



# Collaboration in Research, Training and Knowledge Management Towards Sustainable Development of the Ocean and Coasts:

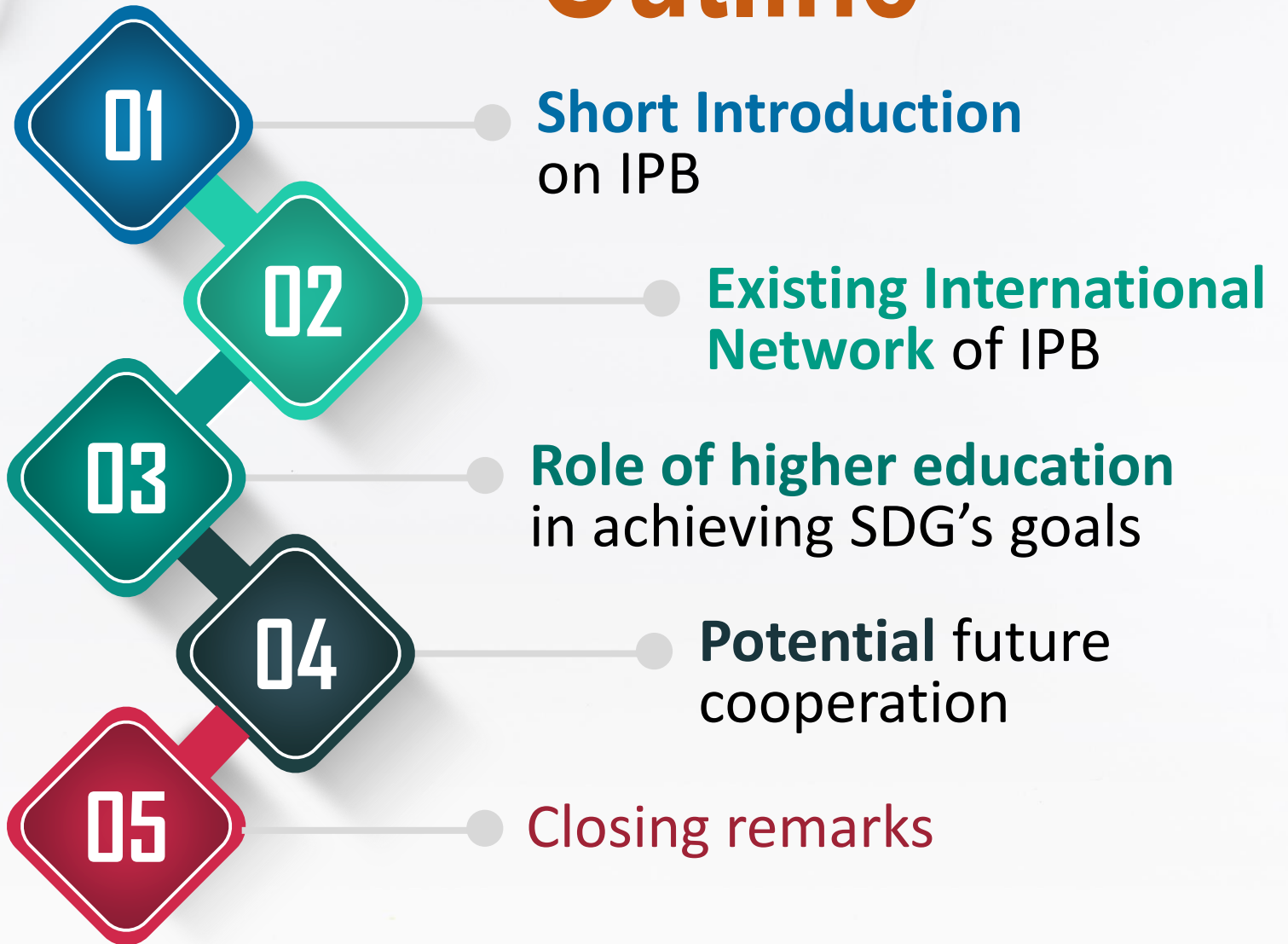
*IPB's Role in Indonesia's SDG Goals Achievement*

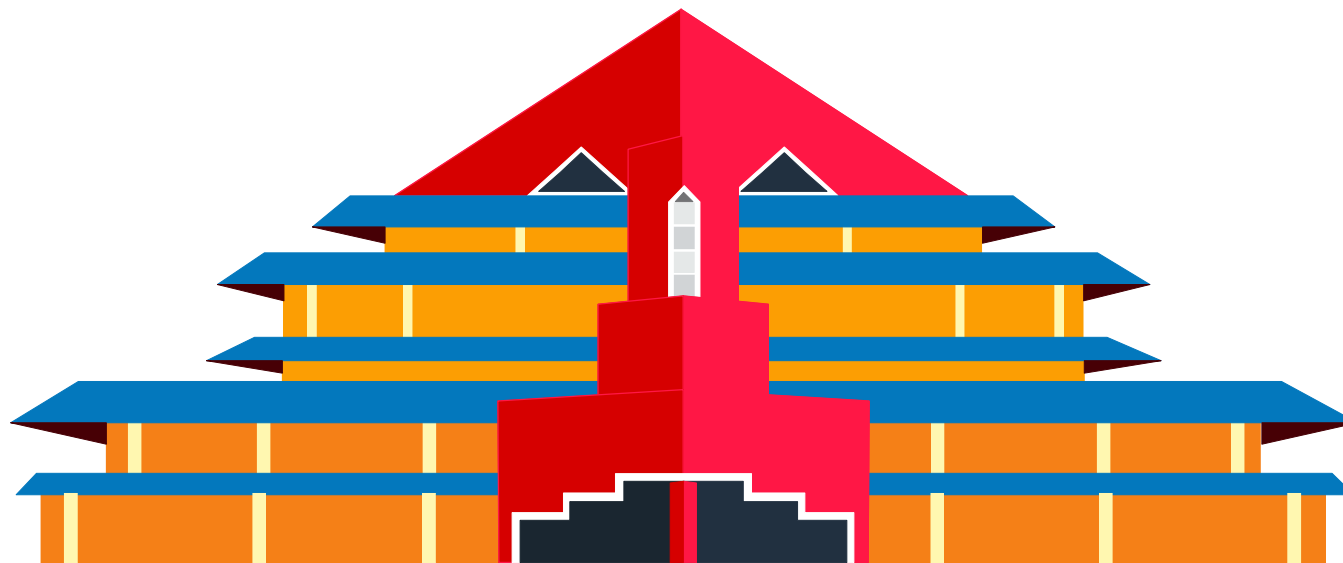
Dr. Arif Satria (Rector of IPB)

Bogor Agricultural University/IPB



# Outline





# Introduction on IPB



# IPB in Brief

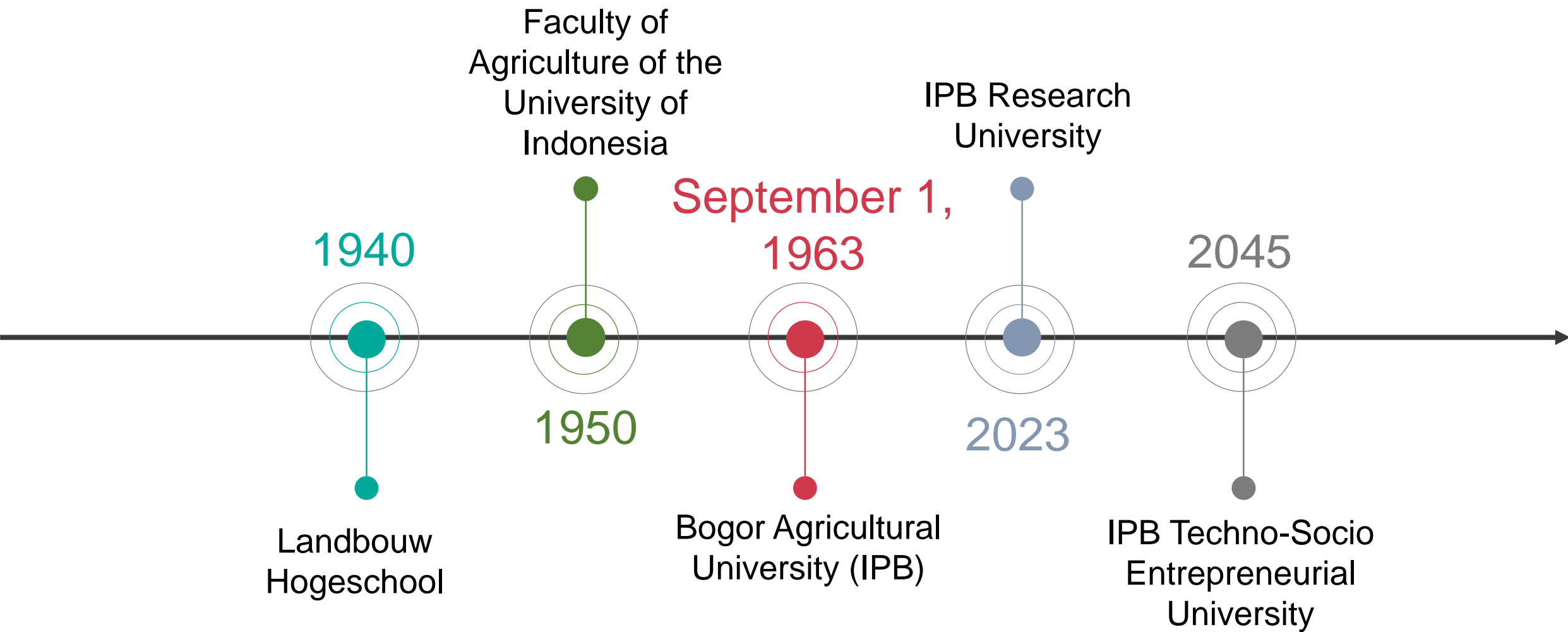


**Bogor Agricultural University** was grounded on the thought of Indonesia's founding fathers that **agriculture and agricultural universities have a very important role** in economic development to build prosperous country





# History



## IPB Vision 2019 - 2045

To become a foremost **techno-socio entrepreneurial university** to strengthen national dignity through globally excellent higher education in tropical agriculture, marine and biosciences

## IPB Mission

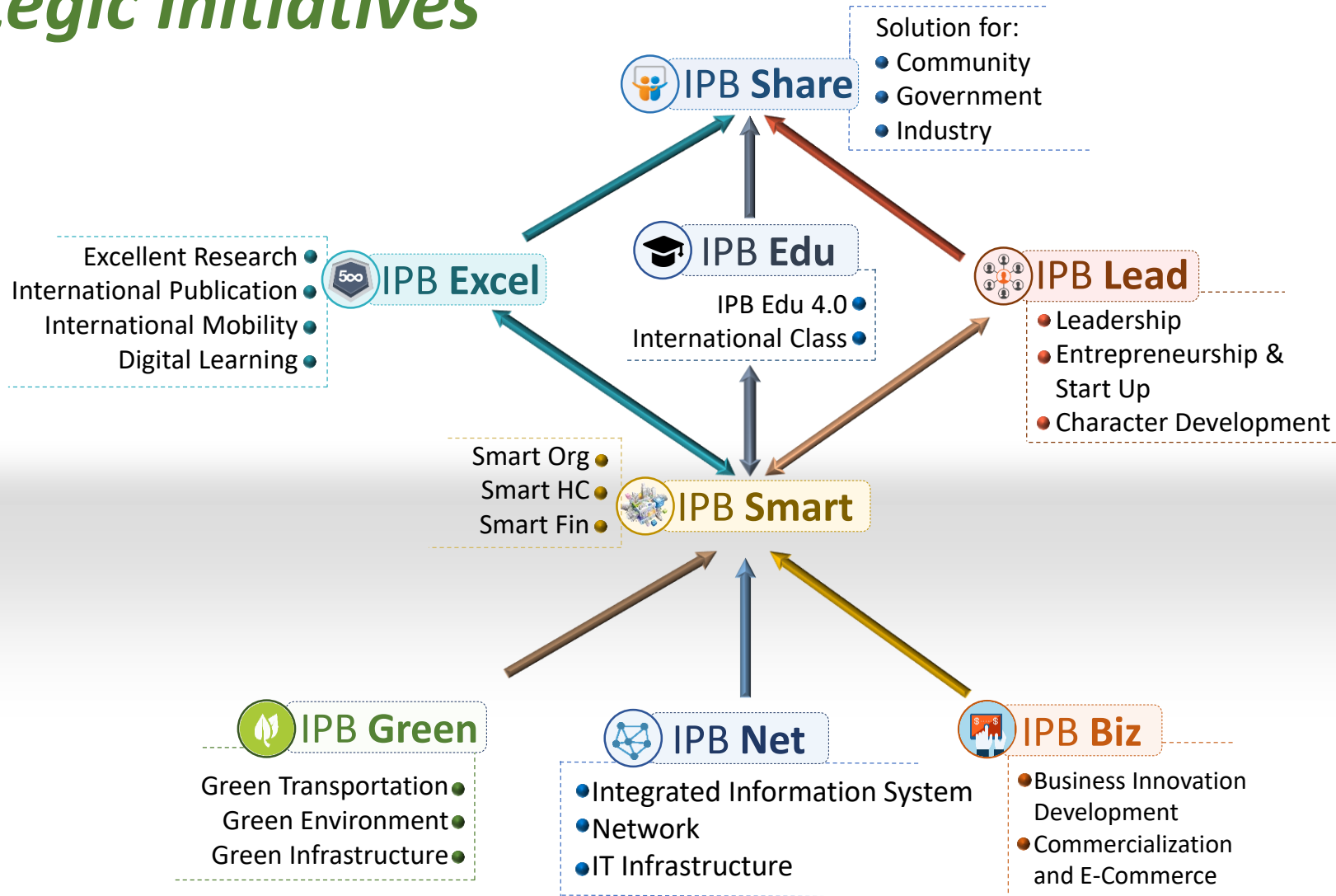
- To implement an excellent higher education, professional with entrepreneur character student in tropical agriculture, marine and biosciences.
- To conduct excellent research for the development of science and technology in tropical agriculture, marine and biosciences for national benefits.
- To transform research, science and IPB excellent culture for sustainable enlightenment, national benefit and life quality.





# IPB 4.0

## Strategic Initiatives





# IPB on Structure

## 9 Faculties

- ❖ Agriculture
- ❖ Veterinary Medicine
- ❖ Fisheries and Marines
- ❖ Animal Science
- ❖ Forestry
- ❖ Agricultural Engineering
- ❖ Mathematics and Natural Sciences
- ❖ Economics and Management
- ❖ Human Ecology

## 3 Schools

(Vocational School, Business School, Graduate School)

## 24 Research Centers

## RESEARCH CENTERS

- Surfactant and Bioenergy Research Center (SBRC)
- Center for Area Development Planning and Studies (P4W)
- Center for Coastal and Marine Resources Studies (PKSPL/CCMRS)
- Center for Primate Animal Studies (PSSP)
- Center for Tropical Horticulture Studies (PKHT)
- Center for Tropical Animal Studies (CENTRAS)
- Center for Human Resources Development (P2SDM)
- Center for Tropical Biopharmaceutical Studies (Trop BRC)
- Center for International Studies on Applied Monetary and Economic (inter CAFE)
- Center for Conflict Resolution Studies (Care)
- Center for Business Incubation and Entrepreneurship Development (IncuBie)
- Center for Climate Risk Opportunity and Management – South East Asia and Pacific (CCROM-SEAP)
- Center for Reclamation Studies (Reklamatam)
- Center for Disaster Management Studies
- Center for Syariah Business and Economic Studies (CI-BEST)
- Center for Gender and Child Studies (PKGA)
- Center for Agrarian Studies (PSA)
- Center for Halal Science Studies
- Center for Transdisciplinary and Sustainable Science Studies





# IPB on Statistics



**1-09-1963**

Established



**29000+**

Students



**500+**

International  
Students



**25**

Internationally  
Accredited Study  
Programs



**485**

Inbound Scholar



**120+**

Global Networking



**Top 100**

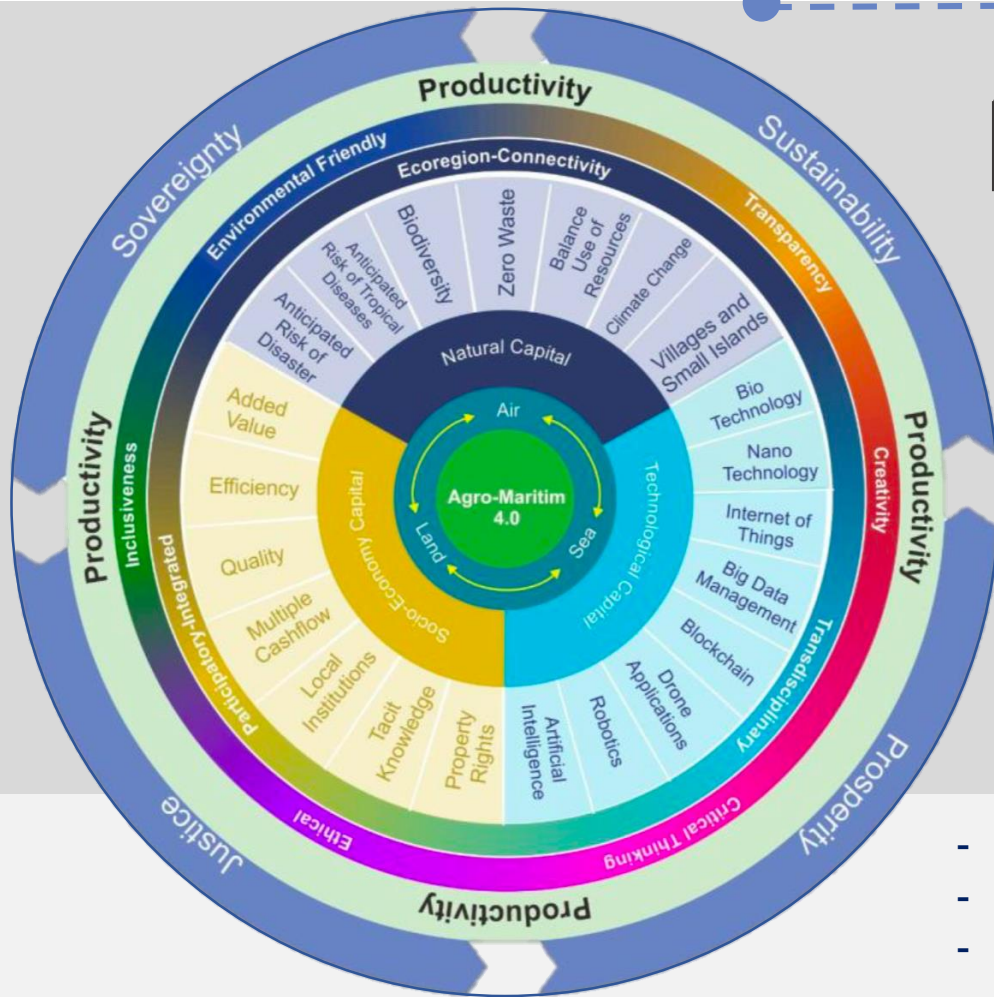
WUR by Subject



**299.6 Ha**

Campus Area

# IPB Agro-Maritime 4.0



Integration of land and marine management that involves complex social, economic and ecological systems, thus requires transdisciplinary, integrated and participative



1

Sustainability



2

Prosperity



3

Justice



4

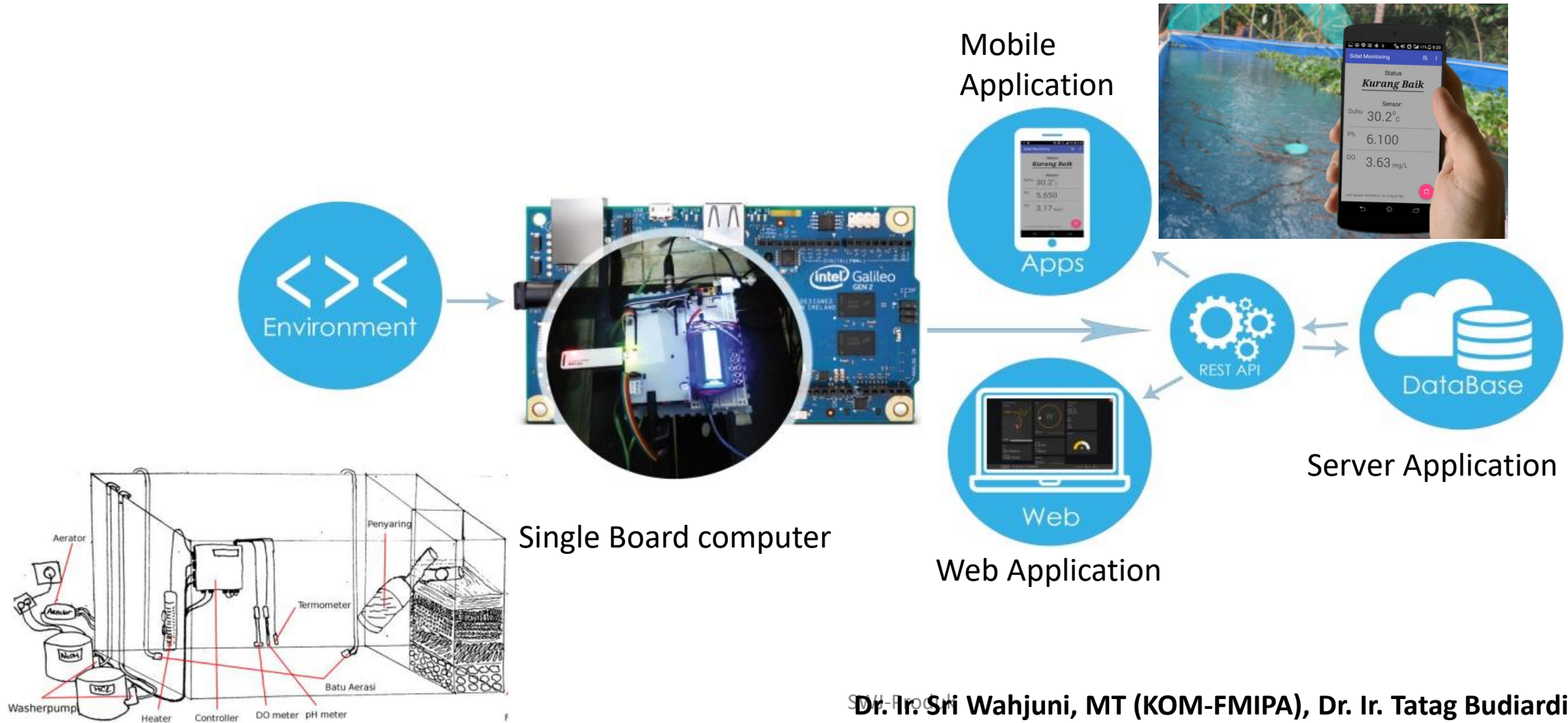
Sovereignty

- Precision
- Accurate
- Zero waste
- Blue Economy

- High Information Technology
- Innovative education
- Etc.



# Smart Aquaculture in Eel Production

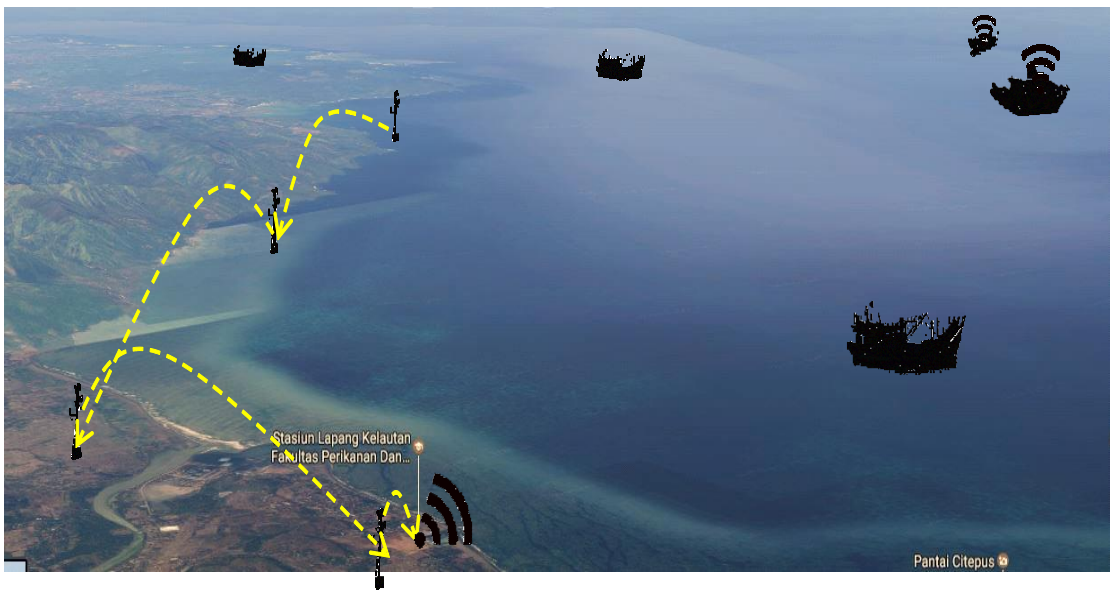
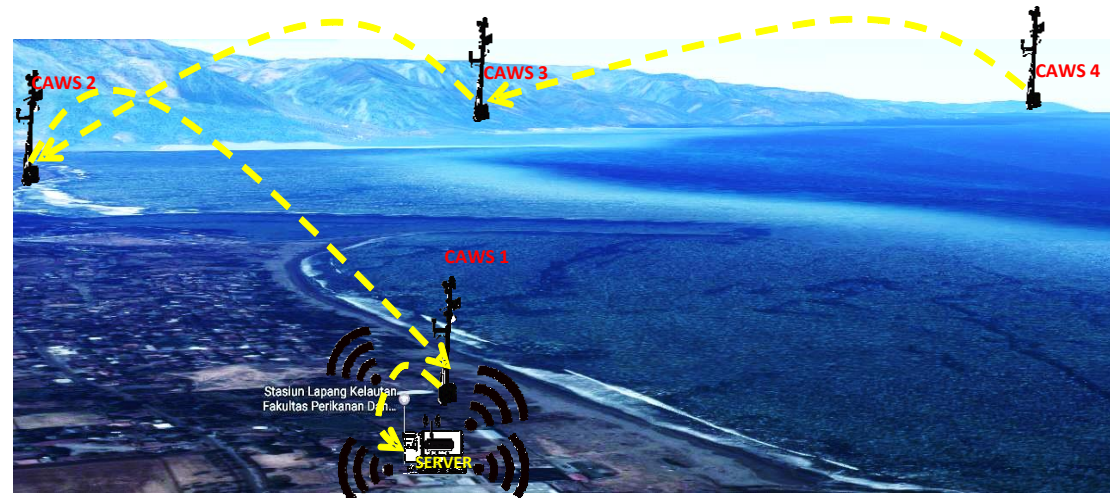


```
graph LR; A((Ecosystem)) --> B((Sensor/Instrument)); B --> C((Integration)); C --> D((Internet))
```

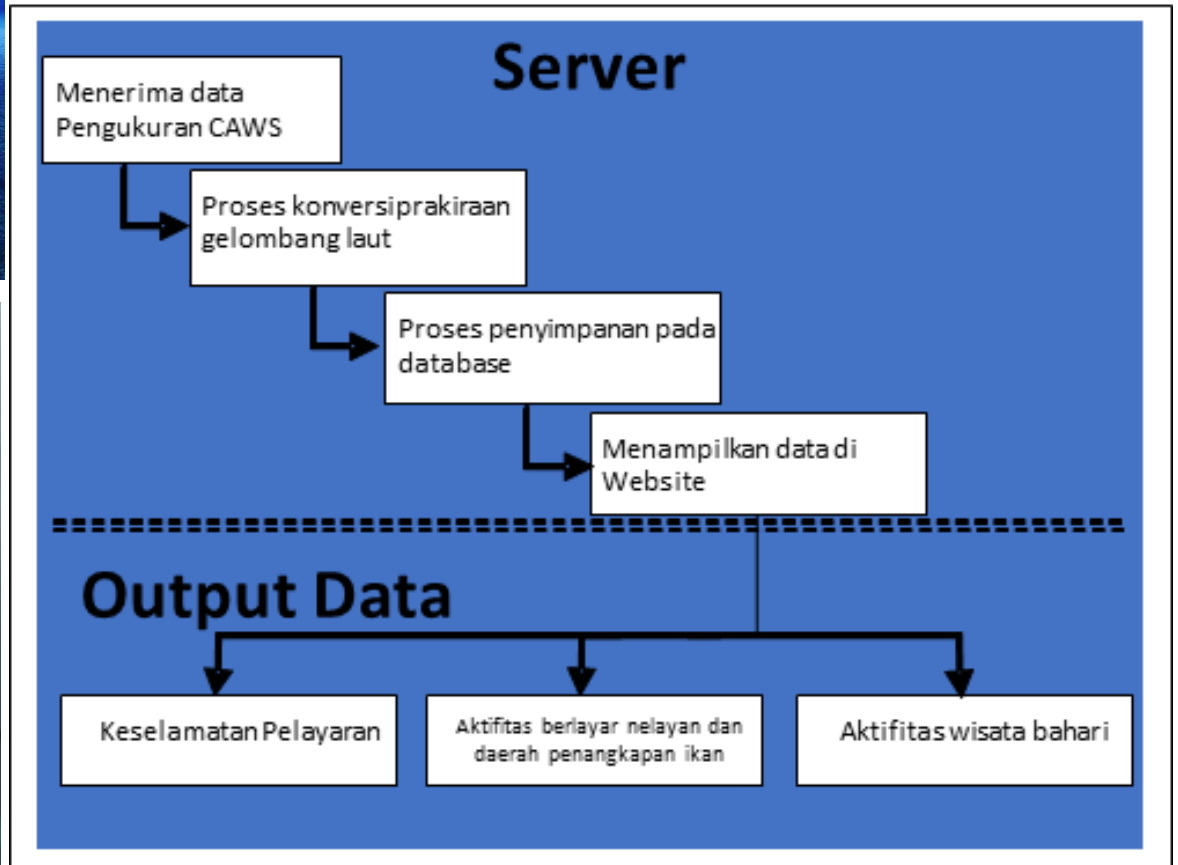




# Smart Coastal Management



## Early Warning System Fishers Safety







# Applied 4.0 Technology for Smart Fishing and Smart Aquaculture

Application Technology 4.0	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
<b>Smart Fishing</b>															
E-log book	√					√		√		√					
Vessels monitoring and surveillance		√		√						√					
Smart and selective fishing gear	√									√					
E-traceability						√				√					
Smart system for safety at sea	√	√				√				√					
Smart handling and processing							√			√	√				
Smart cold storage	√			√		√				√	√				
<b>Smart Aquaculture</b>															
Smart site selection		√	√					√		√					
Smart broodstock selection					√					√					
Smart and precision feeding	√									√	√				
Smart biomass estimation	√			√						√					
Smart harvesting										√	√				
Real time water quality monitoring system	√									√					

**A** Sensors

**D** Artificial Intelligence (AI)

**G** Robotics

**J** Internet of Things

**M** Augmented Reality

**B** Remote Sensing

**E** Bioinformatics and chemoinformatics

**H** Big Data & analytics

**K** Automation

**N** Nano Technology

**C** Drone

**F** Blockchain and Traceability

**I** Cloud Technology

**L** 3D Printing

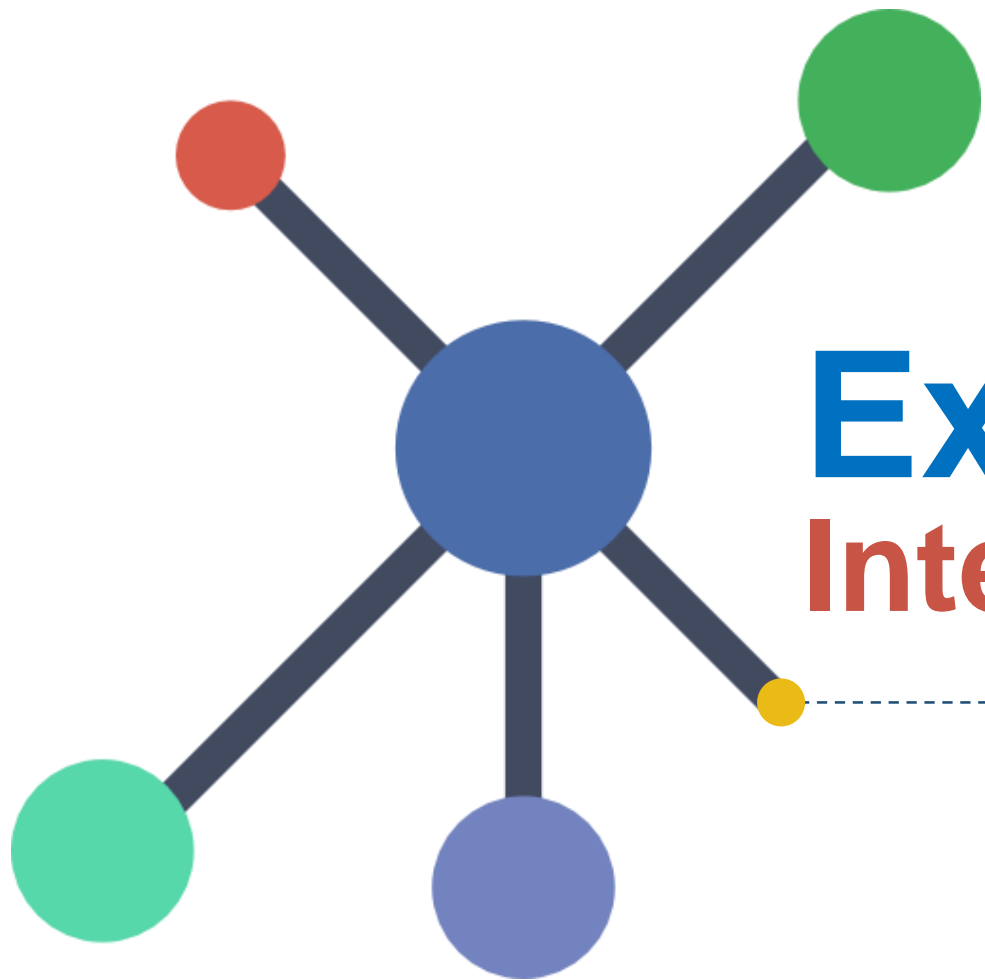
**O** BioTechnology



Application Technology 4.0				A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Smart Fisheries and Ocean Management																		
Smart fish school identification and classification							√						√					
Digital fish stock assessment								√					√					
Digital fish measurement				√									√					
Smart fish data collection and monitoring											√		√					
Smart fisheries estate					√	√					√		√					
Digital ocean map				√	√	√				√	√		√					
Smart Small Islands																		
Smart small islands ecosystem				√	√	√							√					
Smart recreational fishing					√	√							√					
Smart sea port									√				√					
Smart and precise small factory													√	√				
Drone delivery system						√					√		√					
Smart integrated water and energy system													√	√				
Smart settlement/residential						√							√					
A Sensors		D Artificial Intelligence (AI)		G Robotics			J Internet of Things			M Augmented Reality								
B Remote Sensing		E Bioinformatics and chemoinformatics		H Big Data & analytics			K Automation			N Nano Technology								
C Drone		F Blockchain and Traceability		I Cloud Technology			L 3D Printing			O BioTechnology								

# IPB SMART SMALL ISLAND





# Existing International Networks



# IPB International Collaborations



[www.ipb.ac.id](http://www.ipb.ac.id)

## ACADEMIC

### International Accreditation:

- Asean University Network (AUN-QA)
- IFT, USA
- IUFOST
- ABET, USA
- JABEE, Japan
- IFLA
- IMAREST, UK



## INTERNATIONAL PROGRAMS

1. Master In Information Technology Of Natural Resources Management.
2. Joint Degree: Master In Sustainable Agribusiness ( Maastrich School Of Management, Netherland ) Major – Minor.
3. Double Degree: Master In Agriculture Sciences ( French Universities ).
4. Joint Degree: Master In Agribusiness And Rural Development ( University Of Goettingen, Germany ).
5. Double Degree: Master In Sustainable Agriculture (Ibaraki University, Chiba University, And Rhyukyu University Japan).
6. Joint Degree: Master In Agriculture And Forestry ( Suiji, Ehime, Kagawa, Kochi University Japan ).
7. Joint Degree: Master In Economics ( Adelaide University Australia ).

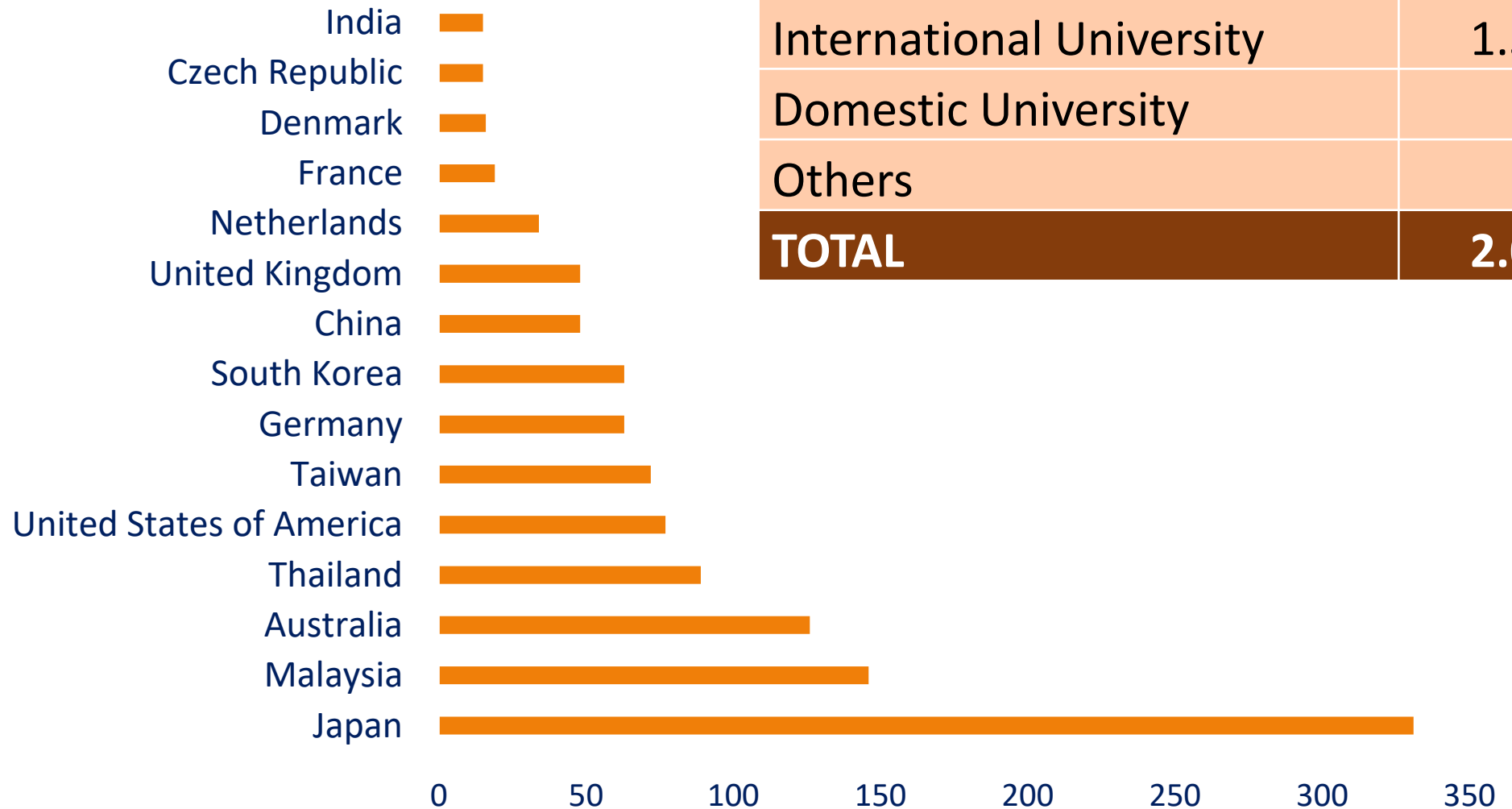
## SUMMER COURSE PROGRAMS

1. Field Course On Primate Conservation Biology And Global Health (IPB – University Of Washington ).
2. An Introduction To Tropical Biodiversity: From The Mountain To The Sea ( IPB-Uc/Searca ).
3. Growth With Equity Paradigm: The Way Toward Poverty Eradication (IPB–University Of Goettingen ).
4. Rapid Biodiversity Assessment ( IPB–University Of Vienna ).
5. Rehabilitation Techniques Of Degraded Dipterocarp Forest (IPB – University Of Goettingen ).
6. Summer Course On Sustainable Agriculture (IPB–Ibaraki University ).





# PARTNERS



International University	1.367
Domestic University	310
Others	334
<b>TOTAL</b>	<b>2.011</b>



# PEMSEA NETWORK ON LEARNING CENTERS (PNLC)



IPB

Chair of PNLC  
2017-2018



The PEMSEA Network of Learning Centers provides technical advice and assistance to national and local governments, ICM project sites, nongovernmental organizations, local communities and the private sector for SDS-SEA implementation across the region through the following:

- Undertaking studies and projects on coastal and ocean management;
- Monitoring and reporting of changes and trends;
- Mentoring and training of planners, managers and practitioners; and
- Conducting local, national and regional training courses.

To date, PEMSEA has partnered with ICM Learning Centers and Regional Centers of Excellence in six partner countries:

## ICM Learning Centers

- Royal University of Phnom Penh (RUPP)
- Coastal and Ocean Management Institute (COMI), Xiamen University
- Kim Il Sung University
- Center for Coastal and Marine Resource Studies, Bogor Agricultural University
- Xavier University-Ateneo de Cagayan
- De La Salle Lipa
- University of the Philippines Visayas
- University of Danang

## PEMSEA Regional Centers of Excellence (RCoE)

RCoE on marine pollution:

Centre for Marine Environmental Research and Innovative Technology (MERIT) of Hong Kong

RCoE on coral reef research and marine protected areas management:

Marine Science Institute (MSI) of the University of the Philippines



# Role of Higher Education in Achieving SDGs Goals





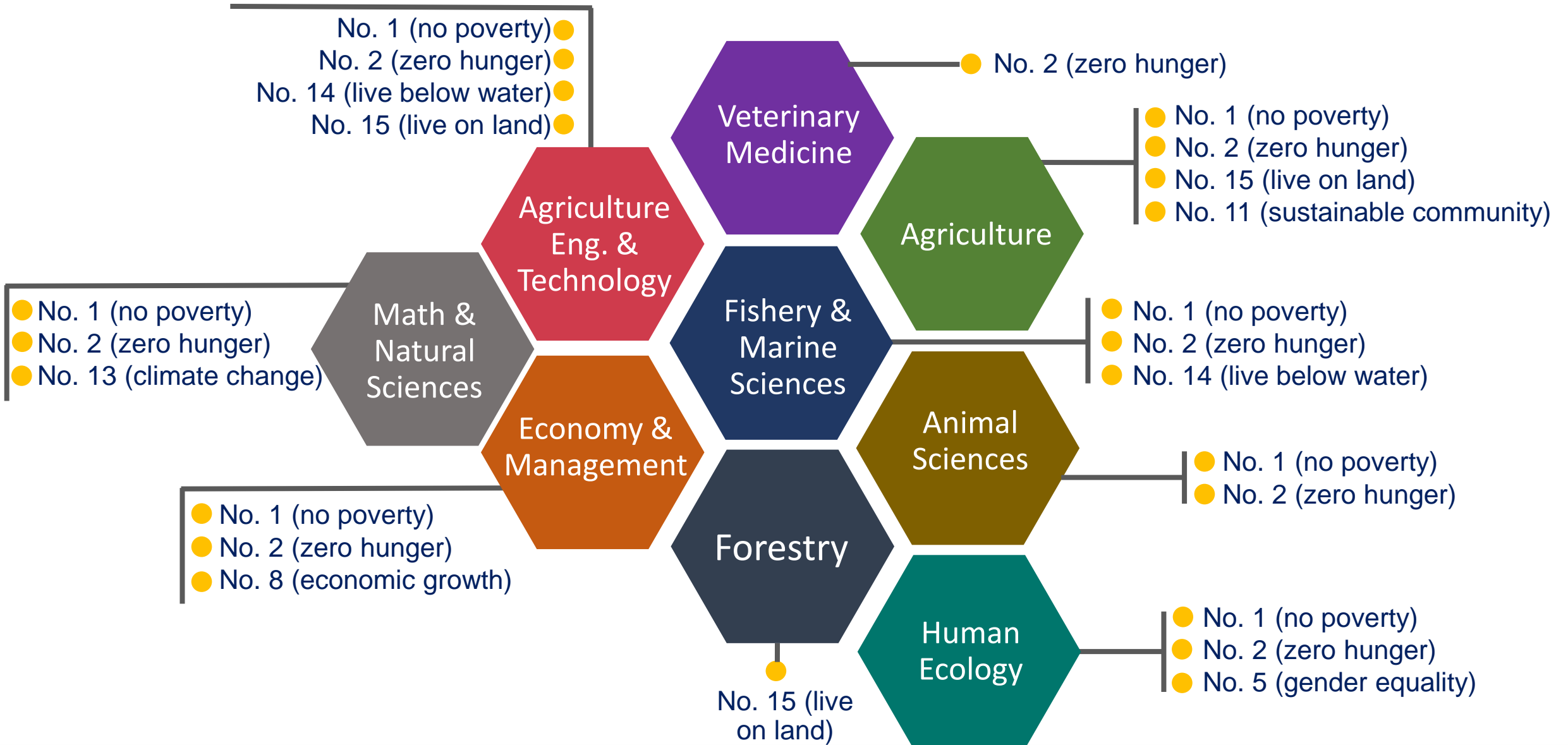
**SUSTAINABLE  
DEVELOPMENT**

**GOALS**



**IPB and  
Higher  
Education  
Responsible  
to **SDG's**  
goals**

# SDG's goals at IPB







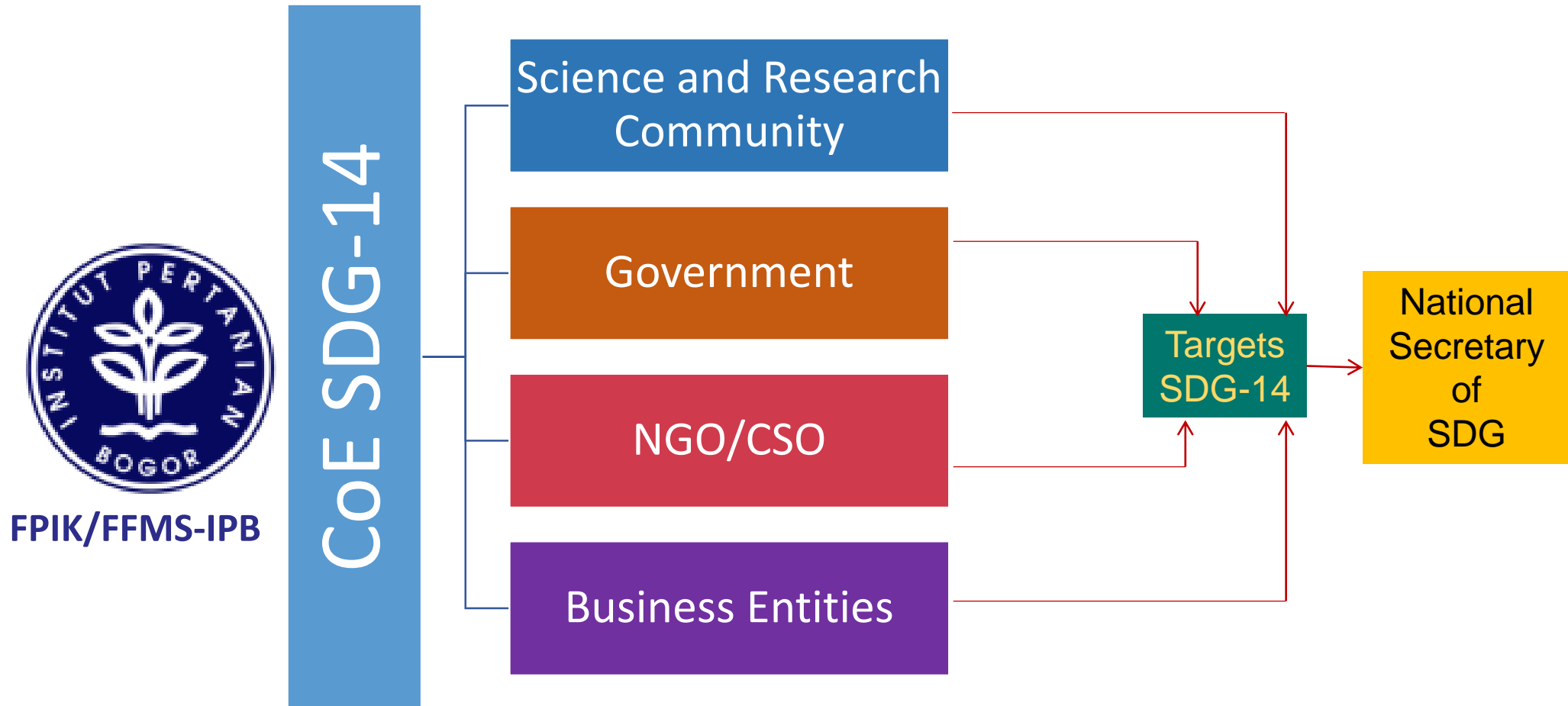
# 24 RESEARCH CENTERS

- Surfactant and Bioenergy Research Center (SBRC ) : Goals No. 7
- Center for Area Development Planning and Studies (P4W ) : Goals No. 11
- Center for Coastal and Marine Resources Studies (PKSPL/CCMRS ) : Goals No. 1, 2, 14
- Center for Primate Animal Studies (PSSP ) : Goals No. 15
- Center for Tropical Horticulture Studies (PKHT) : Goals No. 1, 2, 15
- Center for Tropical Animal Studies (CENTRAS ) : Goals No. 1, 2, 15
- Center for Human Resources Development (P2SDM ) : Goals No. 1, 2
- Center for Tropical Biopharmaceutical Studies (Trop BRC) : Goals No. 1, 2
- Center for International Studies on Applied Monetary and Economic (inter CAFE) : Goals No. 8
- Center for Conflict Resolution Studies (Care ) : Goals No. 16
- Center for Business Incubation and Entrepreneurship Development (IncuBie) : Goals No. 8
- Center for Climate Risk Opportunity and Management – South East Asia and Pacific (CCROM-SEAP) : Goals No. 13
- Center for Reclamation Studies (Reklamatam) : Goals No. 14, 15
- Center for Disaster Management Studies : Goals No. 8
- Center for Syariah Business and Economic Studies (CI-BEST) : Goals No. 8
- Center for Gender and Child Studies (PKGA) : Goals No. 5
- Center for Agrarian Studies (PSA) : Goals No. 1, 2
- Center for Halal Science Studies : Goals No. 81,2
- Center for Transdisciplinary and Sustainable Science Studies : Goals No. 14, 15



# For SDG-14 Indonesia

## IPB as Hub for National Knowledge Management Systems



# Ecosystem Approach to Fisheries Management

## EAFM Small Scale (2012-2014)

Site 1. Jor Bay, East Lombok District



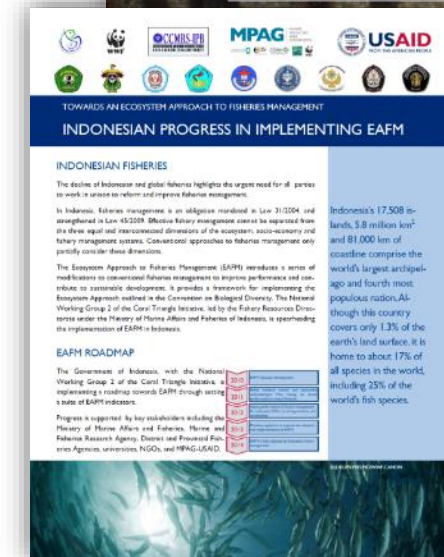
## EAFM Training for Small Scale Fisheries



### The Objectives:

- (1) To enhance knowledge and awareness on the concept implementation of EAFM for small scale fisheries;
- (2) To develop a framework of EAFM implementation plan for small scale fisheries in Jor Bay and Gili Matra

## EAFM Planning for Small Scale Fisheries





# Coastal Community Development

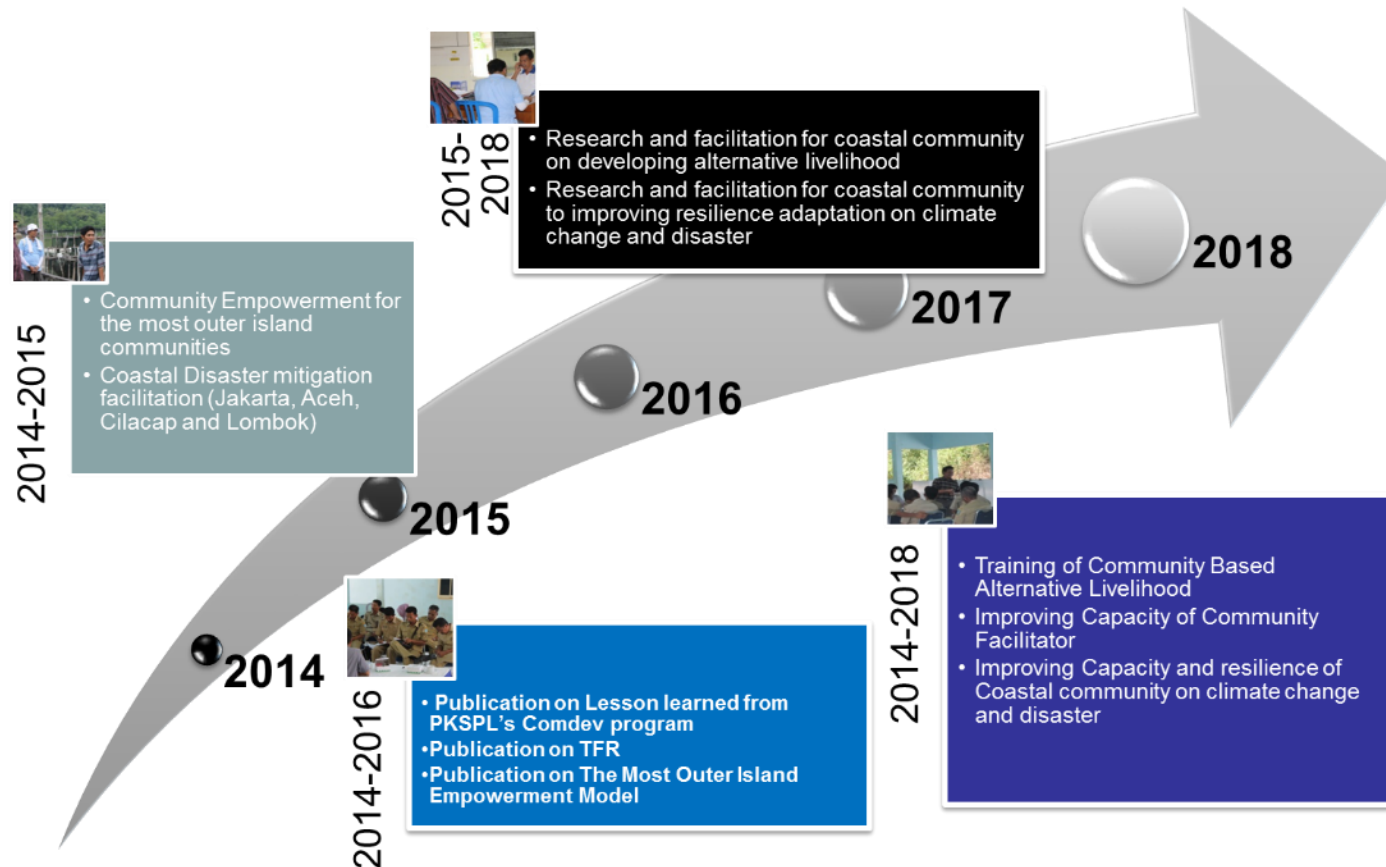
CCD

Community empowerment

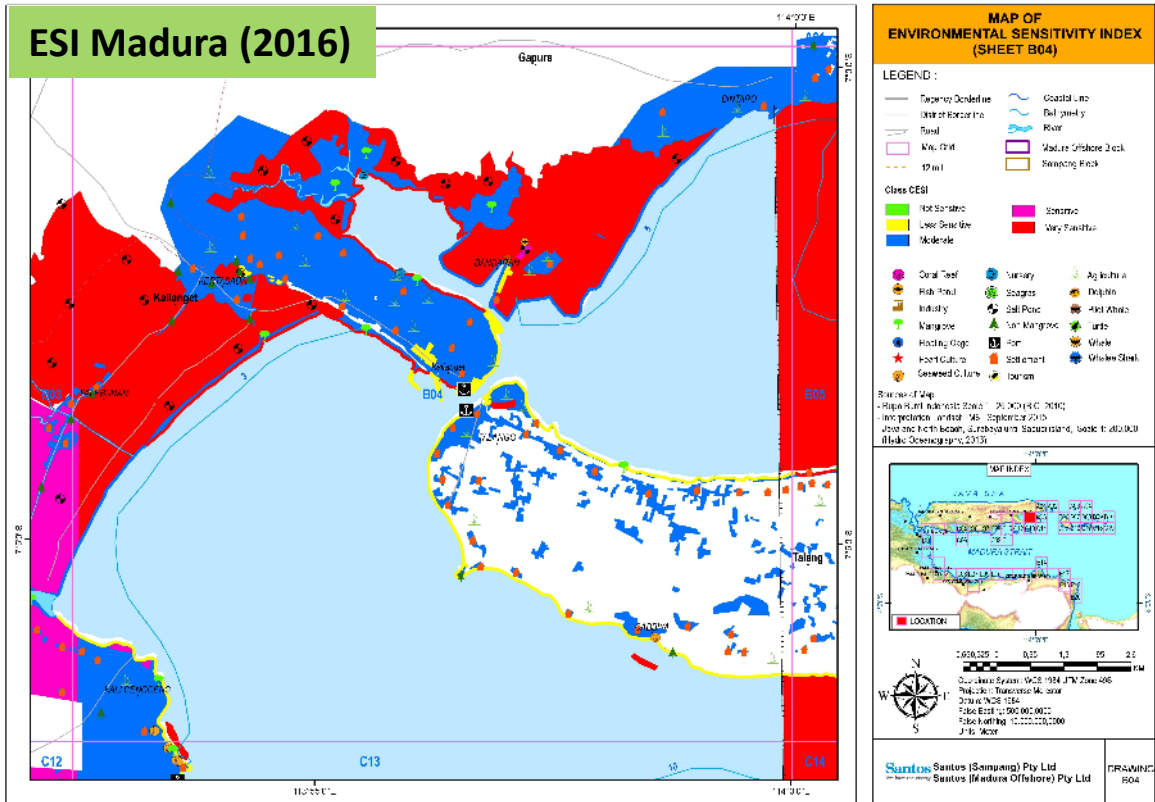
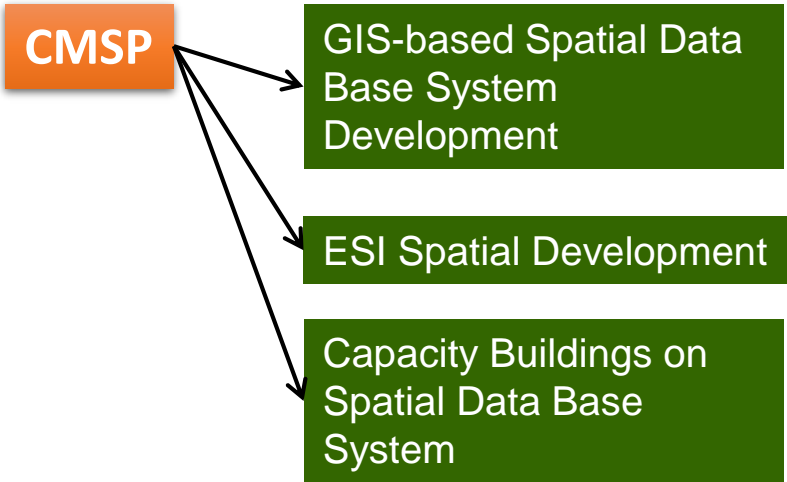
Social Profiling

Social Community Livelihood

Engaging “GERBANG MAPAN” Coastal Community Development Program Tangerang District, West Java Province (2014-2015)



## Coastal and Marine Spatial Planning

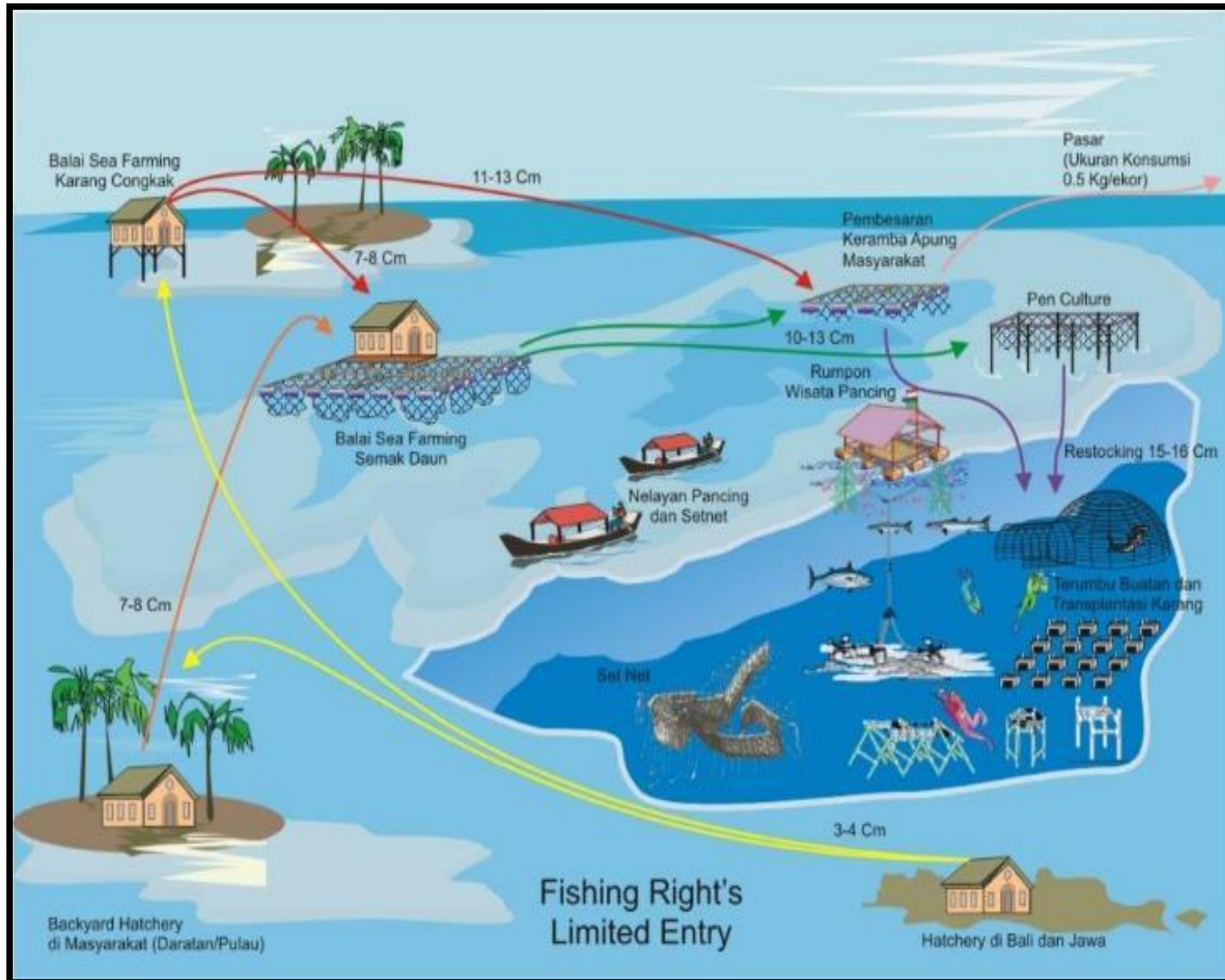


## ESI Field Survey





# Sea Farming & Sea Ranching

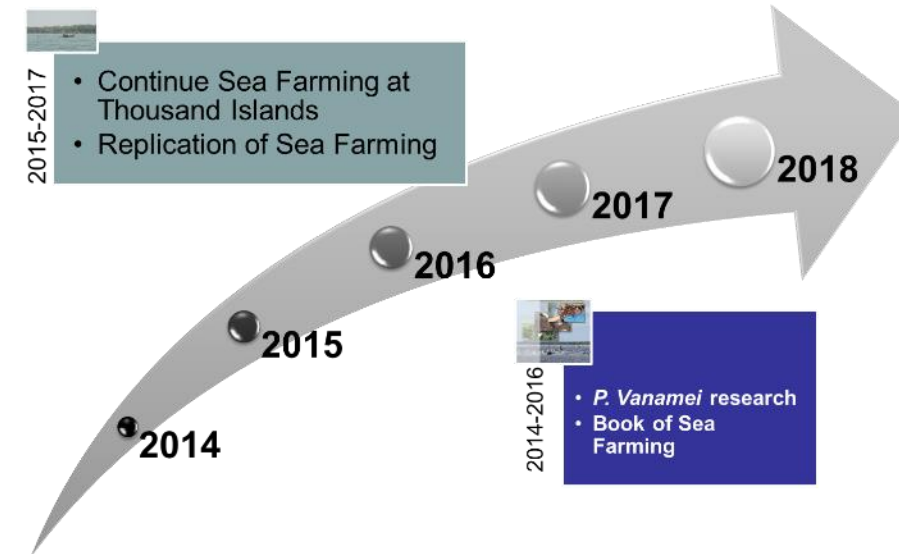


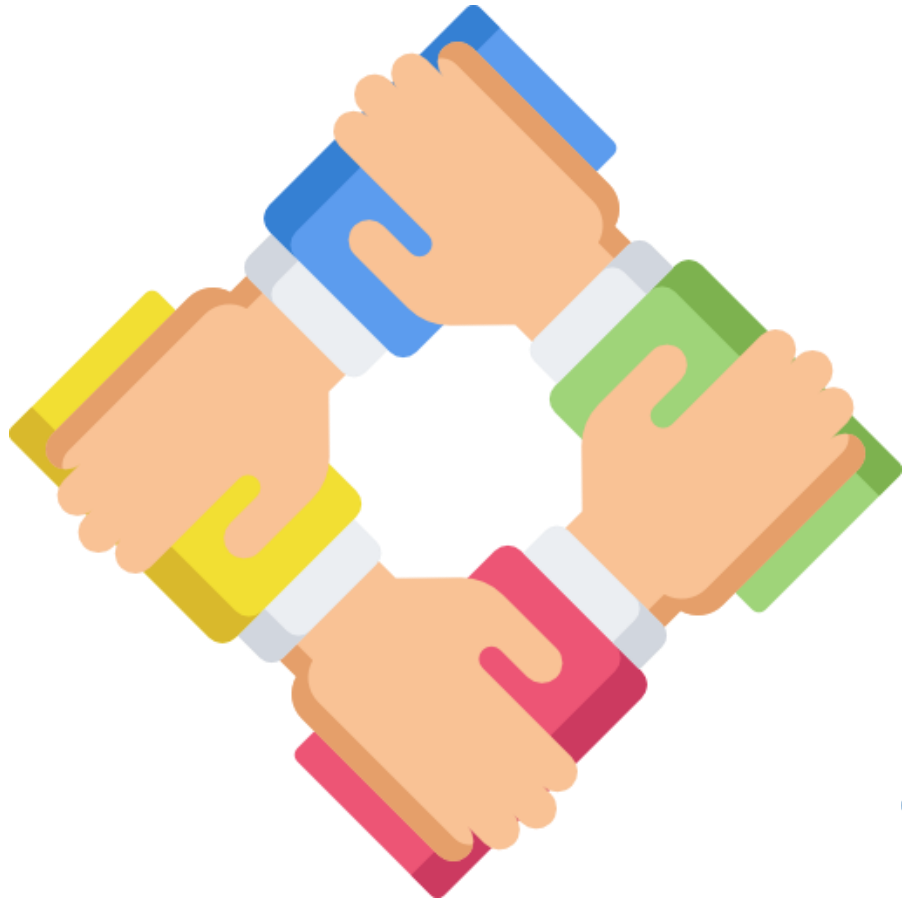
Sea Farming

Mariculture and Restocking

Sea Ranching

Community Based Shallow Waters Management





# Potential Cooperation in The Future



# POTENTIAL COOPERATION IN THE FUTURE



## ● (1) Postgraduate Curriculum, Innovative Learning Models and Double Degree:

- Double Degree for ICM Magister Course
- Sandwiches program for Master
- E-learning, Credit-sharing scheme

## ● (2) Training Workshops Summer Course/School :

- Approaches/Tools/Methods : Fish Stock Assessment, Environmental Sensitivity Index, EAFM, Marine Protected Area Management, Sea Farming
- Summer Course at : Coral Reef Ecosystems, Mangrove Ecosystems
- ICM Training of Trainer Courses

## ● (3) Joint Research Development and Networking:

- Join research in tropical marine research
- Join Publication
- Visiting Professor
- Mobilizing Regional/National Task Force



# Closing Remarks





In the era of fast and precisely knowledge transfer, role of robust IT is important in development of learning processes, knowledge transfers & management and innovative teaching/seminar/workshop techniques

Higher education plays important roles in achieving sustainable development goals, nationally and regionally through human resources development, application of approaches/tools/methods



### Closing Remarks

Collaboration among PNLC members able to enhance and accelerate achievement of SDG's goals especially goal number 14 in the East Asian Seas Region

IPB looks forward to have strong collaboration with all higher education institutions in the East Asian Seas countries

# Thank You



<http://ipb.ac.id>

