Kontribusi Riset Nasional

Sidang Komisi Majelis Senat Akademik Perguruan Tinggi Badan Hukum (MSA-PTNBH)

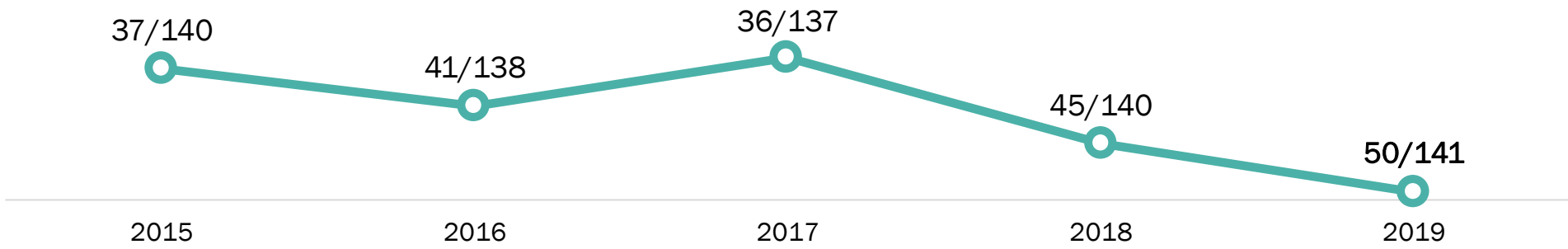
Prof. Ismunandar

KEMENTERIAN RISET DAN TEKNOLOGI/BADAN RISET DAN INOVASI NASIONAL
Jakarta, 8 Agustus 2020

Daya Saing **Indonesia**

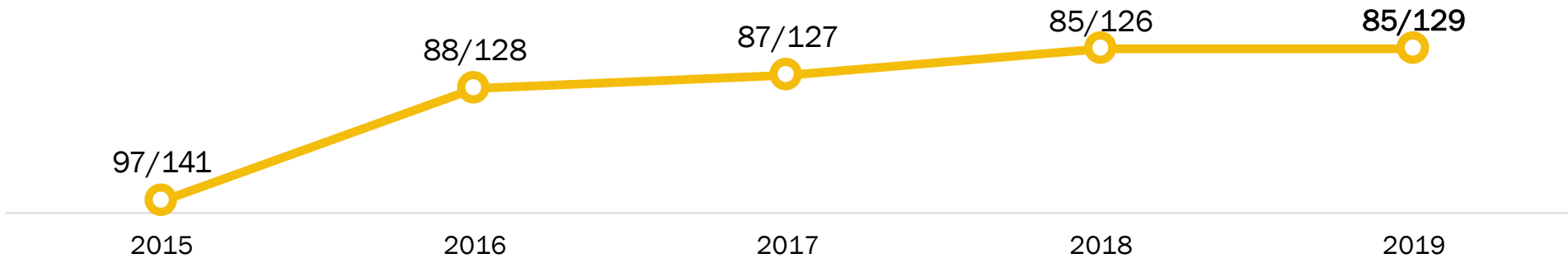
Daya Saing Global Indonesia 2019 diperingkat ke-50 dari 141 negara

Global **Competitiveness** Index, WEF



Daya Saing Inovasi Indonesia 2019 diperingkat ke-85 dari 129 negara

Global **Innovation** Index, WIPO



Potensi Riset Indonesia

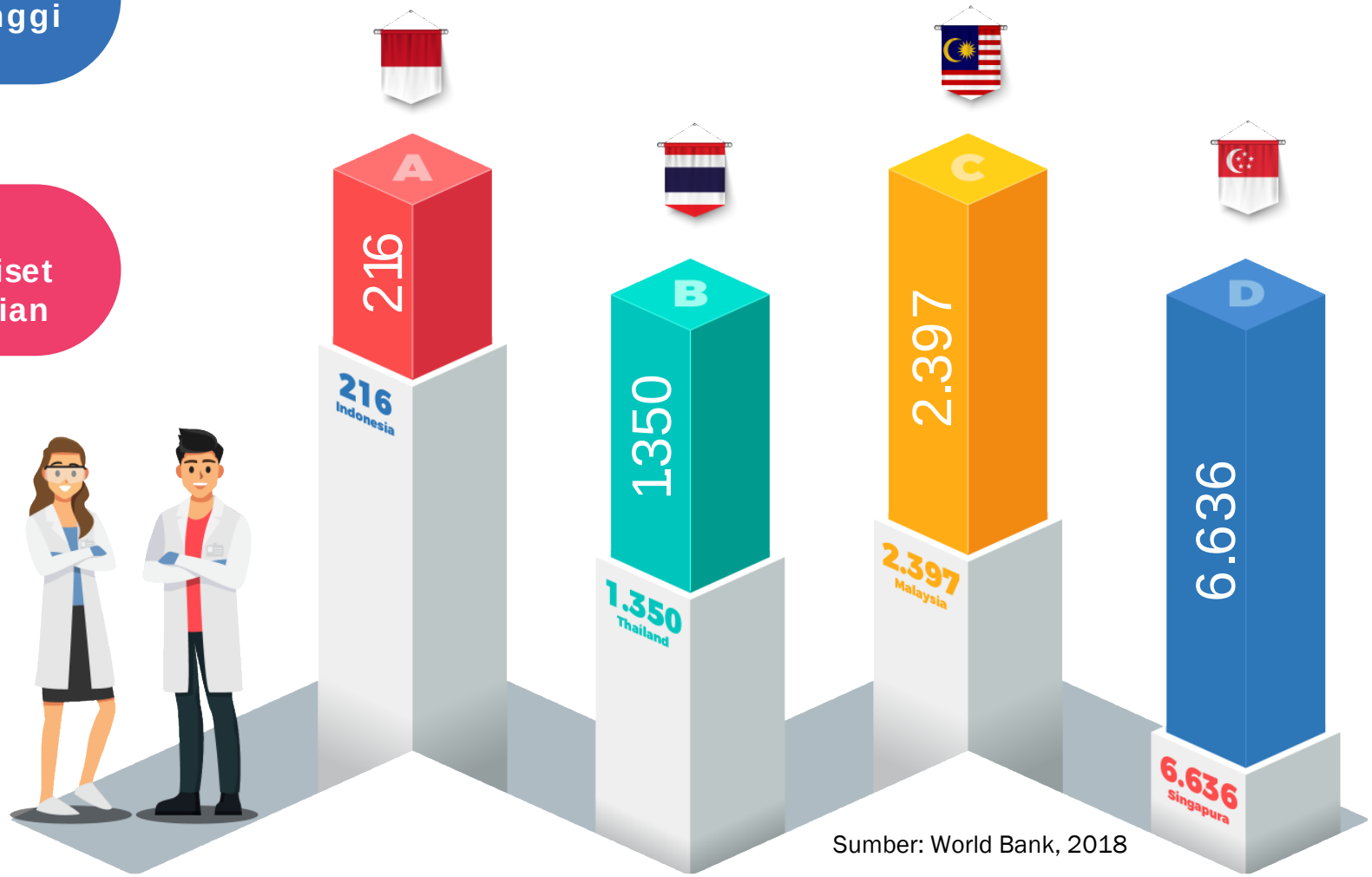
4,724
Perguruan Tinggi

6
LPNK Kemenristek /BRIN

>190
Lembaga Riset di Kementrian

217
Balitbangda

Ratio Peneliti
(per 1 juta penduduk)



Sumber: World Bank, 2018

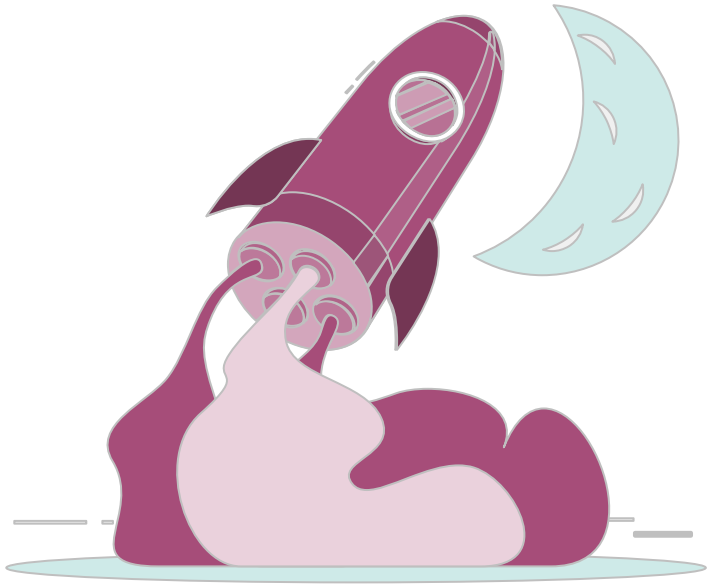
PENETAPAN INDIKATOR CAPAIAN SASARAN (RIRN)

	Sasaran	2015	2020	2025	2030	2035	2040	2045
Input SDM	Jumlah Sumber Daya Manusia Iptek setiap sejuta penduduk	1.071	1.600	3.200	4.800	6.400	8.000	8.600
	Rasio Kandidat Sumber Daya Manusia Iptek (%)	5,6	20	40	60	80	90	100
Input Anggaran	Rasio Alokasi Anggaran Pemerintah untuk Penelitian dan Pengembangan/PDB (%)	0,15	0,21	0,42	0,63	0,84	1,05	1,26
	Rasio Belanja Penelitian dan Pengembangan Bruto/PDB (%)	0,20	0,84	1,68	2,52	3,36	4,20	5,04
Output	Produktivitas Sumber Daya Manusia Iptek (publikasi terindeks global/100 Sumber Daya Manusia Iptek)	2	4	8	10	14	18	22
Outcome	Produktivitas Multifaktor (%)	16,7	20	30	40	50	60	70

Catatan :

1. MFP: multi factor productivity (%) ➔ MFP = TFP (Y-K-L) / PDB Ket: Y, Yield; K, Kapital; L, Labor
2. Produktifitas Peneliti: jumlah total publikasi terindeks global / 100 peneliti
3. SDM Peneliti: rasio jumlah peneliti / sejuta populasi (orang)
4. SDM Kandidat Peneliti: rasio jumlah mahasiswa (S2 + S3) / S1 (%)
5. GERD / PDB dan GBAORD / PDB (%)

Ekonomi dan Inovasi Nasional



Dibutuhkan sinergi triple helix dan dukungan ekosistem inovasi untuk mendorong sebuah ide inovatif menjadi produk yang siap dikomersialisasi

Pengikat (Kebijakan Nasional)
UU No. 11/2019
Pasal 34, 35, 36, 37

Potensi Nasional
(Litbang, SDA, SDM, dll)

Mendorong Kekuatan Ekonomi Nasional
(Daya Saing dan Kemandirian)

Proses Inovasi
Triple Helix

Akademisi
- Perguruan Tinggi
- LPNK
- Lembaga Litbang

Industri
- Masyarakat
- BUMD/BUMN
- Investor

Pemerintah
- Lembaga Keuangan
- Bappenas
- Kementerian Teknis

Kesamaan Langkah (Insentif)
- Inpres TKDN
- Inpres Pemanfaatan PDN

***Trigger* (Insentif)**
PP 45/2019
Super Tax Deduction 300%

Manfaat Penelitian, Pengembangan, Pengkajian, dan Penerapan (**Litbangjirap**) bagi **Transformasi Ekonomi**

Kegiatan litbangjirap harus mengadopsi berbagai kemajuan iptek untuk penyelesaian masalah bangsa dan mengembangkan bidang-bidang ilmu di *frontier*.

01 **Lahirnya berbagai macam teknologi tepat guna**

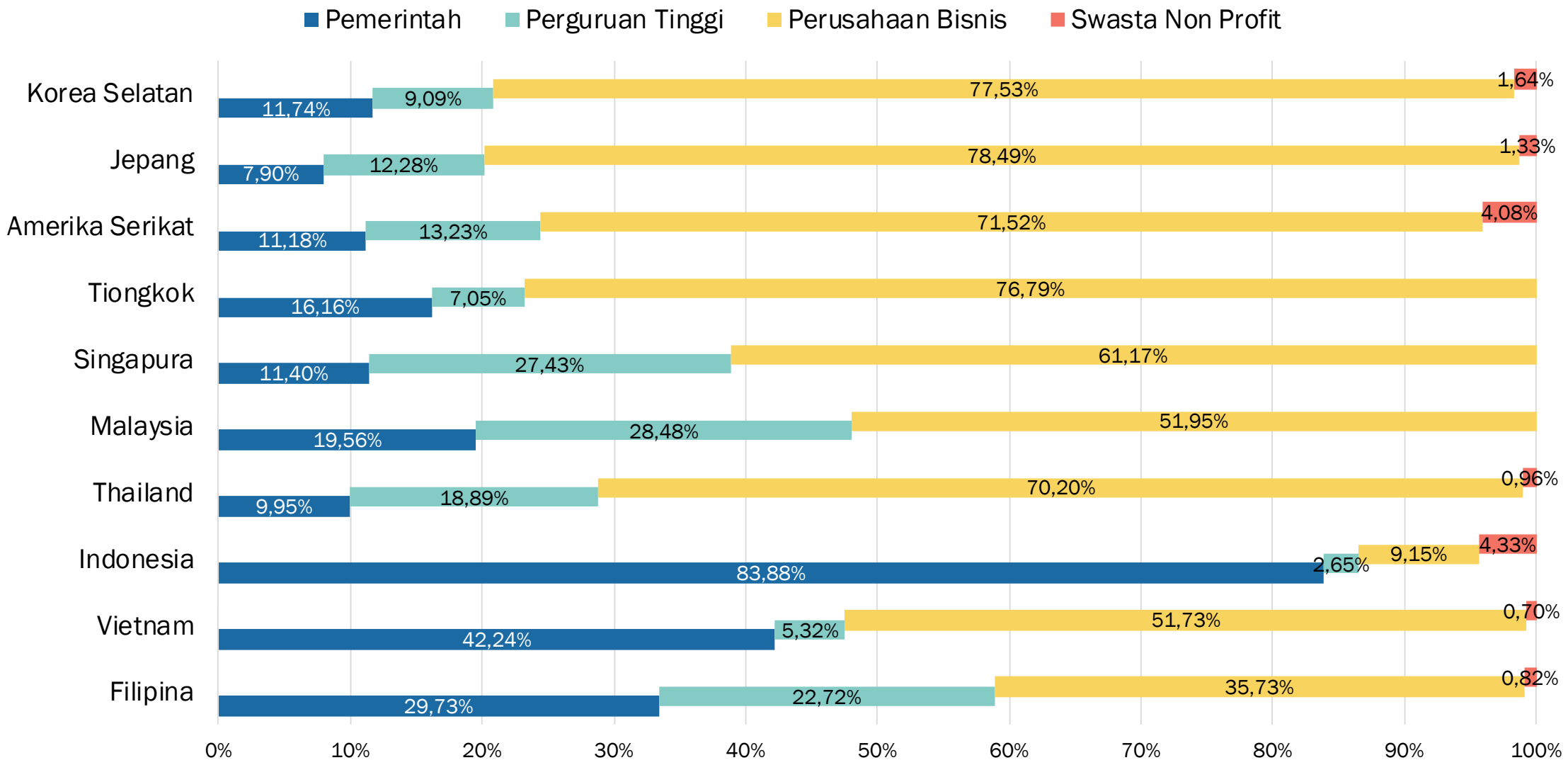
terutama oleh masyarakat berpenghasilan rendah atau UMKM (usaha mikro, kecil dan menengah)

02 **Lahirnya produk berbasis SDA dengan sentuhan teknologi dan inovasi**

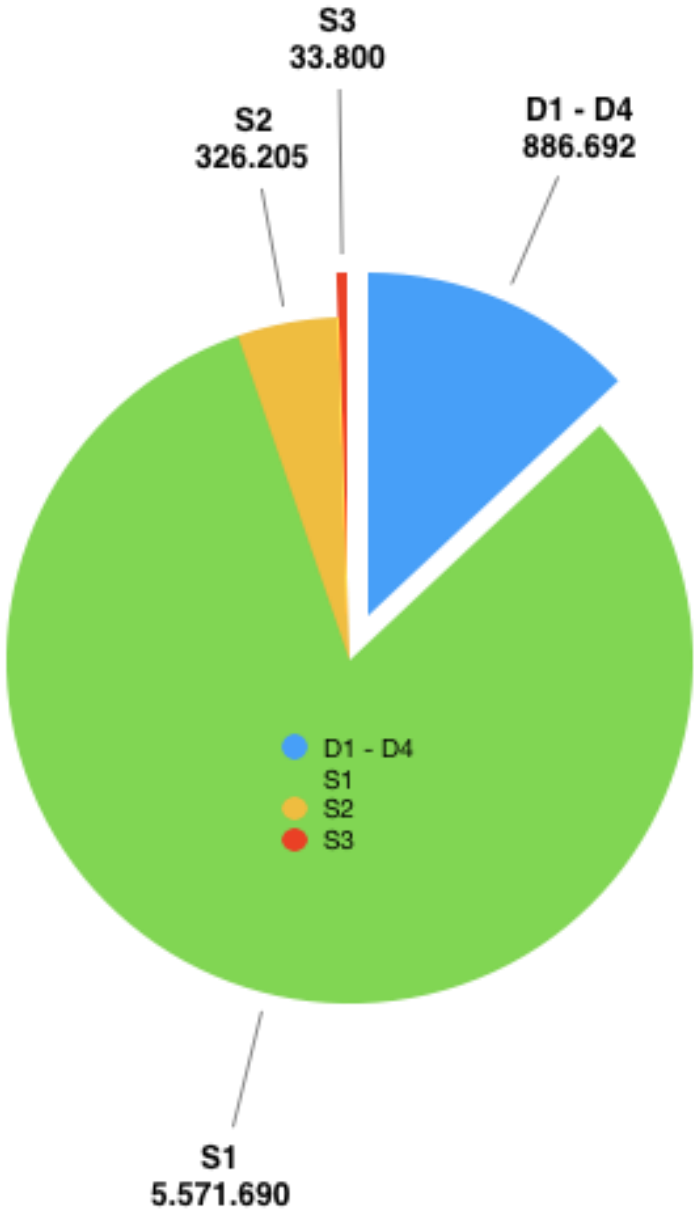
serta peningkatan nilai tambah produk dan hilirisasi

03 **Mendorong penelitian yang menghasilkan substitusi impor dan peningkatan Tingkat Komponen Dalam Negeri (TKDN)**

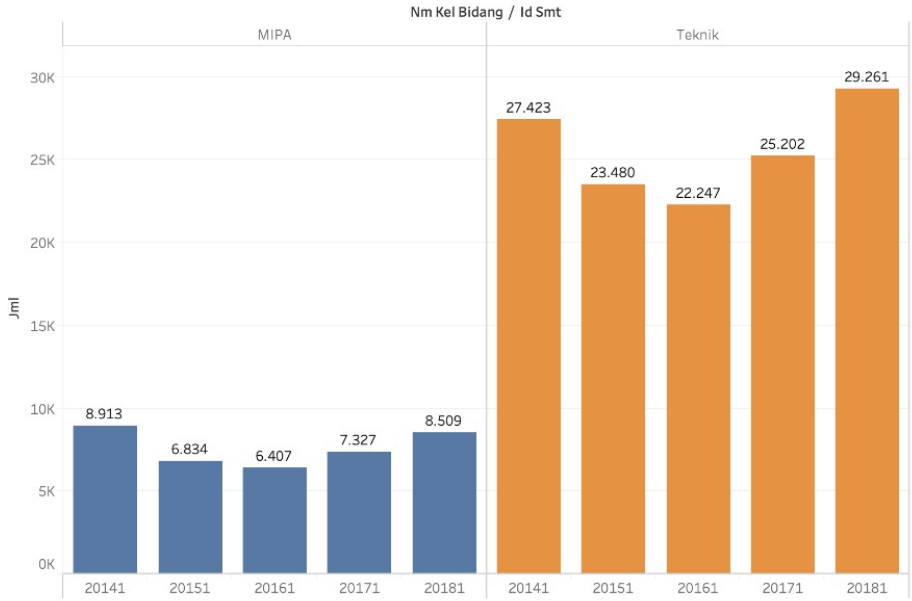
Perbandingan Anggaran Riset Negara (di ASEAN)



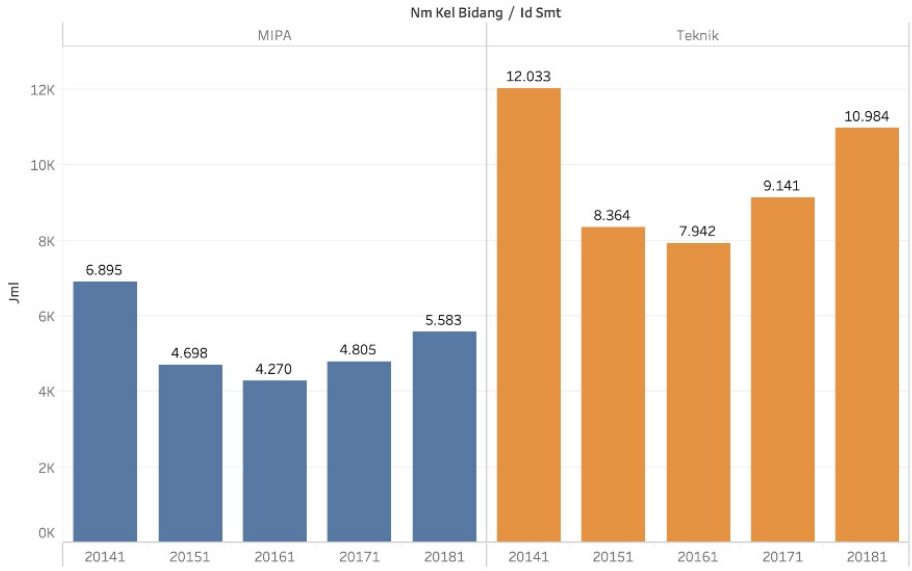
JUMLAH MAHASISWA MIPA INDONESIA 2014-2018



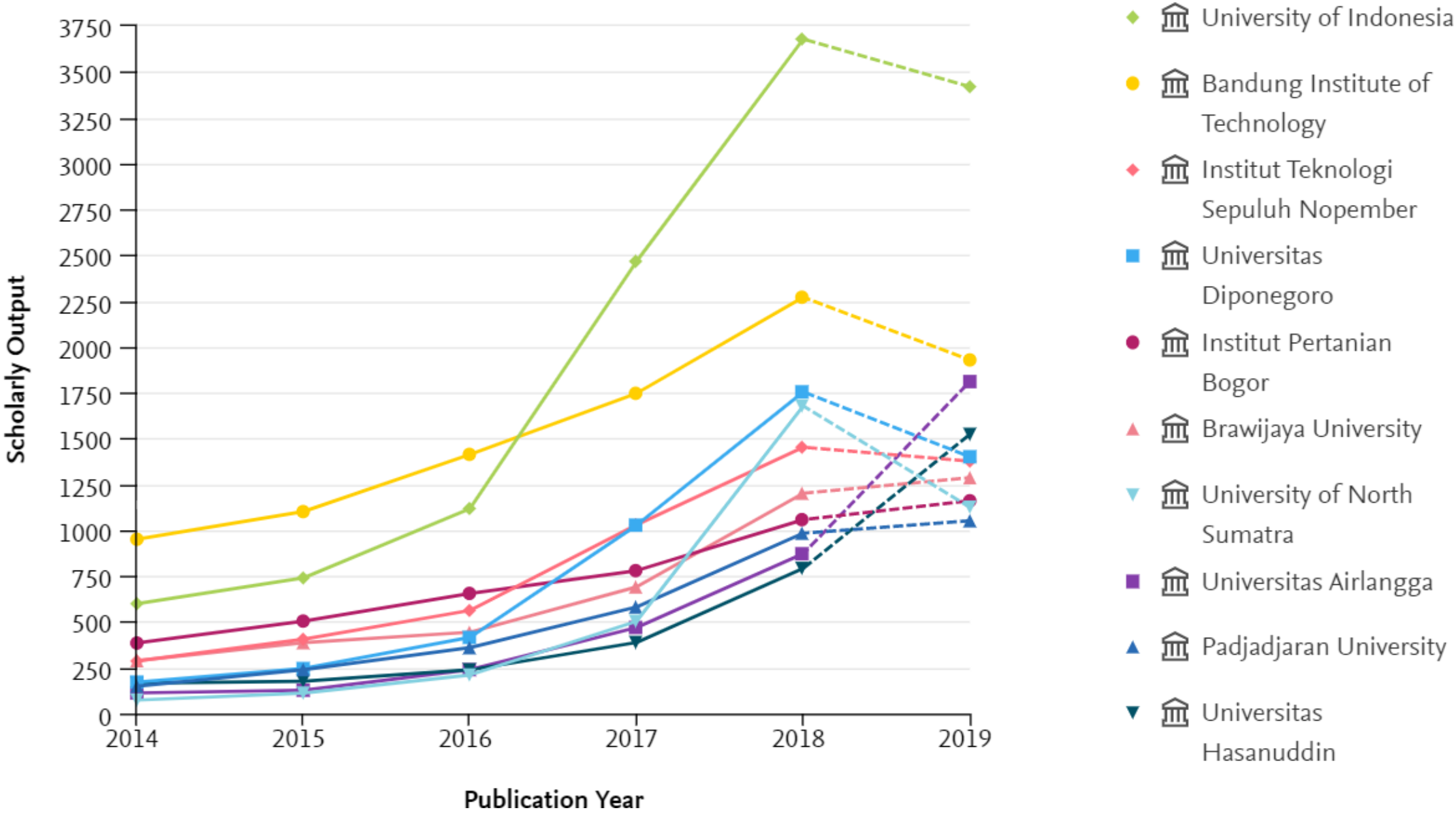
Perkembangan Mahasiswa Terdaftar Pasca Sarjana MIPA dan Teknik 2014-2018



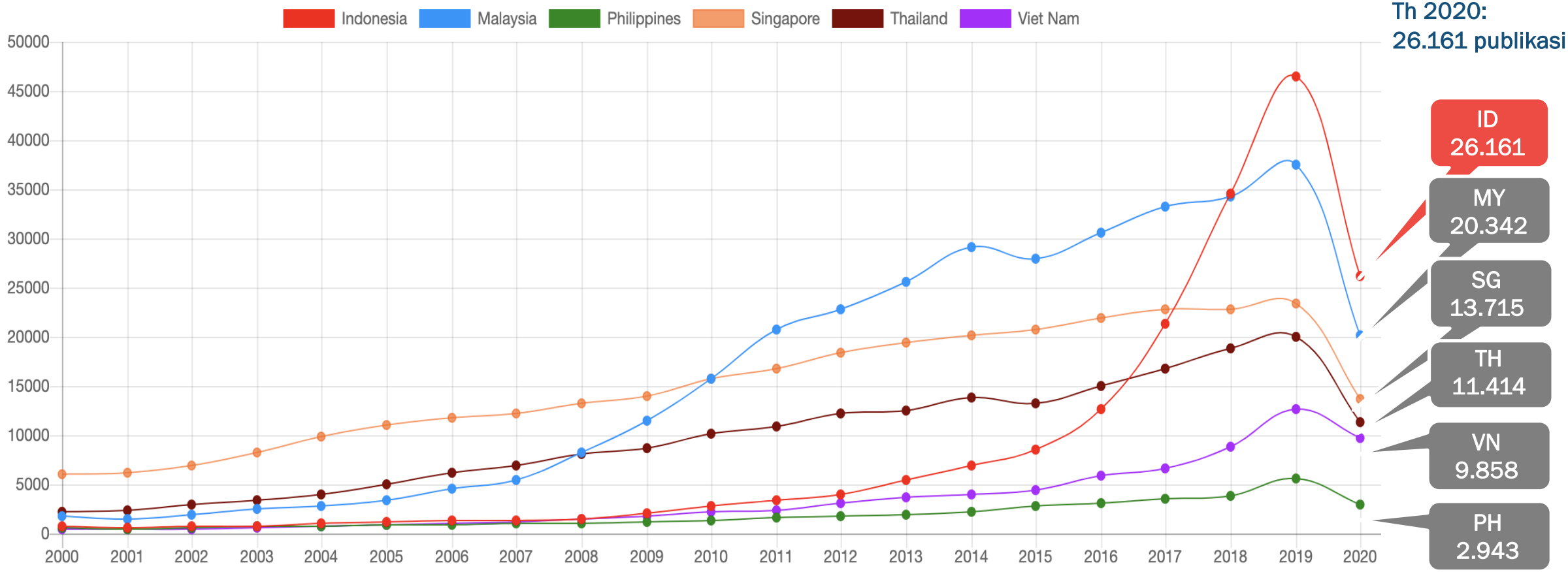
Perkembangan Mahasiswa Terdaftar Pasca Sarjana MIPA dan Teknik 2014-2018 (PTN-BH)



Pentingnya Meningkatkan Publikasi Berkualitas



Publikasi Internasional Indonesia
ASEAN Benchmarking



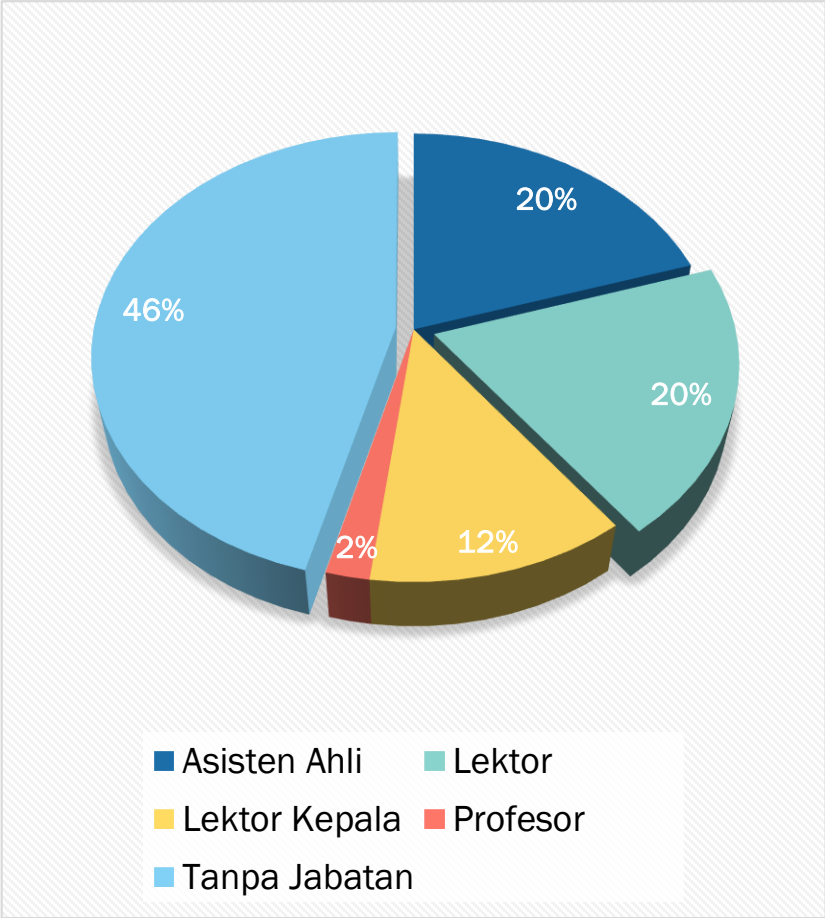
Indonesia unggul di ASEAN
Th 2020:
26.161 publikasi

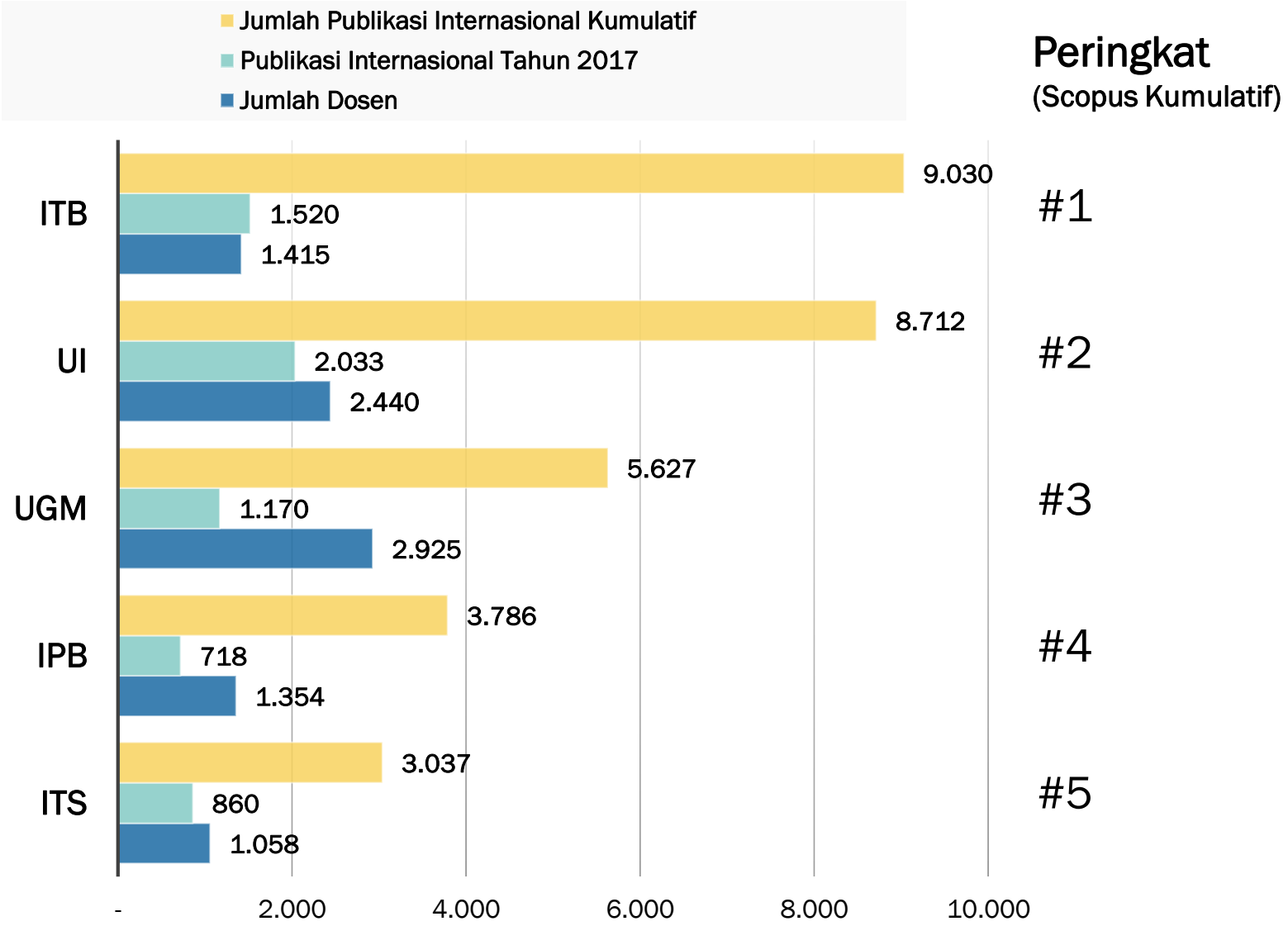
ID 26.161
MY 20.342
SG 13.715
TH 11.414
VN 9.858
PH 2.943

Sumber: Sinta Kemenristek/BRIN, http://sinta.ristekbrin.go.id/home/benchmark, diakses 21 Juli 2020

Dosen Perguruan Tinggi & Jumlah Publikasi Yang Dihasilkan (2017)

Jumlah **Dosen Aktif (PT di bawah Kemristekdikti) 2017** =
247.269 orang





Sumber:
- Intisari Statistik Pendidikan Tinggi 2017, PD DIKTI
- Forlap Dikti
- Scopus, diakses 21 Feb 2018

Indonesia produced 119,423 papers between 2014-2019 which received 280,407 citations, which is equal to 11% less citations than world average.

Scholarly Output
119,423 ▲

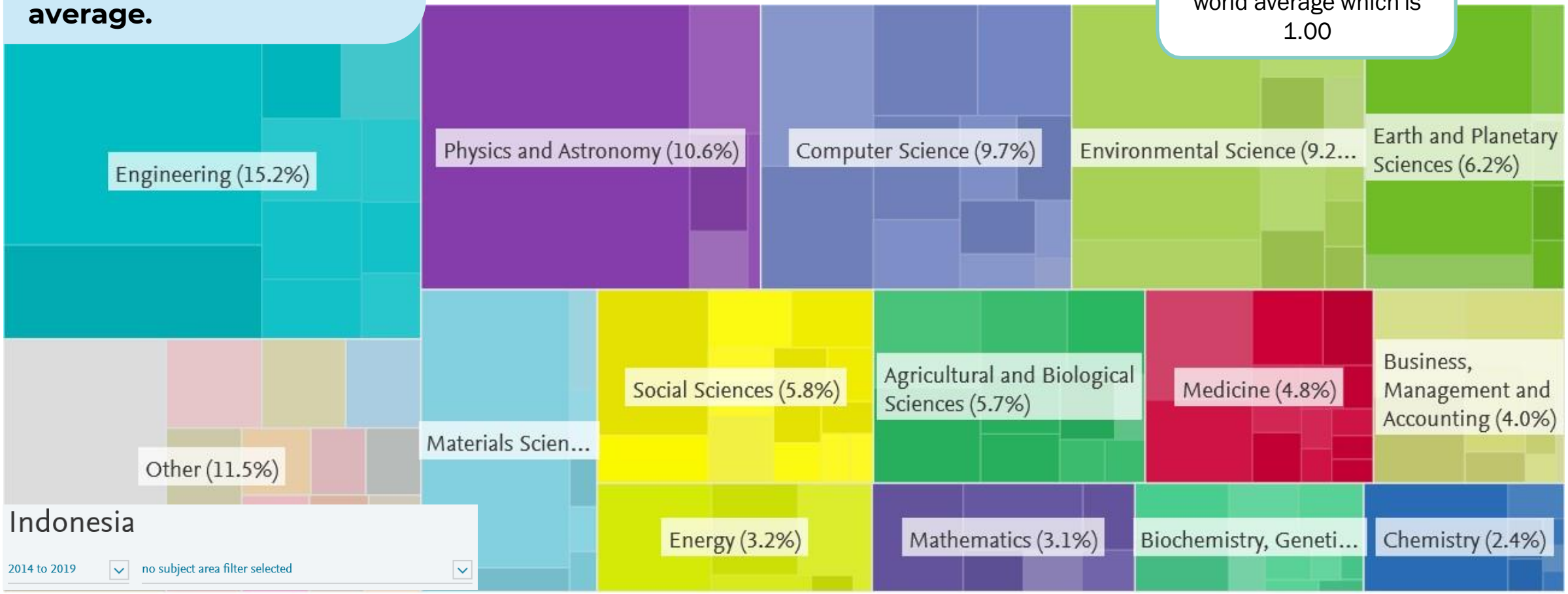
Authors
135,200 ▲

Field-Weighted Citation Impact
0.89

Citation Count
280,407

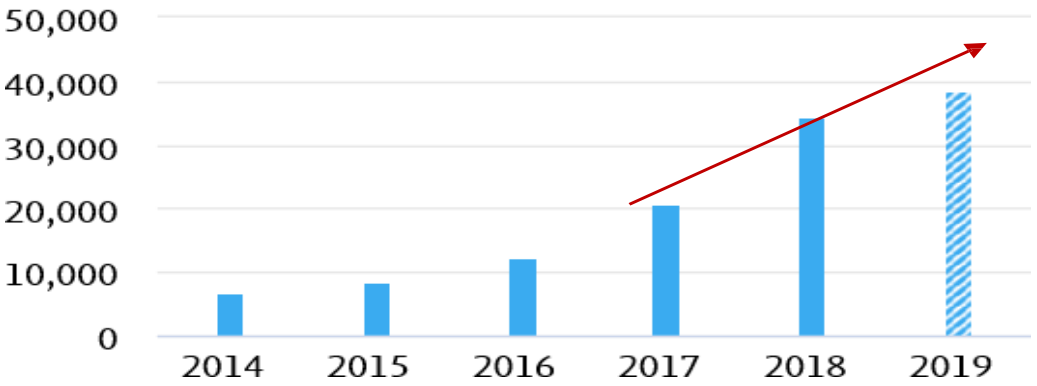
Citations per Publication
2.3

FWCI of 0.89 indicates 11% less citations than world average which is 1.00

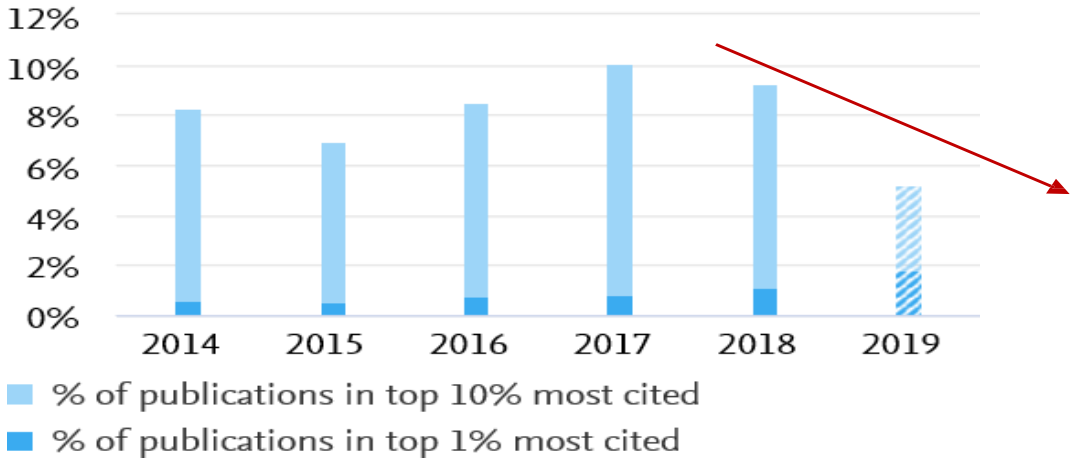


Indonesia's research volume is growing fast but quality indicators such as percentage of papers in top journals, highly cited papers, and FWCI show declining trends

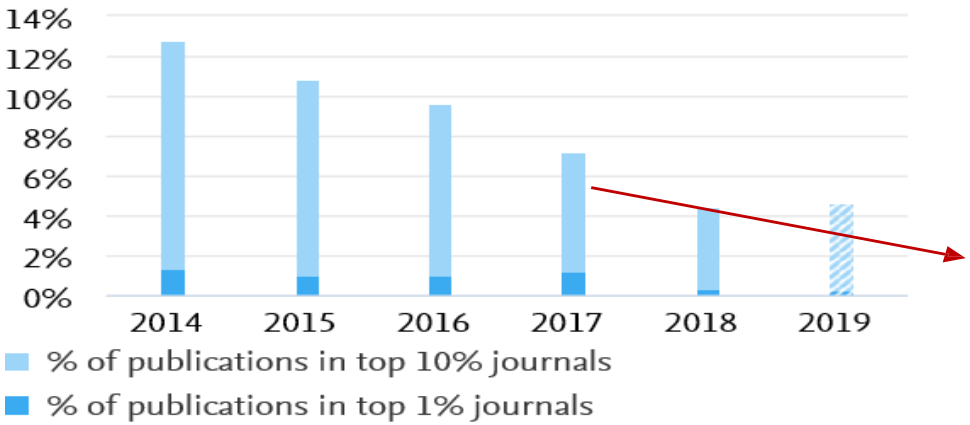
Scholarly Output



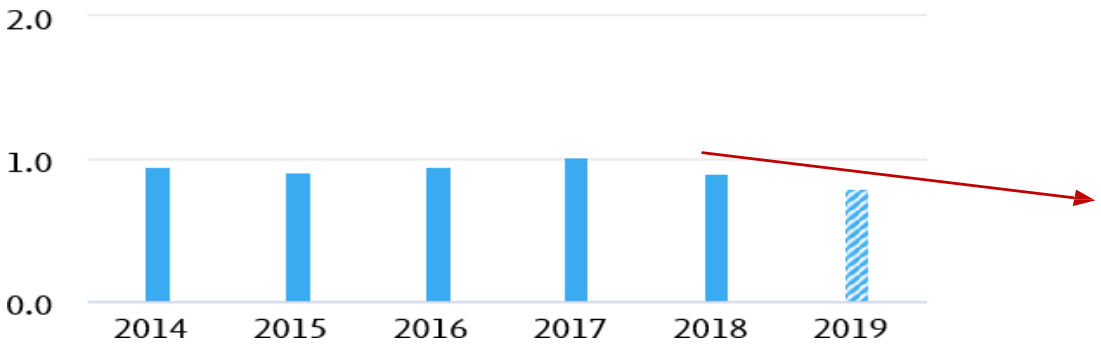
Outputs in Top Citation Percentiles



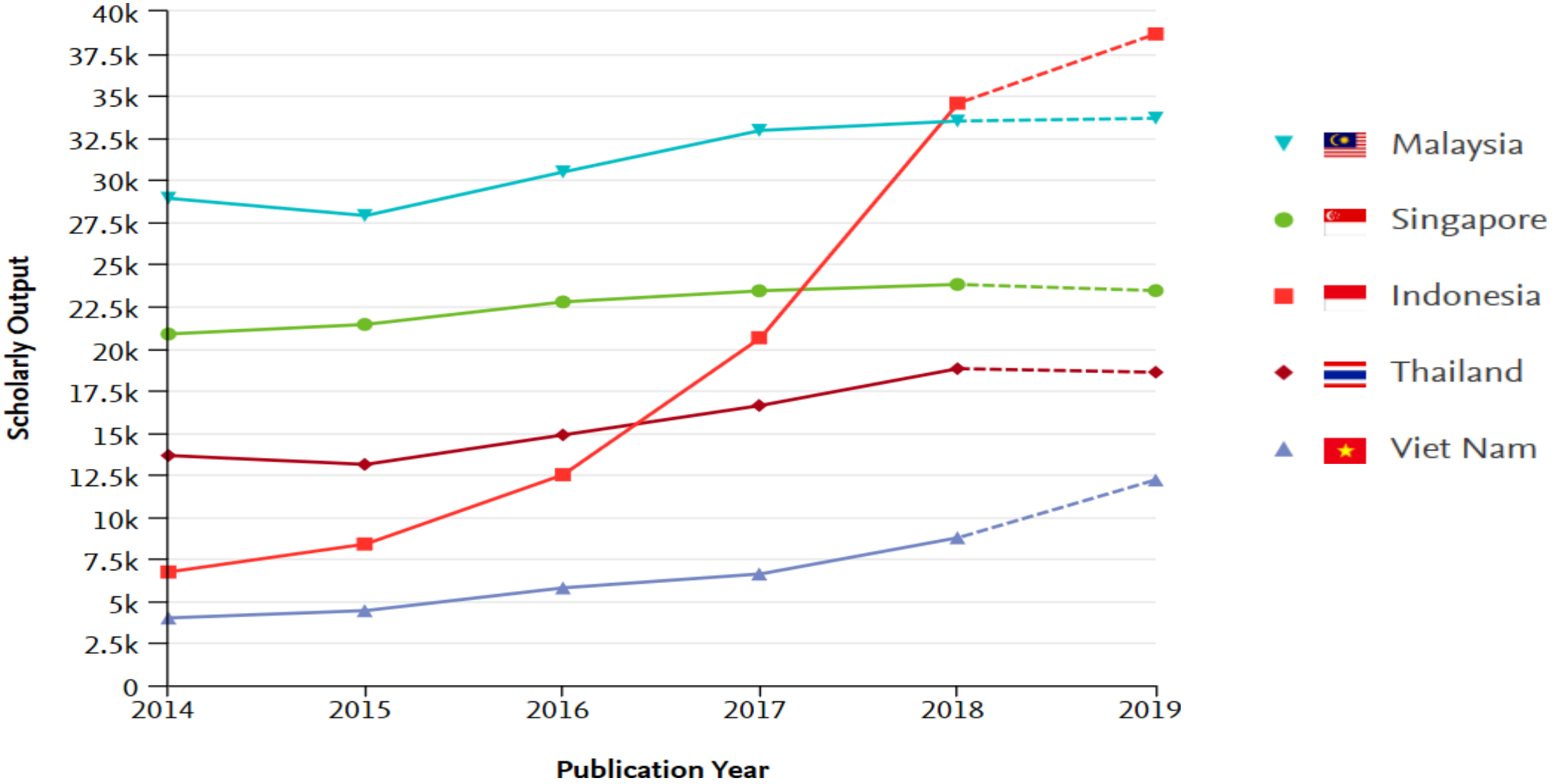
Publications in Top Journal Percentiles



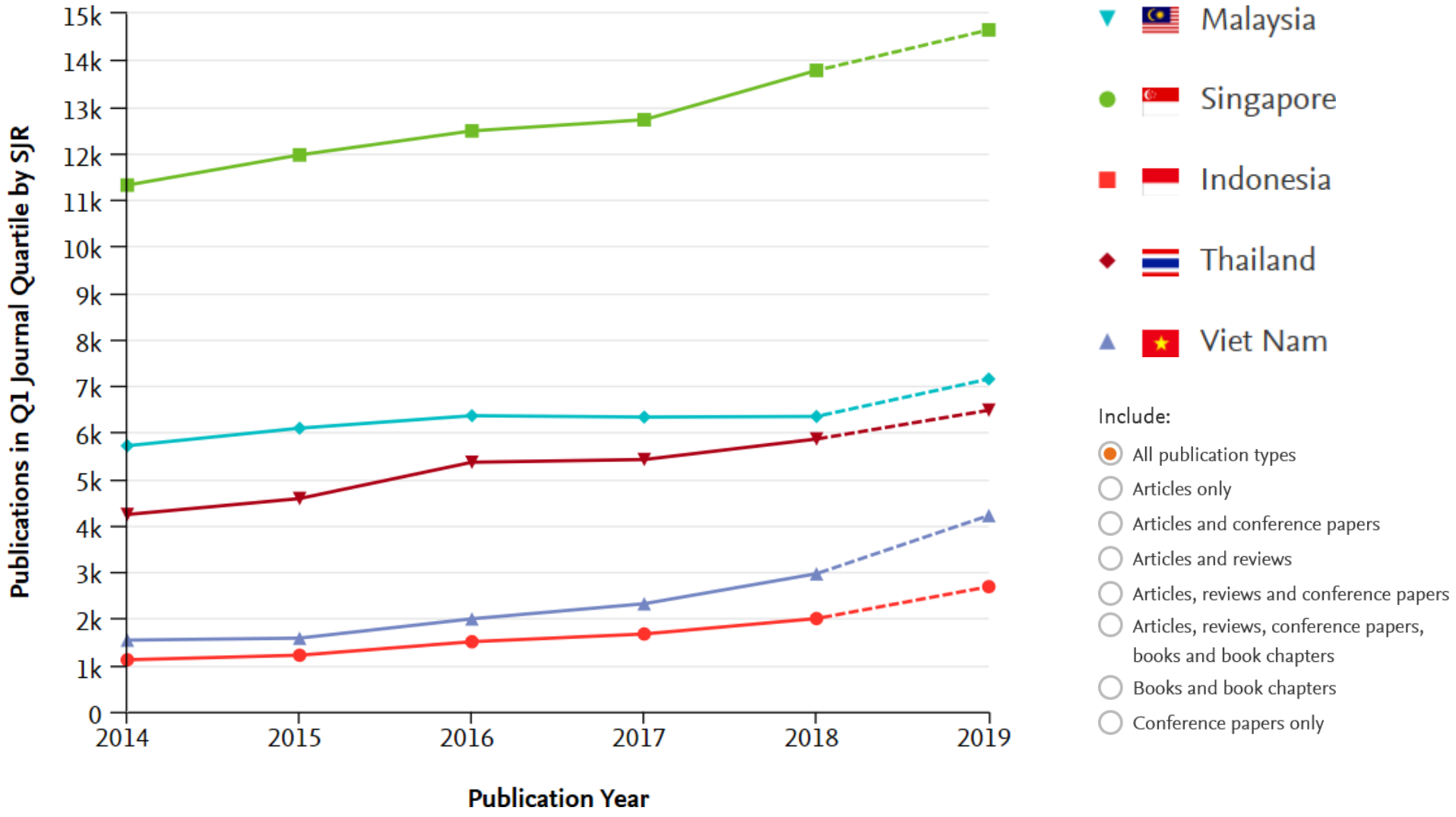
Field-Weighted Citation Impact



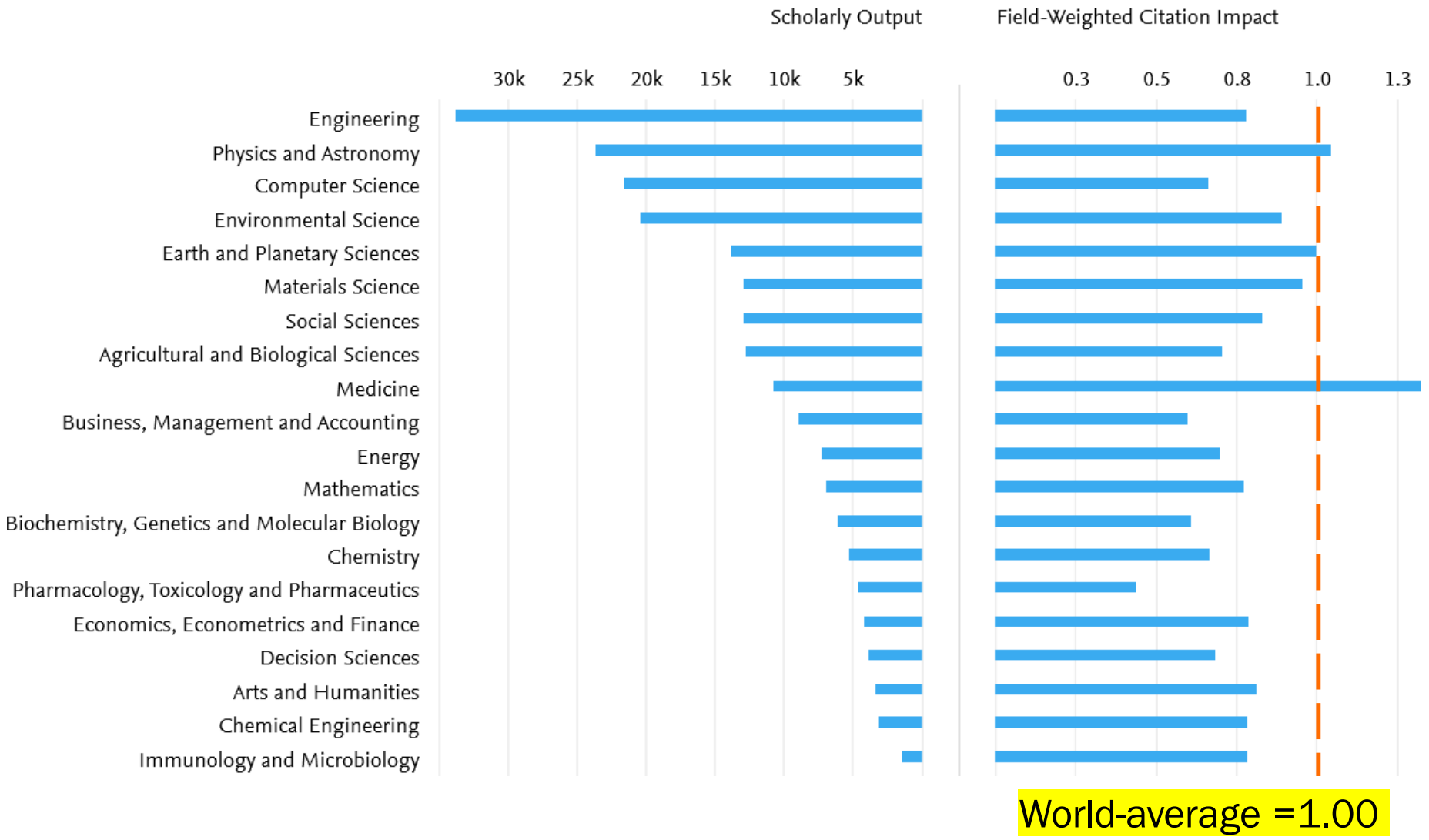
Indonesia surpassed Malaysia in terms of total publication volume when including all content types



When looking at all papers published in Q1 journals, **Singapore leads the way and Indonesia produces lowest volumes of papers** in top journals



Indonesia's research strengths include **Medicine and Earth and Planetary Sciences**, which are both highly cited. **Engineering is the highest volume subject, but receives less than world average citations**



Indonesia's strength in **General Medicine** in being driven by Universitas Indonesia especially when it comes to quality (citation impact).

Institution	Scholarly Output	Field-Weighted Citation Impact	Citations
1. University of Indonesia	556 ▲	2.89	5,999
2. University of North Sumatra	176 ▲	0.28	123
3. Universitas Airlangga	173 ▲	0.41	139
4. Gadjah Mada University	128 ▲	0.92	412
5. Universitas Diponegoro	76 ▲	0.21	61
6. Brawijaya University	72 ▲	0.81	102
7. Universitas Udayana	67 ▲	1.71	596
8. Padjadjaran University	59 ▲	2.60	729
9. Universitas Andalas	49 ▲	0.38	23
10. Ministry of Health, Indonesia	48 ▲	48.13	9,658

2014 to 2019 | General Medicine

Indonesia's strength in **Global and Planetary Change**, is being driven by CIFOR and IPB while some others also produce high FWCI research

Institution	Scholarly Output	Field-Weighted Citation Impact	Citations
1. Center for International Forestry Research, West Java	94 ▲	2.79	1,854
2. Institut Pertanian Bogor	41	2.45	599
3. Universitas Hasanuddin	18 ▲	1.46	128
4. Bandung Institute of Technology	17 ▲	1.57	198
5. Lembaga Ilmu Pengetahuan Indonesia	17 ▲	1.68	184
6. Gadjah Mada University	13 ▲	1.33	64
7. Ministry of Health, Indonesia	12 ▼	0.79	91
8. University of Indonesia	11	1.29	80
9. University Of Palangka Raya	5	2.90	123
10. Universitas Syiah Kuala	4 ▲	1.22	39

2014 to 2019

Global and Planetary Change

Topic T.55 | part of Topic Cluster TC.165 - Biodiesel; Diesel Engines; Engine Cylinders

Biodiesel; Transesterification; Produce biodiesel

Scholarly Output

4,093

Globally this topic consists of 4,093 papers

Field-Weighted Citation Impact

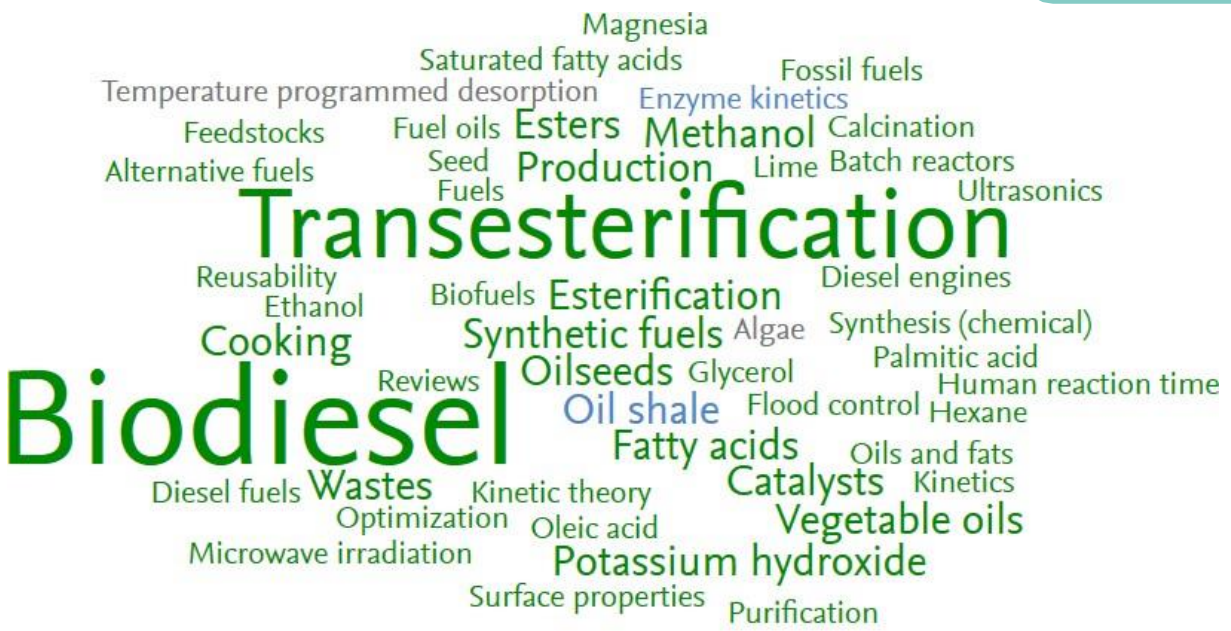
1.10

Globally, the papers in this topic were cited 10% more than average

Topic Prominence percentile

99.859

This topic belongs to world's top 1% most Prominent



A A A relevance of keyphrase | declining A A A growing (2014-2018)

Indonesia is world #4 country in Biodiesel research and receives most citations.

UNDIP leads Indonesia in the topic

Countries

	Countries & territories	Scholarly Output	Field-Weighted Citation Impact
1.	India	777	1.11
2.	Malaysia	488	1.34
3.	China	444	1.06
4.	Indonesia	341	1.38
5.	Brazil	333	0.78

World Institutions

	Institution	Scholarly Output	Field-Weighted Citation Impact
1.	Anna University	111	1.05
2.	Universiti Putra Malaysia	97	1.56
3.	University of Malaya	90	1.87
4.	Universiti Teknologi Petronas	69	1.60
5.	Universiti Teknologi Malaysia	57	0.79

Corporates

	Institution	Scholarly Output	Field-Weighted Citation Impact
1.	SINOPEC	7	0.00
2.	Petrobras	6	0.56
3.	Petronas	5	1.08
4.	SAIC	5	2.44
5.	PetroChina	2	0.00

Indonesian Institutions

	Institution	Scholarly Output	Field-Weighted Citation Impact
1.	Universitas Diponegoro	41	2.36
2.	Institut Teknologi Sepuluh Nopember	38	0.49
3.	Universitas Islam Indonesia	32	1.62
4.	Universitas Syiah Kuala	26	2.10
5.	Gadjah Mada University	25	1.34

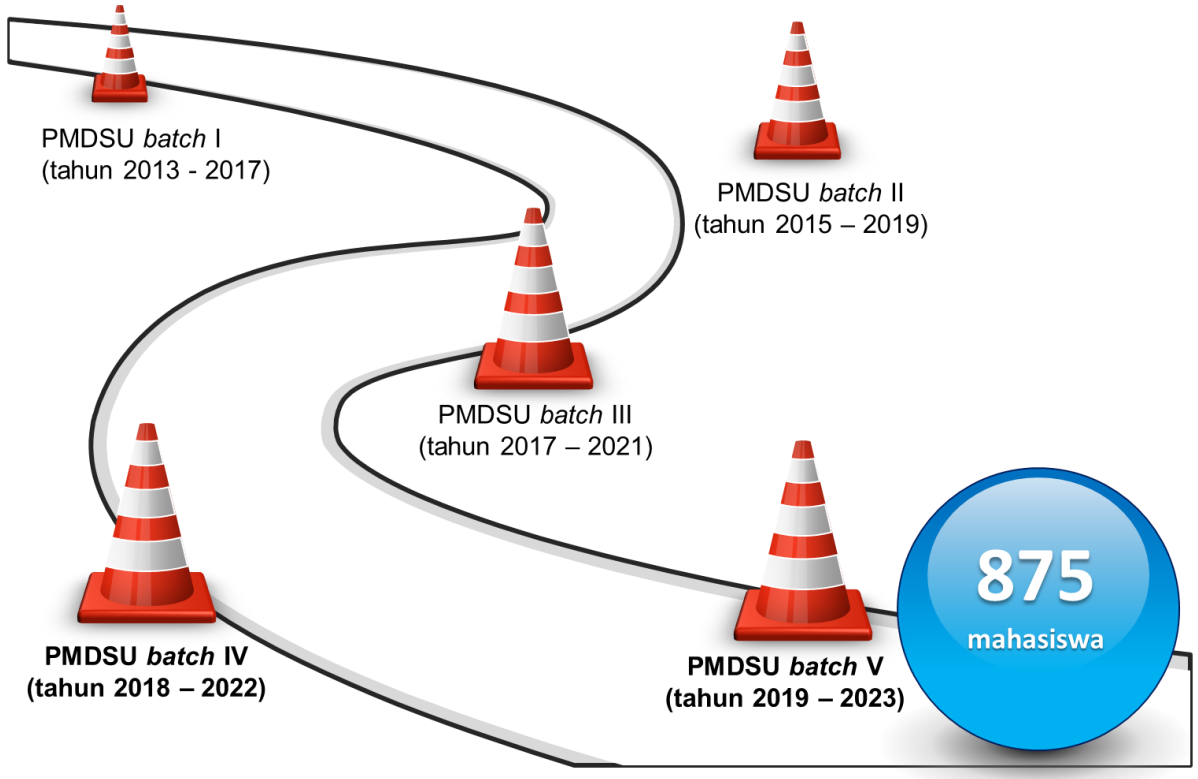
Topic T.55 | part of Topic Cluster TC.165 - Biodiesel; Diesel Engines; Engine Cylinders

Biodiesel; Transesterification; Produce biodiesel

Beasiswa PMDSU (1)

Pendidikan Magister Menuju Doktor Untuk Sarjana Unggul

Lulusan Dalam Negeri Kualitas Internasional



Penyelenggara PMDSU

1 Perguruan Tinggi Unggul

2 Promotor Unggul

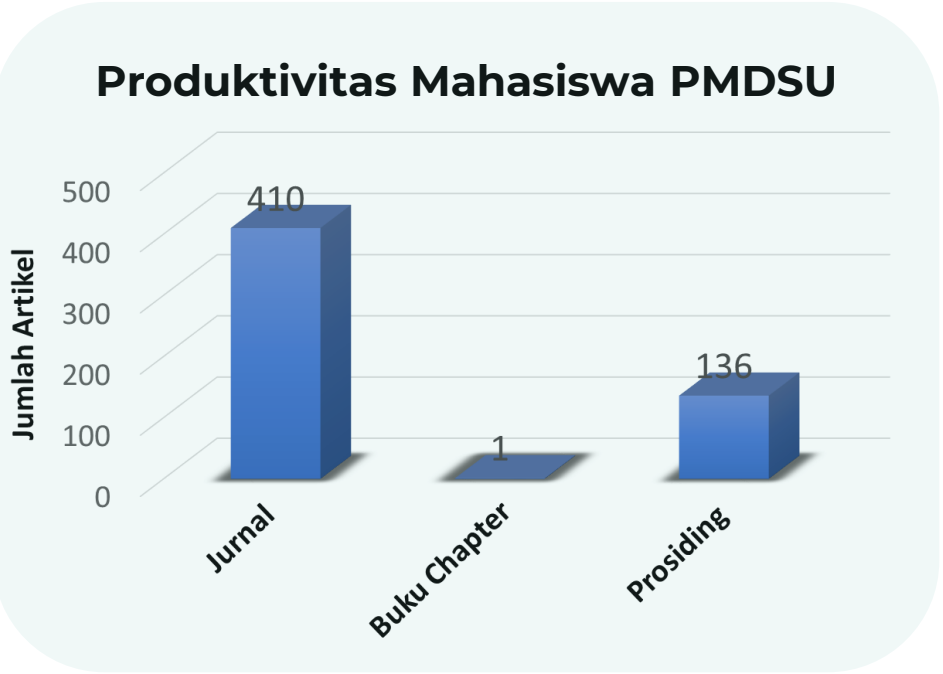
3 Sarjana Unggul

Meningkatkan Jumlah Dosen Perguruan Tinggi bergelar Doktor

Beasiswa PMDSU (2)

Pendidikan Magister Menuju Doktor Untuk Sarjana Unggul

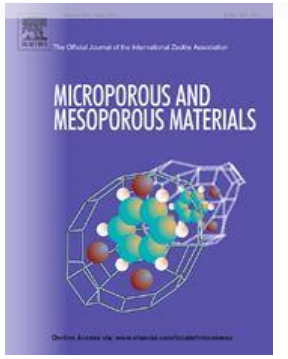
Lulusan Dalam Negeri Kualitas Internasional



Total publikasi **547** dokumen
dari **211** mahasiswa
dari **133** promotor
(data s.d. 29 Agustus 2019)

ENERGI

MATERIAL MAJU



KEMARITIMAN

KESEHATAN

Beasiswa PMDSU (3)

Pendidikan Magister Menuju Doktor Untuk Sarjana Unggul

		h-indeks	Jumlah Publikasi
	**Dr. Grandprix T. M. Kadja** Institut Teknologi Bandung Batch I	5	11
	**Dr. Robi Kurniawan** Institut Teknologi Bandung Batch I	4	15
	**Dr. Shibghatullah Muhammady** Institut Teknologi Bandung Batch I	5	21
	**Dr. Suhendra Pakpahan** Universitas Gadjah Mada Batch I	3	06

Beasiswa PMDSU (4)

Pendidikan Magister Menuju Doktor Untuk Sarjana Unggul

		h-indeks	Jumlah Publikasi
	**Dr. Mochamad Asrofi** Universitas Andalas Batch II	4	09
	**Dr. Agung S. Batubara** Universitas Syiah Kuala Batch II	3	15
	**Muhammad Ahsan** Institut Teknologi Sepuluh Nopember Batch II	4	12
	**Alexander P. Nugraha** Universitas Airlangga Batch III	5	20

PROGRAM FRAMEWORK

LIPI

Pusat Penelitian/ Badan Litbangji

- Kelompok Penelitian/Kelompok Peneliti
- Kelompok Penelitian/Kelompok Peneliti
- Kelompok Penelitian/Kelompok Peneliti

Kelompok Penelitian/ Kelompok Peneliti , berperan:

- **Co Promotor** peserta program
- Mensinergikan **tema riset** peserta program
- Memastikan **pendanaan** kegiatan riset peserta program

PROGRAM BELAJAR BERBASIS RISET (*Degree By Research*)

- *Research collaboration*
- *Joint affiliation*

- **Promotor** dari Perguruan Tinggi penyelenggara program studi berbasis riset
- **Kurikulum** didesain berbasis hasil riset
- **Kolaborasi** infrastruktur riset

Perguruan Tinggi

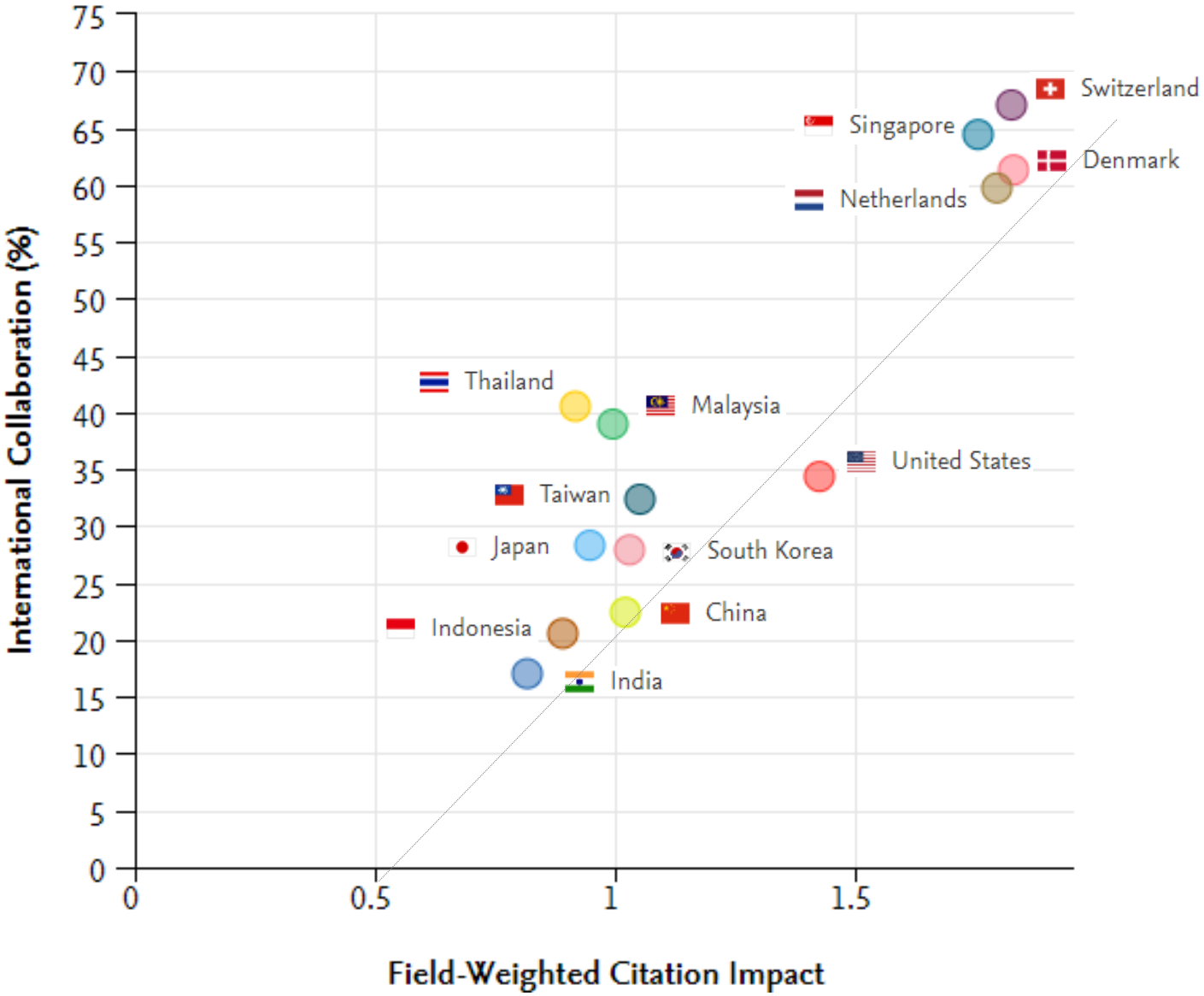
- Program Studi Berbasis Riset
- Program Studi Berbasis Riset
- Program Studi Berbasis Riset

www.lipi.go.id

Pentingnya Jejaring Internasional

There is a **positive correlation of 0.91 between how much a country collaborates internationally (%) and the total Field-Weighted Citation Impact of the entire country**.

Countries which collaborate more are cited more often!



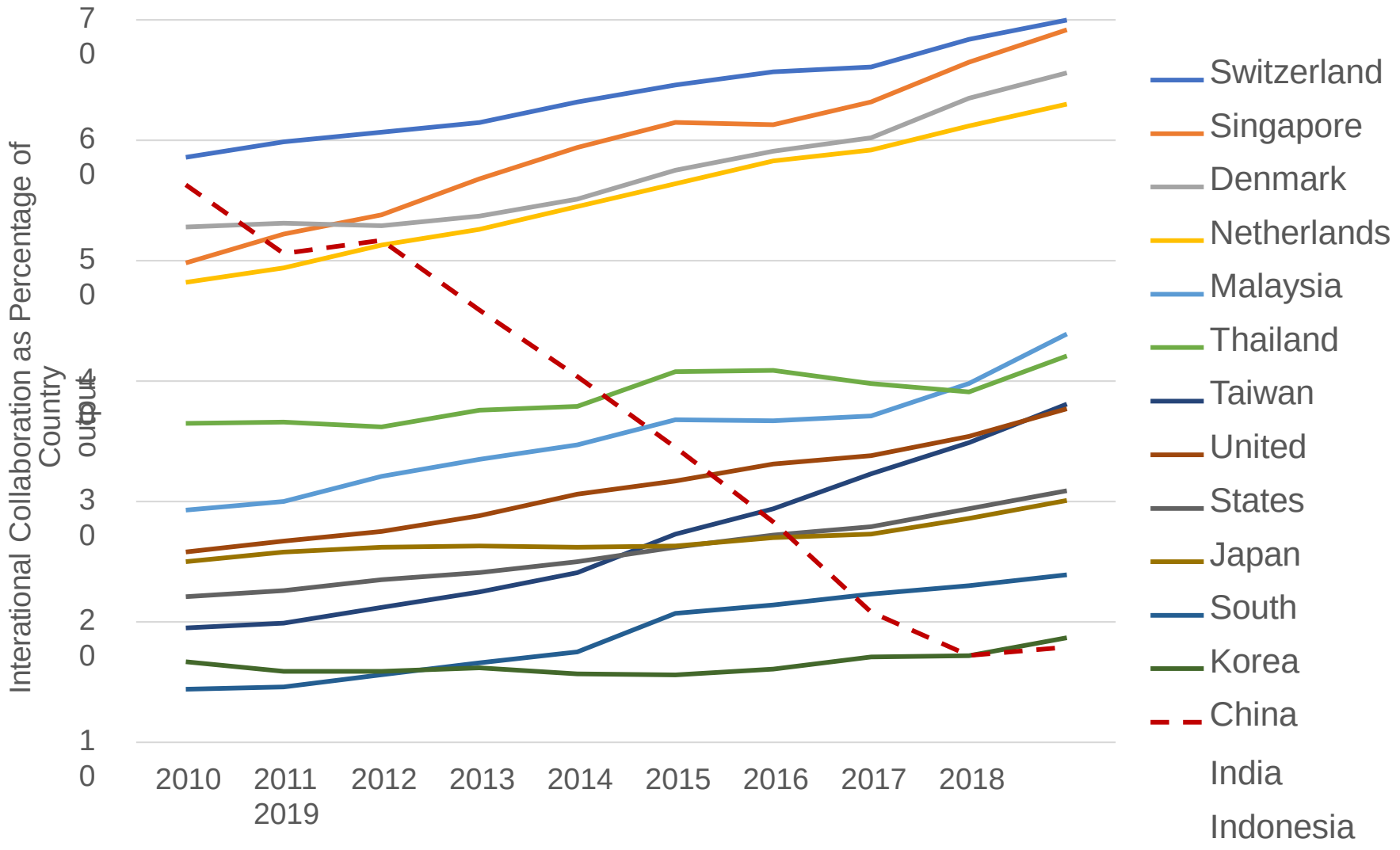
Looking at the **top 10 countries Indonesia collaborates with**, the resulting co-publications are all cited many times higher than world average!

Countries & regions	Co-authored publications	Field-Weighted Citation Impact
Japan	5,960 ▲	2.22
Malaysia	5,954 ▲	2.18
Australia	3,586 ▲	3.60
United States	3,215 ▲	4.20
United Kingdom	2,444 ▲	4.76
Netherlands	2,043 ▲	4.64
Germany	1,837 ▲	5.61
South Korea	1,518 ▲	5.94
Taiwan	1,458 ▲	5.73
Thailand	1,436 ▲	2.35

World average FWCI = 1.00

2014 to 2019

Indonesia's percentage of Internationally collaborated papers has aggressively declined from over 55% in 2010 to less than 20% in 2019.



*)environmental and climate science, disaster mitigation and management, climate change adaptation and resilience, and related materials

Luaran

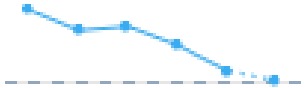
1. Artikel Q1
2. Purwarupa (*Prototype*)/ *Blueprint*
3. Paten
4. Kebijakan

Inovasi

Publications in Indonesia that have been cited in Patents (2014-2019)

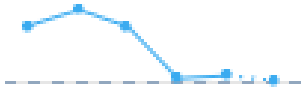
Scholarly Output

106



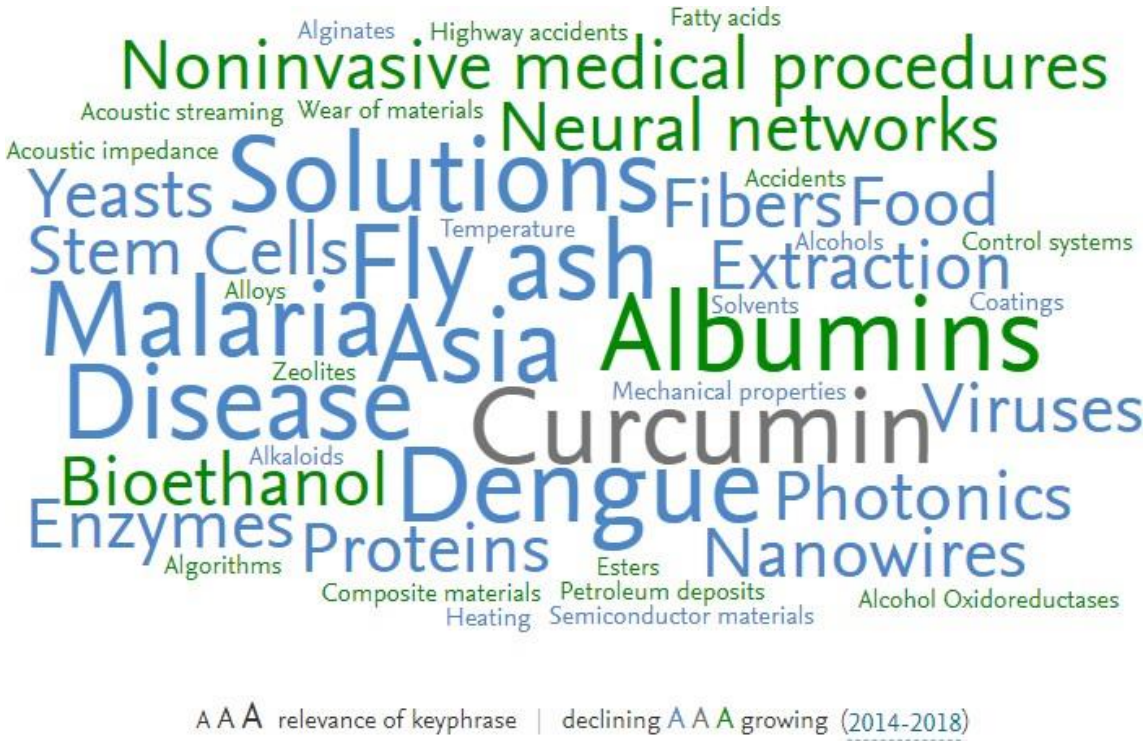
Field-Weighted Citation Impact

20.85



106 Indonesian research papers were cited by 175 patents

The cited research papers were related to the these keyphrases



Example of a Patent citing Indonesian research paper

is this one by Signpath Pharma INC related to chemotherapeutic agent

Bibliographic data: EP3144006 (A1) — 2017-03-22

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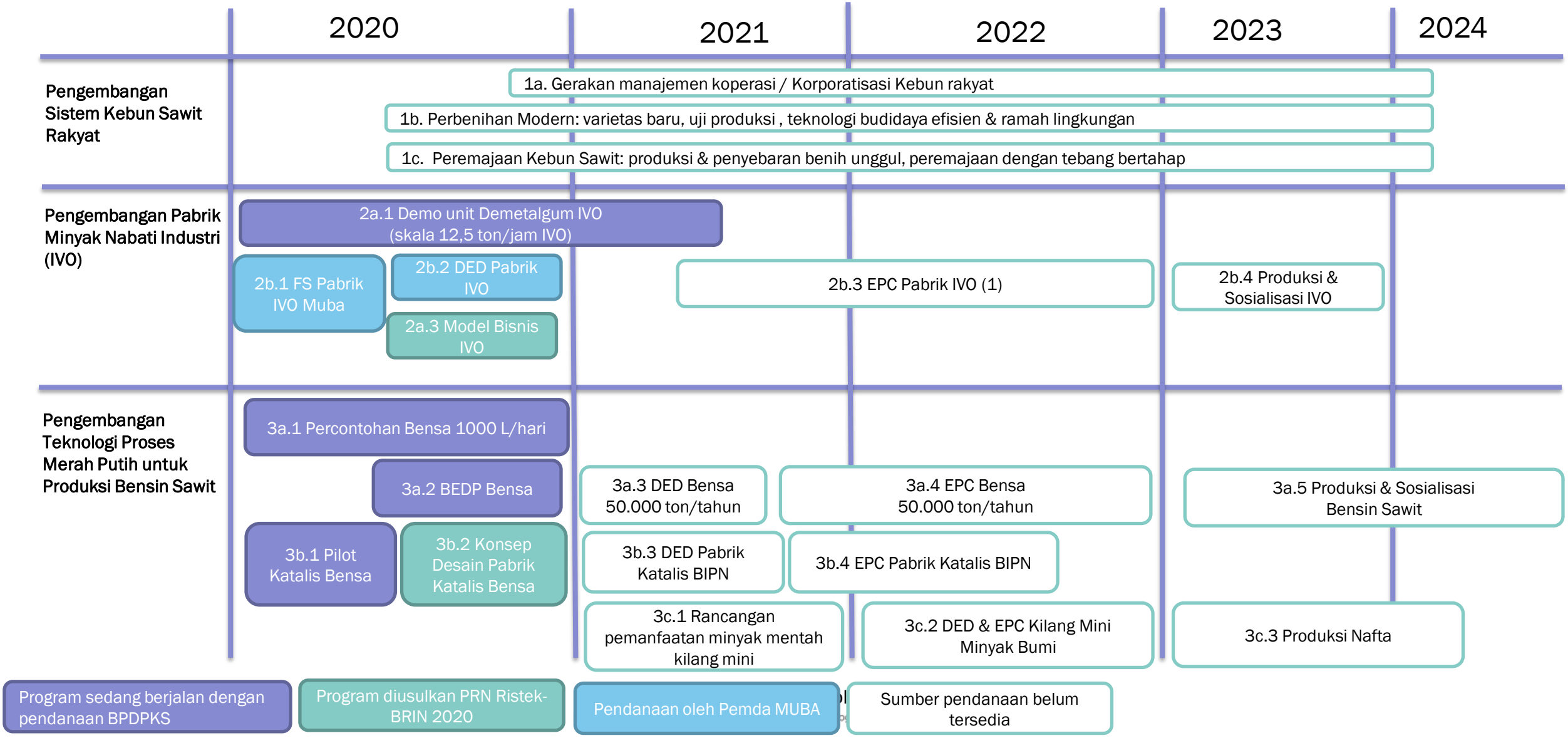
USE OF A COMBINATION OF A CURCUMINOID AND A CHEMOTHERAPEUTIC AGENT FOR USE IN TREATMENT OF GLIOBLASTOMA

Page bookmark	EP3144006 (A1) - USE OF A COMBINATION OF A CURCUMINOID AND A CHEMOTHERAPEUTIC AGENT FOR USE IN TREATMENT OF GLIOBLASTOMA
Inventor(s):	SORDILLO LAURA A [US]; SORDILLO PETER P [US]; HELSON LAWRENCE [US] ±
Applicant(s):	SIGNPATH PHARMA INC [US] ±
Classification:	- international: ***A61K31/4188; A61K36/9066; A61K45/06; A61K9/127; A61P35/00***
	- cooperative: A61K31/121 (EP, US); A61K31/4188 (EP); A61K36/9066 (EP); A61K45/06 (EP, US); A61K9/0019 (EP); A61K9/127 (EP); A61P35/00 (EP) → more
Application number:	EP20160188460 20160913 Global Dossier
Priority number(s):	US201562220635P 20150918
Also published as:	CA2940470 (A1) CA2940470 (C) US10485768 (B2) US2017079934 (A1)

Indonesian Institutions producing the most papers cited by Patents

	Institution	Scholarly Output	Field-Weighted Citation Impact
1.	Bandung Institute of Technology	14	4.89
2.	University of Indonesia	10	17.49
3.	Institut Teknologi Sepuluh Nopember	6	0.76
4.	Lembaga Ilmu Pengetahuan Indonesia	6	2.47
5.	Ministry of Health, Indonesia	6	27.37
6.	Universitas Diponegoro	6	1.99
7.	Gadjah Mada University	5	4.75
8.	Universitas Airlangga	5	3.51
9.	Eijkman Institute for Molecular Biology	4	14.05
10.	Institut Pertanian Bogor	4	1.81

Peta-Jalan Pengembangan Teknologi Produksi Minyak Nabati Industri (IVO) dan Bensin Sawit dengan Katalis Merah Putih yang Terintegrasi dengan Kebun Rakyat



We aspires to develop battery ecosystem and is seeking strategic consortium partners for E2E value chain

Nickel Ore	MHP Ni,Co Sulphate	Battery Chemical and Cells Component	Battery Cell, Battery Modules, and Packs	xEVs, Electricity Supply, ESS and Infrastructures	Recycling
Nickel ore	Nickel & Cobalt Sulphate	Battery Precursor	Cathode	Battery Cell & Pack	Electric Vehicles / ESS / Charging Station	Battery Recycling
Upstream to Cathode			Battery Manufacturing	xEV	New Energy Infra	Recycling

SOE consortium

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Potential partner

+ Consortium partner

Note: xEV includes various type of electric vehicle including HEV(Hybrid Electric Vehicle), BEV(Battery Electric Vehicle), PHEV(Plug-in Hybrid Electric Vehicle)

Terima Kasih

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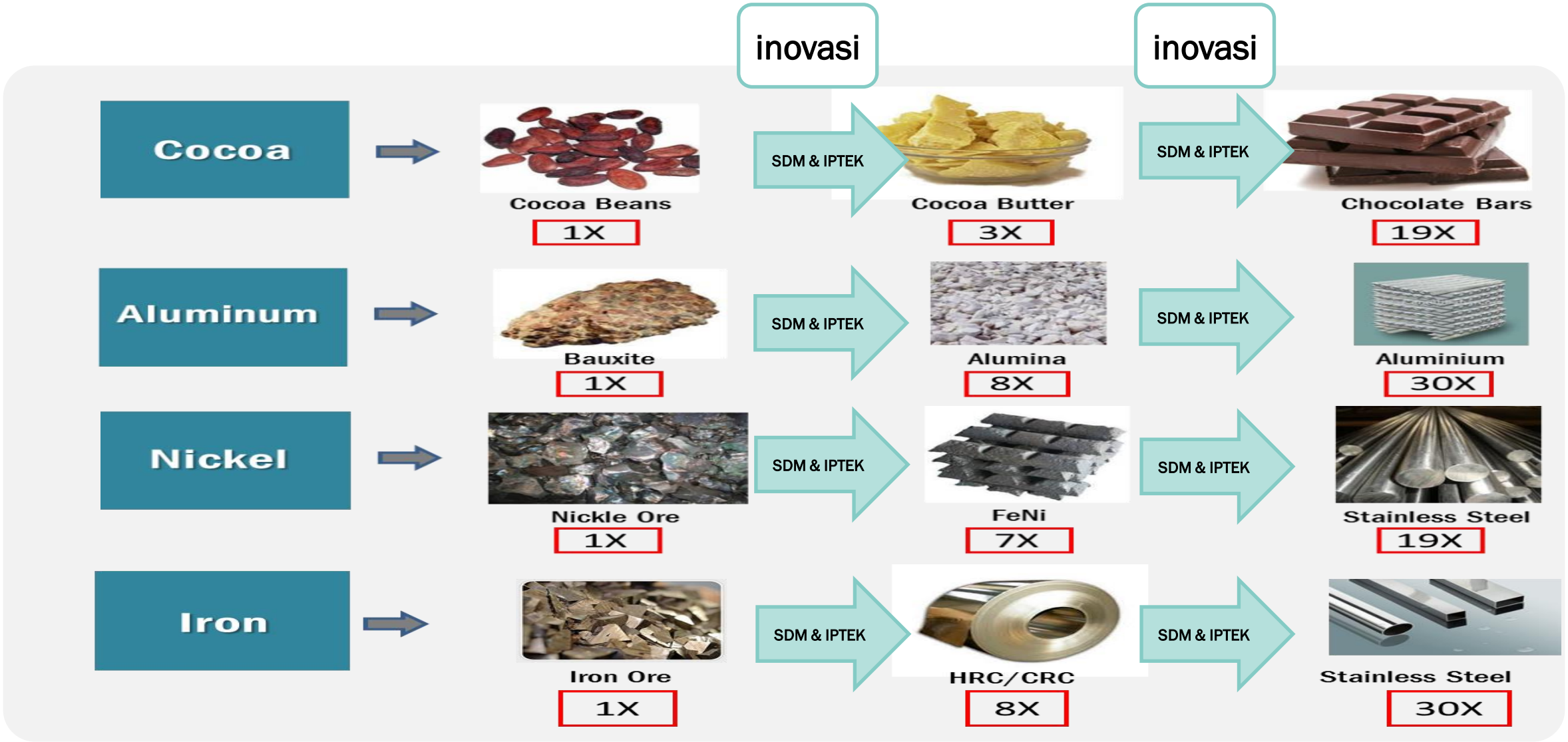
PERAN IPTEK DAN INOVASI DALAM PENINGKATAN NILAI TAMBAH SUMBER DAYA ALAM



TANTANGAN DAN PELUANG

Sumber : diolah dari berbagai sumber

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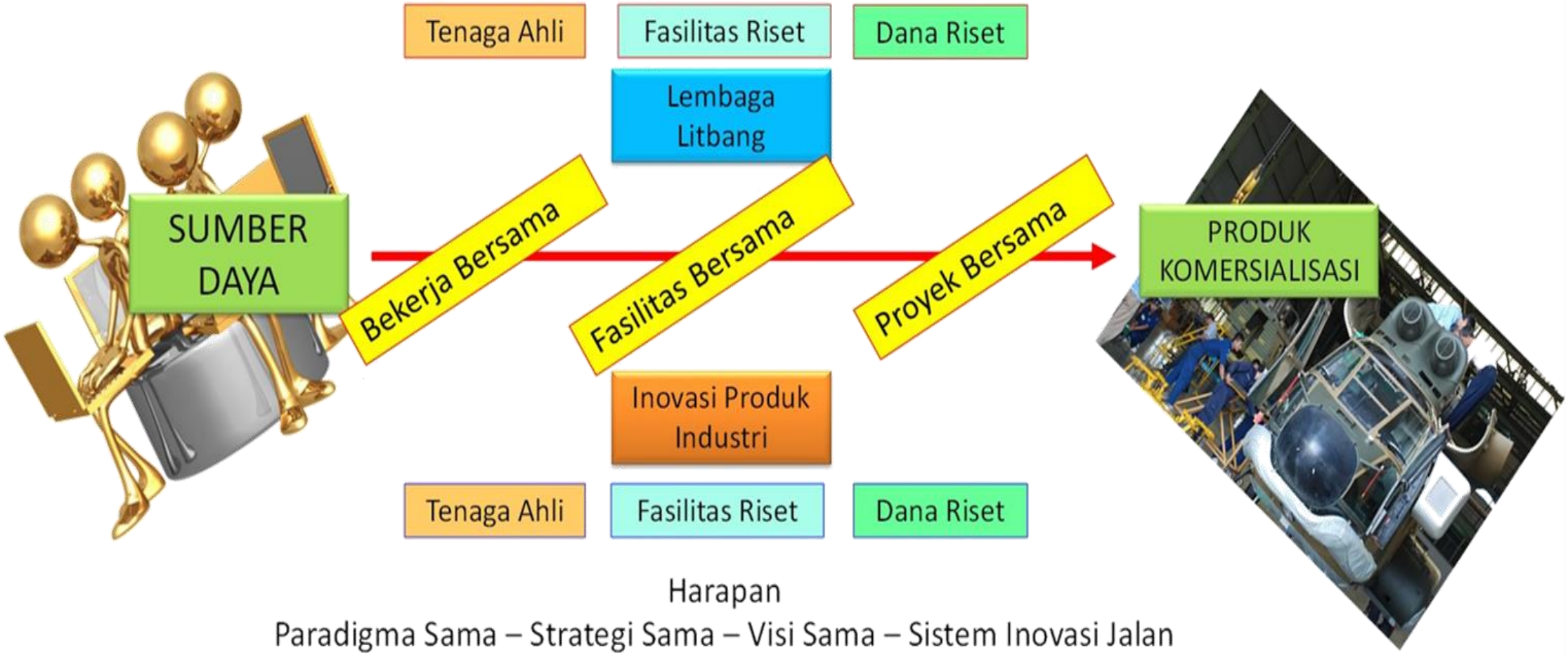

Harapan

Paradigma Sama – Strategi Sama – Visi Sama – Sistem Inovasi Jalan

Sehingga Lembaga Litbang dg Industri Nyambung – Produktivitas Meningkat

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