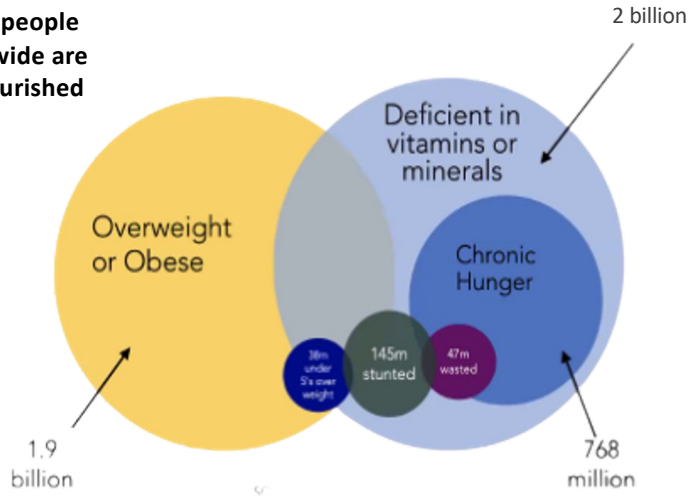
“Implementasi Konsep Blue Economy untuk Mendukung Ketahanan Pangan Nasional”

Eva Anggraini
Direktur Konektifitas Global
&
Program Studi Ekonomi Kelautan Tropika
Departemen Ekonomi Sumberdaya dan Lingkungan
Fakultas Ekonomi dan Manajemen
IPB University

Persoalan Pangan Global

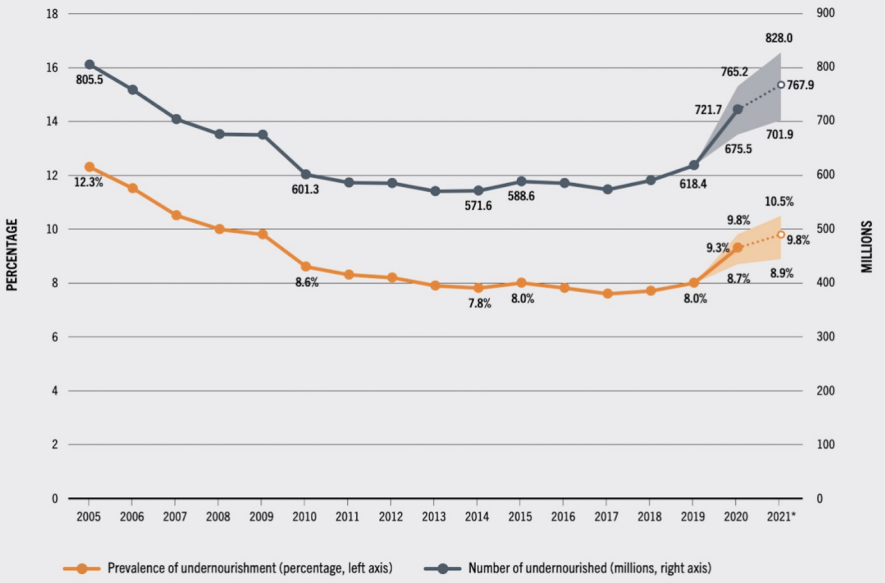
1 in 3 people worldwide are malnourished



“Sekitar **768 juta jiwa** di dunia yang mengalami kelaparan pada 2021, meningkat sekitar **46 juta jiwa** dari 2020”

Sumber : FAO (2021)

FIGURE 2 BETWEEN 702 AND 828 MILLION PEOPLE IN THE WORLD FACED HUNGER IN 2021. CONSIDERING THE MIDDLE OF THE PROJECTED RANGE (768 MILLION), HUNGER AFFECTED 46 MILLION MORE PEOPLE IN 2021 COMPARED TO 2020, AND A TOTAL OF 150 MILLION MORE PEOPLE SINCE 2019, BEFORE THE COVID-19 PANDEMIC



NOTES: * Projected values for 2021 are illustrated by dotted lines. Shaded areas show lower and upper bounds of the estimated range.
SOURCE: FAO.

Sumber : FAO (2022)

Impacts of Climate Change

Forest coverage

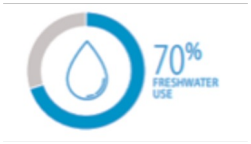
Decrease about 50%

Water scarcity

Area that faces water scarcity is increasing from 6% to 9%

Wild life Habitat

The decrease in population of extinct animals



Agriculture accounts for **70% of freshwater use**

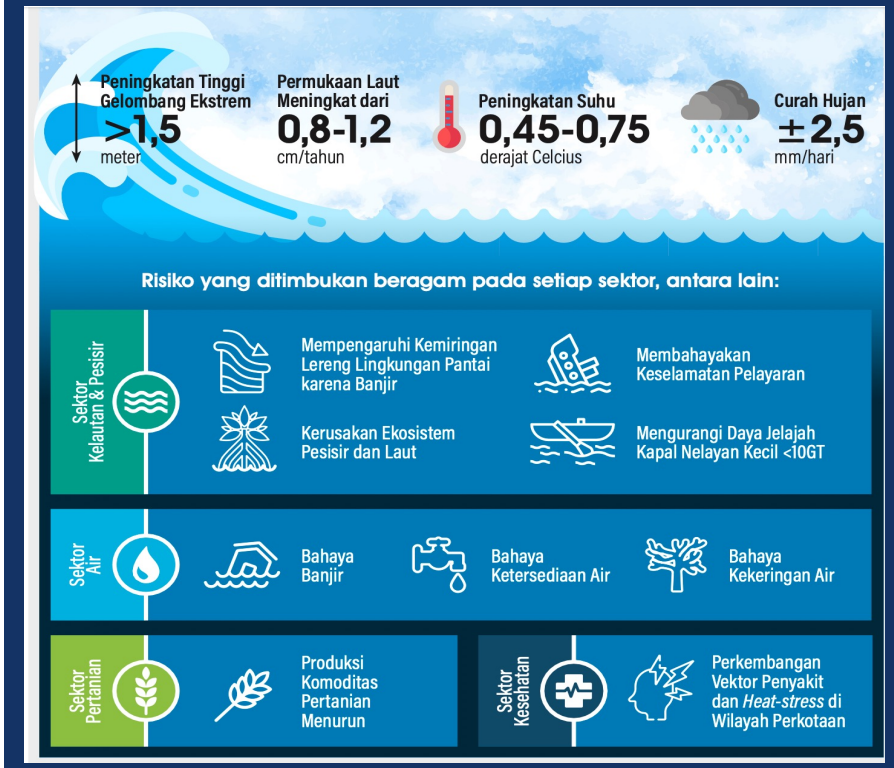
Agriculture

Food systems release **29% of global GHGs**

Environment & agriculture	Drought, rain anomaly, more frequent natural/hydrometeorogy disasters (flood, erosion), sea level rise etc. → effect land and marine based activities
Economy	Loss and damage
Health	*Malnutrition, stunting*, tropical diseases
Social	Increasing social and environmental conflicts
Energy	Energy crisis

Sumber: Bappenas (2019). Rancangan Teknokratik Rencana Pembangunan Jangka Menengah Nasional 2020-2024

Dampak Perubahan Iklim terhadap Sumberdaya Alam

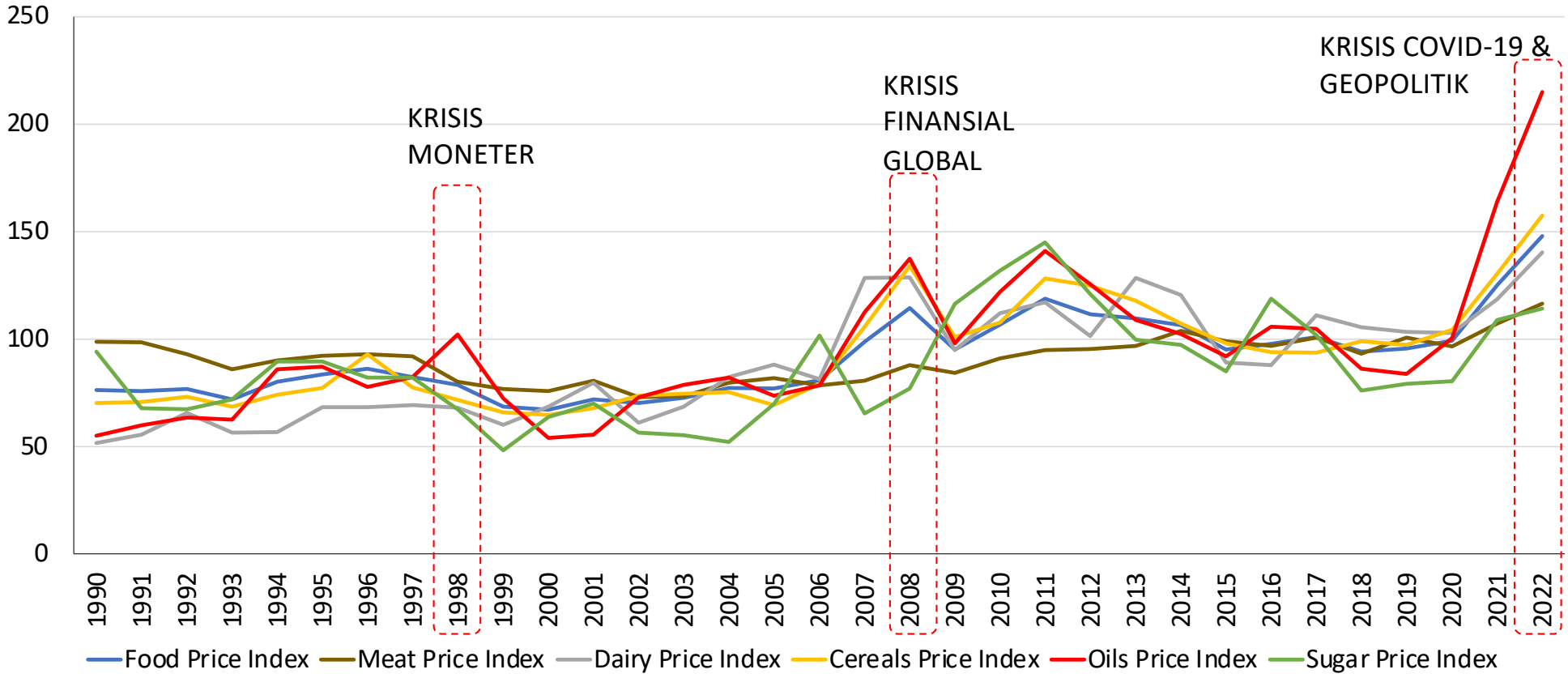


Potensi Kerugian Ekonomi Dampak Perubahan Iklim pada Empat Sektor Prioritas (Rp Triliun)

Sektor	Tahun				
	2020	2021	2022	2023	2024
Kelautan & Pesisir	81,30	81,43	81,57	81,69	81,82
Air	3,83	4,74	5,61	6,45	7,29
Pertanian	11,20	13,40	15,59	17,77	19,94
Kesehatan	6,03	6,15	6,26	6,37	6,48
Jumlah	102,36	105,72	109,03	112,29	115,53

Sumber: Bappenas (2021)

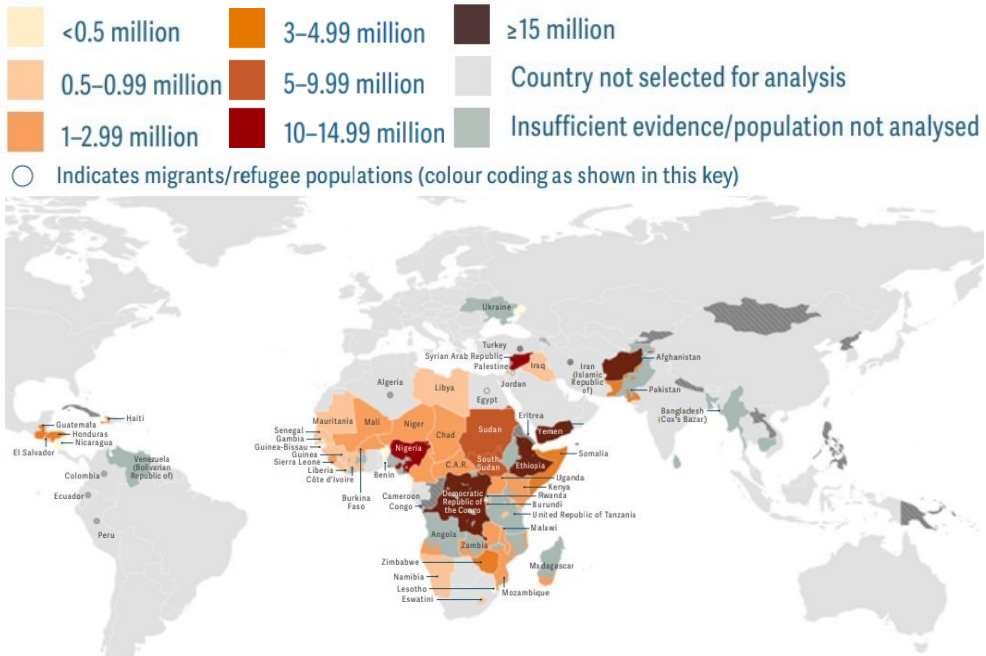
Keterkaitan Krisis Energi dan Pangan



Source: FAO

Conflict, Climate and Food Crises

Around 134 million people across 53 countries experienced a food crisis or worse (IPC/CH Phase 3 or above) in 2021



Source: Global Report on Food Crisis 2021, FSIN, GRFC May 2022

Conflict was the primary driver of food crises in 2021 even accounting for economic effects of COVID-19

	2018	2019	2020	2021
Conflict/ insecurity	73.9M 21 countries	77.1M 22 countries	99.1M 23 countries	139.1M 24 countries
Weather extremes	28.8M 26 countries	33.8M 25 countries	15.7M 15 countries	23.5M 8 countries
Economic shocks	10.2M 6 countries	24.0M 8 countries	40.5M 17 countries	30.2M 21 countries

What is Blue Economy?

- ”Sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem" (**World Bank**)
- "All economic activities related to oceans, seas and coasts. It covers a wide range of interlinked established and emerging sectors” (**European Commission**)
- ”An emerging concept which encourages better stewardship of our ocean or 'blue' resources" (**The Commonwealth of Nations**)
- ”Blue economy also includes economic benefits that may not be marketed, such as carbon storage, coastal protection, cultural values and biodiversity" (**Conservation International**)
- ”It is now a widely used term around the world with three related but distinct meanings- the overall contribution of the oceans to economies, the need to address the environmental and ecological sustainability of the oceans, and the ocean economy as a growth opportunity for both developed and developing countries" (**Center for the Blue Economy**).
- ”Blue Economy comprises a range of economic sectors and related policies that together determine whether the use of ocean resources is sustainable, ranging from sustainable fisheries to ecosystem health to preventing pollution. Bhe blue economy challenges us to realize that the sustainable management of ocean resources will require collaboration across borders and sectors through a variety of partnerships, and on a scale that has not been previously achieved. This is a tall order, particularly for Small Island Developing States (SIDS) and Least Developed Countries (LDCs) who face significant limitations.” (**United Nations**)

Blue Economy supports the achievement of SDGs as a global development platform

Transitions to Blue Economy

01

Sustainable use of natural resources, not exceeding carrying capcity and to recover the resources to increase the supply

02

Renew economic indicators to become more sustainable

03

Institutional transformation in many aspect of lifes (finance, education, social, economy) to achieve sustainablity

04

Policy to enhance transition from conventional economy to bioeconomy, and support biodiversity based innovations

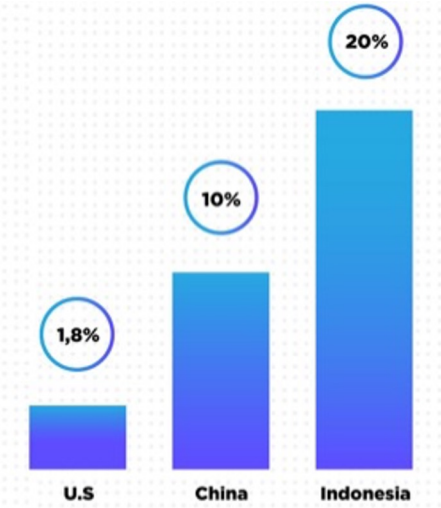
Source: Dasgupta (2021); E. Gawel et al. (2018)

Global Trend to Enhance Blue Economy

COP 26 dan Pertemuan G-20 put Blue Economy as a agenda

Why Blue Economy?

Ocean economy has a significant value for Indonesia, in which it contributes 20% GDP of the country. A similar ratio to other countries with large ocean territories.



Blue economy contribution to GDP. United States, China, and Indonesia (in comparison)

This huge potential in Indonesia will be amplified by the rising trends of Blue Economy to be one of the most powerful economy in the world!

Global future trends of blue economy sector

The ocean will become an economic force on this century. Here's why!

1. Rising global population and consumption generating the need for new sources of food, energy and minerals.
2. A variety of ocean economy emerges following the soaring trends of tourism, coastal development, shipping, and port infrastructure & services as a setting for economic activities.
3. Investment opportunities are arising from the application of new technologies to harness the ocean's potential as a resource base.
4. The emerging investment opportunities in ocean health and ecosystems in mitigation to climate-change challenges.

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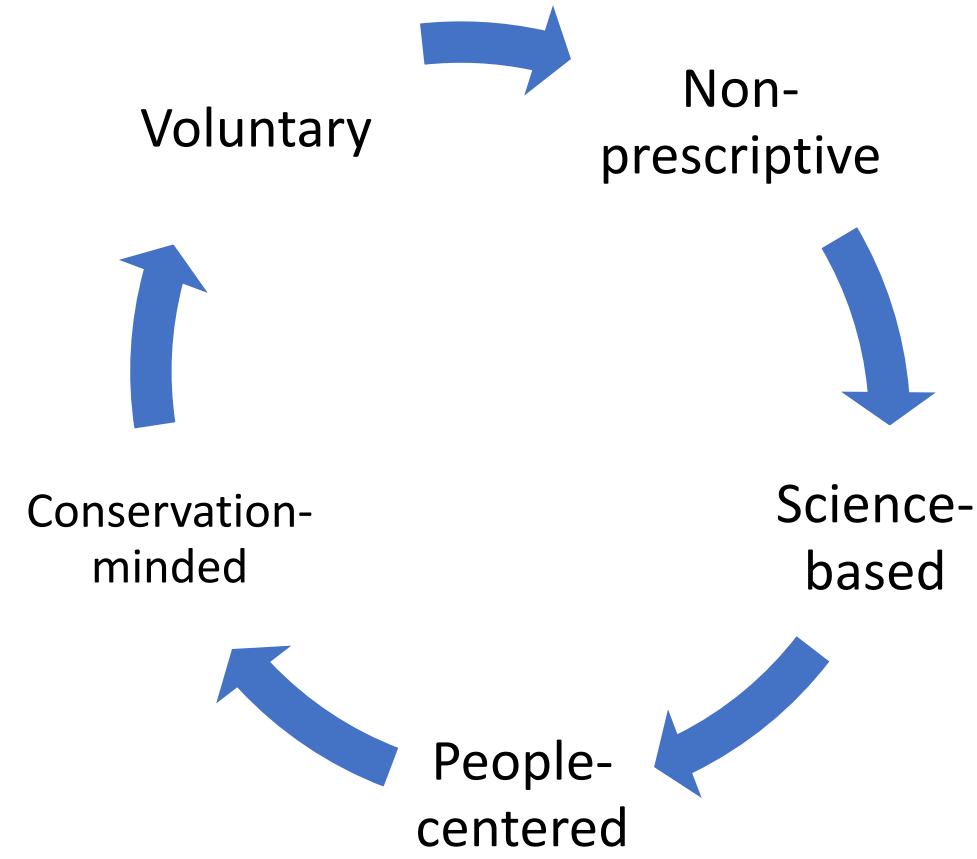
Sustainable Blue Economy Principles

support decision makers in choosing sustainable investment and development opportunities while minimizing risk, increasing benefit-sharing, and optimizing long-term returns.



Indonesian Blue Economy Initiatives

World Bank (2021). Oceans for Prosperity: Reforms for a Blue Economy in Indonesia. The World Bank, Washington, D.C

Policy Direction of MMF Indonesia 2021 - 2024

- Increasing PNBP from capture fisheries natural resources to improve people's welfare
- Development of aquaculture to increase exports and development of aquaculture villages based on local wisdom
- To develop the marine and fishery industry through meeting the needs of industrial raw materials, improving product quality and adding value to increase investment and export of marine and fishery productsan
- Management of marine space, coastal areas and small islands, strengthening supervision of marine and fishery resources, and fish quarantine through coordination with relevant agencies
- Strengthening human resources and marine and fisheries policies

KKP (2021)

Components of Blue Economy related to Food Security

Type of Activity	Activity Subcategories	Related Industries/ Sectors	Drivers of Growth
Harvesting and trade of marine living resources	Seafood harvesting	Fisheries (primary fish production)	Demand for food and nutrition, especially protein
		Secondary fisheries and related activities (e.g., processing, net and gear making, ice production and supply, boat construction and maintenance, manufacturing of fish-processing equipment, packaging, marketing and distribution)	Demand for food and nutrition, especially protein
		Trade of seafood products	Demand for food and nutrition, especially protein
		Trade of non-edible seafood products	Demand for cosmetic, pet, and pharmaceutical products
		Aquaculture	Demand for food and nutrition, especially protein
	Use of marine living resources for pharmaceutical products and chemical applications	Marine biotechnology and bioprospecting	R&D and usage for health care, cosmetic, enzyme, nutraceutical, and other industries

Source: https://sustainabledevelopment.un.org/content/documents/15434Blue_EconomyJun1.pdf

BLUE ECONOMY SEBAGAI BASIS PENGELOLAAN SUMBER DAYA PERIKANAN TANGKAP

ASPEK UTAMA PERIKANAN TANGKAP

Biologi	Menjaga sumber daya ikan untuk keberlanjutan produktivitasnya
Lingkungan	Meminimalkan dampak penangkapan ikan terhadap lingkungan & SDI, termasuk untuk spesies non-target dan *spesies* yang dilindungi
Ekonomi	• Menghasilkan keuntungan ekonomi yang optimal bagi pelaku usaha dan masyarakat • Menghasilkan penerimaan yang optimal dan berkelanjutan bagi negara
Sosial	• Memaksimalkan peluang kerja/mata pencaharian bagi nelayan dan masyarakat • Menjaga harmoni antar stakeholders • Mendukung pertahanan dan keamanan negara

Blue Economy (Ekonomi Biru)

Prinsip Ekonomi Biru

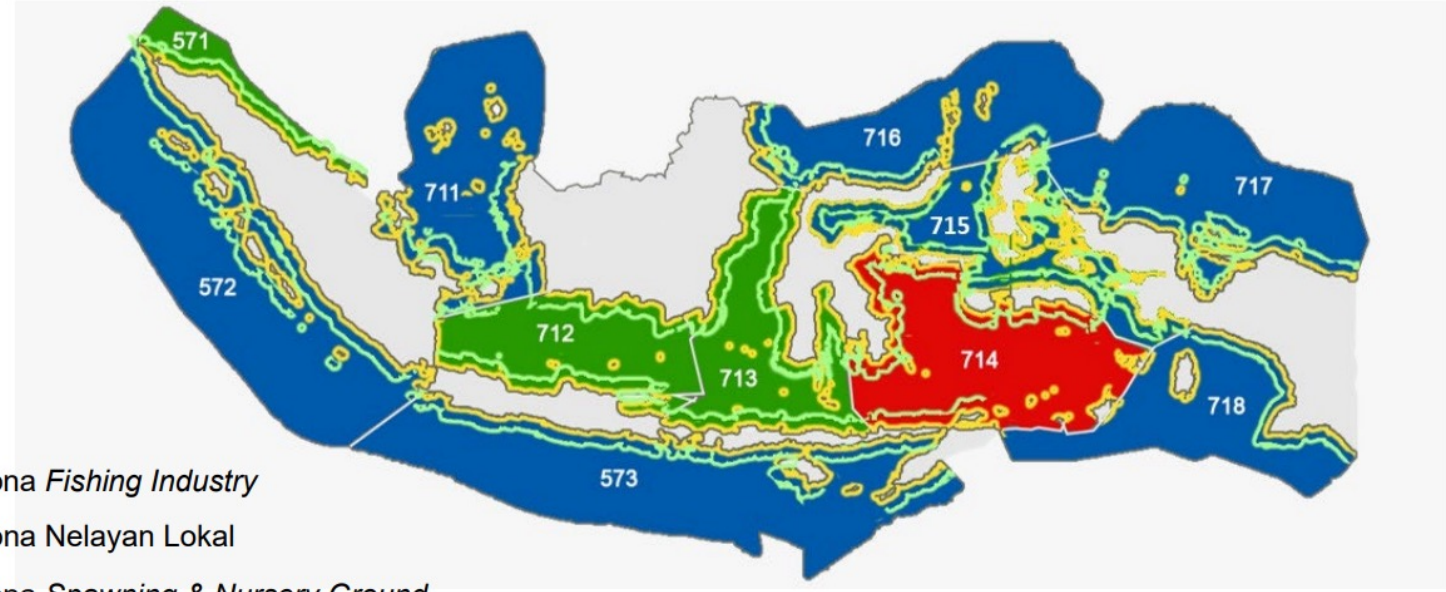
- **Efisiensi SDA,** bukan ekspolitasi SDA
- **Nilai ekonomi dan sosial seimbang,** bukan semata fokus pada profit
- **Ramah lingkungan dan berkelanjutan,** tidak merusak ekologi

Model Bisnis:

- Penangkapan ikan yang ramah lingkungan
- Pengembangan Pelabuhan perikanan berwasan lingkungan (eco fishing port)
- Pengolahan limbah ikan
- dll

KKP (2021)

PEMBAGIAN ZONA KEBIJAKAN PENANGKAPAN TERUKUR DI WPPNRI



: Zona *Fishing Industry*

: Zona Nelayan Lokal

: Zona *Spawning & Nursery Ground*

: Garis Pantai

: 12 mil (wilayah tradisional)

Nelayan lokal dengan ukuran kapal <30 GT tetap dapat menangkap di WPPNRI

KKP (2021)

TATA CARA PENERAPAN KEBIJAKAN PENANGKAPAN TERUKUR ZONA *FISHING INDUSTRY*

KUOTA

JTB di masing-masing zona dibagi kepada pelabuhan-pelabuhan pendaratan di zona tersebut

SISTEM PERIJINAN

- Seleksi pelaksanaan konsesi dilakukan melalui *beauty contest*
- Menandatangani kontrak konsesi penangkapan terukur

JALUR PENANGKAPAN IKAN

12 mil garis pantai, di 4 zona penangkapan (Zona 01, 02, 03 dan 04)

PENDARATAN

Pendaratan ikan hanya di Pelabuhan pangkalan dimana kuota penangkapan ikan diberikan.

UKURAN KAPAL

> 30 GT

PEMASARAN IKAN

Pengangkutan ikan untuk pasar domestik dan ekspor dari pelabuhan perikanan yang ditetapkan di WPP

AWAK KAPAL

Seluruh awak kapal adalah nelayan lokal (kecuali *fishing master* dan nakhoda kapal untuk kapal buatan Luar Negeri)

SISTEM PEMUNGUTAN PNBP

Kontrak dan Pasca Produksi

KKP (2021)

Marine Spatial Planning

- Increasing inter-island input-output connectivity to reduce the dominance of Java and cities in the national economy
- Spatial planning needs to link the production system and the settlement system
- Need a strong national logistics system based on sustainable spatial planning

Integration of land and marine spatial planning

- Requires total integration, includes
  - Inter-sectoral
  - Inter-governmental
  - Spatial
  - Science-management
  - International

Fisheries and Aquaculture Estates as a Hub in Blue Economy Networks

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Marine Conservation by the State

Small Islands as a Niche of the Blue Economy

Need Conservation to increase asset value

+

- Catch Fisheriy
- Aquaculture/Mariculture
- Marine tourism

Integrated management, such as the concept of MINAWISATA BAHARI can:

- ✓ reduce marine pollution (including marine plastic)
- ✓ Reducing the impact of climate change
- ✓ Increase community engagement and management
- ✓ Encouraging partnership development
- ✓ Increase green investment

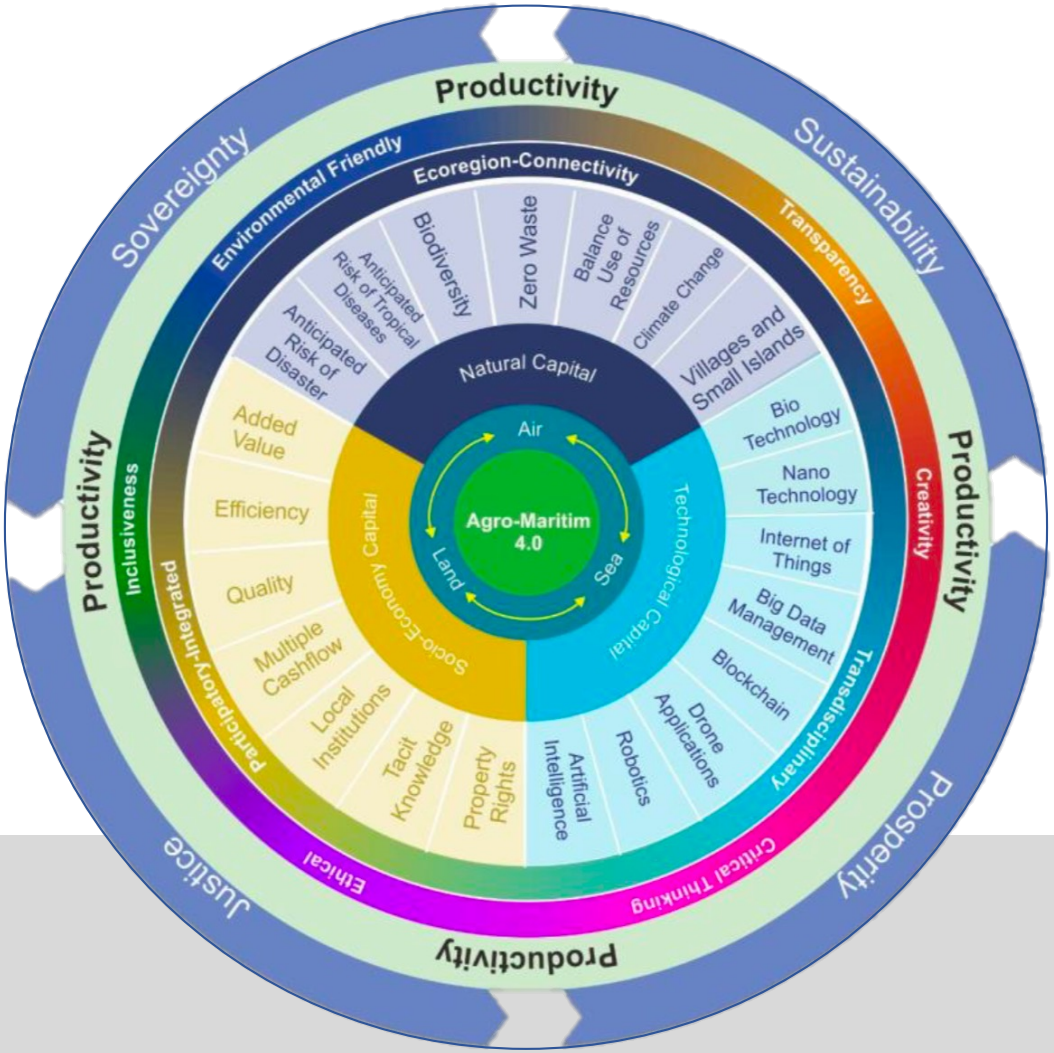
+

Other sectors in the marine sector, such as transportation, marine industry, etc.

BLUE ECONOMY

Mainstreaming the Blue Economy requires:

- integration of land and sea spatial planning
- integration of policies and programs between ministries/agencies
- Technological innovation



Agro-Maritim 4.0:

a thought from IPB

Inclusive integration of land and sea area management involving complex social, economic and ecological systems that requires a transdisciplinary, integrated and participatory approach.

1 Competitive Agro-Maritime Industry and Trade

- Increasing Productivity of Agro-Maritime Products
- Safe and Halal Agro-Maritime Product Traceability
- Agro-Maritime Industry Competitiveness
- Upstream-Downstream Integration of Agro-Maritime Logistics System
- Elements of Production, Industry and Trade in one coordination umbrella
- Building the Provision and Management of Agro-Maritime Big Data

2 Strengthening the Connectivity Infrastructure and Agro-Maritime Value Chain

- Integrated Agro-Maritime Intermodal Transportation System
- Strengthening the Effectiveness of Intermodal Port Services
- Distribution and Warehousing System of Strategic Agro-Maritime Products
- Policy and Technology

3 Strengthening Human Resources and Science and Technology

- Strengthening Agro-Maritime Education and Community Development Systems
- Strengthening of Agro-Maritime Science and Technology

Direction of Agro-Maritime Transformation 4.0

IPB Agromaritim 4.0:
Pengembangan Pertanian, Kelautan dan Perikanan Cerdas yang Berketahanan Iklim

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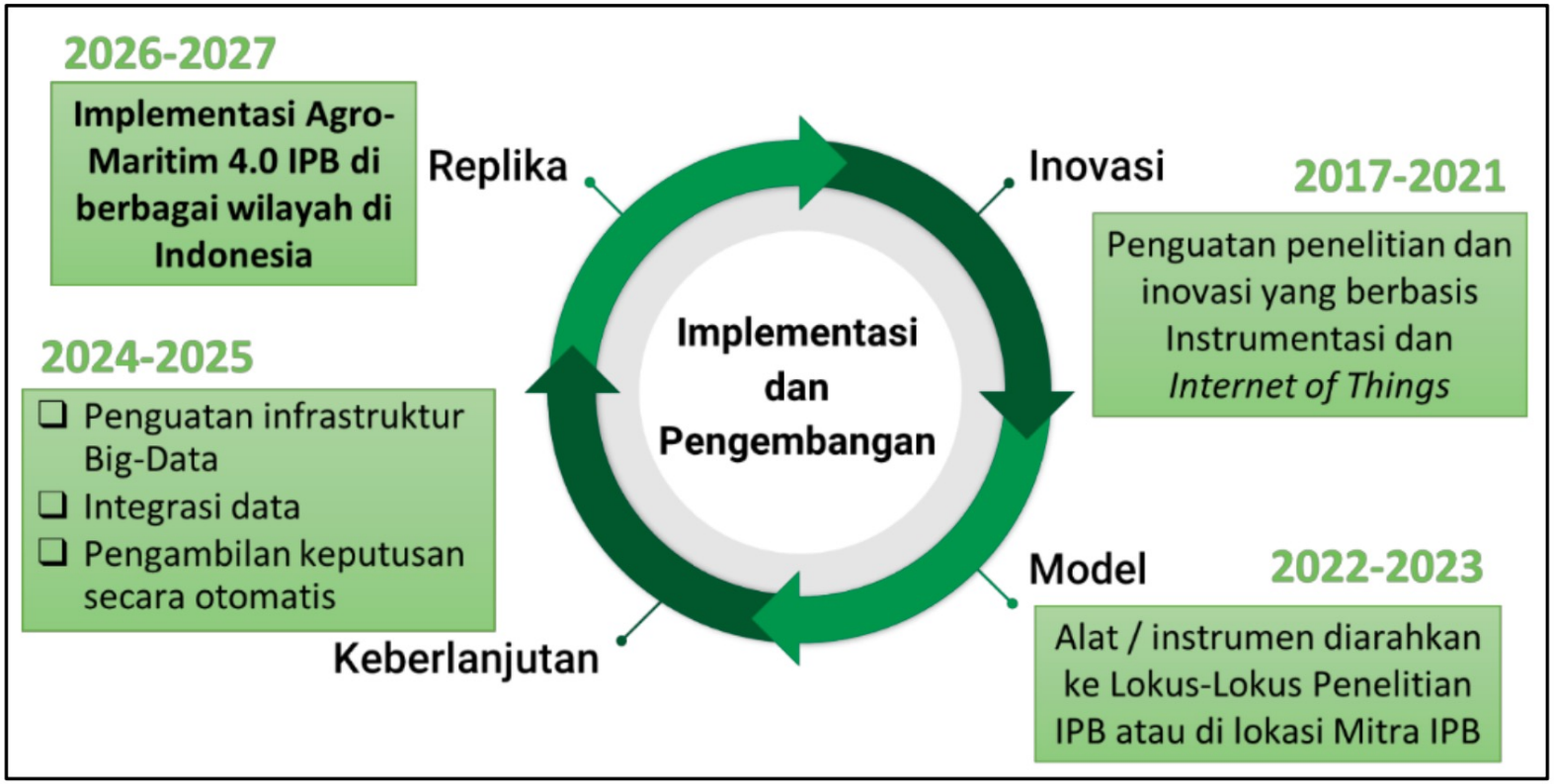
Smart Aquaculture
- Smart Site Selection
- Smart Broodstock Selection
- Smart & Precision feeding
- Smart Biomass Estimation
- Smart Harvesting
- Real Time Water Quality Monitoring System

Smart Fishing
- E-log book
- Vessels Monitoring & Surveillance
- Smart & Selective Fishing Gear
- E-traceability
- Smart System for Safety at Sea
- Smart Handling and Processing
- Smart Cold Storage

Smart Fisheries & Ocean Management
- Smart Fish School Identification & Classification
- Digital Fish Stock Assessment
- Digital Fish Measurement
- Smart Fish Data Collection & Monitoring
- Smart Fisheries Estate
- Digital Ocean Map

Smart Small Island
- Smart Small Island Ecosystem
- Smart Recreational Fishing
- Smart Sea Port
- Smart and Precise Small Factory
- Drone Delivery System
- Smart Integrated Water and Energy System
- Smart Settlement /Residential

Strategi Implementasi Agro-Maritim 4.0



Sumber: Buku Roadmap Penelitian Agro-Maritim 4.0 IPB Edisi 2 (2022)

Smart Fisheries and Coastal Management

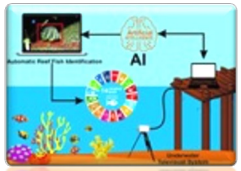
TREKfish

Aplikasi untuk menelusuri jejak penangkapan ikan

Automatic Coastal Weather Station

Teknologi untuk sistem peringatan dini/prediksi cuaca

Nusantara ARFI



AI untuk Identifikasi Species Indikator Kesehatan Terumbu Karang

Underwater Televisual System

Aplikasi untuk pemantauan & evaluasi ekosistem vegetasi bawah laut & terumbu karang

Sea Surface Drone

Tim Peneliti: Dr. Indra Jaya, Muhammad Iqbal MSi, Mahesa Glugah, MSi, Agung S.Kel.

Robot tanpa awak untuk pemantauan dan evaluasi ekosistem dekat pantai

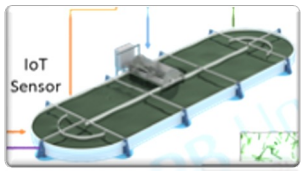
MITRA: PT. PANRITA NUSANTARA JAYA

Smart Rumpon Portable

Alat bantu pendeteksi posisi ikan melalui smartphone

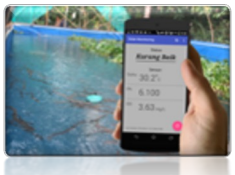
SMALPI

Tim Peneliti: Prof. Yandra Arkeman, Irman Hermadi, PhD, Dr. Dhani Satria, Ganjar Saefurrahman, MSc, Wiilyam, SKom



Kolam cerdas untuk produksi Algae

Smart Aquaculture in Eel Production

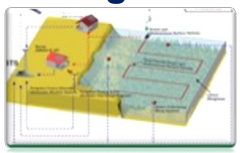


Teknologi cerdas untuk produksi belut

Sea Farming

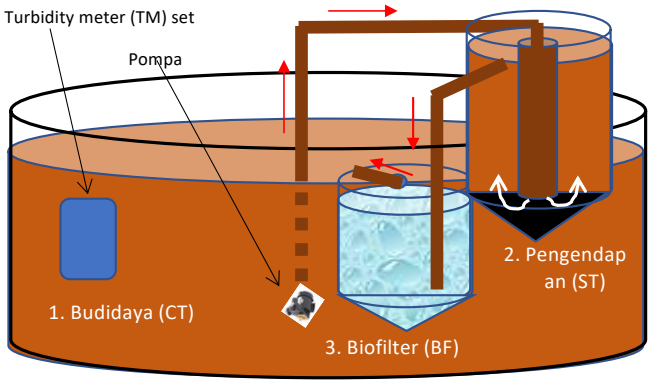
Progam pemberdayaan & pelatihan budidaya laut menggunakan teknologi 4.0

Smart Coastal Management



Teknologi IoT untuk Ekosistem Lamun

BUDIDAYA UDANG INTENSIVE DENGAN
SYSTEM BIOFLOC-RAS INDOORS di Lahan Terbatas



- **Produktivitas = 4 - 7 kg/M3**
- Potensi Produksi Per Ha = >100 Ton/Ha (Dengan Panen Parsial)
- Manfaat:
  - Meningkatkan Biosecurity untuk Menurunkan Risiko Penyakit Sehingga Tingkat Keberhasilan Lebih Tinggi
  - Meningkatkan Produktivitas Lahan dan Air
- Potensi Pengembangan:
  - Pemanfaatan Lahan Tambak Terbengkalai
  - Urban Farming

TERIMA KASIH

Contact: evaanggraini@apps.ipb.ac.id

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