Technology Downstream to Leverage Domestic Industrial Competitiveness

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Outlines

- Current Challenges to Research
- The Formation of National Research and Innovation Agency (BRIN)
- Commercial Ecosystem of Research and Innovation
- Summary Figures of Licensing Research and Innovation

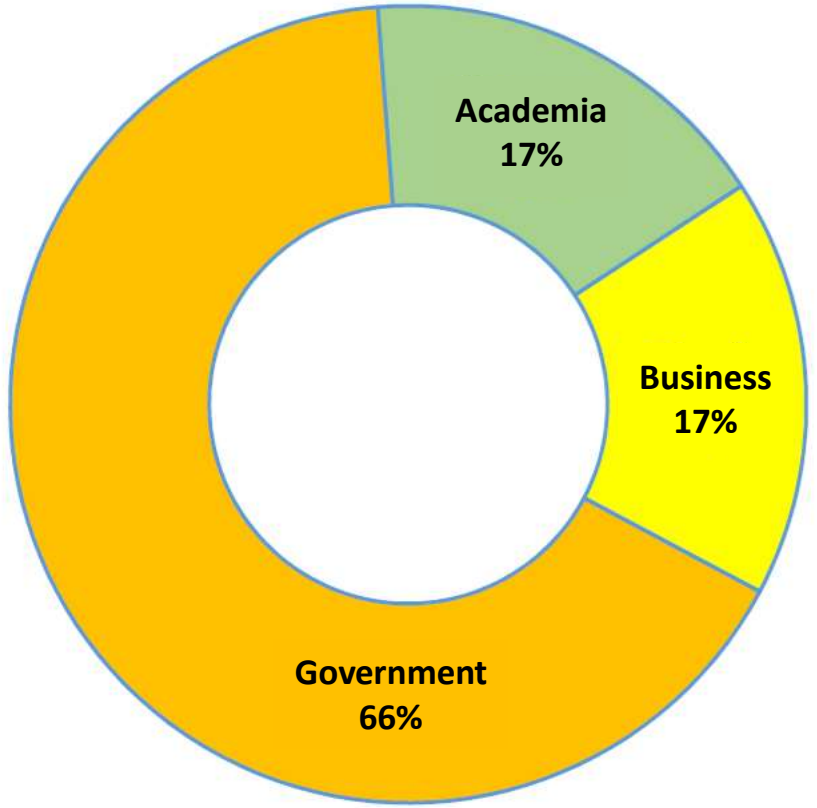
Challenges in Science and Technology Research

Distribution of National Research Spending by Sector in 2022

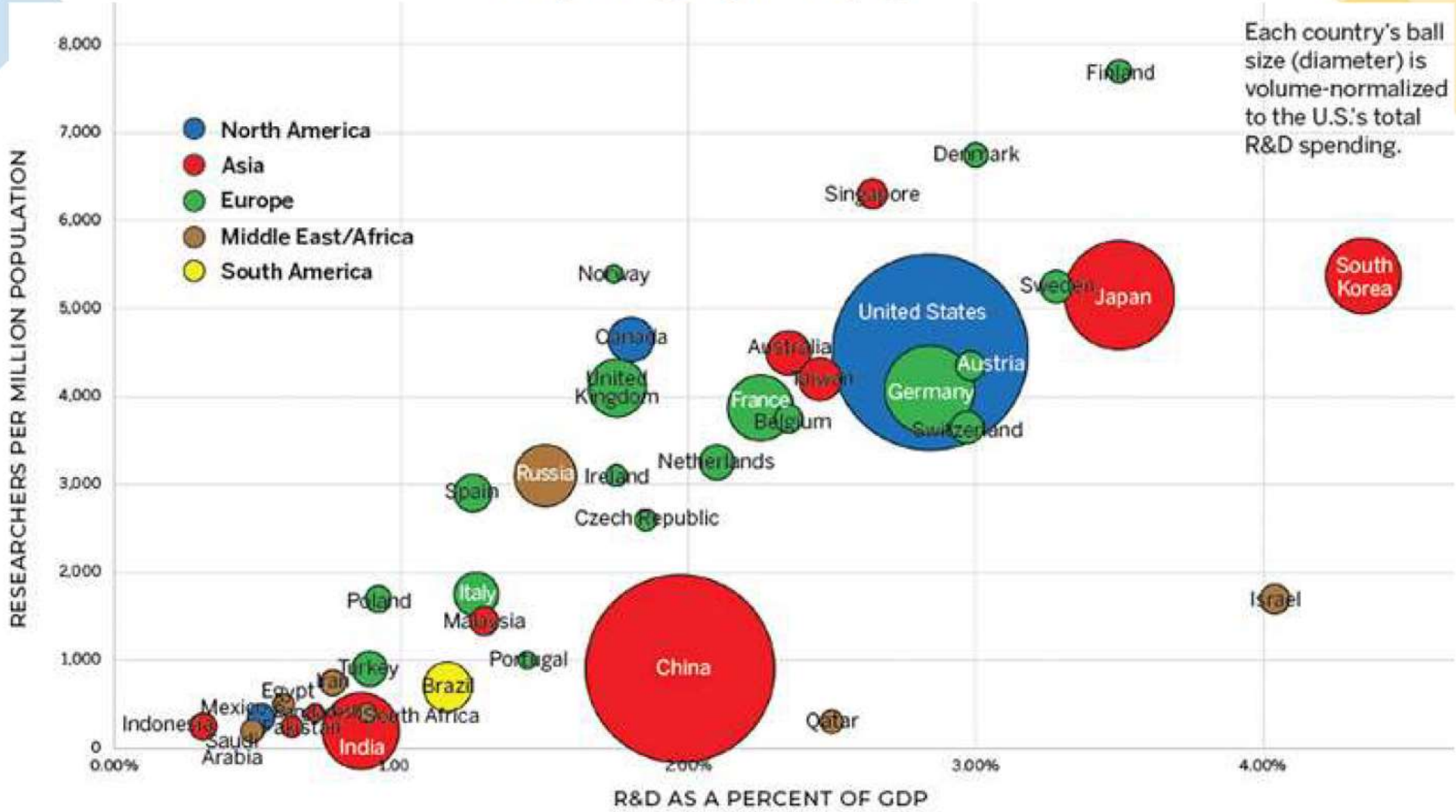
No	Sector	Spending (IDR)	Pct.
1	Pemerintah (BRIN, pemerintah daerah dan LPDP) [1)]	11.743.096.134.752	66
2	Perguruan Tinggi [2)]	3.029.724.677.000	17
3	Bisnis [3)]	2.963.369.254.279	17
	Total	**17.736.190.066.031**	100

Sumber:
1) BRIN (2022), Kementerian Dalam Negeri (2022) dan Laporan Keuangan LPDP (2022)
2) Kemendikbudristek (2022)
3) Diolah dari Sistem Registrasi Lembaga Riset (SeBaRis) BRIN, 2023; Bursa Efek Indonesia (BEI), 2023; dan Survei Industri Menengah dan Sedang, BPS (2022)

PERCETAGE DISTRIBUTION OF NATIONAL RESEARCH SPENDING



WORLD OF R&D


Each country's ball size (diameter) is volume-normalized to the U.S.'s total R&D spending.
North America
Asia
Europe
Middle East/Africa
South America
RESEARCHERS PER MILLION POPULATION
R&D AS A PERCENT OF GDP
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0.00%
1.00
2.00%
3.00%
4.00%
Finland
Denmark
Singapore
Norway
Canada
United States
Sweden
Japan
South Korea
Australia
Taiwan
Austria
Germany
United Kingdom
France
Belgium
Switzerland
Netherlands
Russia
Ireland
Spain
Czech Republic
Poland
Italy
Malaysia
Portugal
China
Israel
Turkey
Iran
Egypt
Brazil
South Africa
Mexico
Indonesia
Pakistan
Saudi Arabia
India
Qatar

Research Spending to PDB Ratio in 2022

National Research Spending to PDB Ratio in 2022

Persentase Belanja Riset	Persen (%)
Nasional	0,1
Pemerintah	0,06
Perguruan Tinggi	0,02
Bisnis	0,02

Sumber: hasil pengolahan

Research Spending of Business Sector and Its Percentage to PDB in 2022

Uraian	2022
Belanja riset sektor bisnis (Rp)[1)]	2.963.369.254.279
PDB (Rp.)[2)]	19.588.500.000.000.000
Persentase belanja riset sektor bisnis terhadap PDB	**0,02%**

Sumber:
1) Diolah dari Database Sistem Registrasi Lembaga Riset (SeBaRis), 2023; Bursa Efek Indonesia (BEI) 2023; dan Survei Industri Besar dan Sedang, BPS (2022);
2) BPS (2022).

BRIN
BADAN RISET
DAN INOVASI NASIONAL

Legal Basis for BRIN

- Law No. 11 Year 2019 on the National System of Science and Technology.
- Presidential Decree No. 78 Year 2021 on the National Research and Innovation Agency (BRIN).

Integration of National Research Units

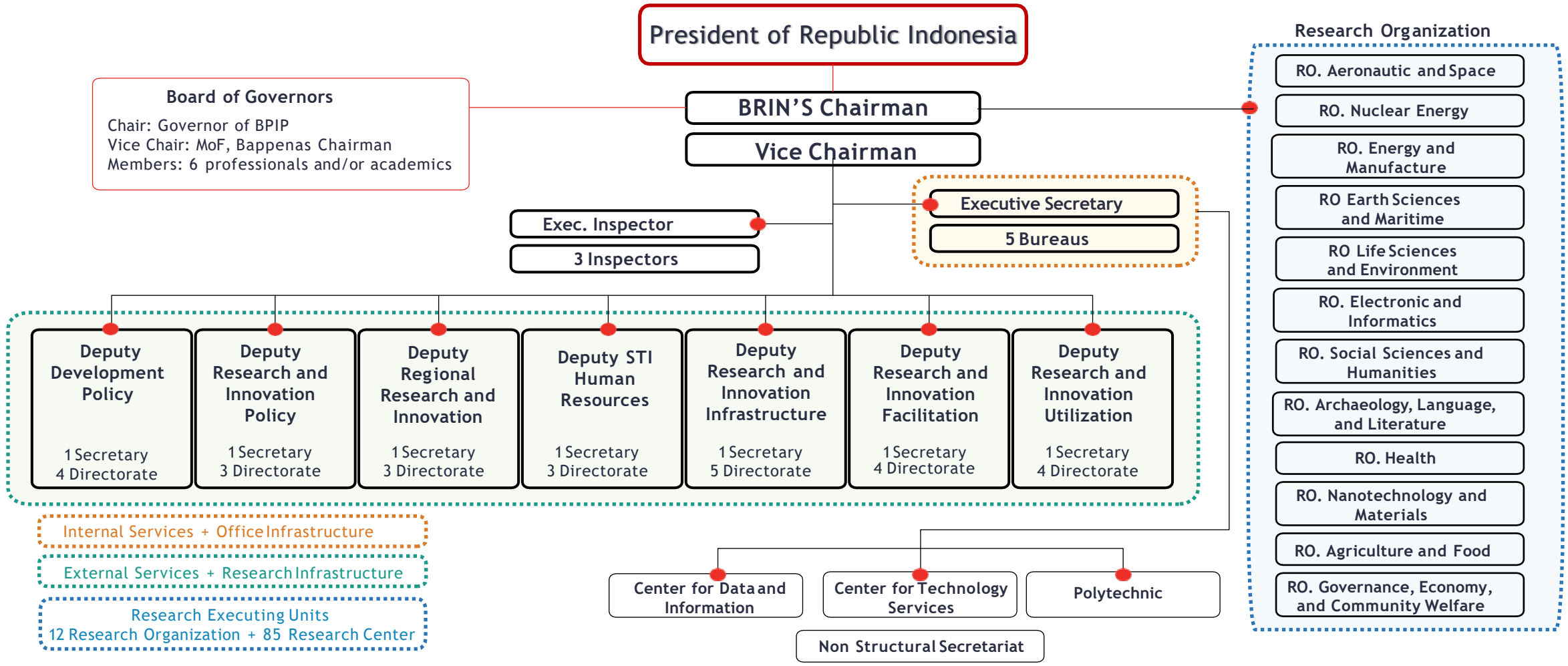
- With this integration, a critical mass of research and innovation will be reached, i.e., **human resource, infrastructure, and budgets** will increase.
- It will leverage the research and innovation ecosystem, and encourage R&D in industries

+

R&D Units of All Ministries

BRIN's Organization

Source: Presidential Decree 78/2021 about BRIN, Peraturan BRIN 1/2021 about BRIN's Organization



National Research and Innovation Agency
Business Process

National/International
Research Colaboration,
External Funds

Matching-Fund
National/International,
Eksternal Partners

Policy

- **Deputy Development Policy** (Ministries/Agencies)
- **Deputy Regional Research and Innovation** (Regional Gov.)
- **Deputy Research and Innovation Policy**
  Data/ Regulation/ Monev

Executing Agency

- RO. Aeronautic and Space
- RO. Nuclear Energy
- RO. Energy and Manufacture
- RO Earth Sciences and Maritime
- RO Life Sciences and Environment
- RO. Electronic and Informatics
- RO. Social Sciences and Humanities
- RO. Archaeology, Language, and Literature
- RO. Health
- RO. Nanotechnology and Materials
- RO. Agriculture and Food
- RO. Governance, Economy, and Community Welfare

Research Organization

Funding Agency

- **Deputy STI Human Resources** researchers
- **Deputy Research and Innovation Infrastructure** Infrastructure/labs
- **Deputy Research and Innovation Facilitation** Funding Facilitation
- **Deputy Research and Innovation Utilization**
  utilization schemes ; invention → innovation

Facilitating with the princip of:

- Independency of funding agency
- Fairness for all researcher

Research Organizations in BRIN

- Earth and Marine RO

- Biology and Environment RO

- Food and Agriculture RO

- Health RO

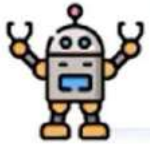
- Archeology, Language, and Literature RO

- Social Sciences and Humaniora RO

- Nuclear Power RO

- Governance, Economy, and Well-being RO

- Energy and Manufacture RO



- Nano Technology and Material RO

- Electronics and Informatics RO

- Aeronautics and Space RO

BRIN
BADAN RISET
DAN INOVASI NASIONAL

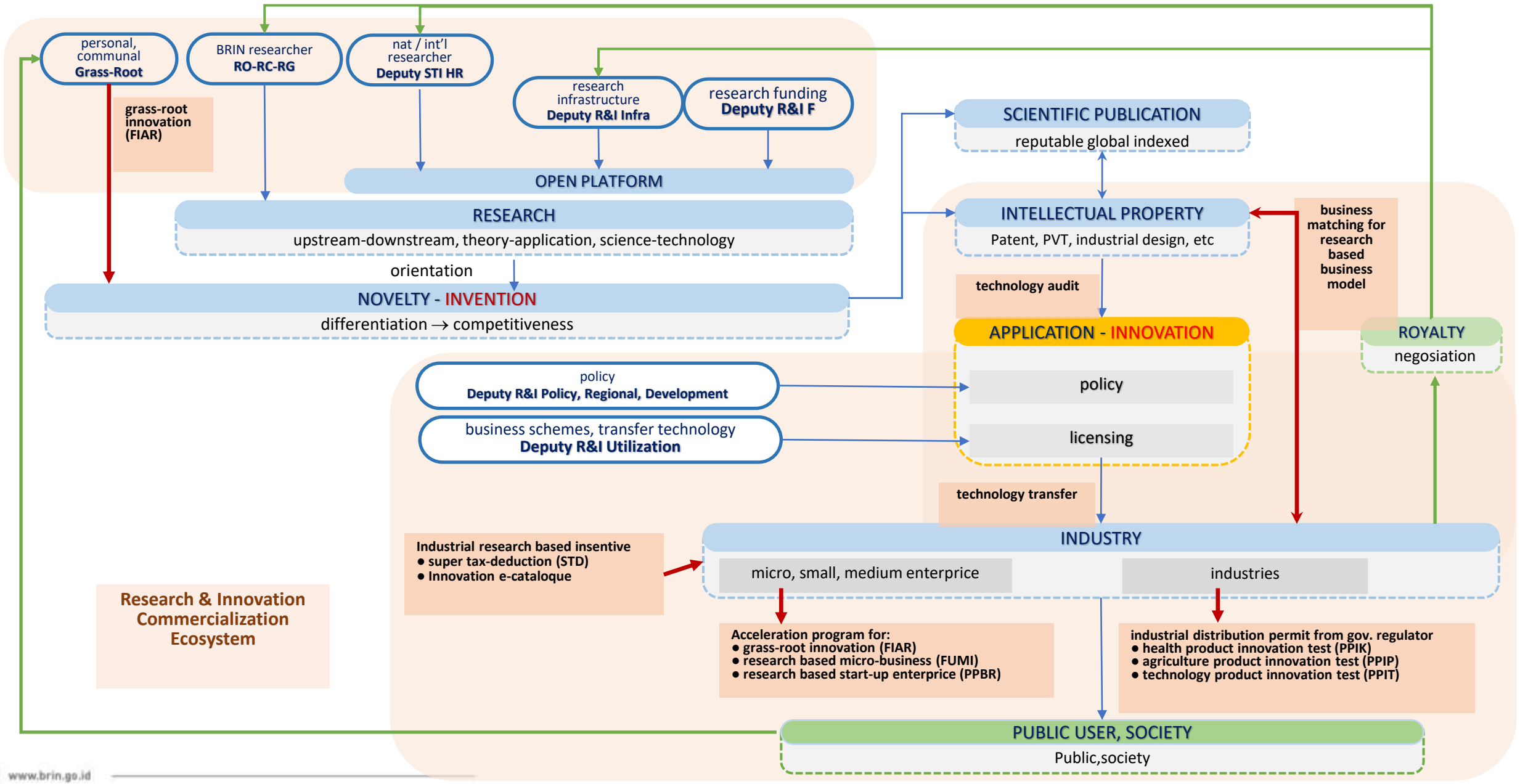
Commercialization of Research & Innovation Result

Deputy for Utilization of Research and Innovation

National Research & Innovation Agency - BRIN

October 2023

Strengthening Research and Innovation Commercialization Ecosystem



Human Capital Engagement & Research Facilitation Program

ULTIMATE GOAL

Improving Indonesian researchers' capacity and competence

GLOBAL ENGAGEMENT!

Research and Innovation Matching Fund

As a platform for inclusive and collaborative cooperation, with focused area. With budget form state fund and endowment fund

https://pendanaan-risnov.brin.go.id/

Matching-fund Oversea Agency

Facilitation for Foreign Direct Investment on R&I

National Talent Management

- President Decree
- BRIN ↦ Research & Innovation Talent
- 2022 – 2045

- Joint collaboration & supervision on Degree By Research Program form Master dan PhD
- Collaborative based Researcher Mobility Program for non degree (Postdoctoral, Visiting Researcher, Internship, Conference)
- Special Program on Biodiversity Utilization - Ocean - Nuclear - Space. LPDP's National Strategic Program for PhD at designated research groups in overseas universities for 5 – 10 years period

- **Global Collaboration University, R&D Institution**
- **Capacity Building Development & Research Mobility**

http://manajementalenta.brin.go.id

Open Platform Infrastructures

http://elsa.brin.go.id

Open Research Infrastructure

BRIN is the main research infrastructure provider, and make all of them open and accessible for any parties (academics, researcher, business, communities)

Facilitation & Regulation

https://klirensetik.brin.go.id/

Ethical Clearance & Research Permit

BRIN provide services to assess the ethical acceptability of a research project that will be carried out by researchers from BRIN as well as outside BRIN , including foreign researchers

Business Market Analysis

Mapping of potential industries, industry needs, potential utilisation of research and innovation BRIN

Business Matching

Cooperation Initiation by identifying *Technology Request andTechnology Offer* while building a network of co-operation

Business Model Development

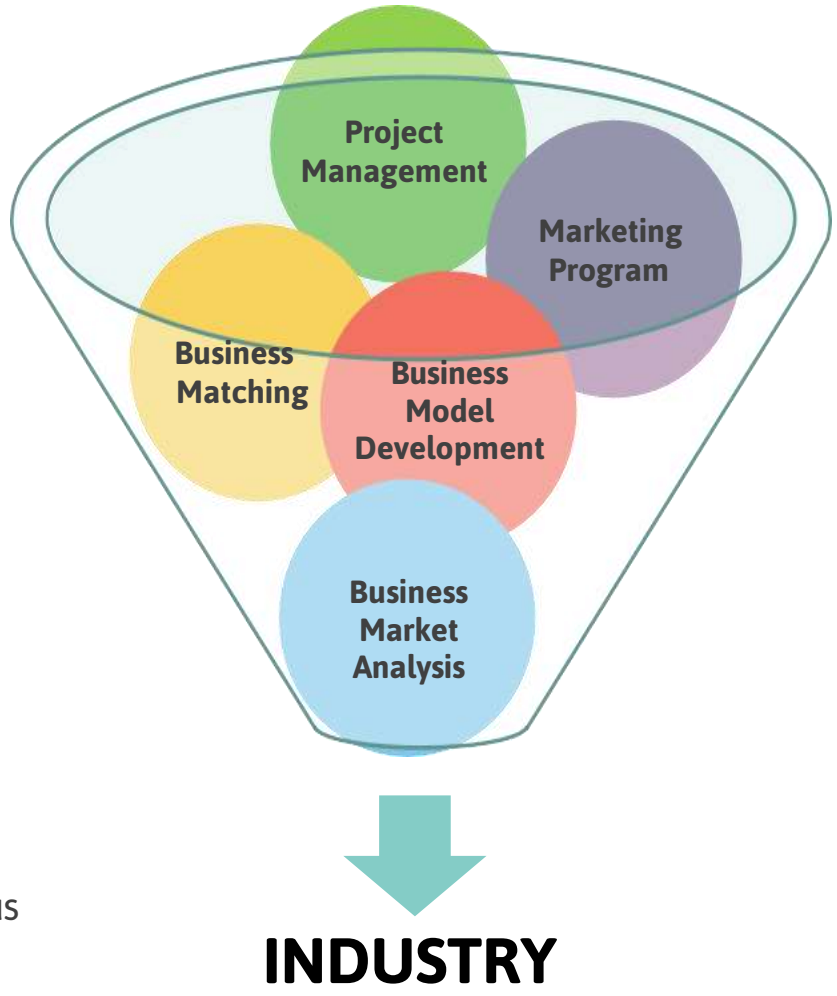
Research collaboration; utilisation of innovative technologies; utilisation of expertise;and utilisation of research infrastructure

Business/project management

Business processes as operational guidelines for commercialisation of BRIN innovations with industry, implementation of collaborations, and development of innovation data base systems.

Marketing Program

Promoting BRIN's science and technology expertise, BRIN's research infrastructure, ready-to-be-applied technologies, and success stories from the utilisation of previous research and innovation.



National Talent Management Program

Postdoctoral
Out-bond

Student University ● Young Talents | Potential Talents | Superior Talents

RESEARCH INNOVATION TALENTS

Research Assistant
BARISTA

MBKM → Final Project → **BSc**

S2 by Research
BARISTA
Research Assistant

Thesis → **MSc**

S3 by Research
BARISTA
Research Assistant

Dissertation → **PhD**

DbR MSc

DbR PhD

International PhD student*
Post-doctoral (*in-bound*)
International Conference / Training

Visiting Researcher / Professor

Mobility Program

Post doctoral → **ASN BRIN** 500 PNS / PPPK → Visiting Researcher

Research and Innovation Ecosystem

\+ NATIONAL TALENT APPRECIATION

Joint Research Visit

University or Industry

BRIN Focus Research Areas for Capacity Building

Advanced Biodiversity's Utilization

[Blue biotechnology (i.e. biodiversity of diatoms and their metabolites for sustainable aquaculture), Plant Membrane Transporter, Genome Mapping, Plant Biotechnology, Microbial Genetics Engineering, Plant breeding & genetics, Bioinformatics, Biodiversity, Bioactive compounds, functional food]

Deep Sea and Maritime

[Marine Geosciences, Physics & Chemistry Oceanography, Pollution of the Coastal and Marine Environment, Ocean – Atmosphere interaction, Marine Science and Technology, Fishery, Marine Biology & Biotechnology, Onshore and Offshore Building Technologies, Marine Disaster Mitigation Technology, Sea Transportation Technology, Deep Sea Exploration Technology, Maritime Logistics, Law of the Sea and Maritime Culture]

Nuclear & Radiation Technology

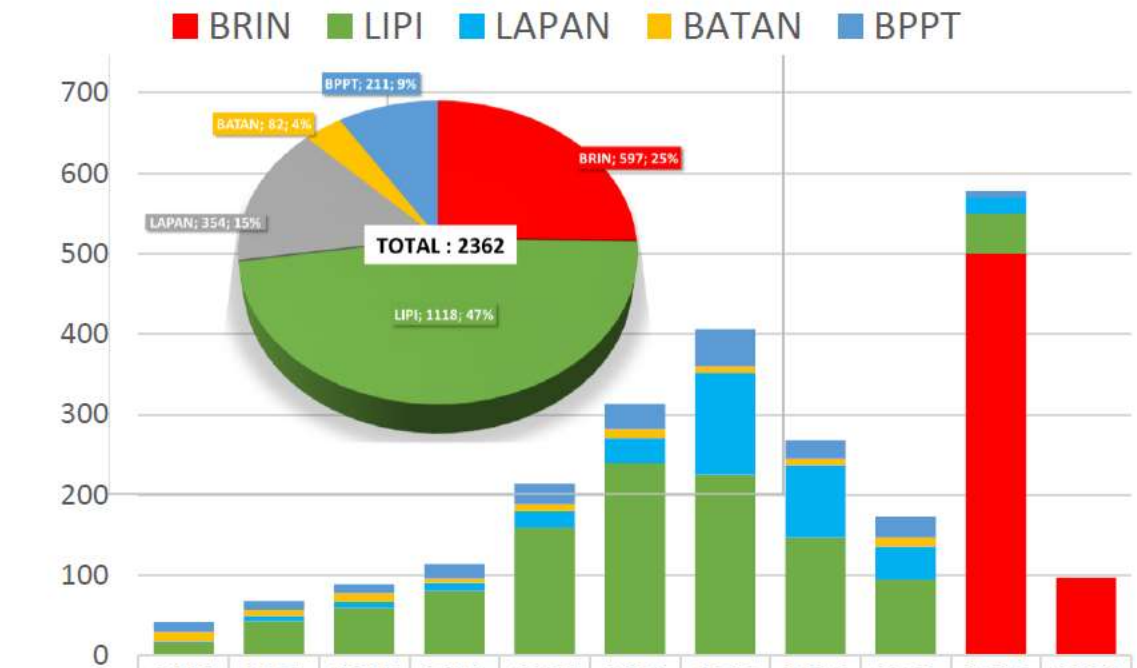
[Nuclear Reactor, Reactor Core, Nuclear System and Component, Nuclear Instrumentation and Control, Nuclear Safety, Nuclear Security, Nuclear Fuel and Materials, Nuclear Fuel Cycle and Radioactive Waste Management, Radiation Technology, Advanced Nuclear Technology, Construction and Operation. Accelerators Science, Accelerator Utilization, Engineering; Fusion and Plasma]

Space and Avionics

[Aerospace science, technology, applied science satellite, space science, structure material, propellant, thermal insulation, propulsion, instrumentation, avionic, control system, telemetry, remote sensing, aerodynamic, flight performance, flight mechanic, aircraft configuration, design structure, load analysis, stress analysis, weight and balance, fatigue mechanics, aerolasticity, dynamic structure.

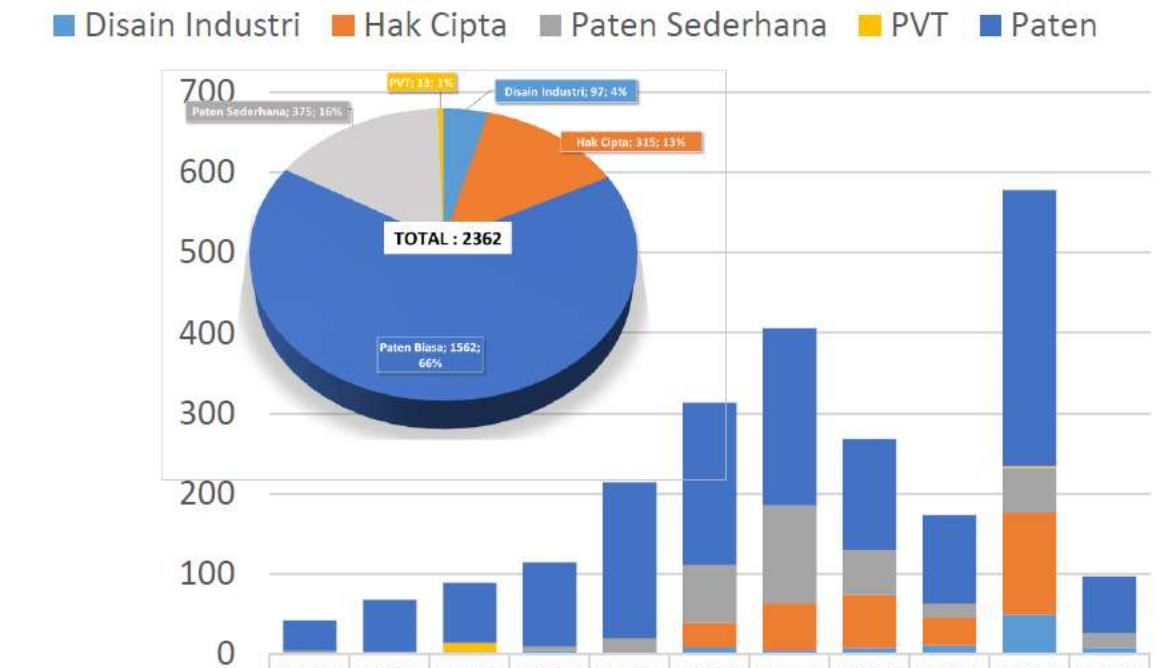
RESEARCH RESULT PRODUCTIVITY

The Number of Intellectual Property by years



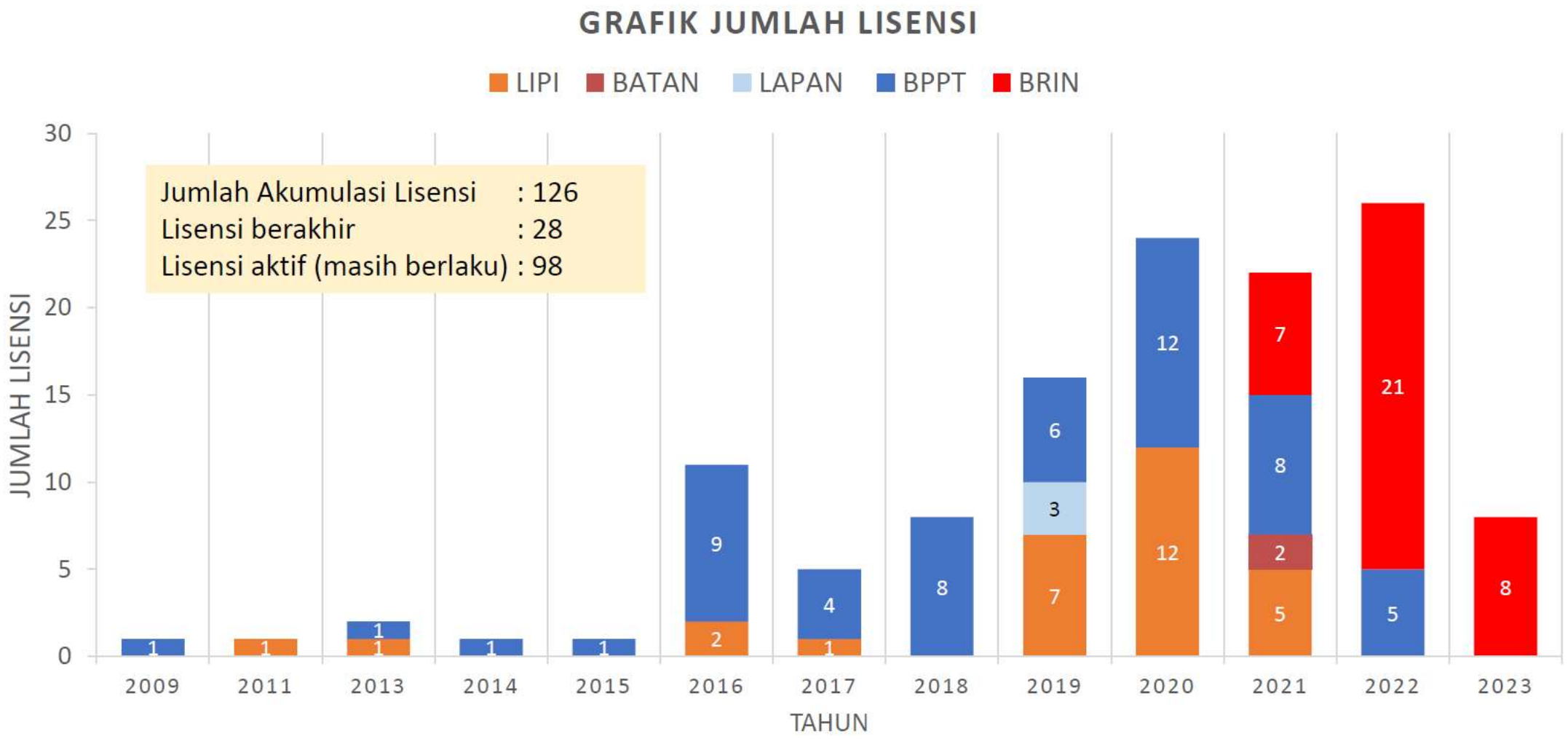
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BPPT	12	11	11	18	25	31	46	23	26	8	
BATAN	12	7	11	5	9	11	8	8	11		
LAPAN	1	7	7	10	20	31	127	90	41	20	
LIPI	17	43	60	81	160	240	225	147	95	50	
BRIN										500	97

Types of Intellectual Property by years



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Paten	38	65	75	104	194	202	221	138	110	344	71
PVT			11							2	
Paten Sederhana	4	3	2	6	18	72	122	56	18	56	18
Hak Cipta						30	58	66	34	127	
Disain Industri			1	4	2	9	5	8	11	49	8

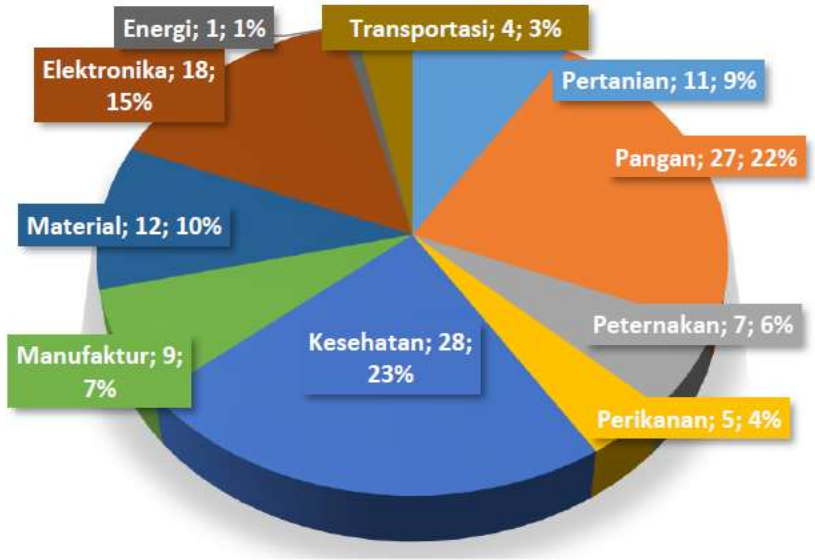
THE NUMBER OF LICENSE 2009-2023



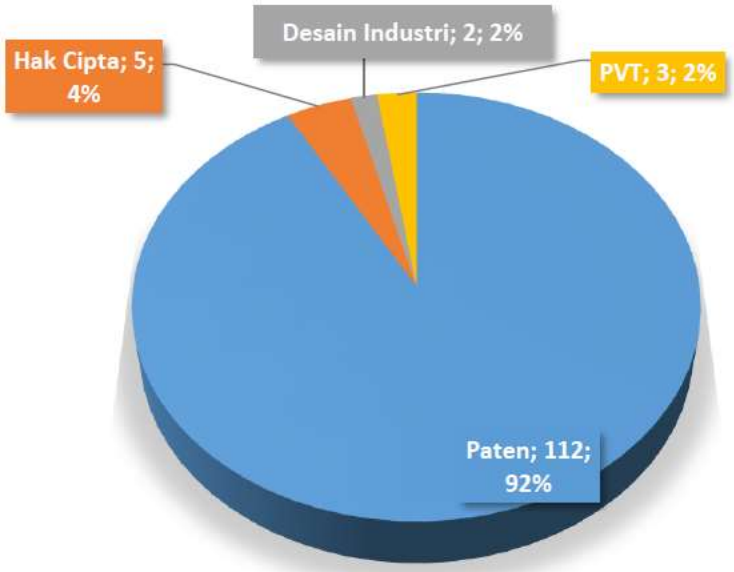
BRIN'S LICENSE 2009-2023

TOTAL (2011-23)
126 Lisensi

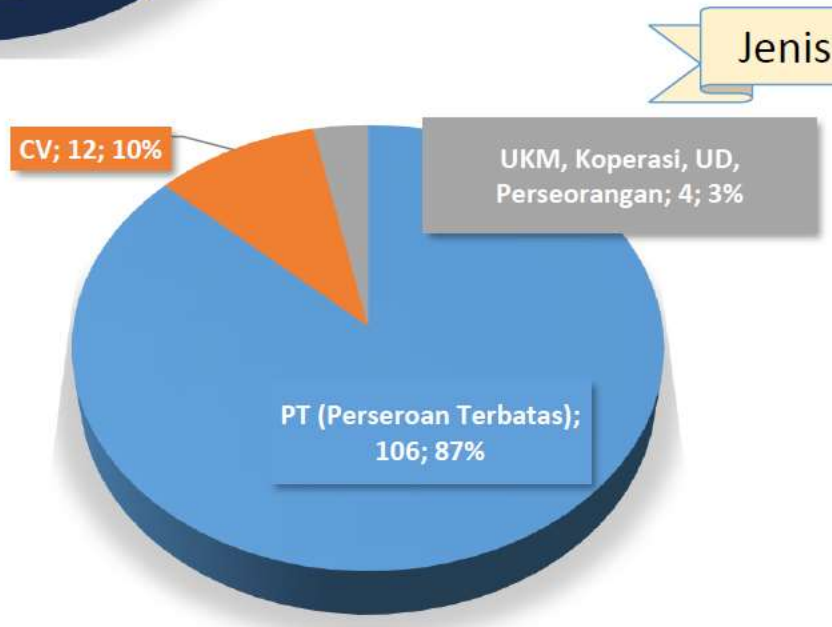
Sektor Industri



Jenis KI



Jenis MITRA



STRATEGY: FACILITATION SCHEME

Online processes

Year-long registration

Evaluation based on **track-record**

PROSEDUR

Only finance **core research activities,** not operationals.

Direct financing to service providers for **testing and sailing day**

PRINSIP DASAR

Competitive and open financing for all

To support research related needs

Source of fund: sustainable and State Budget

JENIS FASILITASI

http://pendanaan-risnov.brin.go.id

Riset mendukung Prioritas Riset Nasional

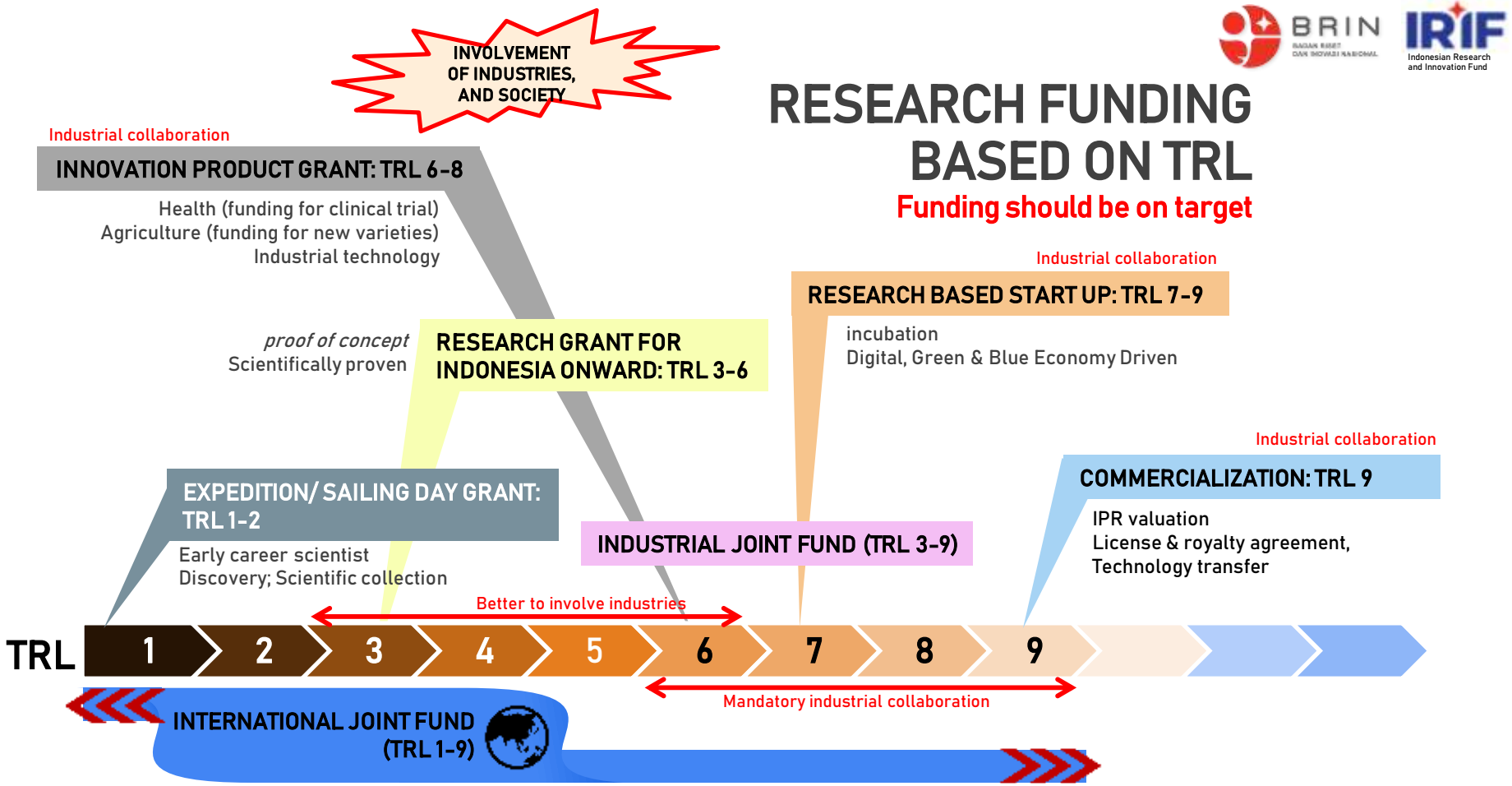
Hari layar ↦ aktivitas riset diatas kapal riset

Perusahaan Pemula Berbasis Riset

Riset penanganan COVID-19

Pengujian produk inovasi kesehatan (uji pra-klinis, uji klinis, uji alkes)

Akuisisi Pengetahuan Lokal


INVOLVEMENT OF INDUSTRIES, AND SOCIETY
RESEARCH FUNDING BASED ON TRL
Funding should be on target
Industrial collaboration
INNOVATION PRODUCT GRANT: TRL 6-8
Health (funding for clinical trial)
Agriculture (funding for new varieties)
Industrial technology
proof of concept
Scientifically proven
RESEARCH GRANT FOR INDONESIA ONWARD: TRL 3-6
Industrial collaboration
RESEARCH BASED START UP: TRL 7-9
incubation
Digital, Green & Blue Economy Driven
Industrial collaboration
COMMERCIALIZATION: TRL 9
IPR valuation
License & royalty agreement,
Technology transfer
EXPEDITION/ SAILING DAY GRANT: TRL 1-2
Early career scientist
Discovery; Scientific collection
INDUSTRIAL JOINT FUND (TRL 3-9)
Better to involve industries
TRL
1
2
3
4
5
6
7
8
9
Mandatory industrial collaboration
INTERNATIONAL JOINT FUND (TRL 1-9)

Gracias

Obrigado

Thank you

Mercy

Danke

Arigato

Suksma