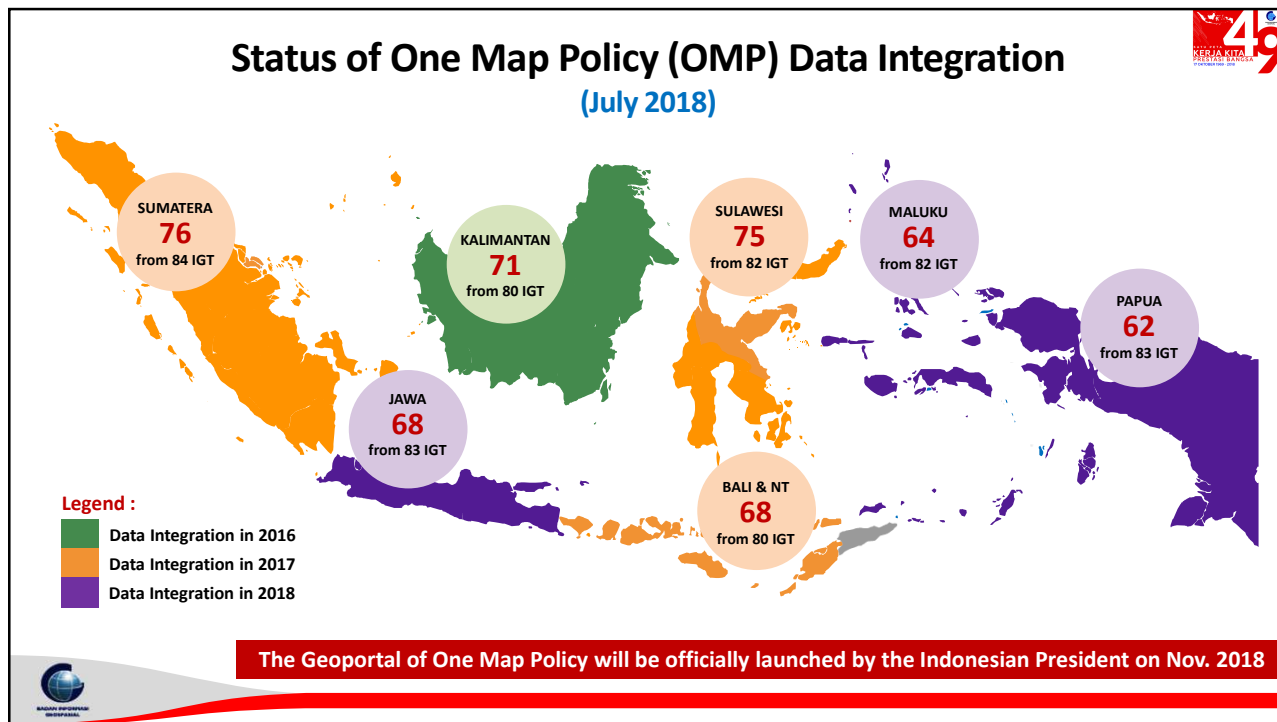
DATA SHARING

Product of OMP will be shared through InaGeoportal to ministries/agencies involved.

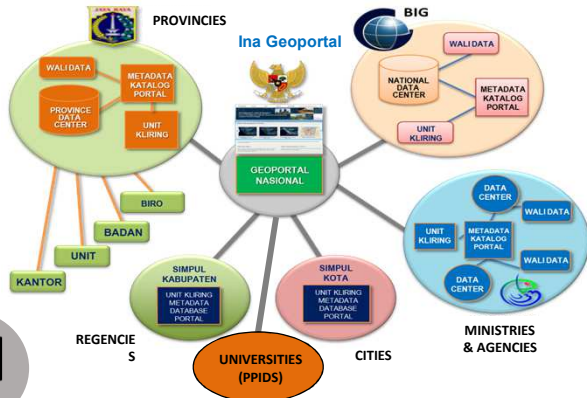
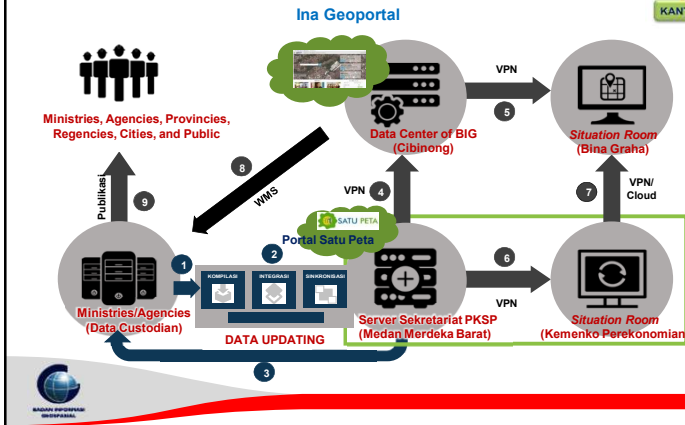


Priority Areas of One Map Policy (2016-2019)





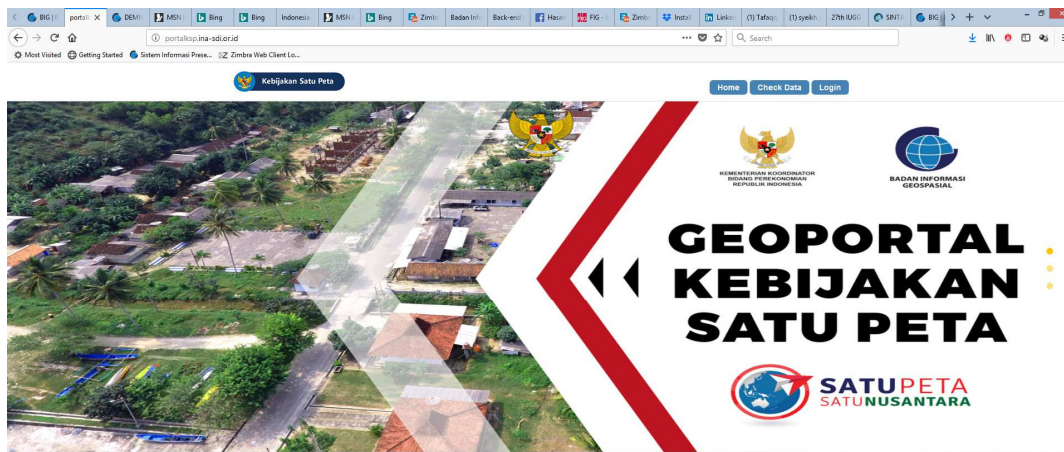
Indonesian National Geospatial Information Network (NGIN)



Status of NGIN Nodes		
	TARGET	CONNECTED
Ministries/Agencies	57	23
Provinces	34	34
Regencies/Cities	514	22
Universities	34	19

Ina-GeoPortal : National Geospatial Information Network, <http://tanahair.indonesia.go.id>

OMP-Geoportal inside InaGeoportal, <http://portalksp.ina-sdi.or.id/>



OMP-Geoportal is only available for OMP stakeholders, and governed by data sharing protocol.

85 Peta Tematik

Peta tematik dalam Pelaksanaan Kebijakan Satu Peta mencakup 7 (tujuh) tema, yaitu batas wilayah, kehutanan, perencanaan ruang, sarana prasarana, pertanian dan pertanahan, sumber daya alam dan lingkungan, kawasan khusus dan transmigrasi. Kelujuh tema tersebut tersebar di 34 Provinsi yang menjadi kewenangan 19 (sembilan belas) Kementerian/Lembaga yang terlibat sebagai Walidata IGT



InaGeoportal is connected to the network nodes of Ministries, Agencies, Provinces, Districts

Number of Geospatial Information Metadata

Province	Metadata Count
Aceh	433
Jambi	349
Sulawesi Selatan	229
Sulawesi Tengah	200

The screenshot displays the InaGeoportal interface. On the left, a sidebar lists various government entities with their status (e.g., 'Terhubung'). The main content area shows a grid of metadata counts for different provinces, with Sulawesi Selatan and Sulawesi Tengah highlighted in a red dashed box. Below this, there are news articles and a login section. The footer contains navigation links and contact information for the National Geospatial Information Agency (BIG).


Status of Network Nodes of Ministry/Agency

August 2018 Status

 **8** ALREADY OPERATIONAL


-  Kementerian LHK
-  Kementerian ESDM
-  Kementerian PUPR
-  Kementerian Pertanian
-  Kemenko Perekonomian
-  Kementerian ATR/BPN
-  BIG
-  BMKG

Already connected to NIGN and has supporting regulation

 **10** ALREADY OPERATIONAL BUT NOT YET OPTIMAL*

-  Kementerian Kelautan dan Perikanan
-  Kementerian Perhubungan
-  Kementerian Luar Negeri
-  Kementerian Desa, PDT, dan Transmigrasi
-  BPS
-  Kementerian Kominfo
-  Kementerian Dalam Negeri
-  Kementerian Dikbud
-  Kementerian Perindustrian
-  Kementerian PPN/Bappenas

** Already connected to NIGN but no supporting regulation yet*

 **1** NOT YET OPERATIONAL **

-  Kementerian Pertahanan

*** Not yet connected to NIGN but has supporting regulation*




Ref. Kemenko Perekonomian (Agt. 2018)



Status of Network Nodes of Provinces

August 2018 Status

 **15** ALREADY OPERATIONAL

 **19** ALREADY OPERATIONAL BUT NOT YET OPTIMAL*



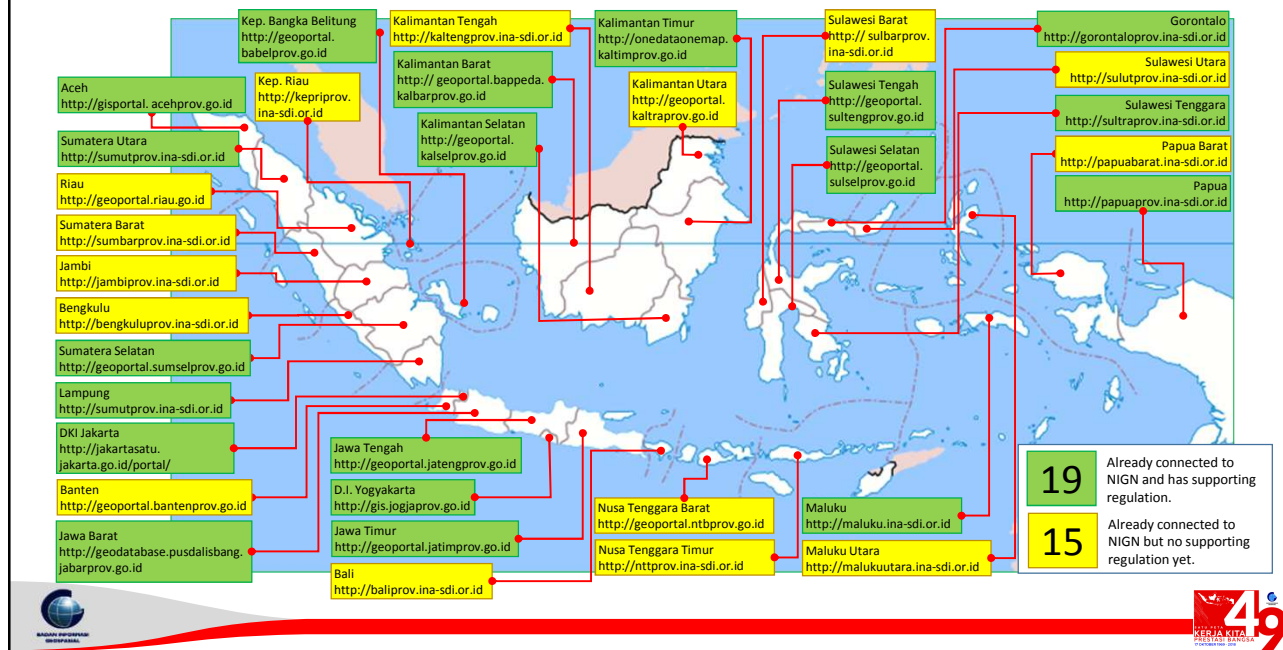
** Already connected to NIGN but no supporting regulation yet*



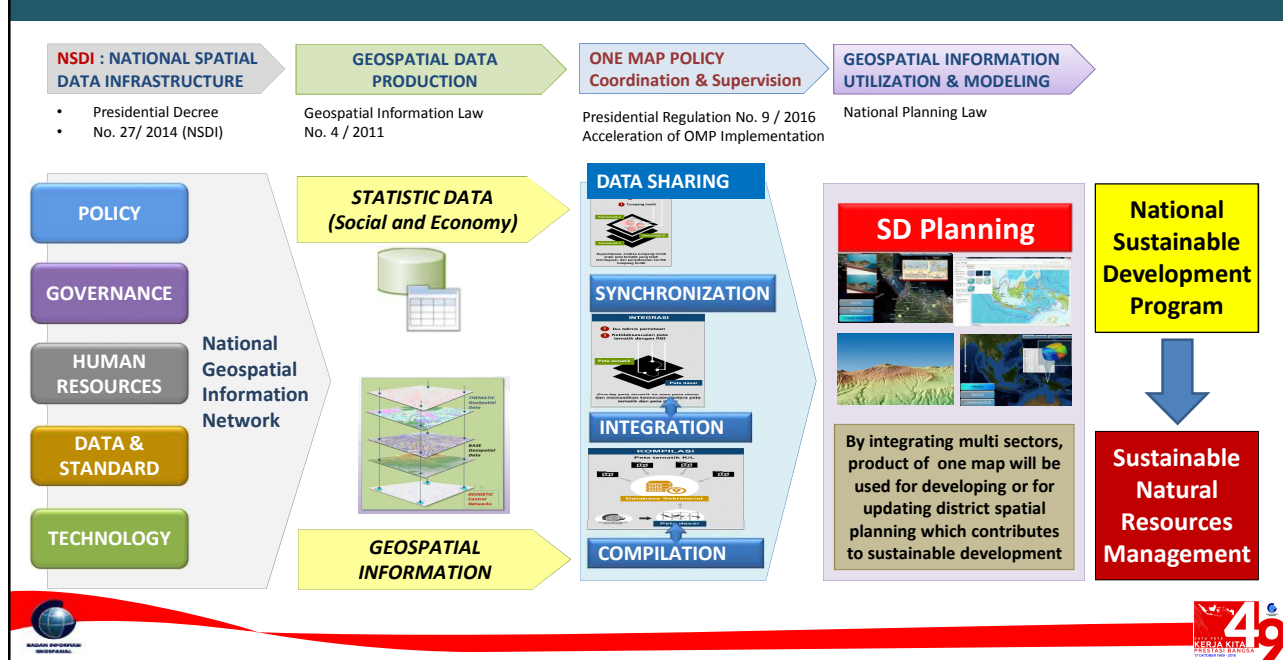
Ref. Kemenko Perekonomian (Agt. 2018)



Geoportal Address of Provinces (August 2018)



Closing Remark (1): Geospatial Information and National Resources Management



Closing Remark (2): Future of One Map Policy

- ✓ **Geoportal** housing OMP data will be launched on November 2018. The **synchronization** stage is continuing.
- ✓ **Data Sharing** of OMP data is based on regulation.
- ✓ **The National Geospatial Information Network** is being completed to support data sharing of OMP data.
- ✓ **Several issues for OMP continuation:**

- | | |
|---|--|
| • Utilization of OMP Data in Decision Making Process of Central and Local Governments | • Human Resource Development |
| • Toward Larger Scale of 1:5.000 | • Institutional and Policy Enhancement |
| • Inclusion of other Thematic Maps | |
| • Adding more Stakeholders, e.g. NGO and Private Sector | |

