Global Innovation Index 2021

The Global Innovation Index 2021 – ASEAN Results and Using the Index as a Driver to Enhance Innovation

Jakarta, February 24, 2022

Sacha Wunsch-Vincent
Co-editor of the GII and Head of the Composite Indicator Research Section, Department for Economics and Data Analytics, IP and Innovation Ecosystems Sector

WIPO
WORLD
INTELLECTUAL PROPERTY
ORGANIZATION

Topic 1: Introduction to the GII 2021

How to measure innovation?

Global Innovation Tracker: how did innovation respond during the pandemic?

GII 2021 Results

How can policy makers use the GII

WIPO

Objective of the Global Innovation Index

Improving the journey towards a better way to measure and understand innovation and to identify targeted policies :
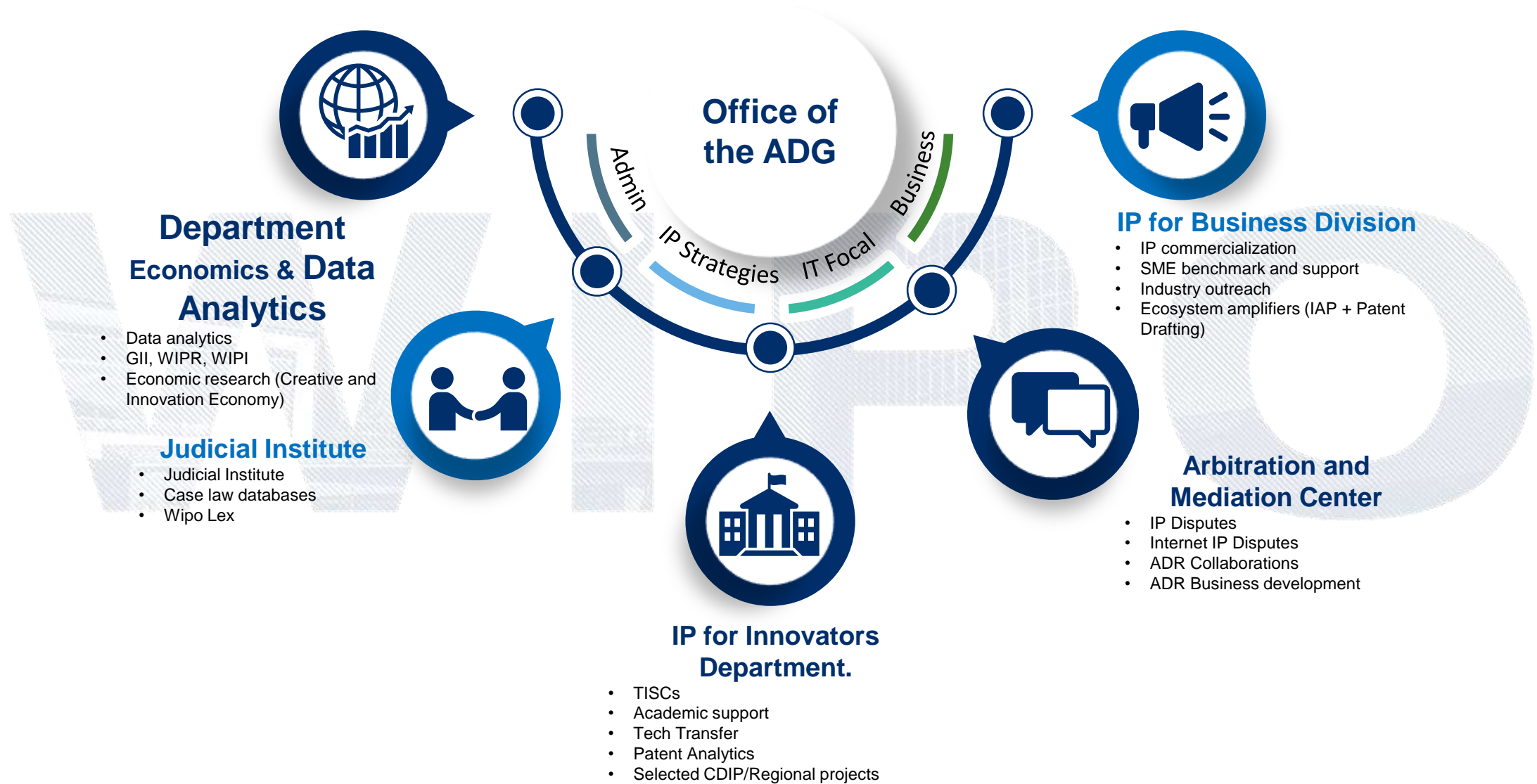
- Providing insightful data on innovation
- Assist economies in evaluating innovation performance
- Helping shape innovation measurement and the policy agenda of the economies it analyses

It is:

- Powerful tool to benchmark relative performance to other countries in a given year & analyse national innovation system
- Part of the WIPO IP and Innovation Ecosystems Sector portfolio

IP & Innovation Ecosystems Sector (IES)

Global Innovation Index 2021

Office of the ADG

Admin
IP Strategies
IT Focal
Business

Department
Economics & Data Analytics

- Data analytics
- GII, WIPR, WIPI
- Economic research (Creative and Innovation Economy)

Judicial Institute

- Judicial Institute
- Case law databases
- Wipo Lex

IP for Business Division

- IP commercialization
- SME benchmark and support
- Industry outreach
- Ecosystem amplifiers (IAP + Patent Drafting)

Arbitration and Mediation Center

- IP Disputes
- Internet IP Disputes
- ADR Collaborations
- ADR Business development

IP for Innovators Department.

- TISCs
- Academic support
- Tech Transfer
- Patent Analytics
- Selected CDIP/Regional projects
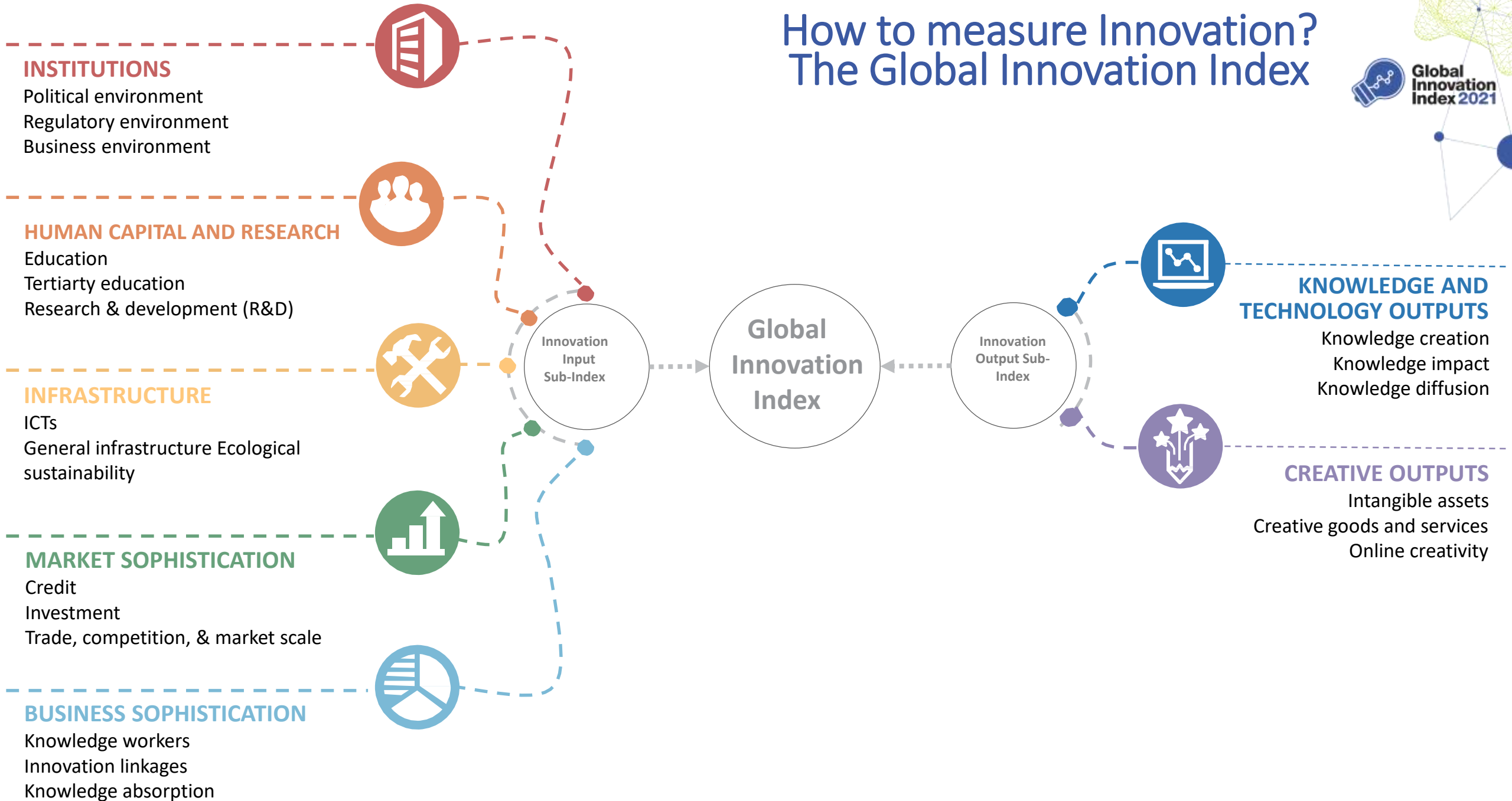
What is innovation and how do you measure it?

- Measuring innovation is complex and a moving target.

➡️ No magic formula.

1) Clear definition based on conceptual model

2) Coherent data selection

3) Flawless data gathering, aggregation and computations

4) Adapting model as we go

How to measure Innovation?
The Global Innovation Index

Global Innovation Index 2021

INSTITUTIONS
Political environment
Regulatory environment
Business environment

HUMAN CAPITAL AND RESEARCH
Education
Tertiarty education
Research & development (R&D)

INFRASTRUCTURE
ICTs
General infrastructure Ecological
sustainability

MARKET SOPHISTICATION
Credit
Investment
Trade, competition, & market scale

BUSINESS SOPHISTICATION
Knowledge workers
Innovation linkages
Knowledge absorption

Innovation Input Sub-Index

Global Innovation Index

Innovation Output Sub-Index

KNOWLEDGE AND TECHNOLOGY OUTPUTS
Knowledge creation
Knowledge impact
Knowledge diffusion

CREATIVE OUTPUTS
Intangible assets
Creative goods and services
Online creativity

Method of data collection

The model includes 81 indicators, which fall within the following three categories:

1. Quantitative/**hard data**
2. Composite indicators
3. Survey/qualitative **data**

WIPO

- Patents PCT
- Trademarks
- Industrial designs

Important data collection principles

- No data is received directly from Member States

- Data is collected from official public data sources as indicated in the Sources and Definitions (exception is IP data)

What is the global state of innovation? Has the pandemic slowed or accelerated investments in innovation

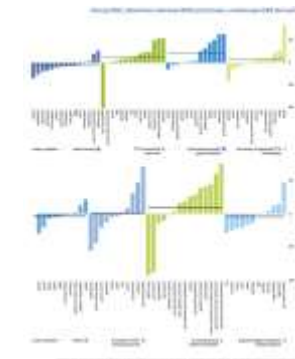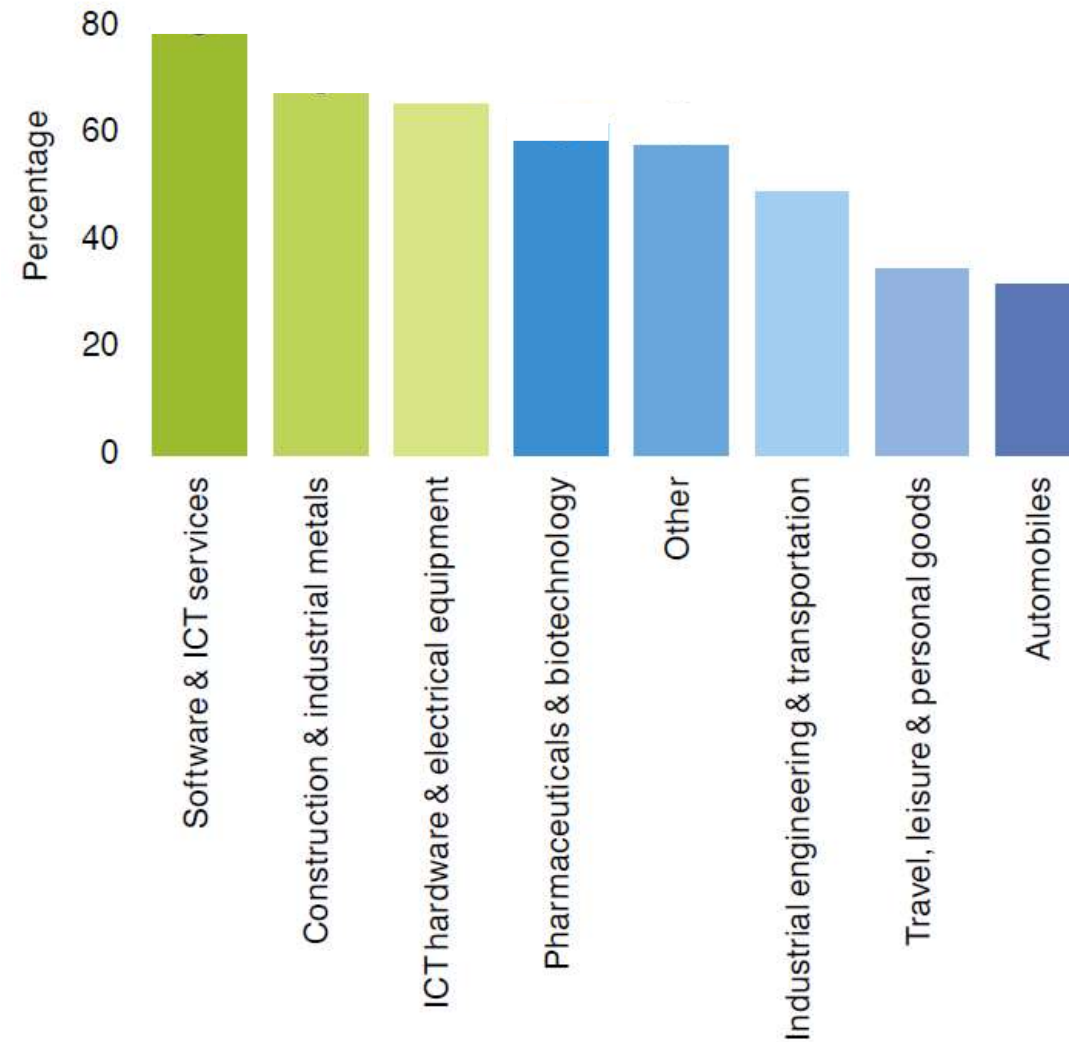# 1. Investment in innovation has shown great resilience during the COVID-19 pandemic
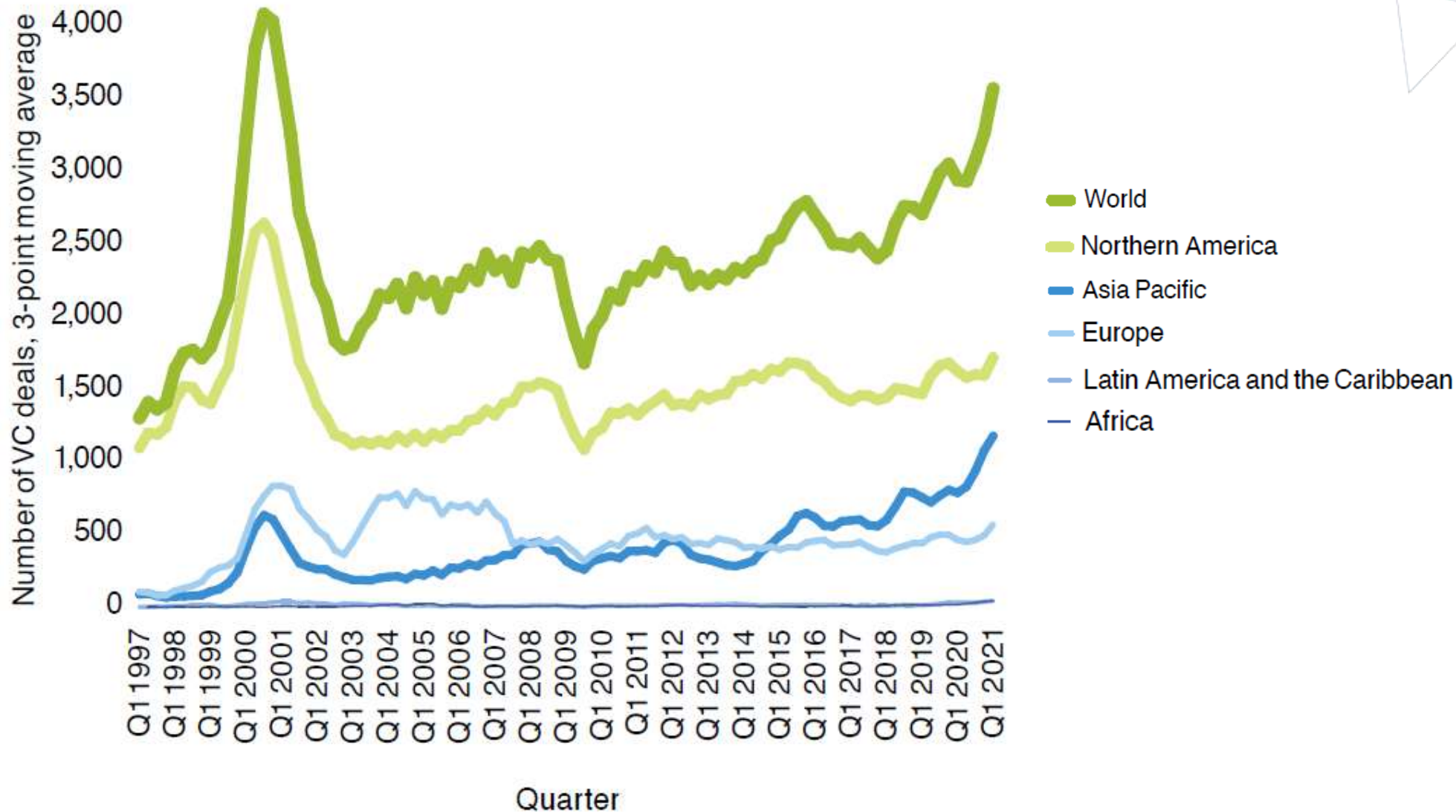
R&D and GDP growth, 2001-2022
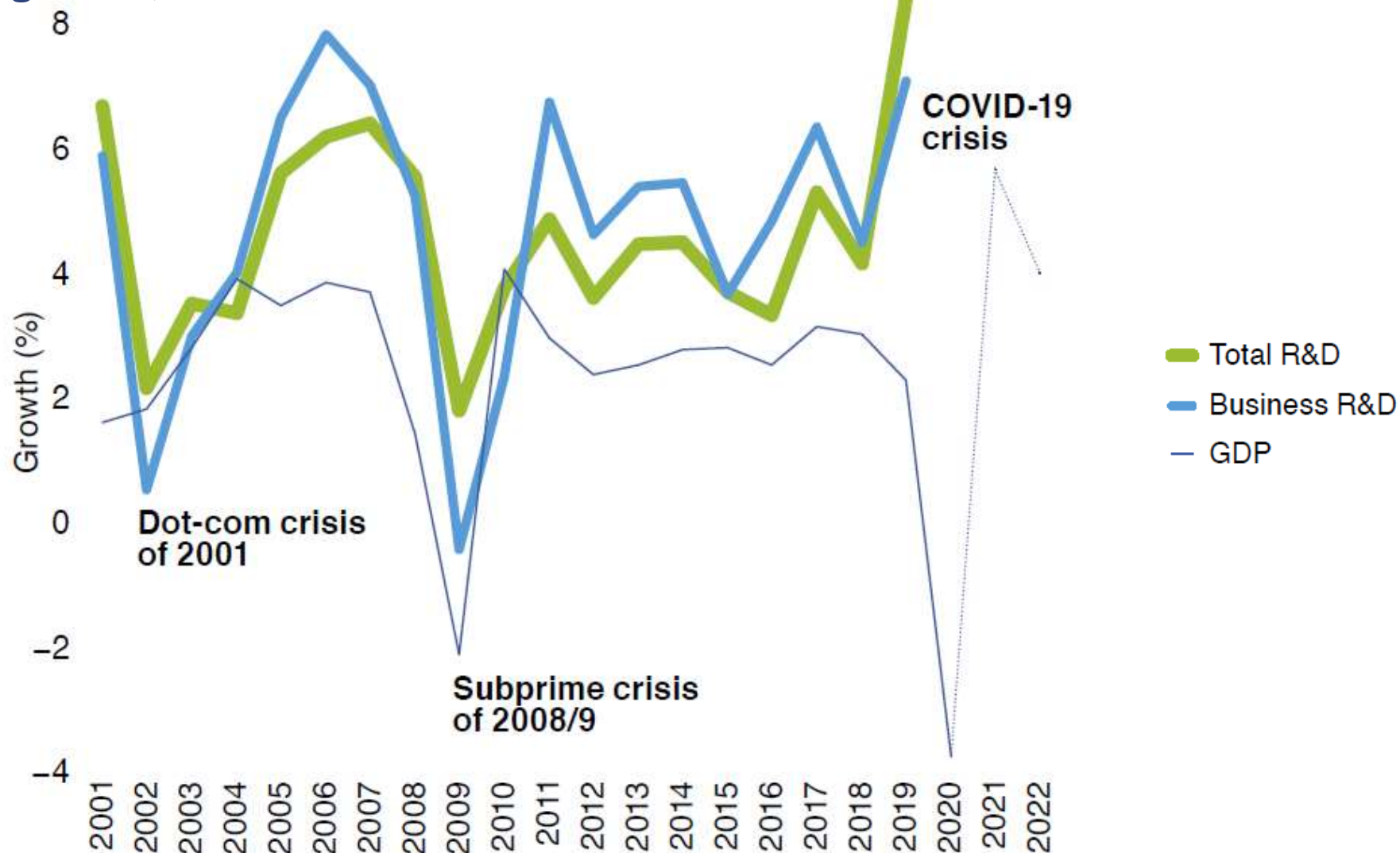
2. Varying impact across sectors

Share of firms reporting R&D expenditure increases, 2020

Strong growth in venture capital deals

Number of VC deals by region, three-point moving average, 1997-2021

How is the global innovation landscape changing?

WIPO
WORLD
INTELLECTUAL PROPERTY
ORGANIZATION

The geography of innovation is changing unevenly

Ranking of world regions by innovation performance, 2021

1	Northern America
2	Europe
3	South East Asia, East Asia, and Oceania
4	Northern Africa and Western Asia
5	Latin America and the Caribbean
6	Central and Southern Asia
7	Sub-Saharan Africa

High-income	Upper middle-income	Lower middle-income	Low-income
1. Switzerland	1. China	1. Viet Nam	1. Rwanda ↑
2. Sweden	2. Bulgaria ↑	2. India ↑	2. Tajikistan ☆
3. United States of America	3. Malaysia ↓	3. Ukraine ↓	3. Malawi ☆

South East Asia, East Asia, and Oceania
1. **Republic of Korea** ↑
2. **Singapore** ↓
3. **China** ☆

1. **Israel**
2. **United Arab Emirates** ↑
3. **Turkey** ☆

1. **Chile**
2. **Mexico**
3. **Costa Rica**

1. **South Africa**
2. **Kenya**
3. **United Republic of Tanzania**

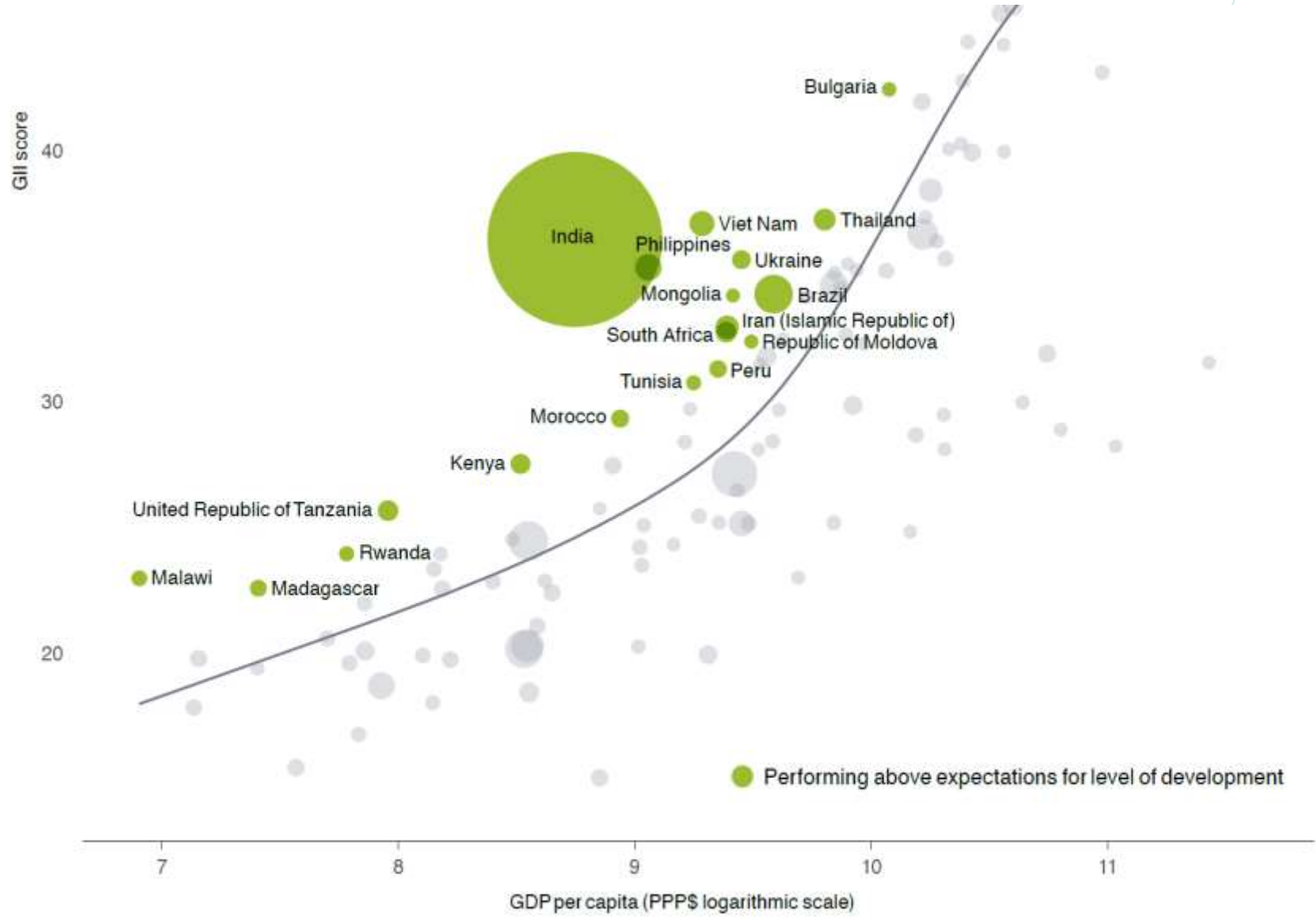**Source**: Global Innovation Index Database, WIPO, 2021.

WIPO

Global Innovation Index 2021

Selected middle-income economies are changing the innovation landscape (TVIPs)

Global Innovation Index 2021

GII 2011   **GII 2021**

Top 15

29 China   12 China

31 Malaysia

41 Turkey   36 Malaysia

Top 50

44 Viet Nam

46 India

Top 60

51 Viet Nam   51 Philippines

Other

62 India

65 Turkey

91 Philippines

Source: Global Innovation Index Database, WIPO, 2021

WIPO
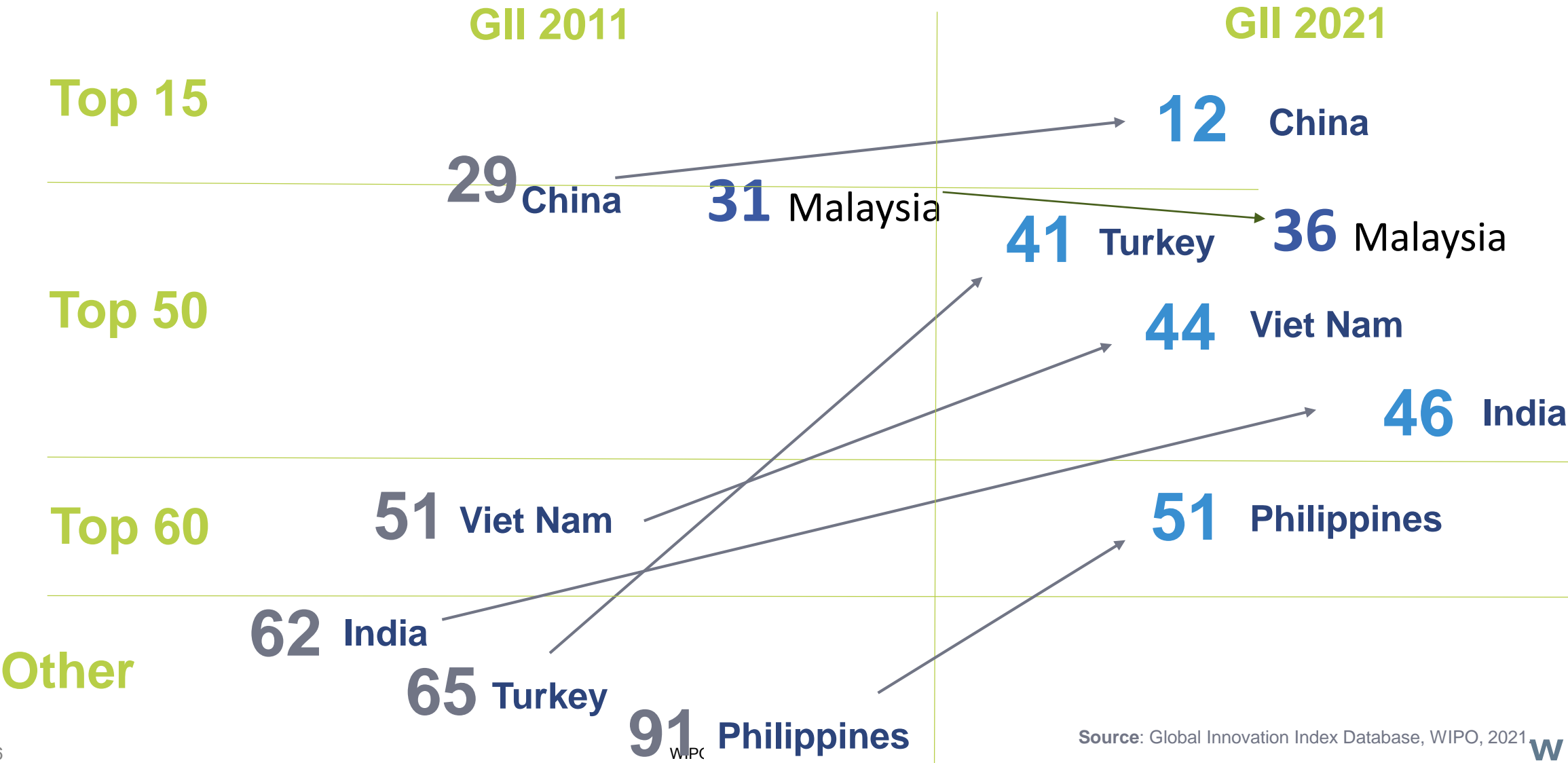
Several economies are out-performing on innovation relative to development

Years as an innovation achiever	Economies
11	India Kenya Republic of Moldova Viet Nam
9	Malawi Mongolia Rwanda Ukraine
Newcomers	Brazil Iran (Islamic Rep. of) Peru

How can policy-makers use the GII?

Three types of policy reactions in context of the GII

Global Innovation Index 2021

1. Countries that only pay attention on the day of the GII launch

2. Countries that analyze their performance in-depth but do not have an action agenda in place – no follow-up

3. Countries that have systematic action plans, implement & evaluate

WIPO

Is there a recipe to move up the GII rankings?

Some Do's

- ✓ Ensure that innovation is embedded as a key priority in the country's path of national development and progress, possibly formulated in a clear **innovation policy**.

- ✓ Set up a **cross-ministerial task force** to pursue innovation policy and GII matters with a "whole of government approach"

- ✓ Ensure that any innovation policy task force **interacts and consults innovation actors** from the private and public sector, including start-ups, deans of research universities, and the relevant innovation clusters.

- ✓ Ensure that any national **intellectual property (IP) policy** is aligned with or even integrated in the innovation policy.

- ✓ Ensure that innovation policy targets or actions are **quantifiable**, and that they are regularly revisited and **evaluated**.

A core benefit of the GII is that it positions data-based evidence and metrics at the core of evaluating, crafting, and deploying innovation policies. As a first step, countries begin by bringing together statisticians and decision-makers to understand the country's innovation performance based on the GII metrics. In a second step, the policy discussion turns to leveraging domestic innovation opportunities while overcoming country-specific weaknesses. Both steps are an exercise in careful coordination among different public and private innovation actors, as well as between government entities at local, regional, and national levels. Ideally, the GII becomes a tool for such coordination.

Is there a recipe to move up the GII rankings?

Some Don'ts

- Do not set overambitious and thus **unrealistic** GII rank targets.

- Do not expect policy changes to result in improved GII indicator performance instantaneously.

- Do not treat the GII as a mathematical exercise.

- Do not over focus on the GII year-on-year changes alone. **Setting objectives over a multiyear period**—e.g. 3 to 5 years—and looking at combined progress over time is a more fitting use of the GII.

- Do not set overambitious and thus unrealistic GII rank targets—e.g., enter the top 20 by 2020 when the economy's rank is still far from that goal. GII rank increases are rarely large from year to year, in particular in the top echelons.
- Do not expect policy changes to result in improved GII indicator performance instantaneously. There are important lags between innovation policy formulation, execution, and impact. The latest available innovation data is also rarely current; it often lags by a few years.
- Do not treat the GII as a mathematical exercise—i.e. attempting to collect or focus on specific indicators to go up the rankings. At the end of the day, national development and progress are only partially captured by the GII rank alone.
- Do not overfocus on the GII year-on-year changes alone. These are influenced by the relative performance vis-à-vis other countries and other methodological considerations (Appendix IV)—of which many are outside the control of the economy in question. Setting objectives over a multiyear period—for example 3 to 5 years—and looking at the combined progress over a few years is a more fitting use of the GII.
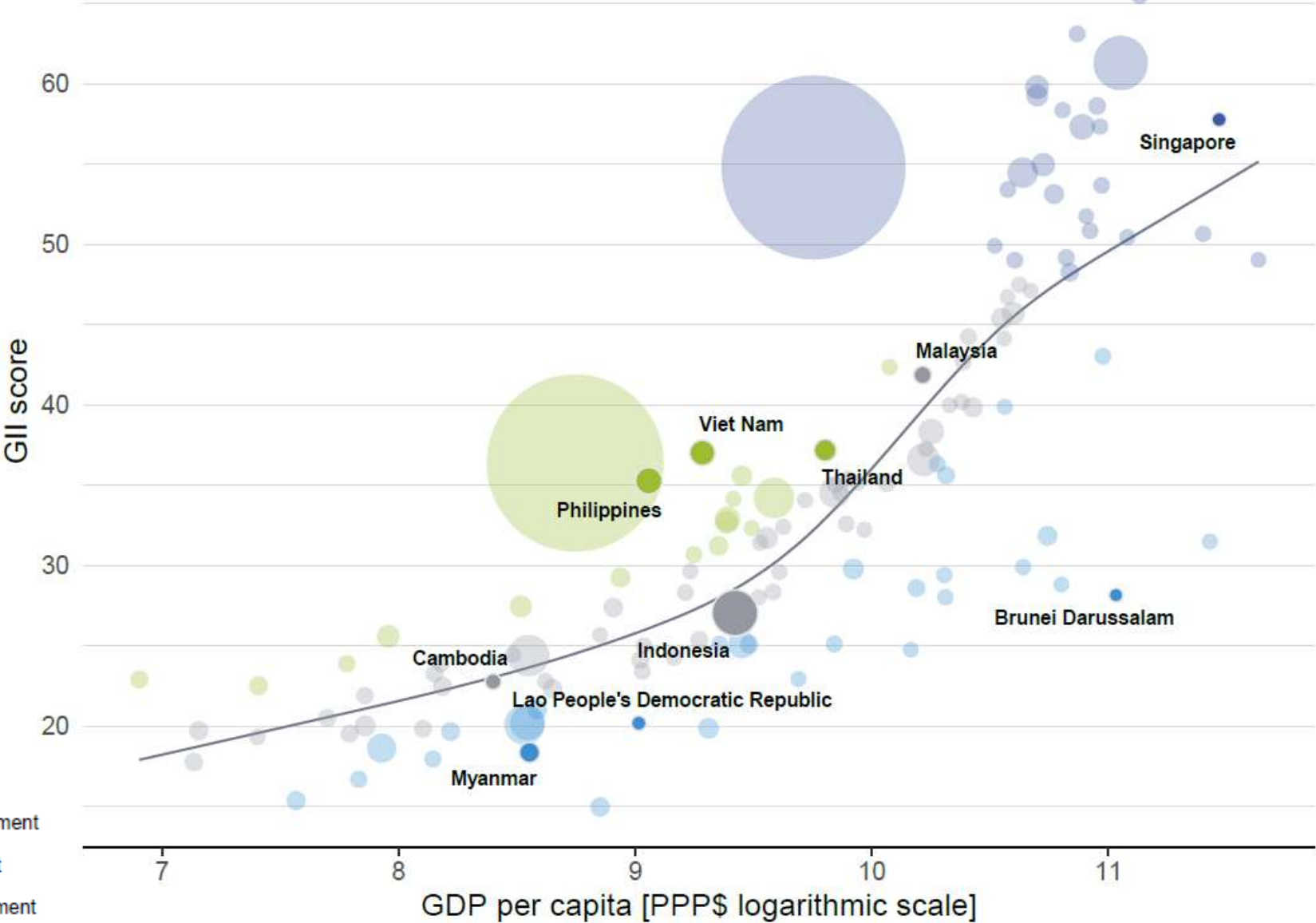
WIPO

Topic 3: Spotlight on ASEAN Performance in the 2021 GII

ASEAN Countrys' strengths and weaknesses in terms of innovation performance in order to identify the policy "levers" that can be adjusted to improve innovative performance and output.
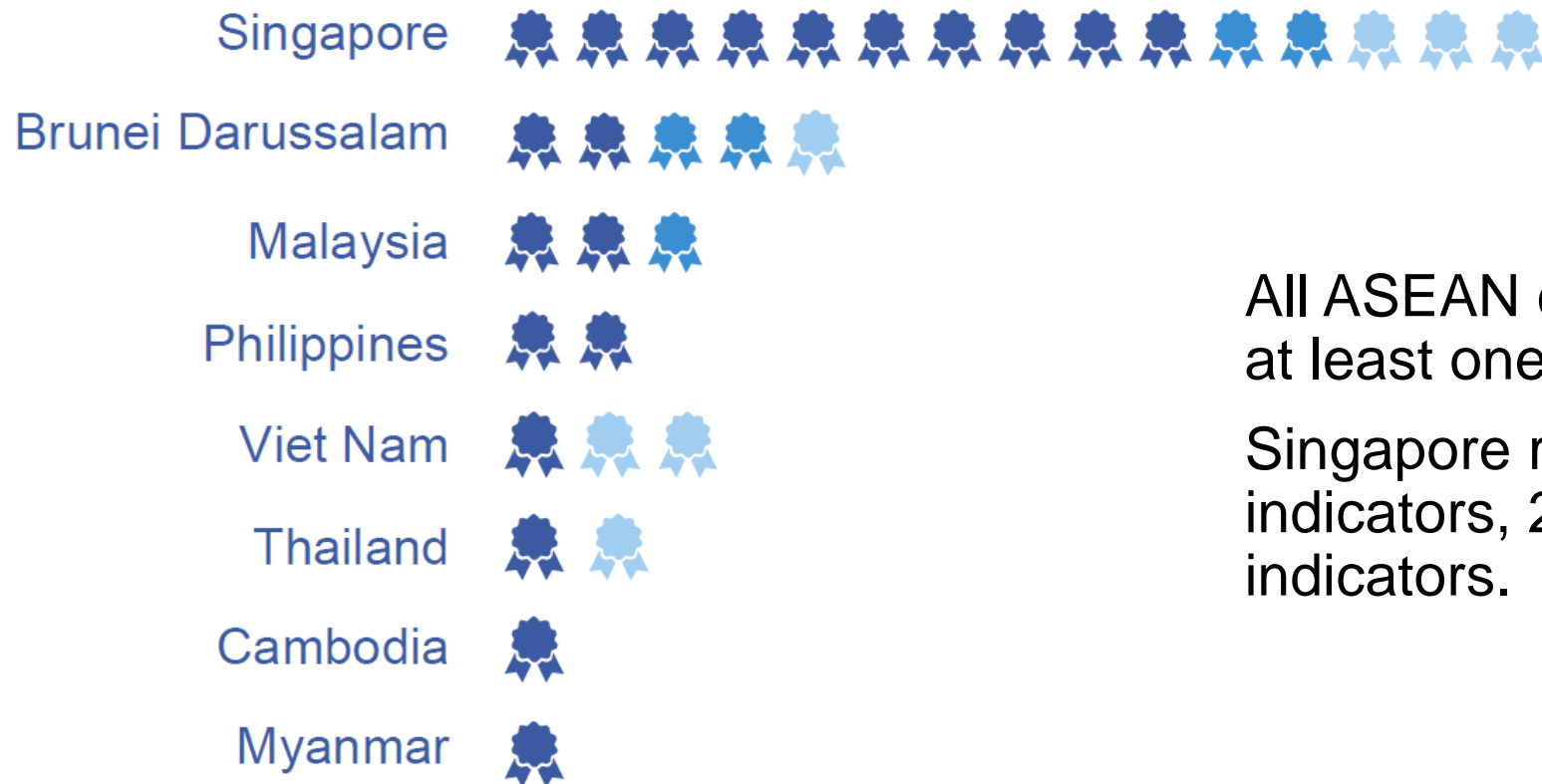
WIPO

The positive relationship between innovation and development

Number of top 3 indicators

Singapore ▣▣▣▣▣▣▣▣▣▣▣▣▣▣▣▣▣

Brunei Darussalam ▣▣▣▣▣

Malaysia ▣▣▣

Philippines ▣▣

Viet Nam ▣▣▣

Thailand ▣▣

Cambodia ▣

Myanmar ▣

All ASEAN countries ranked in the top 3 in at least one of their indictaors.

Singapore ranked 1st in 10 out of 81 indicators, 2nd in two and 3rd in three indicators.

How often an economy's indicator ranked:
1st ▣
2nd ▣
3rd ▣

WIPO

Input, Output, and Overall GII Rankings

Inputs

1. Singapore (1)
2. Malaysia (36)
3. Thailand (47)
4. Brunei Darussalam (51)
5. Viet Nam (60)
6. Philippines (72)
7. Indonesia (87)
8. Cambodia (106)
9. Lao PDR (123)
10. Myanmar (128)

Outputs

1. Singapore (13)
2. Malaysia (34)
3. Viet Nam (38)
4. Philippines (40)
5. Thailand (46)
6. Indonesia (84)
7. Cambodia (104)
8. Lao PDR (112)
9. Brunei Darussalam (115)
10. Myanmar (120)

GII

1. Singapore (8)
2. Malaysia (36)
3. Thailand (43)
4. Viet Nam (44)
5. Philippines (51)
6. Brunei Darussalam (82)
7. Indonesia (87)
8. Cambodia (109)
9. Lao PDR (117)
10. Myanmar (127)

Cambodia improved it's innovation inputs significantly in 2021, up from 117 last year.

WIPO

Income Group Rankings: top 10

Global Innovation Index 2021

10 best-ranked economies by income group

Rank	Global Innovation Index 2021
High-income economies (51 in total)	
1	Switzerland (1)
2	Sweden (2)
3	United States (3)
4	United Kingdom (4)
5	Republic of Korea (5)
6	Netherlands (6)
7	Finland (7)
8	Singapore (8)
9	Denmark (9)
10	Germany (10)

Rank	Global Innovation Index 2021
Upper middle-income economies (34 in total)	
1	China (12)
2	Bulgaria (35)
3	Malaysia (36)
4	Turkey (41)
5	Thailand (43)
6	Russian Federation (45)
7	Montenegro (50)
8	Serbia (54)
9	Mexico (55)
10	Costa Rica (56)

Rank	
Lower middle-income economies (34 in total)	
1	Viet Nam (44)
2	India (46)
3	Ukraine (49)
4	Philippines (51)
5	Mongolia (58)
6	Republic of Moldova (64)
7	Tunisia (71)
8	Morocco (77)
9	Kenya (85)
10	Uzbekistan (86)

Rank	
Low-income economies (13 in total)	
1	Rwanda (102)
2	Tajikistan (103)
3	Malawi (107)
4	Madagascar (110)
5	Burkina Faso (115)
6	Uganda (119)
7	Mozambique (122)
8	Mali (124)
9	Togo (125)
10	Ethiopia (126)

Five ASEAN countries ranked in the top 10 of their income group.

Source: Global Innovation Index Database, WIPO, 2021.

Note: The overall Global Innovation Index rank is reported in brackets next to the economy.

WIPO

ASEAN's Overall Strengths

Seven ASEAN countries are strong in creative goods

Six in high-tech exports

|	Indicator	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam
7.2.5	Creative goods exports, % total trade			🏋️	🏋️	🏋️	🏋️	🏋️		🏋️	🏋️
6.3.3	High-tech exports, % total trade				🏋️	🏋️		🏋️	🏋️	🏋️	🏋️
4.3.1	Applied tariff rate, weighted avg., %	🏋️			🏋️		🏋️	🏋️	🏋️		
5.3.4	FDI net inflows, % GDP		🏋️		🏋️		🏋️		🏋️		🏋️
2.2.2	Graduates in science and engineering, %	🏋️			🏋️	🏋️	🏋️	🏋️			
4.1.3	Microfinance gross loans, % GDP		🏋️		🏋️	⛔	🏋️			⛔	🏋️
4.1.2	Domestic credit to private sector, % GDP		🏋️				🏋️			🏋️	🏋️
3.2.3	Gross capital formation, % GDP	🏋️	🏋️	🏋️			🏋️		⛔		
5.3.2	High-tech imports, % total trade	⛔	⛔			🏋️		🏋️		🏋️	🏋️
1.1.1	Political and operational stability*	🏋️	🏋️		🏋️				🏋️		

WIPO

ASEAN's Overall Opportunities

Global corporate R&D investors is a weakness for almost all ASEAN countries.

|	Indicator	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam
2.3.3	Global corporate R&D investors, top 3, mn US$	⚠️	⚠️	⚠️	⚠️	⚠️	⚠️	⚠️		⚠️	⚠️
5.2.3	GERD financed by abroad, % GDP	⚠️		⚠️				⚠️		⚠️	
5.1.2	Firms offering formal training, %			⚠️		⚠️	⚠️			⚠️	
1.2.3	Cost of redudancy dismissal	🏋️		⚠️		⚠️		⚠️	🏋️	⚠️	
7.2.4	Printing and other media, % manufacturing				⚠️	⚠️		⚠️	⚠️		
1.3.1	Ease of starting a business*	🏋️	⚠️			⚠️	🏋️	⚠️	🏋️		
5.1.1	Knowledge-intensive employment, %		⚠️						🏋️	⚠️	⚠️
2.3.4	QS university ranking, top 3*		⚠️	🏋️	⚠️	🏋️	⚠️				
6.3.4	ICT services exports, % total trade	⚠️						🏋️		⚠️	⚠️
2.2.3	Tertiary inbound mobility, %			⚠️				⚠️			⚠️
2.1.1	Expenditure on education, % GDP		⚠️					⚠️		⚠️	
7.1.3	Industrial designs by origin/bn PPP$ GDP	⚠️					⚠️		⚠️		

WIPO

Global Innovation Index 2021

ASEAN's most commonly missing data…

Indicators 4.2.2, 6.1.3 and 7.2.3 were the most commonly missing data – for four ASEAN countries.
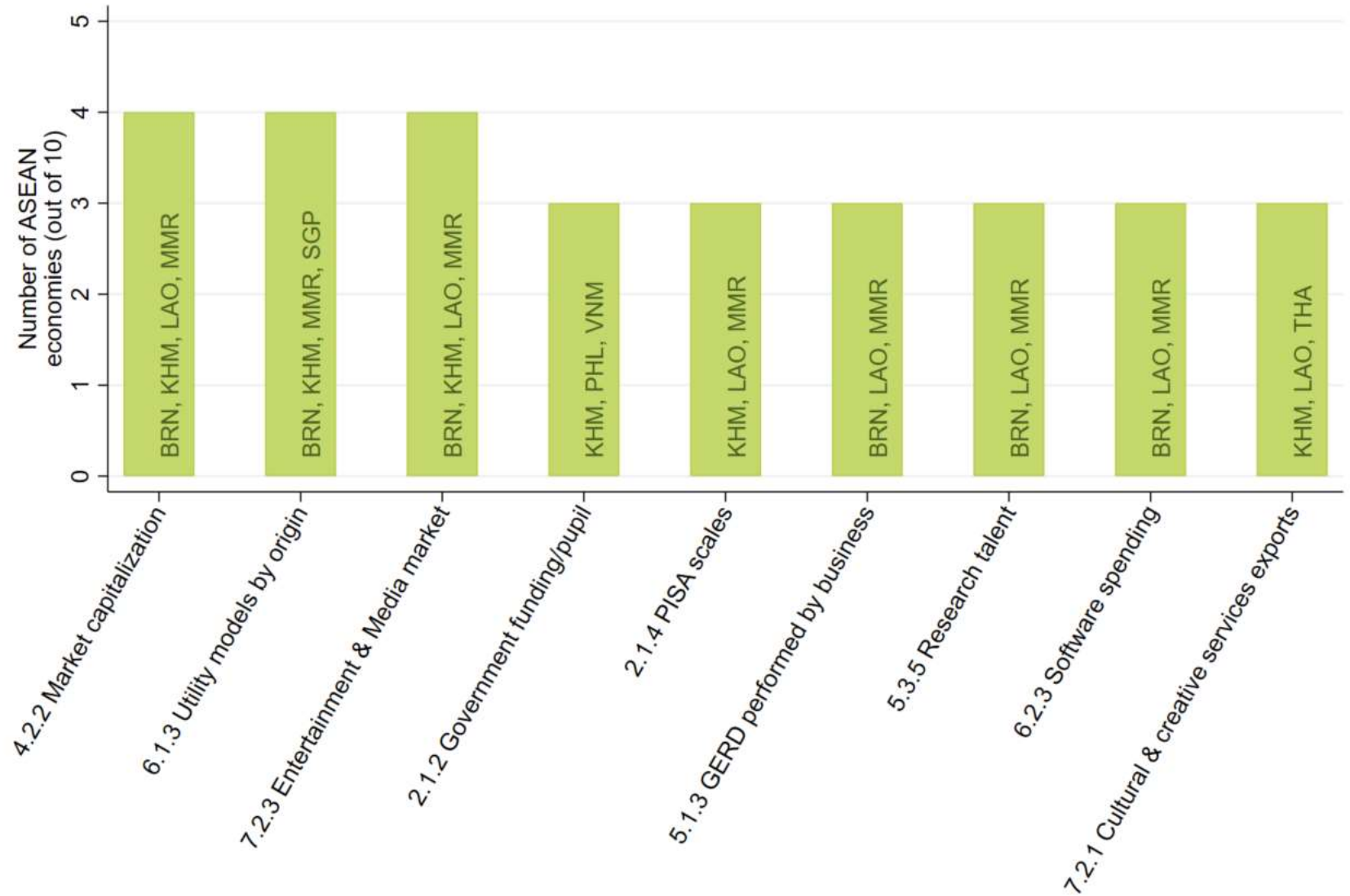
… but timeliness needs to be kept in check
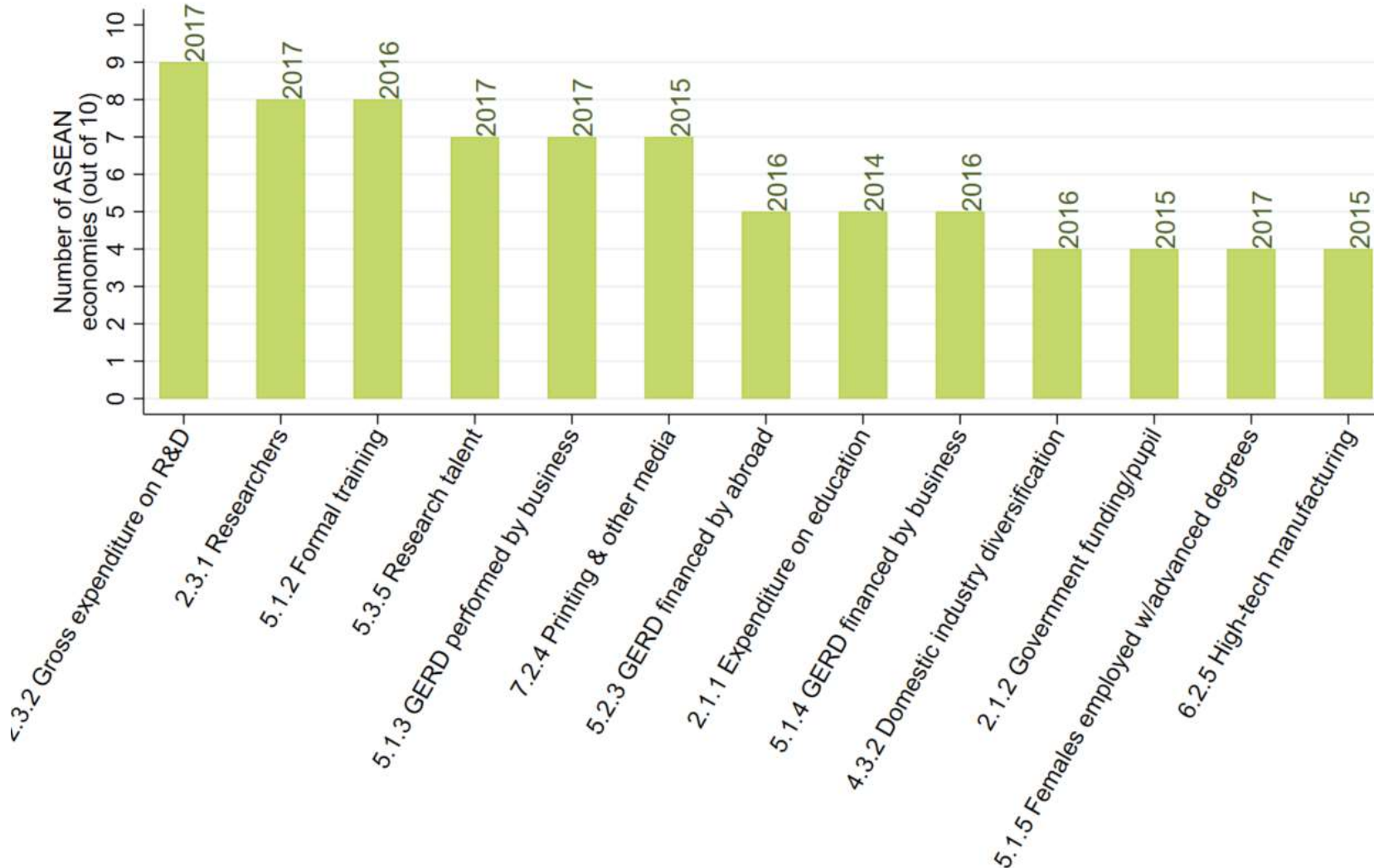
Indicator 2.3.2 was outdated for nine ASEAN countries, averaging a data year of 2017.

Outdated Indicators

Note: The averge data year for the outdated indicators is presented at the top of each bar.

WIPO

www.wipo.int/gii

www.globalinnovationindex.org

#GlobalInnovationIndex
@GI_Index

WIPO