



National development planning on building STP: Challenges and opportunities – perspectives from Indonesia

**Director for Higher Education and Science-Technology
Ministry of National Development Planning/BAPPENAS**

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Transfer of Technology (APCTT)**

PENDAHULUAN

Indonesia Global Competitiveness: Where are we now

Human Development Index - 2019

Ranking	Negara ASEAN	2018	2019
9	Singapura	0.932	↑ 0.935
22	Korea Rep.	0.903	↑ 0.906
61	Malaysia	0.802	↑ 0.804
77	Thailand	0.755	↑ 0.765
85	China	0.752	↑ 0.758
106	Filipina	0.699	↑ 0.712

111 **Indonesia** **0.694** **↑ 0.707**

117	Vietnam	0.694	↓ 0.693
129	India	0.640	↑ 0.647
140	Lao PDR	0.601	↑ 0.604
146	Cambodia	0.582	↓ 0.581

Sumber: World Development Report 2020, World Bank

Human Capital Index - 2020

Negara ASEAN	2020
Singapura	0,879
Korea Rep.	0,799
Malaysia	0,611
China	0,653
Vietnam	0,690
Thailand	0,609
Filipina	0,516

Indonesia **0,540**

India	0,494
Cambodia	0,492
Lao PDR	0,457

Sumber: Human Capital Report – September 2020, World Bank

Global Innovation Index 4.0 - 2020

Ranking	Negara ASEAN	2019	2020
8	Singapura	58.37	↓ 56.61
10	Korea Rep.	56.55	↓ 56.11
33	Malaysia	42.68	↓ 42.42
14	China	54.82	↓ 53.28
42	Vietnam	38.84	↓ 37.12
44	Thailand	38.63	↓ 36.68
48	India	36.58	↓ 35.59
50	Filipina	36.18	↓ 35.19

85 **Indonesia** **29.72** **↓ 26,49**

98	Cambodia	26.69	↓ 26.59
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Sumber: WIPO, 2019 & 2020

Global Competitiveness Index 4.0 - 2019

Ranking	Negara ASEAN	2018	2019
1	Singapura	83,5	↑ 84,8
13	Korea Rep.	78,8	↑ 79,6
27	Malaysia	74,4	↑ 74,6
28	China	72,6	↑ 73,9
40	Thailand	67,5	↑ 68,1

50 **Indonesia** **64,9** **↓ 64,6**

64	Filipina	62,1	↓ 61,9
67	Vietnam	58,1	↑ 61,5
68	India	62	↓ 61,4
106	Cambodia	50,2	↑ 52,1
113	Lao PDR	49,3	↑ 50,1

Sumber: WEF The Global Competitiveness Report, 2018 & 2019



INDONESIA 2045

Sovereign Progressive Just and Prosperous

4 Development Pillars of Indonesia 2045

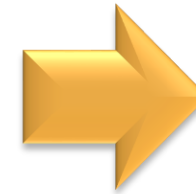
1. Human Development and Mastery of Science and Technology
2. Sustainable Economic Development
3. Equitable Development
4. National Resilience and Governance

2017
GDP per Capita
USD 3,877



2036
GDP per Capita
USD 13,162

Achieving
High-
Income
Country



2045
GDP per Capita
USD 23,199

5.7% Average	Economic Growth	6.3% Average	Manufacturing Growth	3.1% Average	Agriculture Growth	73 Million	International Tourist Arrival
5rd	5th Largest Economy	26%	Manufacturing Share to GDP	7%	Agriculture Share to GDP	1st	Tourism as the Largest Source of Foreign Exchange

*)scenarios were developed before Covid-19

Policy Direction and Strategy: Increasing STI Capability

Priority Research for Sustainable Development

- National Research Priority (Flagship)
- Technology for sustainable use of natural resources
- Technology for disaster prevention & mitigation
- Appropriate technology
- Frontier Technology
- Research and social innovation

Innovation Ecosystem Enhancement

- Strengthened triple-helix cooperation
- Improved patent / IP management
- Strengthening the main Science Techno Park (STP)
- Technology Commercialization Office within the framework of Innovation Management in universities
- Technology Transfer Office at STP or PRIs
- Startup Company Development (PPBT)



Development of Research Power House

- Increase the quantity and capacity of science and technology human resources
- Strategic R&D infrastructure development
- Strengthening S&T Center of Excellence
- Accreditation of R&D institutions
- Management of biodiversity and intellectual property data
- Strengthening research networks

Improvement of R&D Budget and Quality of Spending

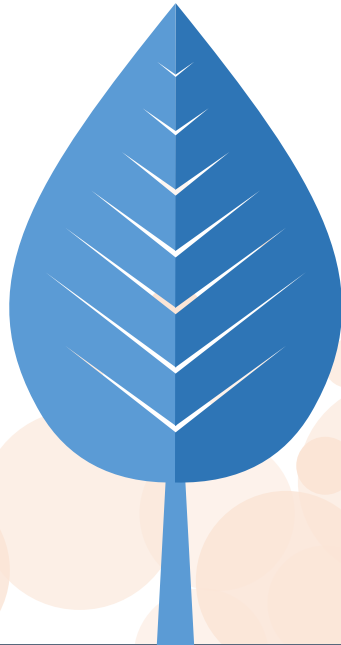
- Establishment of National Research and Innovation Board
- Research Endowment Fund
- Initiating nongovernment funding for research and innovation

Innovation Ecosystem Enhancement

R&D Institution



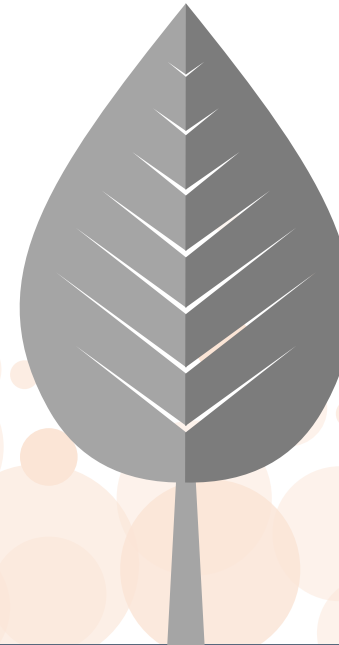
Entrepreneur



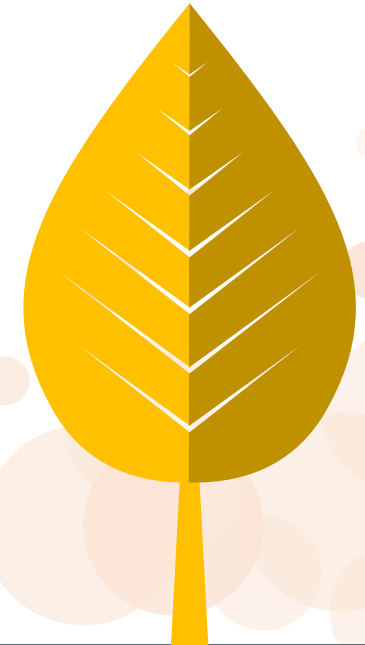
Incubator
Technology Transfer Office
Science-Techno Park



Industry/Private Sector



End User



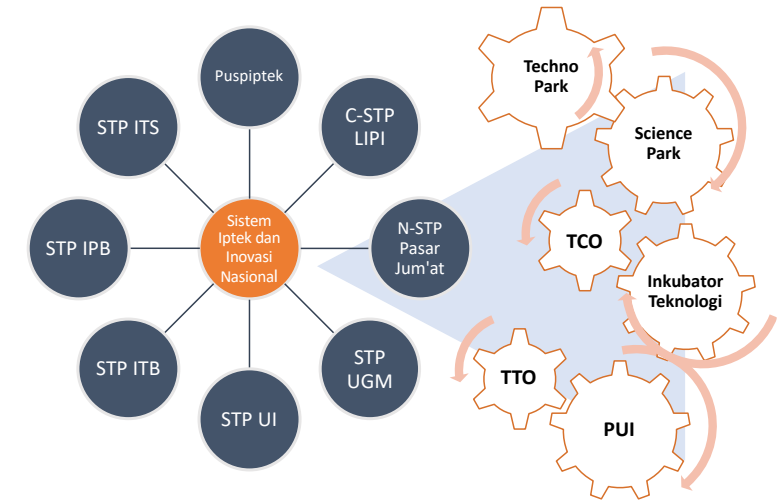
Funding and finance support

Policy and regulation support

Synchronizing Research and Innovation Modalities: Centered at STP

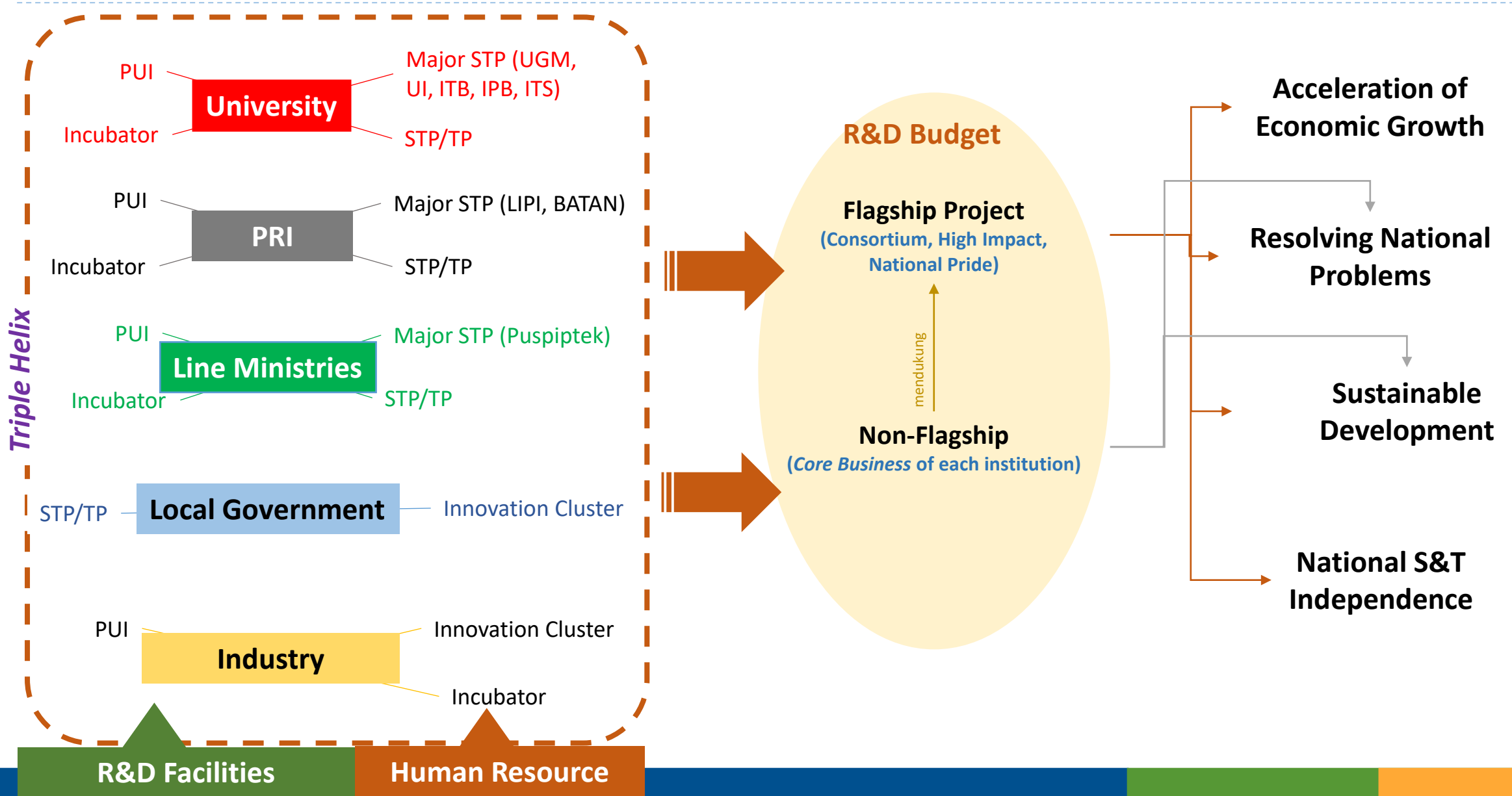
Institution	In-wall Industry	Research Capability	Tenant Development Support	Reverse Engineering	Technology Dissemination	Teaching Industry	IP Management	Commercialization
Major STP	★★★★	★★	★★★★	★★	★★★★	★★	★★★★	★★★★
STP/TP/SP/ATP	★★	★	★★★★		★★	★★	★★	★★
Science CoE (PUI)		★★★★		★★★★	★			
Incubator		★	★★★★				★★★★	★★
TCO/ IP Centre*					★★★★		★★★★	★★
TTO*		★★★★		★★★★			★★★★	

STP is linked to other institutions



*) *Technology Commercialization Office (TCO)/IP Centre and Technology Transfer Office (TTO) are not form of organizational structure, but a function provided in HEIs/PRIs*

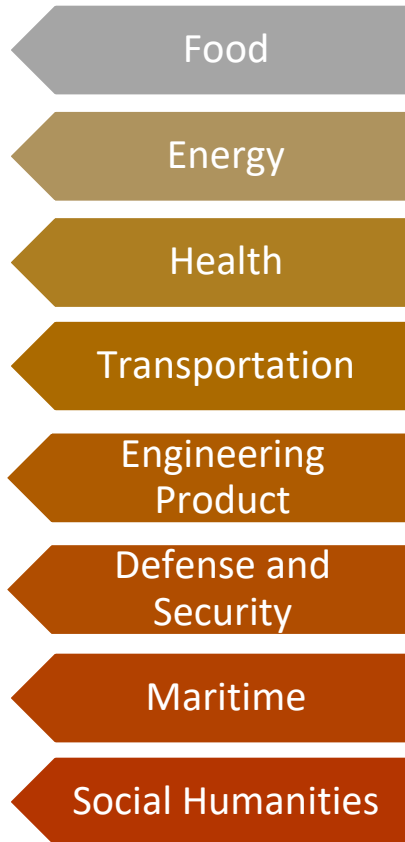
STI Development Framework 2020-2024: Flagship Project as a Driving Force



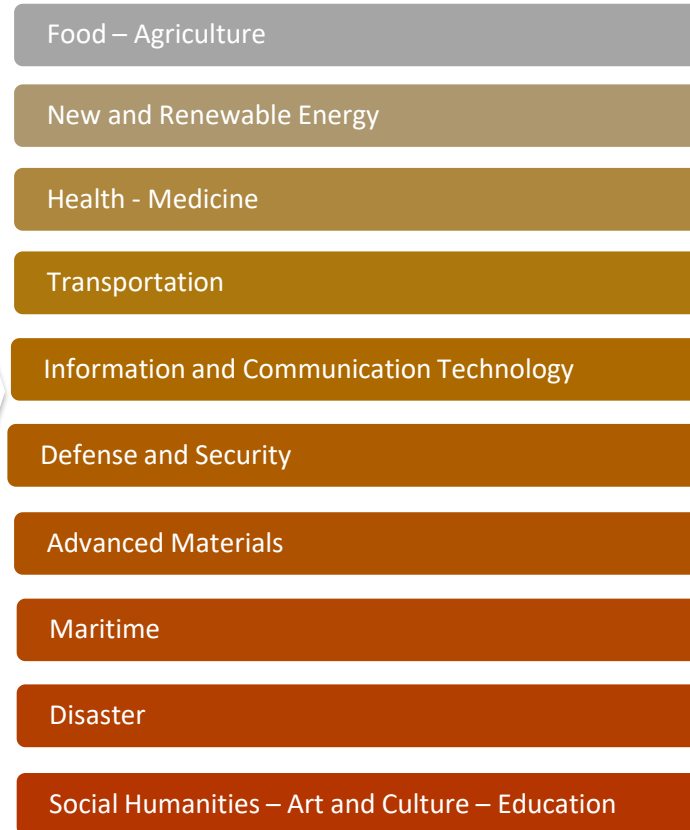
Policy for STI: 8 Focus Areas

Refocusing Priority Area for R&D

Research Sector of The National Research Master Plan 2017-2045



Research Focus of The National Research Priority, 2017-2019 and 2020-2024 (on-going preparation)



STI Human Resources Development

- Providing scholarships (**Master/Doctor by Research**) to increase the quantity of human resources in science, technology, and innovation.
- Continuous competencies improvement for STI Human Resource (researcher, lecturer, engineer)
- Recruiting ‘talents’ with doctoral qualification.

Strategic R&D Infrastructure Development

- Technology Driver
- Strategic areas
- Resource sharing (cross-institutions users)

Challenges in Developing STP

- Limited Budget
- Many STP but only few that is functional (miss in basic STP concept)
- Insufficient of professional staffs (most STP personnel are civil servants with irrelevant educational background)
- Level of confidence of industry on STP capability
- High tech-low price technology from abroad
- Broken link between STP and universities/PRIs as the main source of knowledge

Opportunities in Developing STP: Innovation Modalities in Indonesia

8 Matured National Science & Techno Park (STP):

- Gadjah Mada University STP
- University of Indonesia STP
- Institute of Technology Bandung (ITB) STP
- BLST IPB
- Institute of Technology Sepuluh November (ITS) STP
- Puspiptek
- Cibinong STP (LIPI)
- National STP (BATAN)



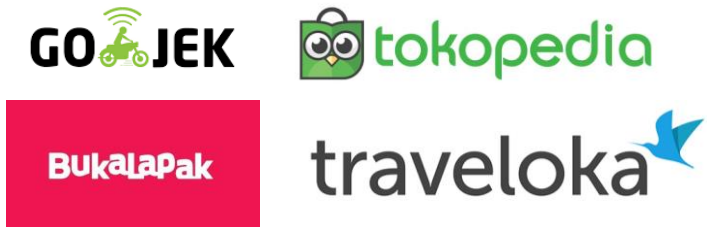
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Established Centre of Excellence in specific distinctive areas, such as:

- Medical Research Centre (IMERI UI)
- Hydrodynamics of Floating Structures (BPPT)
- Molecular Biology and Genomic (Eijkman Institute)
- Medical Material Technology (BPPT)
- Traditional Food Packaging technology (LIPI)
- Isotope and Radiation Applications (BATAN)
- Broadband Wireless Access (ITB)

4

Unicorns out of total 2,070 start-ups
(www.startupranking.com)



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Technology and Business Incubators

#3

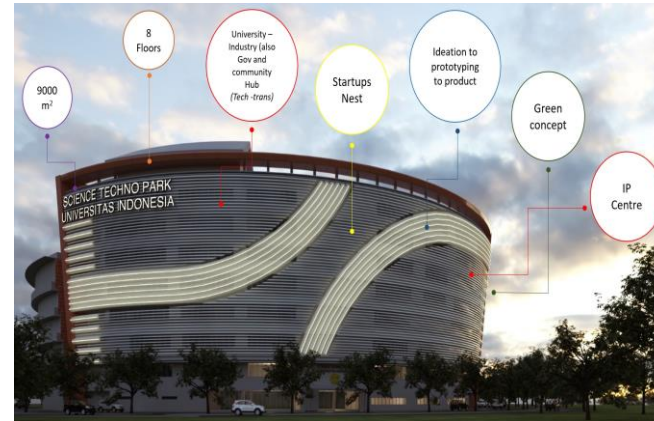
Indonesia ranked third of world most biodiversity countries



2020-2024 Major Project: (Optimization of Triple Helix in 4 Major Universities)



Bandung Institute of Technology (ITB)



University of Indonesia

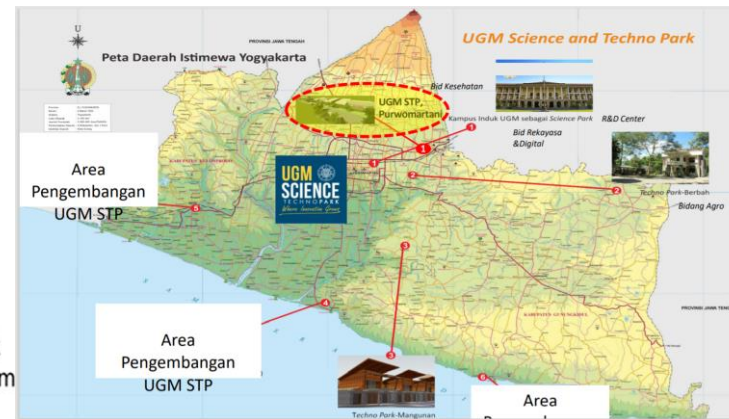
The full operation of the 4 STPs as an innovation hub

Generate startup (PPBT).
Research products commercialized by industry:

- ITB: 10 Products
- UI: 19 Products
- IPB: 6 Products
- UGM: 22 Products



Bogor Institute of Agriculture (IPB)



University of Gadjah Mada

Thank You