The Role of University in SDGs

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Searching and serving the best

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3 Pillars of University

- Education
- Research & Innovation
- Community Development
University CONTRIBUTION TO SDGs

• Sustainable development should be **core business** of higher education

• Universities are seeing the relevance of SDGs within the institution’s mandate (i.e. teaching, research, & public services)

• Promoting the diversity of actions contribute to SDGs in policy advocacy, leadership and management, curriculum reform, research, outreach, campus greening, student initiatives, etc.
Indonesia SDGs – There is no left behind Approach

GOVERNMENT AND PARLIAMENT

• Target, Policy & Programs
• Data, Indicators Development
• Dissemination, Communication and Advocacy
• Regulation and Budget
• Monitoring, Evaluation and Reporting

ACADEMIA AND EXPERTS

• Capacity Building
• Evaluation
• Policy Paper/Brief, input for Policy Formulation
• Research, Data and Indicator Development

PHILANTHROPY AND BUSINESS

• Advocacy within Business Sector
• Program Facilitation (Communications, Capacity Building, Funding collaborations)

CIVIL SOCIETY AND MEDIA

• Dissemination and Advocacy
• Program Facilitation
• Advocacy, Awareness and Capacity Building
• Dissemination and Monitoring

SDGs INDONESIA

Courtesy: Adrianto (2018)
IPB’s Vision 2019 – 2045

To become a leading *techno-socio entrepreneurial university* in strengthening nation’s dignity through excellent higher education the global level in the fields of *tropical agriculture, marine and bioscience.*
SMART Society 4.0

AGRARIAN SOCIETY
Hunting, farming

1784

INDUSTRIAL SOCIETY
Mechanization, steam power, weaving loom Mass production, assembly line, electrical energy

1870

INFORMATION SOCIETY
Automation, computers, electronics

1969

Smart SOCIETY
Cyber Physical Systems, Internet of things, networks

NOW

Dr. Arif Satria, SP, M.Si
# Smart Society

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## Technology changes
- Internet of things, big data, robotic, artificial intelligence, 3D printing, biologi, molekuler, material

## From Product based to Platform based
- Three type of target industry platform:
  - Information-oriented industry
  - Scattered data industry
  - Asimetric information industry

## From Ownership to Sharing

## Changes in work field
- Work field in 20\(^{th}\) c will be replaced by 4.0 technological-based new work

## Lifestyles changes
- Phubbing, check its smartphone every 4 min, fomo (fear of missing out), online game, addicted to praises (likes, share, love), altruism, cyber romance, dating scam, dll

## Changes in competition map
- ‘old success’ platform will be changed by more competitive platform. For example Kodak replace by digital camera, Nokia replaced by android and iOS

## Regulation changes
- Perspective changes in industry cluster and new work field. Exp: GOJEK and AMAZON

## New power: Data
- Now: who rule the big data will rule the world
  - Bigdata
    - Volume, Velocity, Variety

## Trust and reputation are important

## New skill changes
- Complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, system skills, negotiation,

## Changes in spatial orientation
- Village has become life support with ever-evolved economic and technology
IPB’s roles
Activities:

- formulating model of poverty alleviation in Indonesia
- Local Development Policy to promote food production, horticulture, animal farm and fisheries
Book/Policy Recommendation:
Indikator Kemiskinan dan Misklasifikasi Orang Miskin (Poverty indicators and Misclassification of the Poor)

**New Poverty line**

2. IPB:
   - Nagekeo : Rp 606,730
   - Pamekasan : Rp 604,365
   - Takalar : Rp 594,954
   - Rembang : Rp 517,481
1st SDG: NO POVERTY

Book/Policy Recommendation

Analisis Kesejahteraan Rumah Tangga Usaha Perikanan (Analysis of Fishery Household’s Welfare)

- Analysis of Agriculture Census’s data, used multidimensional indicators: education, health, and life standard
- Formulating some recommendations for policy making
IPB in Addressing SDGs:

Activities:

- To support national food security and sovereignty through:
  - Technological development
  - Biotecnology (SEAFAST)
  - Etc.
FUTURE FARMS
small and smart

SURVEY DRONES
Aerial drones survey the fields, mapping weeds, yield and soil variation. This enables precise application of inputs, mapping spread of pernicious weed blackgrass could increasing Wheat yields by 2-5%.

FLEET OF AGRIBOTS
A herd of specialised agribots tend to crops, weeding, fertilising and harvesting. Robots capable of microbot application of fertiliser reduce fertiliser cost by 99.9%.

FARMING DATA
The farm generates vast quantities of rich and varied data. This is stored in the cloud. Data can be used as digital evidence reducing time spent completing grant applications or carrying out farm inspections saving on average £5,500 per farm per year.

TEXTING COWS
Sensors attached to livestock allowing monitoring of animal health and wellbeing. They can send texts to alert farmers when a cow goes into labour or develops infection increasing herd survival and increasing milk yields by 10%.

SMART TRACTORS
GPS controlled steering and optimised route planning reduces soil erosion, saving fuel costs by 10%.
IPB Innovation for Community : IPB 3S (rice)

- Potential Yield 13.4 ton/Ha
- Mean Yield 7 ton/Ha
- 300 grain/panicle

Multiplier Effect: applied in 26 Provinces

Economic Value Rp 1.76 Trillions (2017)
2nd SDG: ZERO HUNGER

PROGRAM GIZI ANAK SEKOLAH (School Feeding):
Partnership program between Ministry of Education and Culture, Faculty of Human Ecology, and Indonesian Food and Nutrition Society (Pergizi Pangan)
2nd SDG: ZERO HUNGER

PROGAS:

Goals
Nutrition education, improving students’ nutrition, and character education (Clean and Health Behavior and Culture/PHBS)

Targets
Student of Elementary School in Indonesia conducted project: Kupang District, South Timor Tengah District, Tangeran District
2nd SDG: ZERO HUNGER

KANTIN SEHAT BERAGAM TERJANGKAU (SERAT)
Providing cheap healthy food for students
IPB in Addressing SDGs:

Activities:
✓ To produce biomedicines (BIOFARMAKA)

Example:
✓ Galohgor honey for local-based Nutraceutical for lactation period
✓ Temulawak and Meniran to Overcome and Prevent Avian Influenza
✓ Extract of Mahkota Dewa Leaf and Temulawak for Anti Dementia
Ayo Melek Gizi Community and Nutrition Education Center (AMG CONNECT)

Partnership program between Faculty of Human Ecology, and PT Sarihusada
3rd SDG: GOOD HEALTH AND WELL-BEING

AMG CONNECT

**First Year**
- Curriculum and modul for nutrition education
- Educating 198 kader from 91 Posyandu around IPB
- Educating 192 Key Opinion Leaders (KOLs)
- Educating more than 4000 mothers
- Building 2 showcases AMG Connect in Posyandu

**Second Year**
- Building Kampung AMG in Dramaga
- Nutrition education (Level 1 and Level 2 for more than 100 persons)
- Modul Level 1 and 2
- Identifying nutrition problems in study location (case: KKNT's village)
3rd SDG: GOOD HEALTH AND WELL-BEING

MOBIL CURHAT: Mobile Health, Nutrition, and Family Counseling Service
Partnership between Bogor Government and FEMA

Goal

To increase access to health, nutrition, and family/child counseling
IPB in Addressing SDGs:

Activities:
- Developing vocational school in several remote districts
- Enhancing education quality improvement
- Capacity building through IPB International Certified Training
IPB MILLENIAL EDUCATION 4.0 (2)

1. **Curriculum reorientation**
   - Integration between *hard skills* & *soft skills* into curriculum structure
   - Mapping and updating *school of thought*
   - Structuring the study program

2. **Changes/alignment in learning process**
   - *Blended learning* system and/or MOOCs (Massive Open Online Courses)
   - *ODL* (Online Distance Learning)

3. **Updating lecturer skills**
   - Preparation of virtual/e-learning teaching materials,
   - Heutagogic development for virtual learning,
   - Development of assessment design for virtual learning outcome.

4. **Develop new knowledge and professions**
   - *Agrologistic, data science, cyber psychology, cyber sociology, sustainability*

5. **Curriculum Reform for IPB Vocational School 4.0**
   - *Work-based Curricula* approach based on joint design on curriculum block and 1-2-3 system
LABSCHOOL CHARACTER EDUCATION IPB - ISFA
PG–TK–Daycare–After School Activities
Department of Family and Consumer Science,, FEMA – IPB
LABSHOOL

Academic Programs:

- Play Group (Toddler) → 2-3 year
- Pre Kinder and Kinder
- Daycare
4th SDG: QUALITY EDUCATION

LABSHOOL

Supporting Programs:

• Children Growth Consultation,
• Children Interest and Talent Consultation
• Consulting Children with Special Needs
• Parenting Consultation
• Family Counseling
• Bulletin
• Seminar and Education for teachers/parents
IPB in Addressing SDGs:

Activities:

- Gender partnership and Family Endurance
- District gender profile
- Gender Development Index and Gender Empowerment Measure
IPB in Addressing SDGs:

Activities:
- IPB Goes to Fields helps
  - handle waste
  - Improve sanitation
  - Provide clean water pipe post earthquake
Activities:
✓ Producing alternative energy from renewable resource sustainably
✓ The use of bio-surfactant to produce cheap energy
7th SDG: AFFORDABLE AND CLEAN ENERGY

Integrated Waste Management
• Production of biogas as energy source for canteen
• Catfish aquaculture
• Hydroponics
• Farming for food diversification

PLASMA
Bio-energy
IPB in Addressing SDGs:

Activities:
- Increasing innovations
- Scale up of innovation products
- Collaborating with enterprises
Total aplikasi Paten s.d 2017
401
3%
9,71
Penyumbang Inovasi Paling Prospektif
terbanyak di Indonesia
versi (BIC)
Business Innovation Center
tahun 2008 - 2017

Total 2008-2017
415 from 1045 innovations

Penyumbang Inovasi Paling Prospektif
terbanyak di Indonesia
versi Business Innovation Center (BIC)
tahun 2008 - 2017

39,71%

http://ipb.ac.id

Searching & Serving the Best
IPB Innovations

JUMLAH APLIKASI PATEN IPB 2013-2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Application per Year</th>
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<tbody>
<tr>
<td>2013</td>
<td>276</td>
<td>23</td>
</tr>
<tr>
<td>2014</td>
<td>289</td>
<td>13</td>
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<tr>
<td>2015</td>
<td>321</td>
<td>32</td>
</tr>
<tr>
<td>2016</td>
<td>348</td>
<td>27</td>
</tr>
<tr>
<td>2017</td>
<td>401</td>
<td>52</td>
</tr>
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</table>

Total Patents up to 2017

- **401**
  - Patent Granted
  - **134**

Pemohon Paten **Terbanyak** tingkat Perguruan Tinggi

http://ipb.ac.id
Implementasi Inovasi

Penyebaran Pepaya Callina

88 Kabupaten
38 Kota
di INDONESIA

11 MANCANEGARA Malaysia, Pakistan, Tanzania, Jepang, India, Singapura, Brunei Darussalam, Timor Leste, Thailand, Filipina, Vietnam.

3 Mitra PKHT dengan luas lahan 3 Ha
1 Mitra Botani Seed seluas 3.500 m2
untuk produksi tahun 2019

Penjualan Benih Pepaya Callina
Januari - Juli 2018 (Juta Rupiah)

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<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>Mei</th>
<th>Jun</th>
<th>July</th>
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<tr>
<td></td>
<td>1.575</td>
<td>27.775</td>
<td>31.770</td>
<td>17.190</td>
<td>27.520</td>
<td>21.475</td>
<td>26.460</td>
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http://ipb.ac.id
Agribusiness Development Station (ADS)

IPB

Seed

Products

Extension service

Farmers

31 Supermarket

Non Organik 79,700 m²

Organik 43,700 m²
IPB Achievement on Innovation

- Widyapadhi Science and Technology Award 2017-2018
- Best Collaborator of Foreign Researcher Partners for Public University 2016-2018
- Public University Productive-Intellectual Property Center 2016-2017
- Intellectual Property Award for WIPO IP Enterprise Trophy on PT Bogor Life Science and Technology 2017
- Public University with highest commercialized patent 2015
- Public University with highest registered patent 2012
1. Fuzzy system to diagnose pest and disease
2. Bioinformatics & genetics algorithm to invent quality seed
3. Otomation of quality test tool to avoid crop damage
4. Identification of soil fertility using neural networks
5. Smart system using remote sensing technology for land & water use planning
6. Optimizing shortest route in commodity distribution chain
7. Transparency of the flow of goods and money using blockchain & big data
IPB in Addressing SDGs:

Activities:
- Improving rural community livelihood
- Land reforms
- Etc.
Insurance Literacy Program
for Fishers and Farmers
10th SDG: Reduced Inequalities

PROGRAM
Digital Literacy For Farmers

17 - 8 - 45
Districts  Provinces  Community groups

Kerjasama Dept. SKPM FEMA IPB dengan Kementerian Komunikasi dan Informatika Republik Indonesia
Contextual Problems of Cattle in Indonesia

1. 98% cattle population belong to small farmers
2. Small scale ownership (2.53 heads/farmer)
3. No breeding program by smallholders
4. Traditionally managed
5. High inbreeding depression
6. Low educational background
IPB Innovation for Community: Sekolah Peternakan Rakyat

- 7292 Breeder
- >1000 cows Per SPR
- <100 bulls Per SPR
- 10 Strategies
- 1 vision Independent Breeder

29 Location
6 Provinces
IPB in Addressing SDGs:

Activities:
✓ Climate adaptation
✓ Disaster warning system
  e.g
  - Forest fire system (CCROM)
  - Carbon accounting
  - Microclimate observation
  - etc.
IPB in Addressing SDGs:

Activities:

- Developing marine development planning
- Formulating fisheries policies (PKSPL)
- Promoting clean marine and sustainable fisheries
- Etc.
Provisioning
Fish and marine biota for food and non food

Regulating
Flood controls, waters controls, climate balance

Cultural
Coastal and marine tourism

Supporting
Nutrient cycling, primary and secondary productivity

Marine Ecosystem Services
Blue Carbon Movement

Mangrove Rehabilitation in Pekalongan
collaboration with Local Governments
Promoting community conservation

CCRN Projects: Collaboration with Saint Mary University, Manitoba University, Waterloo University (CANADA)

Mapping and Empowerment of Customary Based fisheries management
IPB SMART AND PRECISE AQUACULTURE

Big Data

Sensors

camera

Broadband

camera

Sensors

camera

Smart Broadcast Selection

Drone Site Selection

Mobile Monitoring

Drone Site Selection

Smart Broadcast Selection

Drone Site Selection

Big Data

Sensors

camera
IPB SMART FISHING

- E-Weight
- Precise landing E-Landing
- Smart Market
- Cool Store
- Smart Factory
- Cold Storage
- E-Certificate
- ICT
- E-Certificate
- E-Observer Vessed Bate System (VBS)
Activities:
✓ Spatial planning (PPLH)
✓ Ecoregion based management (Forestry faculty)
Reclamation of ex-mining area in Bangka (Cooperation with PT

Goal

To change new landscape of the ex-mining area Air Jangkang into new ecosystems which have high tourist attraction and useful in ecology, physical, social and economic.
Before

After → Eco-Park
IPB in Addressing SDGs:

Activities:
- Establishing Collaborative Innovation Center in several districts collaborating with local government
- Development farmer community
- Sekolah Peternakan Rakyat
International Collaboration

Konsorsium Green Knowledge (GK)
Perguruan Tinggi untuk Indonesia Hijau
“PETUAH” MCA-Indonesia
1. SDGs are process and need strong commitment from the all of stakeholders to achieve.

2. Knowledge based strategies should be developed using inclusive approach as mandated in the National SDG Platform

3. Knowledge management system should be essentially used for achieving the SDGs
Thank you