#### INDONESIA'S NATIONAL PLAN/STRATEGY FOR ROAD CONSTRUCTION, PAVEMENT ALONG WITH THE CAPITAL RELOCATION

Wida Nurfaida

K

DIREKTORAT JENDERAL BINA MARGA KEMENTERIAN PEKERJAAN UMUM DAN PERUMAHAN RAKYAT

AGUSTUS 2024



# 

- ROAD NETWORK IN IKN (TOLL, NATIONAL ROAD)
- ROAD NETWORK IN KIPP
- IKN URBAN PLANNING
- ROAD DEVELOPMENT IN IKN BY BINA MARGA (TOLL, NATIONAL ROAD)



# Positioning of IKN in Republic of Indonesia

2045 Economic Center IKN as Indonesia's New Economic Driver



Reflecting the Nation's Identity RP RP Social,

Economic, and Environmental Sustainability Smart, Modern, and International Standard City

BRUNEI DARUSSALAM

Bandar Seri Begawan

Hanoi

Manila

Indonesia New Capit City

PHILLIPINE

MALAYSIR /

±1.200km

TIMOR LESTE



#### PLANNING HIERARCHY OF THE NEW CAPITAL (IKN)

The New Capital (IKN) is located in Sepaku District, Penajam Paser Utara Regency, and Kutai Kartanegara Regency, East Kalimantan Province. IKN is planned with three levels of planning, namely:

199.962 ha KPIKN **Development Area of IKN** 



56.180 ha

Area of IKN

KIPP



20

30

40 km

**Core Area of The Government Center** 

Sumber: OTORITA IKN

10

68.188 ha

TOTAL AREA OF IKN

大

Covering land and marine areas



#### **MARINE AREA**



#### LAND AREA 256.142 Ha

**MARINE AREA** 68.188 Ha

#### **IKN ZONES AT 2045**

#### 9 Zone Planning Areas of KP-IKN

1. Core Government Area (KIPP)

- 2. Economic and Financial Center
- 3. Renewable Energy Area
- 4. Tourism and Leisure
- 5. Education Sercives
- 6. Innovation and research
- 7. Agro-commodities, Trade & Logistics
- 8. Agriculture Industry
- 9. Fisheries and Agricultural



Source: Urban Design Development KIPP IKN Nusantara Capital Authority



9

#### **KP-IKN** 256.142 ha

8

#### Population 2045 KIPP & K-IKN 280 – 300 k KP-IKN 1.8 – 2 million

#### **SUB ZONES 1 DISTRIBUTION PLAN AT CORE GOVERNMENT**



Sub Zone 1A Core Government (KIPP) State Palaces, Ministry, ASN/TNI/Polri Housing



Sub BWP 1B Government-Education International Standard University, Sports Centers

Sub BWP 1C Goverment-Health International Hospital, Housing



Source: Urban Design Development KIPP IKN



#### **KEY PERFORMANCE INDICATOR (KPI) IKN**



Kesejahteraan Masyarakat (KM)

**10 Minutes** *Access* to Public and Social Facilities and Transit Points

**60-70%** Total Residential Units Allocated for ASN and TNI/POLRI

**Balanced Housing** in accordance with KPI Safe and Affordable

**Public Space** For National scale Programs and Activities

Ekologis dan Preservasi Lingkungan Alami (EKO)

> 50-70% Green Open Space

**40-50%** Kalimantan Local Plant Conservation

**20-30%** Indonesia Local Plant Conservation

**75-80%** Population Served Acces to CityParks

> **100%** Green line Conected

**100%** Nett Zero Emission

Optimization of microclimate quality 2" temperature reduction



Konektivitas Transportasi (TRA)

**70-80%** Development of Public Transportation in City Movement

**70-80%** *City Development Area Connected to Public Transport and Pedestrian* 

**70-80%** The Urban Area is <500 m Walking Distance to Public Transport Points

<50 menit Transit Train Connection from KIPP to Strategic Airport

Phsyical Integration, Schedules, Information, Payments via ITS

Infrastruktur Kawasan (INF)

**150 l /People/Day** Domestic Drinking Water Use Needs

**60%** Recycling of Waste and Remainder through WTE and/or WTP

**100%** Domestic Waste water treated with SPALD-T and Quality Standards Fulfilled in 2035

**50%** Alternative Water Source Use Area

> **100%** Alternative Energy



#### ICT Infrastructure

(ICT)

**100%** Internet access

Availability WiFi in Public Area

Integrated Operation Control Center

**100%** E-Government in Public Service

#### **ROAD NETWORK IN IKN (TOLL, NATIONAL ROAD)**

<50 minutes Transit express connection from KIPP to strategic airport in 2030



![](_page_7_Picture_3.jpeg)

#### ROAD NETWORK IN KIPP (1A, 1B, 1C)

![](_page_8_Figure_1.jpeg)

![](_page_8_Picture_2.jpeg)

- ROW 54 Arteri Primer
- ROW 54 Kolektor Primer
- ROW 44 Arteri Sekunder
- ROW 36 Kolektor Sekunder 2 Arah
- ROW 24 Lokal Sekunder (Green Bikeway)
- ROW 24 Lokal Sekunder
- ROW 16 Lokal Sekunder (Hunian)
- ROW 16 Lokal Sekunder (Non Hunian)
- ROW 16 Lokal Sekunder (Shared Street)
- ROW 12 Lokal Sekunder (Shared Street)
   Highway

### IKN PLANNING POLICY

Undang-Undang Republik Indonesia No. 3 Tahun 2022 tentang Ibu Kota Negara *"Governent Law about National Capital City"* 

$\bigotimes$	SALINAN
PRESIDEN	

UNDANG-UNDANG REPUBLIK INDONESIA

NOMOR 3 TAHUN 2022

TENTANG

IBU KOTA NEGARA

DENGAN RAHMAT TUHAN YANG MAHA ESA

PRESIDEN REPUBLIK INDONESIA

- mbang A. bahwa Negara Kesatuan Republik Indonesia dibentuk untuk mewujudikan tujuan bernegara sebagaimana yang dinyatakan dalam Pembukaan Undang-Undang Dasar Negara Republik Indonesia Tahun 1945 dengan berlandaskan pada Pancasila;
  - b. bahwa upaya memperbaiki tata kelola wilayah Ibu Kota. Negara adalah bagian dari upaya untuk mewujudkan tujuan bernegara sebagaimana dimakwud dalam huruf a, yaitu melindungi segenap bangsa Indonesia dan seluruh tumpah darah Indonesia, memajukan kesejahteraan umum, mencerdaskan kehidupan bangsa, dan ikut melakasnakan ketertiban dunia berdasarkan kemerdekaan, perdamaian abadi, dan isradilan sosial;
  - c. bahwa tata kelola ibu Kota Negara selain menjadi sarana untuk memenuhi kebutuhan masyarakat Indonesia juga untuk mewujudikan ibu Kota Negara yang aman, modera, berkelanjutan, dan berketahanan, serta menjadi acuan bagi pembangunan dan penataan wilayah lainnya di Indonesia;
  - bahwa hingga saat ini, belum ada undang undang yang mengatur secara khusus tentang Ibu Kota Negara;

e. bahwa

Peraturan Presiden Republik Indonesia No. 64 Tahun 2022 tentang Rencana Tata Ruang Kawasan Strategis Nasional Ibu Kota Nusantara *"Presidential Regulations IKN Land Use Planning"* 

	PRESIDEN REPUBLIK INDONESIA	
	PERATURAN PRESIDEN REPUBLIK INDONESIA	
	NOMOR 64 TAHUN 2022	
	TENTANG	
	RENCANA TATA RUANG KAWASAN STRATEGIS NASIONAL	1 1
	IBU KOTA NUSANTARA TAHUN 2022-2042	
	DENGAN RAHMAT TUHAN YANG MAHA ESA	
	PRESIDEN REPUBLIK INDONESIA,	
Menimbang	Isshwa berdasarkan Pasal 15 ayat (2) Undang-Undang Nomor 3 Tahun 2022 tentang Ibu Kota Negara, perlu menetapkan Peraturan Presiden tentang Rencara Tata Ruang Kawasan Strategis Nasional Ibu Kota Nusantara	Menimbang
	Tehun 2022-2042,	Mengingat
Mengingat	<ol> <li>Pasal 4 ayat 11 Undang-Undang Dasar Negara Republik Indonesia Tahun 1945;</li> </ol>	
	<ol> <li>Undang-Undang Nomor 3 Tahun 2022 tentang Ibu Kota Negara (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 41, Tambahan Lembaran Negara Republik Indonesia Nomor 6766).</li> </ol>	
	MEMUTUSKAN	Menetapkan
Menetapkan	PERATURAN PRESIDEN TENTANG RENCANA TATA RUANG KAWASAN STRATEGIS NASIONAL IBU KOTA NUSANTARA TAHUN 2022-2042.	
	BAB I.	

![](_page_9_Picture_16.jpeg)

Peraturan Presiden Republik Indonesia No. 63 Tahun 2022 tentang Perincian Rencana Induk Ibu Kota Nusantara *"Presidential Regulations IKN Master Plan"* 

![](_page_9_Picture_18.jpeg)

REFURIE INDONESIA

SALINAN

JRAN PRESIDEN REPUBLIK INDONESIA NOMOR 63 TAHUN 2022

TENTANG

N RENCANA INDUK IBU KOTA NUSANTARA

IAN RAHMAT TUHAN YANG MAHA ESA

PRESIDEN REPUBLIK INDONESIA,

wa untuk melaksanakan ketentuan Pasal 7 ayat (4) ang-Undang Nomor 3 Tahun 2022 tentang Ibu Kota ara, perlu menetapkan Peraturan Presiden tentang ncian Rencana Induk Ibu Kota Nusantara.

Pasal 4 ayat (1) Undang-Undang Dasar Negara Republik Indonesia Tahun 1945;

Undang-Undang Nomor 3 Tahun 2022 tentang Ibu Kota Negara (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 41, Tambahan Lembaran Negara Republik Indonesia Nomor 6766;

MEMUTUSKAN

ATURAN PRESIDEN TENTANU PERINCIAN RENCANA UK IBU KOTA NUSANTARA.

Panal 1

am Peraturan Presiden ini yang dimaksud dengan: Ibu Kota Negara adalah Ibu Kota Negara Kesatuan Republik Indonesia.

2. Ibu Kota . .

#### **IKN'S DEVELOPMENT TIMELINE**

#### I. 2022-2024

Foundation of a city ecosystem

Housing and basic infrastructure to support, initial resident

Building the offices of the national government

Resettle of initial residents

Initiation of priority economic sectors

#### II. 2025-2029

Developing Nusantara as a center area

Both primary and secondary public transportation facilities can be used

Expanding settlement area for civil servant and national government's offices

Completing the shift of national government offices

Developing research and talent center

Advance development and maintenance of basic infrastructure

#### III. 2030-2034

Continuing Nusantara's development progressively

Developing integrated intercities transportation facilities

Expanding the next phase of superhub economic cluster

Strengthening smart cities, digital centers and innovation/education

Increasing investment and economical production

#### V. 2035-2039

Developing the three cities' infrastructure & ecosytem : Nusantara, Balikpapan, Samarinda

Rapid developments of the education and health sector

Strengthening the socio cultural community and increasing the capacity of educational and research institutions

Supplementary basic infrastructure's capacity in line with population growth

Increasing capacity and diversification of economic clusatersand enabling infrastructure in Partner Regions

Stable growth residents in IKN

Achieve net zero – carbon emission and 100 % renewble energy

Becoming a leading city in competitiveness

Source: Presidential Regulations of the Republic of Indonesia Num: 63/2022 on the Details of the Nusantara's Capital City Master Plan

![](_page_10_Picture_32.jpeg)

#### V. 2040-2045

Strengthening reputation as "Global City for All"

Advancing infra and inter city public transportation

Stabilization of integrated infrastructure and utilities

#### **ROAD DEVELOPMENT IN IKN BY BINA MARGA**

![](_page_11_Figure_1.jpeg)

![](_page_11_Picture_2.jpeg)

#### 68% 43,11 T

![](_page_11_Picture_5.jpeg)

#### **ROAD DEVELOMPENT IN SUB WP ZONE 1A,1B,1C BY BINA MARGA**

![](_page_12_Figure_1.jpeg)

![](_page_12_Picture_2.jpeg)

![](_page_12_Picture_3.jpeg)

P ZONE 1A,1B,1C	
structed Road	Unbuilt Road
83,09 Km	143,78 Km

Average cost of road construction per km in KIPP Rp. 158.250.000.000

Required costs for completion of roads that have not been built in

#### Sub WP Zones 1A, 1B, 1C Rp. 39.681.778.638.000 (US\$ 26 Billion)

(Rp. 5.23 Trillion) means that the completion for Zone 1 assumed to

regards fullfilling the budget requirement for completing only Zone

The government should invite **diffrent schmes** to be applied in IKN

#### ACCESS TOLL ROAD DEVELOPMENT IN IKN BY BINA MARGA

![](_page_13_Figure_1.jpeg)

Acces Toll Road					
Target Toll Road	Constructed Toll Road	Unbuilt Toll Road			
88,54 Km	67,65 Km	20,89 Km			

- Average cost of road construction per km in KIPP **Rp. 305.815.000.000**
- Required costs for completion of toll roads that have not been built Rp. 6.388.475.350.000 (US\$ 394 million)
- Required costs for completion of Immersed Tunnel Rp. 11.041.382.625.000 (US\$ 682 million)

![](_page_13_Picture_6.jpeg)

#### **ROAD NETWORK AND PAVEMENT CONCEPT**

![](_page_14_Figure_1.jpeg)

![](_page_14_Picture_2.jpeg)

#### **10 MINUTES CITY DEVELOPMENT**

TRANSIT-ORIENTED AREA WHERE PUBLIC TRANSPORTATION IS THE MAIN MODE OF MOBILIZATION, PEDESTRIAN-FRIENDLY AND INTEGRATED

![](_page_14_Picture_5.jpeg)

![](_page_14_Picture_6.jpeg)

![](_page_14_Picture_7.jpeg)

## The soil conditions are

mostly clay shale which is sensitive to water

long

![](_page_15_Picture_3.jpeg)

Construction of various carried infrastructures out simultaneously, causing the potential for clashes between works (for example: overlap between building site and Road Embankment)

Implementation of BIM on all construction work at IKN and use of the clash detection feature to clashes identify potential between construction work so that they can be anticipated early

![](_page_15_Picture_6.jpeg)

**Collaborate with construction** material suppliers in various places and build a special dock for shipping IKN construction materials

![](_page_15_Picture_8.jpeg)

POLICY IMPLEMENTATION CHALLENGES AND SOLUTIONS

#### Adjust work methods so that the clay shale soil layer is not exposed for too

#### TECHNOLOGICAL BREAKTHROUGH FOR ROAD NETWORD DEVELOPMENT IN IKN.

#### **Autonomous Rapid Transit (ART)**

Autonomous trams that operate on roads using tires are guided by virtual tracks using markings

#### **Smart Pole**

Various features such as monitoring via Al cameras, IoT sensors, adaptive lighting, audio system, which can be controlled in real-time or through arrangements by officers.

#### **Nusantara Smart Road System**

- •BIM Integration for Road Design,
- •Pavement Infrastructure Monitoring System Using AI,
- •Energy Harvesting System, Wireless Charging and Charging Station,
- •MUT Monitoring System using LiDAR, Wireless Censors, and Dorne/Robot
- •Road Safety Monitoring System using Visual Recognition to Detect Traffic Distraction

![](_page_16_Picture_11.jpeg)

![](_page_16_Picture_12.jpeg)

![](_page_16_Picture_13.jpeg)

#### Lesson learn from China in boosting their Economy

key aspects of China's infrastructure efforts:

•Massive Investments: China has invested over \$1 trillion in BRI projects, which include constructing and upgrading roads, railways, ports, and pipelines2.

•Global Reach: The BRI spans multiple continents, with over 200 cooperation agreements signed with more than 150 countries and 30 international organizations2.

•Digital Infrastructure: Besides physical infrastructure, China is also focusing on digital connectivity, including internet infrastructure and satellite networks2.

•Policy Coordination: The initiative emphasizes policy coordination, unimpeded trade, financial integration, and people-to-people bonds to ensure smooth implementation and cooperation.

These efforts are designed to not only boost China's own economic growth but also to enhance connectivity and economic development in participating countries.

![](_page_17_Picture_7.jpeg)

#### More Detail what China Does

Specific projects and initiatives China has undertaken to boost its infrastructure:

- 1. High-Speed Rail Network: Spanning over 40,000 kilometers, this network connects major cities, reducing travel time and boosting economic integration.
- 2. Three Gorges Dam: This is the world's largest hydroelectric power station, located on the Yangtze River. It plays a crucial role in flood control and power generation.
- 3. Beijing Daxing International Airport: this airport is one of the largest and most technologically advanced in the world. It serves as a major hub for international travel and trade.
- 4. Urban Infrastructure: Cities like Shenzhen and Shanghai have seen massive investments in urban infrastructure, including smart city technologies, extensive metro systems, and green spaces.
- 5. Digital Silk Road: Part of the BRI, this initiative focuses on enhancing digital infrastructure, including fiber optic networks, data centers, and satellite systems to improve global digital connectivity.

These projects highlight China's commitment to building a robust and modern infrastructure network that supports its economic growth and global trade ambitions.

![](_page_18_Picture_8.jpeg)

#### Conclussion

To overcome the financial and time issues required for IKN, therefore:

- Government need to reform their policy and regulation in regards to ease investor in infrastructure
- The advance technology required to boost the speed of constructions time and to improve the quality the infrastructure.
- There should establish the cooperation with countries that successful in developing their road construction.

![](_page_19_Picture_5.jpeg)

## 

![](_page_20_Picture_1.jpeg)

![](_page_20_Picture_2.jpeg)