



INTEGRATING LAND AND SEA FOR SPATIAL PLANNING IN A COASTAL AREA: A CASE STUDY OF INDONESIA

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Date:
Monday, December 2, 2024



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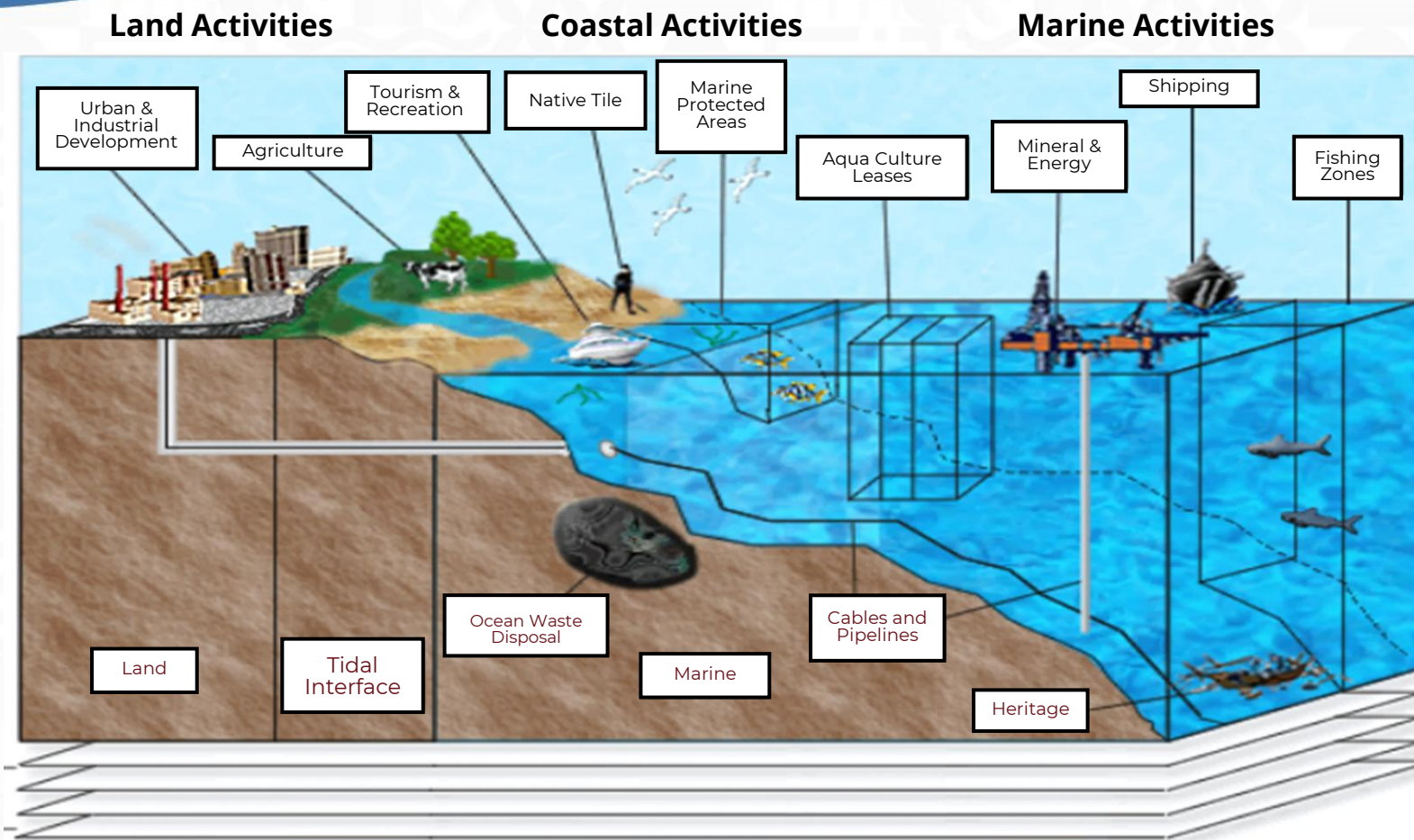
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Key Principles

- ▶ Land and Sea Integrated
- ▶ Zoning Regulation
- ▶ Public Participation
- ▶ Clean and Clear Cadastre Data



Marine Cadastre Concept Diagram, Abba Rajabifard, et al 2014

Challenges

- ▶ Enviromental Degradation
- ▶ Conflict Interest
- ▶ Urbanization
- ▶ Coastal Disaster

Sustainable Development



THE IMPORTANCE OF SPATIAL PLANNING IN COASTAL AREAS

BACKGROUND

- Indonesian's coastal line: 99.093 km²;
- Coastal activities: tourism, fishing, industry, many more;
- Biodiversity;
- Disaster Risk Management;
- SDG's, Blue Economy.

REGULATIONS

- 1 **Law No. 26 of 2007** on Spatial Planning
- 2 **Law No. 27 of 2007** (amended by Law No. 1 of 2014) on the Management of Coastal Areas and Small Islands
- 3 **Law No. 6 of 2023**, on concerning Job Creation
- 4 **Law No. 21/2021** (PP) Number 21/2021 concerning Implementation of Spatial Planning
- 5 **Local Regulations** (e.g., RTRW, RDTR)
- 6 **Regulations of The Minister of Agrarian and Spatial Planning 18/2021** concerning Procedures for Determining Management Rights and Rights of Land
- 7 **Regulation of Minister of Agrarian and Spatial Planning/ Head of the National Land Agency No. 13/2021** Implementation of the Confirmity of Space Utilization Activites and Synchronization of Space Utilization Programs





Integration of Land and Sea Spatial Planning after Law No. 6/2023, concerning Job Creation

► Spatial planning includes land space, sea space, and air space, including space within the earth as a single entity (one spatial planning document). Management of sea and air space resources is regulated by a separate law.

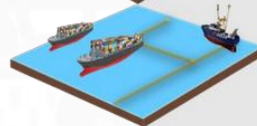
air space



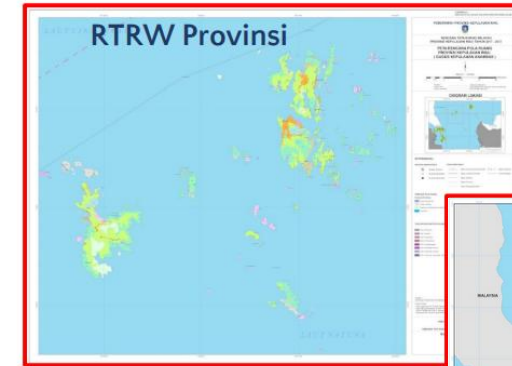
land space



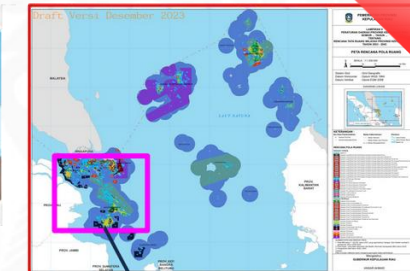
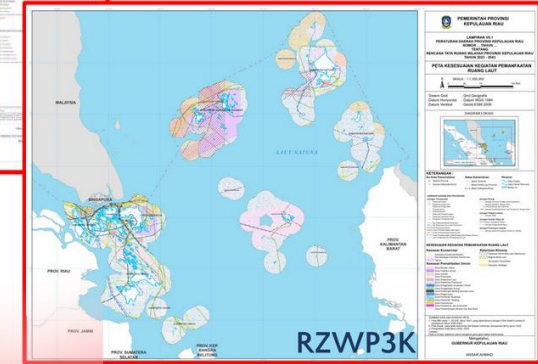
sea space



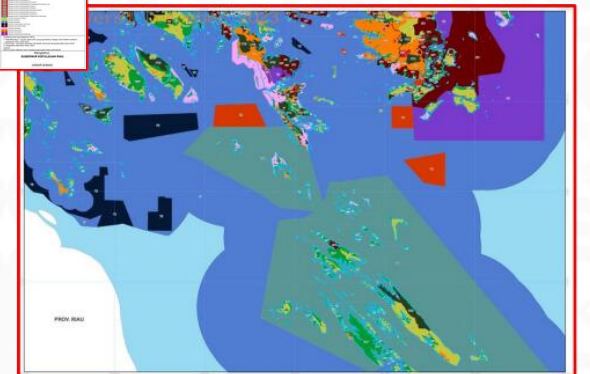
space within the earth



Regional Spatial Plan.
space **before**
the publication of UUCK



Regional Spatial Plan (RTRW) in one
local regulation **after**
the publication of UUCK



contains land and sea
spatial plan.



RZWP3K

RENCANA STRUKTUR RUANG LAUT	
Pusat Pertumbuhan Kelautan	
1. Pusat Pertumbuhan Kelautan dan Perikanan	
2. Pusat Industri Kelautan dan Perikanan	
Sistem Jaringan Transportasi	
1. tatanan kepelabuhanan nasional	
2. pelabuhan lainnya	
3. alur pelayaran	
Sistem jaringan energi dan ketenagalistrikan	
1. pipa bawah laut minyak dan gas bumi	
2. pipa fluida lainnya*	
3. instalasi minyak dan gas bumi	
4. kabel bawah laut untuk ketenagalistrikan	
Sistem jaringan telekomunikasi	
1. kabel bawah laut untuk telekomunikasi	
2. kabel bawah laut untuk mitigasi bencana	
Sistem jaringan sumber daya air**	
1. sumber air	
2. prasarana sumber daya air	

INTEGRASI STRUKTUR RUANG LAUT DAN DARAT DALAM RTRWP

(penyesuaian dengan Permen KP No. 28/2021 Penyelenggaraan Penataan Ruang Laut dan Permen ATR/BPN No. 14/2021 Pedoman Penyusunan Basis Data RTRW Provinsi)

RENCANA STRUKTUR RUANG	
Sistem Pusat Permukiman (PKN, PKW, PKSN dan PKL)	
Sistem jaringan transportasi (termasuk pelabuhan laut dan alur pelayaran)	
Sistem jaringan energi	
Sistem jaringan telekomunikasi	
Sistem jaringan sumber daya air	
Sistem jaringan prasarana lainnya	

RTRWP

Catatan :

* Pipa fluida lainnya dapat diintegrasikan ke dalam struktur ruang RTRWP sesuai dengan jenis fluidanya.

**Sistem jaringan sumber daya air dalam RZWP3K dapat dipadankan dengan sistem jaringan sumber daya air atau dengan sistem jaringan prasarana lainnya, tergantung jenis jaringannya.



RZWP3K

KAWASAN KONSERVASI DI LAUT
KAWASAN PEMANFAATAN UMUM
Pertambangan minyak dan gas bumi
Pertambangan mineral dan batu bara
Pengelolaan energi
Perikanan tangkap
Perikanan budidaya
Pergaraman
Industri
Pariwisata
Permukiman
Perdagangan barang dan/atau jasa
Fasilitas umum
Pelabuhan umum
Pelabuhan perikanan
Bandar udara
Pertahanan dan keamanan
Dumping area
Pengelolaan ekosistem pesisir
Pemanfaatan air laut selain energi
Wilayah kelola Masyarakat Hukum Adat
Pemanfaatan lainnya sesuai dengan karakteristik biogeofisik lingkungannya

INTEGRASI POLA RUANG LAUT DAN DARAT DALAM RTRWP

KAWASAN PERUNTUKAN LINDUNG

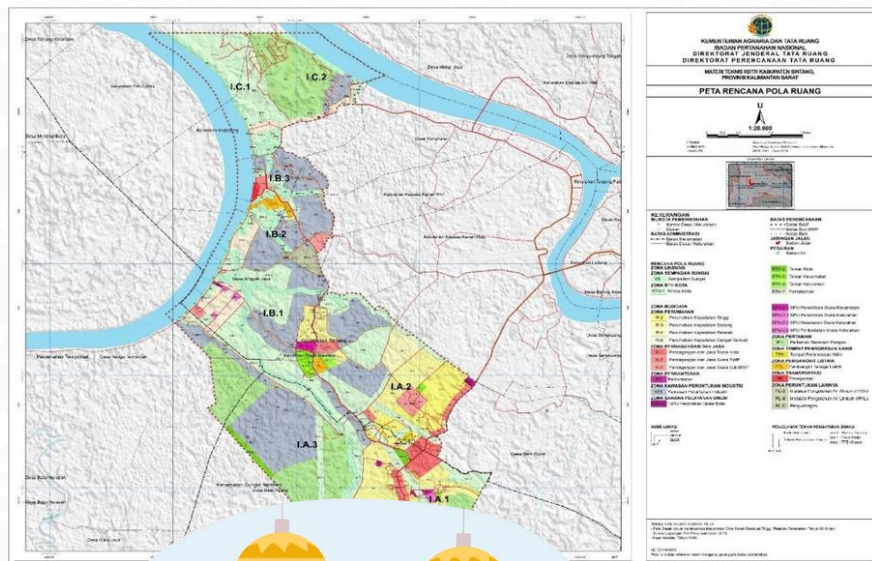
Kawasan yang memberikan perlindungan terhadap kawasan bawahannya
Kawasan perlindungan setempat
Kawasan konservasi
<i>Kawasan pencadangan konservasi di laut*</i>
Kawasan hutan adat
Kawasan lindung geologi
Kawasan cagar budaya
Kawasan ekosistem mangrove

KAWASAN PERUNTUKAN BUDIDAYA

Kawasan hutan produksi
Kawasan perkebunan rakyat
Kawasan pertanian
Kawasan perikanan
<i>Kawasan pergaraman*</i>
Kawasan pertambangan dan energi
<i>Kawasan pemanfaatan air laut selain energi*</i>
Kawasan peruntukan industri
Kawasan pariwisata
Kawasan permukiman
Kawasan transportasi*
Kawasan pertahanan dan keamanan
<i>Kawasan pembuangan di laut*</i>

RTRWP





PP No. 21/2021: Article 93 paragraph (3), Article 113 paragraph (3), Article 129 paragraph (3), Article 208, Article 237 - 239

Inclusiveness of Spatial Planning Implementation

The Member of Spatial Planning forum Consist of:

- Relevant Ministries/Departments;
- Professional Associations
- Academic Associations
- Community Leaders

The Role of the Spatial Planning Forum in Utilizing Space and Improving the Quality of Spatial Planning

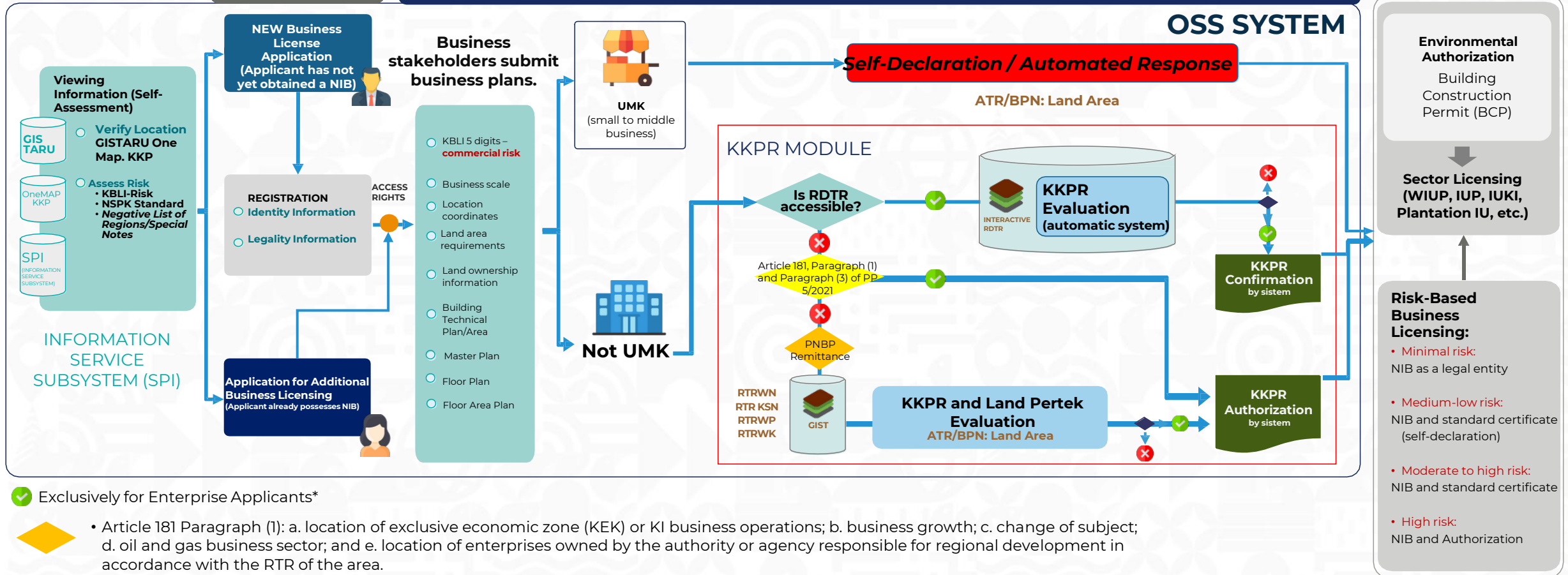
- 1 Providing Recommendations for Reviewing RDTR More Than Once in 5 Years
Article 93 PP No. 21/2021
- 2 Provide consideration for KKPR approval to conduct business activities and non-business activities
Article 113 and Article 129 of PP No. 21/2021
- 3 Providing Facilitation for Settlement of Spatial Planning Disputes
Article 208 of PP No. 21/2021



Business Identity Registration Process

Business Process of Suitability for Spatial Plan Utilization Activities (formerly known as Location Permit)

Business Licensing



✓ Exclusively for Enterprise Applicants*



- Article 181 Paragraph (1): a. location of exclusive economic zone (KEK) or KI business operations; b. business growth; c. change of subject; d. oil and gas business sector; and e. location of enterprises owned by the authority or agency responsible for regional development in accordance with the RTR of the area.
- Article 181 Paragraph (3): the construction of MBR houses shall not exceed an area of 5 (five) hectares (.

PP No. 21/2021: Articles 100–115, Articles 135–143 of the CK Law: Article 13, Article 14, Article 15 of the CK Law

PNBP in accordance of PP 21/2021, PMK 143/2021, and ATR/BPN Regulation 35/2021 Article 8(b)



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Allocation of Land Rights in Aquatic and Coastal Regions

Law 18/2021 concerning Management Rights and Rights of Land,; **Law No. 21/2021** concerning Implementation of Spatial Planning; **Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of National Land Agency 17/2016** concerning coastal area management; Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of National Land Agency 18/2021

Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of National Land Agency Number 17/2016 regarding Land Management in Coastal Areas is implemented through the provision of Land Rights to:

- shore; and
- **coastal waters extending from the coastline into the sea up to the provincial sea boundary**

Provision of Right for **Coastal Regions** intended for :

- building that utilized for protection and safety;
- dock or wharf;
- beachgoer safety observation tower;
- **the residence of the customary law community or its members who have inhabited that location for generations; and/or**
- power station

Issuance of Right for **Coastal Waters** Areas:

- state strategic initiatives;
- public welfare
- **settlements on water for communities governed by customary law; and/or**
- tourist

Law No. 21/2021 (PP) Number 21/2021 concerning Implementation of Spatial Planning:

Coastal waters refer to the seas that are **adjacent to land, encompassing areas that extend 12 nautical miles from the coastline. This includes the waters that link the coast with islands**, as well as estuaries, bays, shallow waters, brackish swamps, and lagoons.

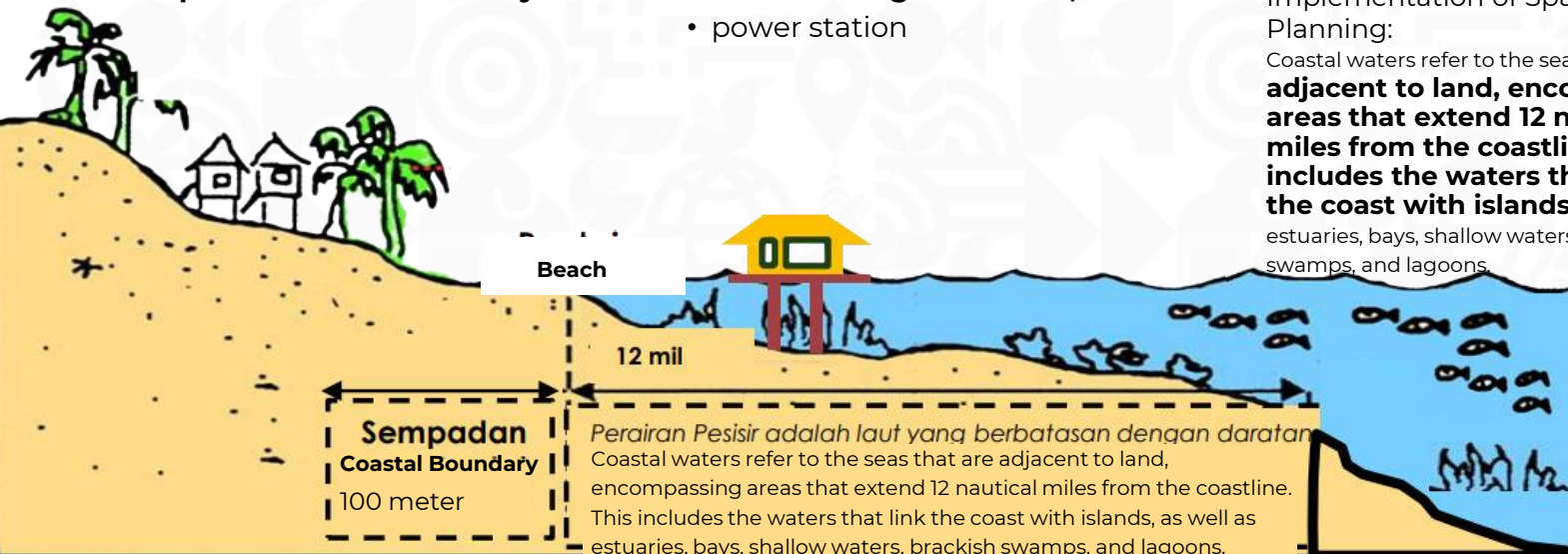
Reinforced in PP 18/2021

Article 65 paragraph (2) "The allocation of land rights in aquatic regions is conducted based on permits issued by the ministry responsible for government affairs in the maritime and fisheries sector, in accordance with the stipulations of statutory regulations."

Minister of Agrarian Affairs and Spatial Planning/Head of National Land Agency Regulation No. 18 of 2021

- For business activities, the issuance of HPL and/or HAT necessitates KKPRL approval/KKPRL Confirmation (Article 197);
- **For individuals, the provision of HPL and/or HAT necessitates the control and utilization of the land for a minimum of 20 consecutive years** by the individual or their predecessor (Article 198).

This article has been coordinated/harmonized with the Ministry of Maritime Affairs and Fisheries prior to publication.



Existing Condition



Existed Before
Independence



State Was Formed



Rules Were Made



1

Dobo, Kepulauan
Aru

2

Sampit, Kotawaringin
Timur

3

Lombok,
Pulau Lombok



How to respond to
the situation?

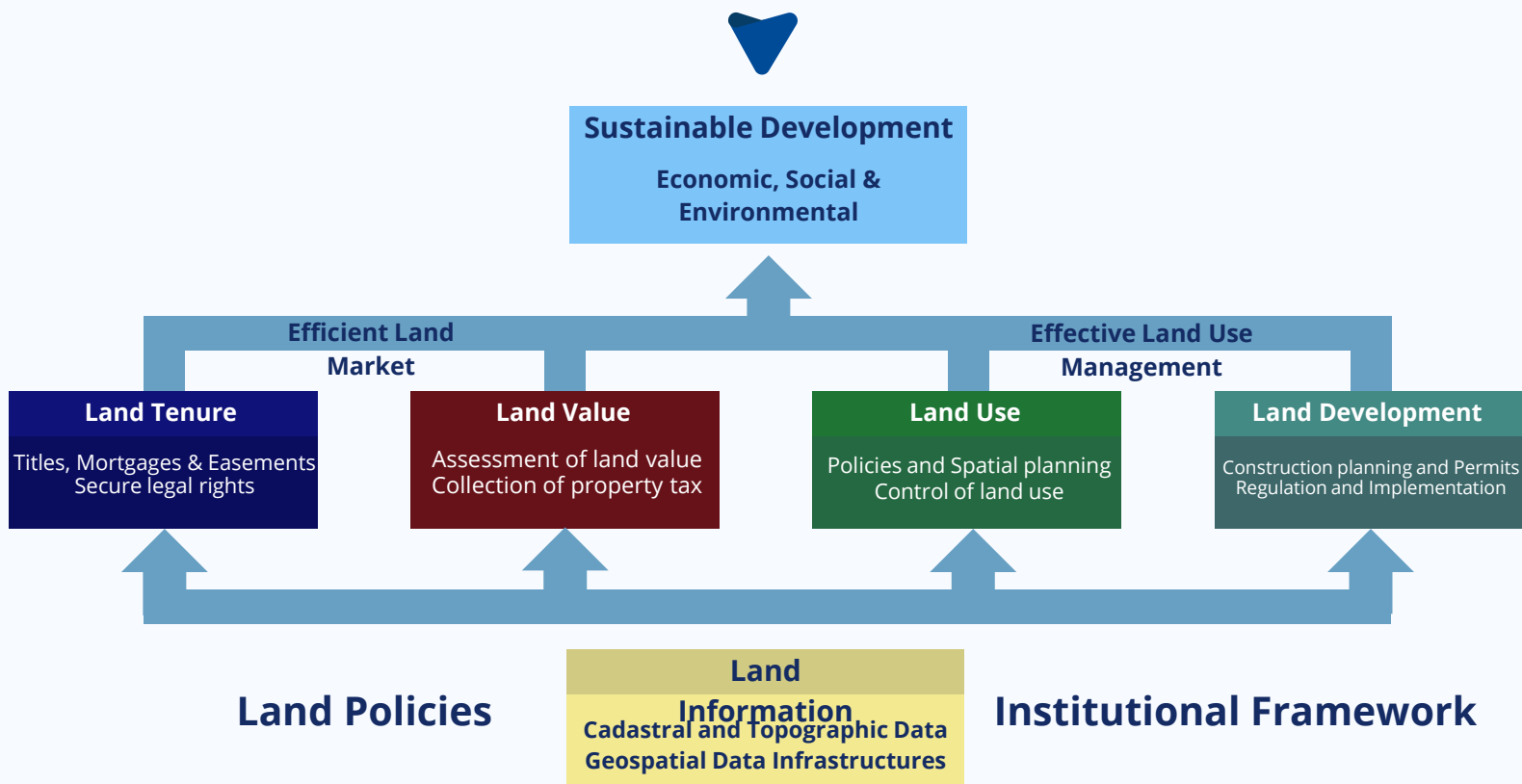


“The entire **earth, water, and space**, including the natural resources contained within them in the territory of the Republic of Indonesia, as a blessing from God Almighty, belong to the Indonesian nation wealth and controlled by the State as the organization of power representing all the people.”

To regulate and organize the allocation, use, supplies and maintenance

To determine and regulate legal relationships

To determine and regulate legal actions



* In cadastre, land is considered equivalent to earth, water, and space.



CADASTRE DEVELOPMENT

BEYOND COMPLETE CADASTRE (Cadastre 2034)

Thematic Map

Land tenure, land value, land use and land development

Land Parcel Map

Land parcel map with accuracy
Non forest estate : 70,4 million ha
Parcel mapped : 55,9 million ha
Target : 14,5 million Ha (as of Nov 2024)

Base Map

Orthophoto



Open Land Data : Bhumi
ATR/BPN

- **Spatial Planning**
- **Smart City**
- **Urban Development and Infrastructure**
- **Disaster Mitigation and Management**
- **Many more...**



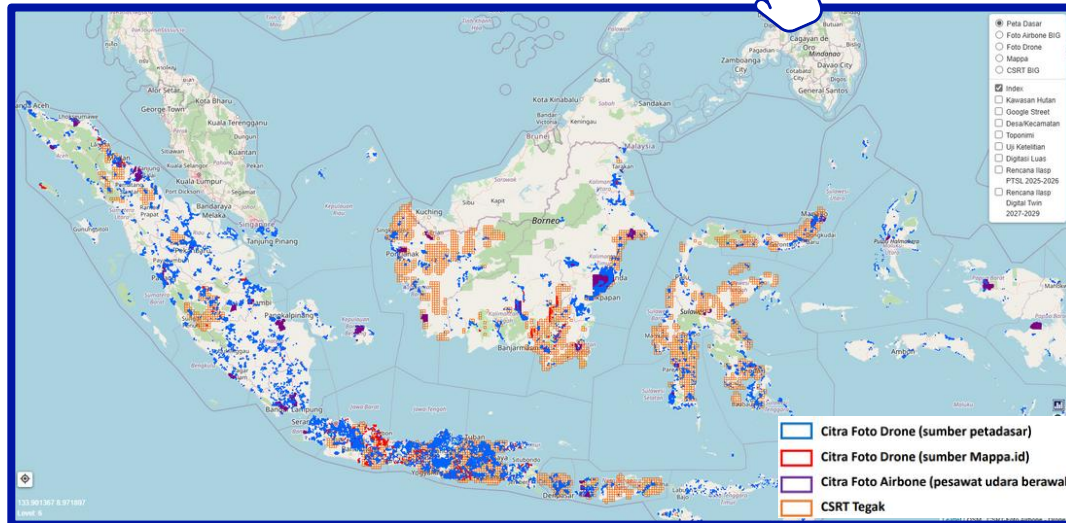
(LAND) BASE MAP

A land base map refers to a map or model that includes CSRT, aerial photographs, elevation data, and building modeling, among other corrected forms, serving as a foundational map for all land and space mapping activities.

The Land Base Map is available on the following platforms:



<https://petadasar.atrbpn.go.id>



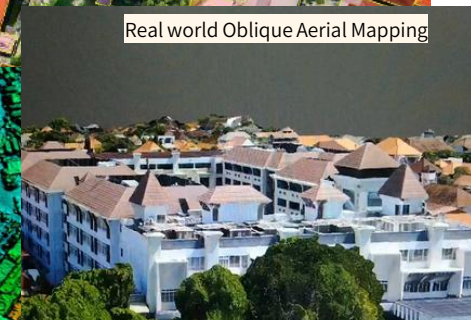
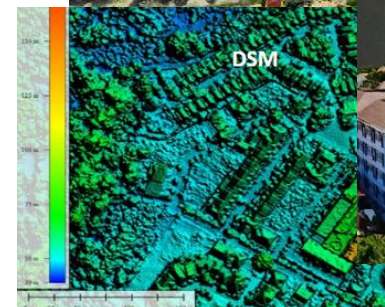
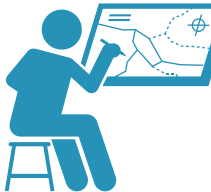
➤ Base Map uploaded as a unified source of truth for mapping activities.

➤ 2D base maps (CSRT, Orthophotos from Drone Mapping, Building footprint delineation using AI technology) and 3D (DTM, Point Cloud elevation) to facilitate multipurpose cadastre and Digital Twin.

PDP Precision (m):

Tahun	GSD	Horizontal	Vertikal
2023	≤0,15	≤0,50	
2024	≤0,12	≤0,40	≤2

Based on the following precision, the land base map can be utilized for large-scale mapping at a ratio of 1:1,000.



In the 2023-2024 period, a **pilot project for 3D data acquisition was conducted in 6 cities: Bogor, Badung, Denpasar, Depok, Surakarta, and Surabaya.**

It is anticipated that these 3D outcomes can be utilized for **3D-based land mapping (3D Cadastre).**



APL Area
70,407,331 Ha



PDP Coverage
41,307,424 Ha



Not yet available
29,099,907 Ha



3,196
25,508,716 if
CSRT



61,333
2,207,988 Ha
Aerial Photographs



377,520
13,590,720 Ha
Drone

Case Study

Bali, Indonesia

<https://petadasar.atrbpn.go.id>



The selection of locations based on regions that have evolved into fully developed cities or regencies (**Complete City/Regent = 104 in 2025**), as well as urban areas currently undergoing organization and preparation to achieve full city or regency status, with the aim of enhancing **B-Ready (formerly known as Ease of Doing Business (EoDB))**.



Above and Below Ground Mapping Concept

Map the plot of land

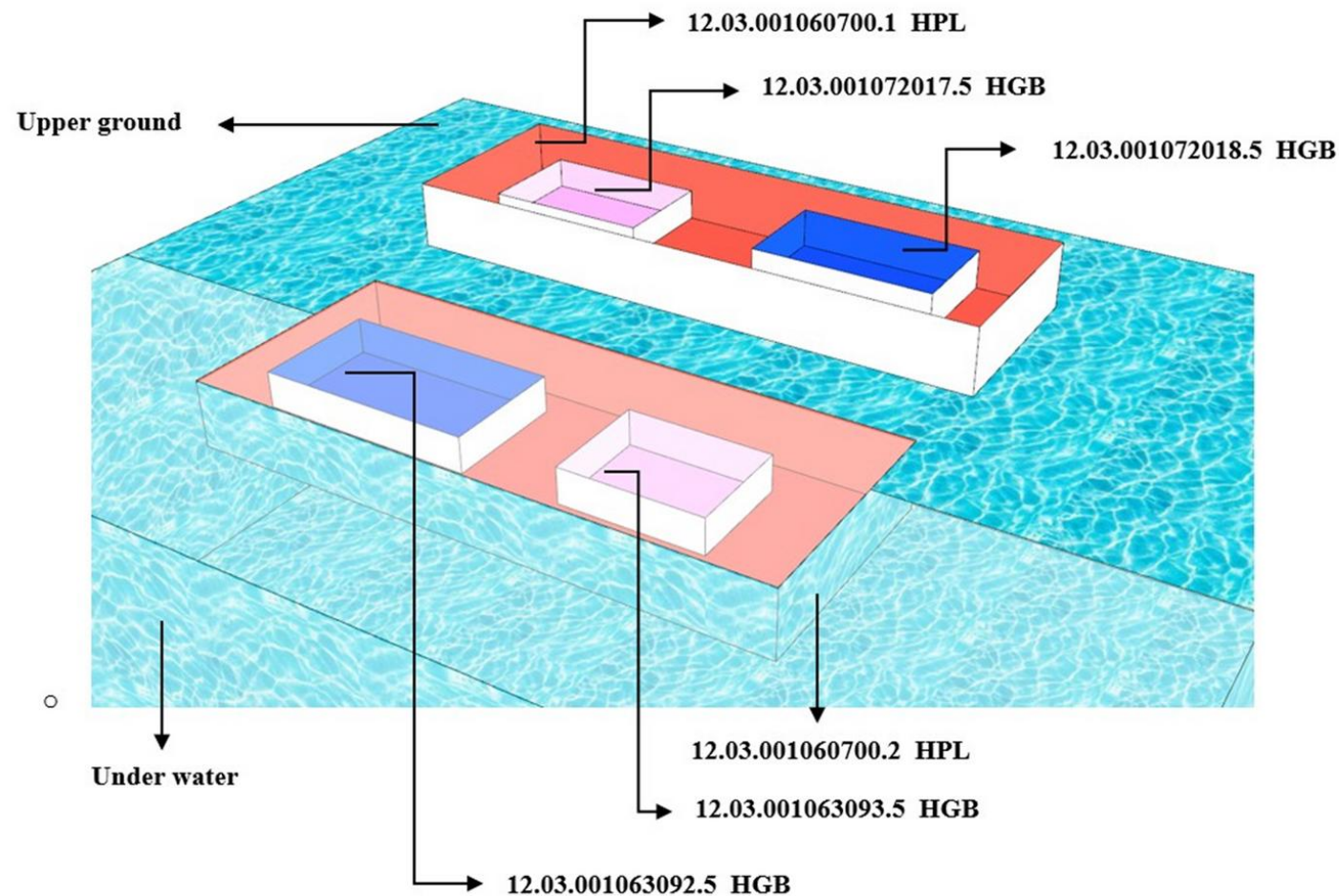


Give the land unique parcel code



Right Granted, but the landuse is limited
(Rights, Restriction, Responsibilities)

Final Target: Protect community rights, but also maintain ecosystem sustainability.



Case Study

Granting Land Titles for settlements of indigenous people in coastal areas in Southeast Sulawesi Province



*former President, Joko Widodo

In the 2022 GTRA Summit, the President presented **525 land titles** to the Bajo Tribe, who reside on the water, as representatives of **6,437 land titles** that will be distributed from all districts in Southeast Sulawesi Province, with the following details:

No.	Desa/Kelurahan	Kecamatan	Jumlah
1.	Tindoi	Wangi Wangi	38
2.	Tindoi Timur	Wangi Wangi	12
3.	Mola Selatan	Wangi Wangi Selatan	56
4.	Mola Utara	Wangi Wangi Selatan	33
5.	Mandati II	Wangi Wangi Selatan	170
6.	Mola Samaturu	Wangi Wangi Selatan	25
7.	Mola Bahari	Wangi Wangi Selatan	77
8.	Mola Nelayan Bakti	Wangi Wangi Selatan	114
TOTAL			525

It has been asserted by the Mandati tribe, the indigenous people of Wakatobi, that the Bajo tribe was granted permission to stop or dock solely by the Mandati tribe, who traditionally govern the Wakatobi region. Therefore, it is essential to carry out a **historical investigation** concerning the acquisition of **rights over water through social mapping activities**.



Concept and Application of Rights, Restrictions , and Responsibilities (3R)

in line with the Circular Letter of the Minister of ATR/BPN number HT.03/757/VI/2022 regarding the Implementation **Guidelines for Granting Land Rights in Water Areas on June 3, 2022**

Right

- Rights are conferred as **time-limited entitlements**.
- Preceded by commercial licensing (KKPR/KKPRL)
- If the rights are "Right of Ownership" then they can be given in the form of communal/joint ownership.

Restriction

- Prohibition on the transfer of Land Rights to legal entities or individuals outside the local indigenous, local, or traditional community.
- Restriction on the alteration of Ownership Rights;

Responsibility

- **Utilization of land for residential purposes, public amenities, social services, and/or other auxiliary facilities;**
- If reclamation is to occur in the future, it will necessitate approval from the relevant agency in accordance with applicable laws and regulations.





38 TGI (Thematic Geospatial Information) Ministry of Agrarian Affairs and Spatial Planning/BPN

(Attachment I (One) to the Regulation of the Minister of Agrarian Affairs and Spatial Planning/National Land Agency Number 1 of 2023)

Directorate General of Land Use Planning

1. IGT National RTRW
2. IGT RTRW Province
3. IGT RTRW District/Region
4. IGT RTRW Urban Area
5. IGT RDTR Border Region
6. IGT RTR of Islands
7. IGT RTR National Strategic Zone
8. IGT RDTR Municipality/City

Directorate General of Agricultural Planning

1. IGT Allocation of Community Land Empowerment Sites
2. IGT Land Technical Factors
3. IGT Essential Land Inventory
4. IGT Allocation of Land Assets for Agrarian Reform
5. IGT Assessment of Land Assets for Agrarian Reform
6. IGT Potential Land Redistribution Items
7. IGT Unprocessed Rice Field
8. IGT Land Proficiency
- 9. WP3WT Potential IGT**
10. IGT Land Utilization Balance Sheet
- 11. IGT Distribution of Outermost Small Islands in Indonesia**

Directorate General of Land and Space Management and Regulation

1. IGT Land Marked as Abandoned
2. IGT Safeguarded Rice Fields
3. IGT Area Marked as Abandoned

Directorate General of Land and Spatial Surveying and Mapping

1. IGT Land Area (Parcel)
2. IGT Fundamental Land Components
3. IGT Crossing Forest Zone Boundaries
4. IGT Land Tenure
5. IGT Property Ownership
6. IGT Land Utilization
7. IGT Land Use

Directorate General of Land Rights Assessment and Registration

1. IGT Property Rights

Directorate General of Land Acquisition and Development

1. IGT Potential Land Consolidation Topic
2. IGT Land Consolidation
3. IGT Land Area Assessment
4. IGT Land Consolidation Plan
5. IGT Outcomes of Land Consolidation Design Application
6. IGT Allocation of Land Development Potential
7. IGT Land Valuation Zone

Directorate General of Land Dispute Resolution and Conflict Management

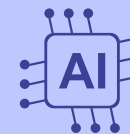
1. IGT specific Concerning Land Disputes, Conflicts, and Cases

DATA ENHANCES ENRICHMENT OF DERIVATIVE THEMATIC ANALYSIS

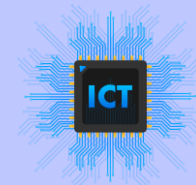
Open Geospatial Large Data



Crawled data



Artificial Intelligence
Technology



openroute
service



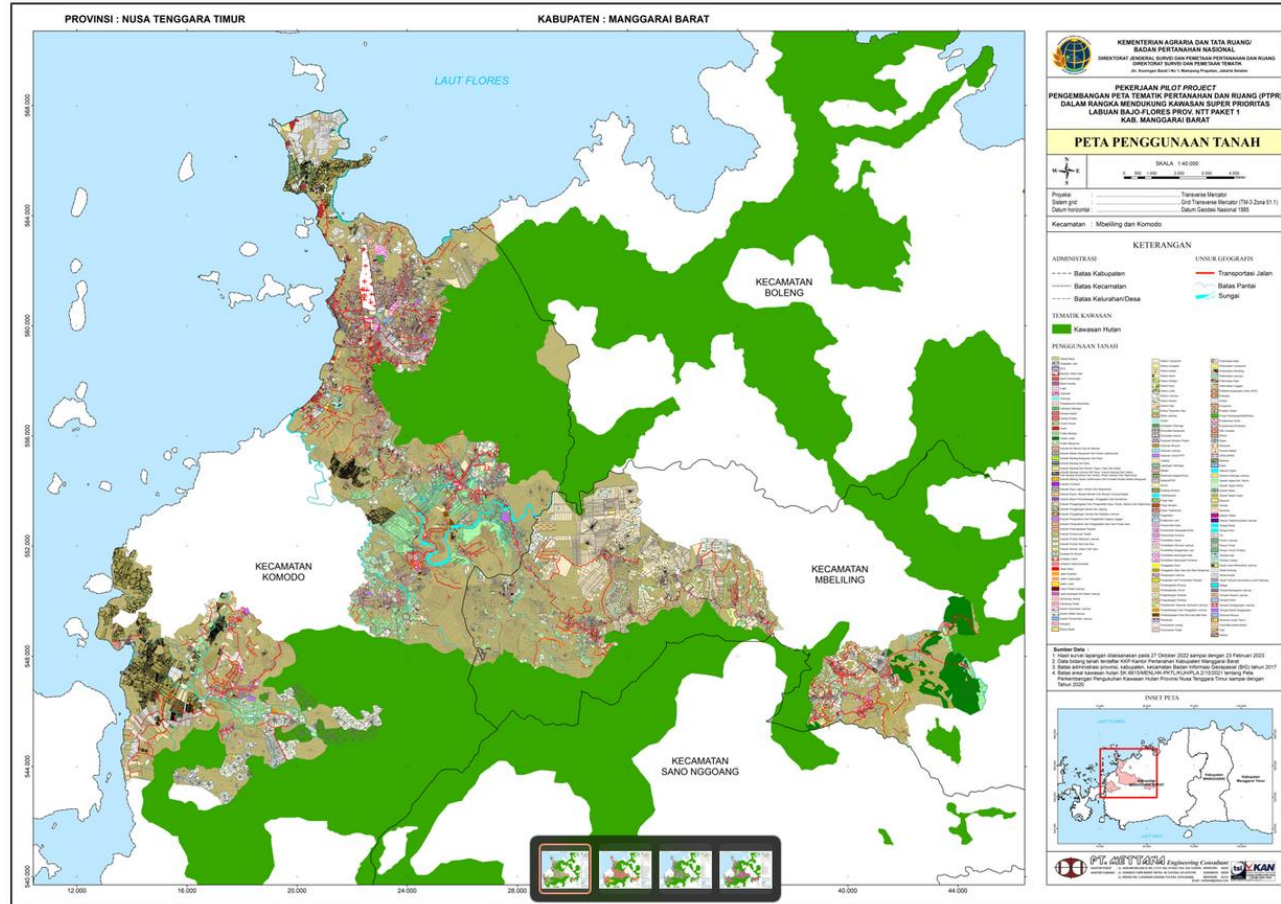
OpenStreetMap



Jual Beli Properti Jadi Mudah

Case Study

Thematic Mapping to Support the Super Priority Area in **Labuan Bajo-Flores, East Nusa Tenggara (NTT)**



Tourism potential map



Paga Beach, Flores, East Nusa Tenggara



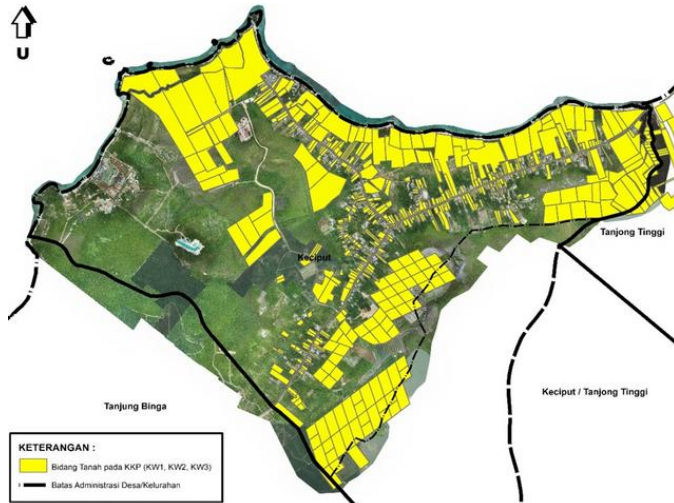
Coffe Platantion called "Arabica Flores Bajawa"



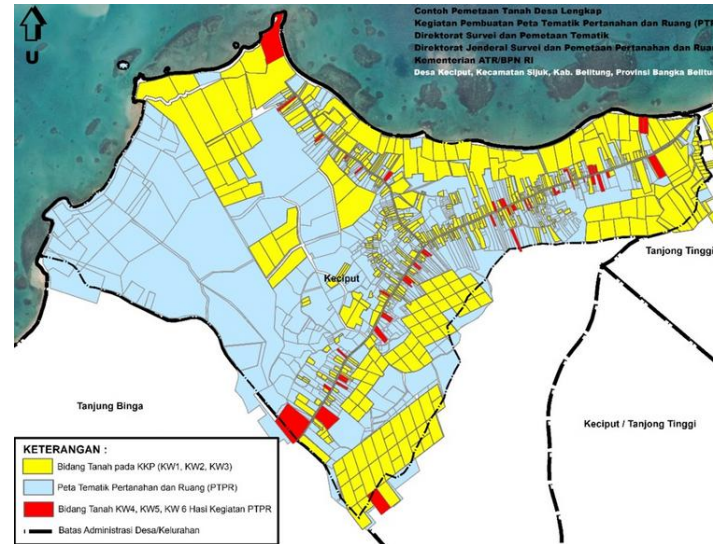
Case Study

Data Quality Enhancement Initiative Acceleration Strategy (through parcel-based thematic mapping) - **Belitung**

Before:

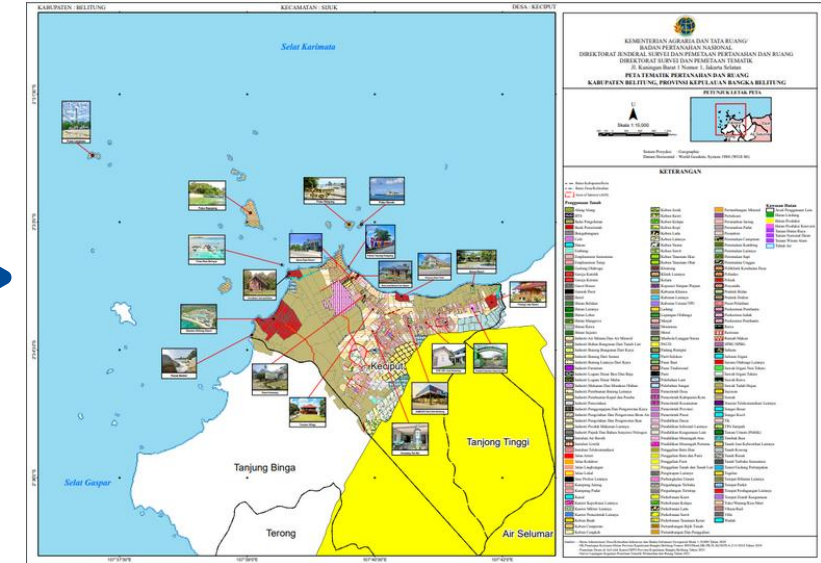


There are still unmapped areas and areas that have been registered but not yet mapped (K4).



The Thematic Land (parcel-based) (PTPR) activity in Belitung Regency resulted in Complete Village Mapping.

PTPR can assist in **identifying the 'flying' parcel (K4) and enhance the quality of parcel.**

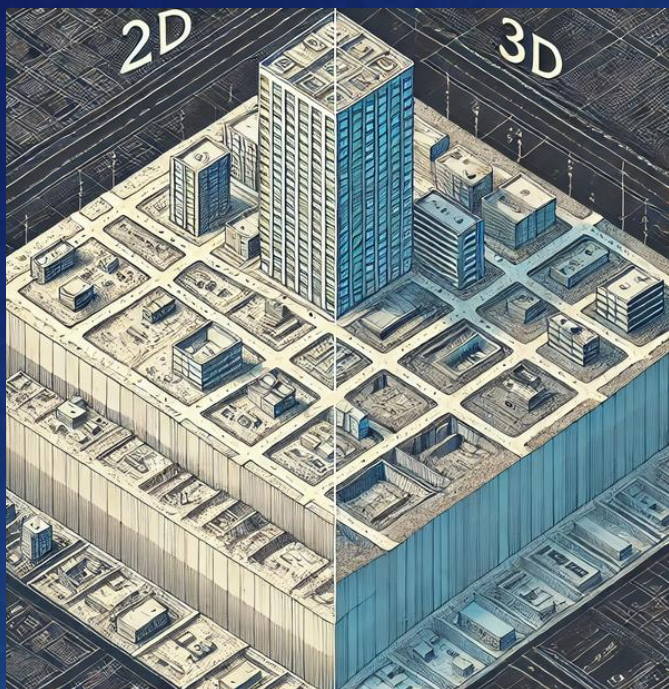


Once the village is completely mapped and filled with attributes of land ownership, land tenure, land utilization and land use, potential locations for development can be identified by adding several parameters.

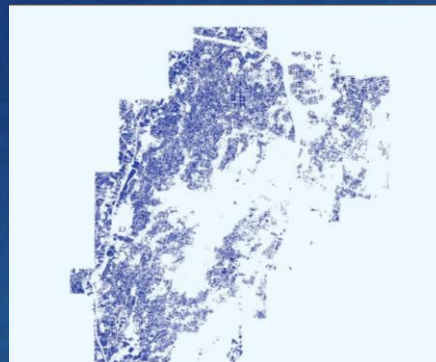


the next chapter >>>>

3D CADASTRE – THE FUTURE SOLUTION FOR LAND MANAGEMENT



**Represent Right, Restriction
and Responsibility**



**MORE REALISTIC
VISUALIZATION**



SUMBER : PT. DEIRA

**ACCELERATE THE LEGALIZATION
OF VERTICAL SPACE**



UPPER & UNDERGROUND MAPPING



DIGITAL TWIN & SMART CITY





FINAL TARGET: OPEN LAND DATA



Internal

Support Land Tenure, Land Value, Land Use, and Land Development



External (Government)

Tax Data Integration



External (Private Sector)

Thematic Derivatives, Business, Property, and Environment

LAND BASED (CADASTRE)





Restriction
Responsibility

Restriction
Responsibility

Right

Right



LAND RIGHT AND OWNERSHIP



LAND AND PROPERTY DATA
INTEGRATION



CADASTRE 4D



OPEN LAND DATA AND
TRANSPARENCY



BUSINESS LOCATION



Concluding Remarks

- The potential of Indonesia's territory, two-thirds of which comprises seawater, has not been optimally harnessed for cultivation activities in aquatic and coastal regions.
- Current laws and regulations adequately provide a legal framework for the allocation of rights over these waters and coastal areas.
- The need of Marine Cadastre to regulate any activities in coastal areas across Indonesia





UN-GGCE International Workshop

JOINING LAND AND SEA

The Integration of Terrestrial, Maritime, Built, and Cadastral Domains

*Terima
Kasih!*
Thank You.



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