



*Confederação Nacional de Industria*  
*Entrepreneurial Mobilization for Innovation*  
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***STRENGTHENING INNOVATION – SOME  
INSIGHTS FROM OECD WORK***

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# Outline

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1. Innovation and its main Drivers
2. Innovation is more than R&D
3. The Role of Mission-Oriented Policies
4. Brazil going Digital
5. Conclusions and some Resources



# *1. INNOVATION AND ITS MAIN DRIVERS*



# 1. Why care about innovation? Because it underpins productivity and helps address policy challenges

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Innovation is a key **driver of growth**, through:

1. Technology embodied in fixed capital, e.g. ICT
2. Investment in knowledge-based capital – intangibles (data, software, R&D, etc.)
3. Productivity growth linked to innovation (MFP)
4. Creative destruction – the entry and exit of firms

Innovation's role for growth **will have to grow in future**, e.g. due to ageing

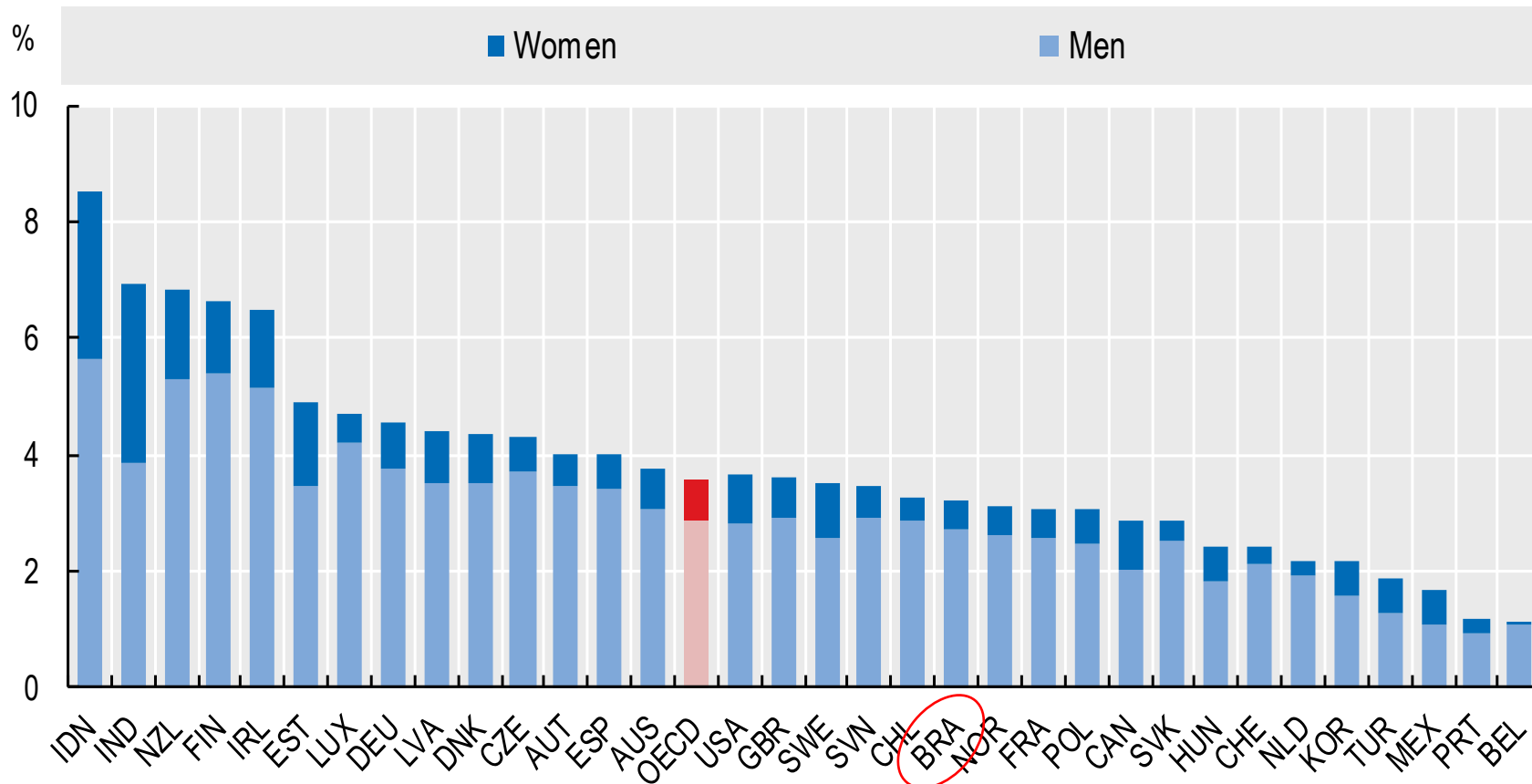
Innovation also helps **address social and economic challenges**, e.g.:

- Health innovation, e.g. vaccines and treatments for COVID
- Environmental challenges, e.g. climate change, biodiversity
- Energy security, e.g. renewable energy
- Food security, e.g. by improving agricultural productivity
- Etc.



# OECD work points to several drivers of innovation, notably talent, ...

Tertiary graduates in information and communication technologies, by gender, 2015  
As a percentage of all tertiary graduates

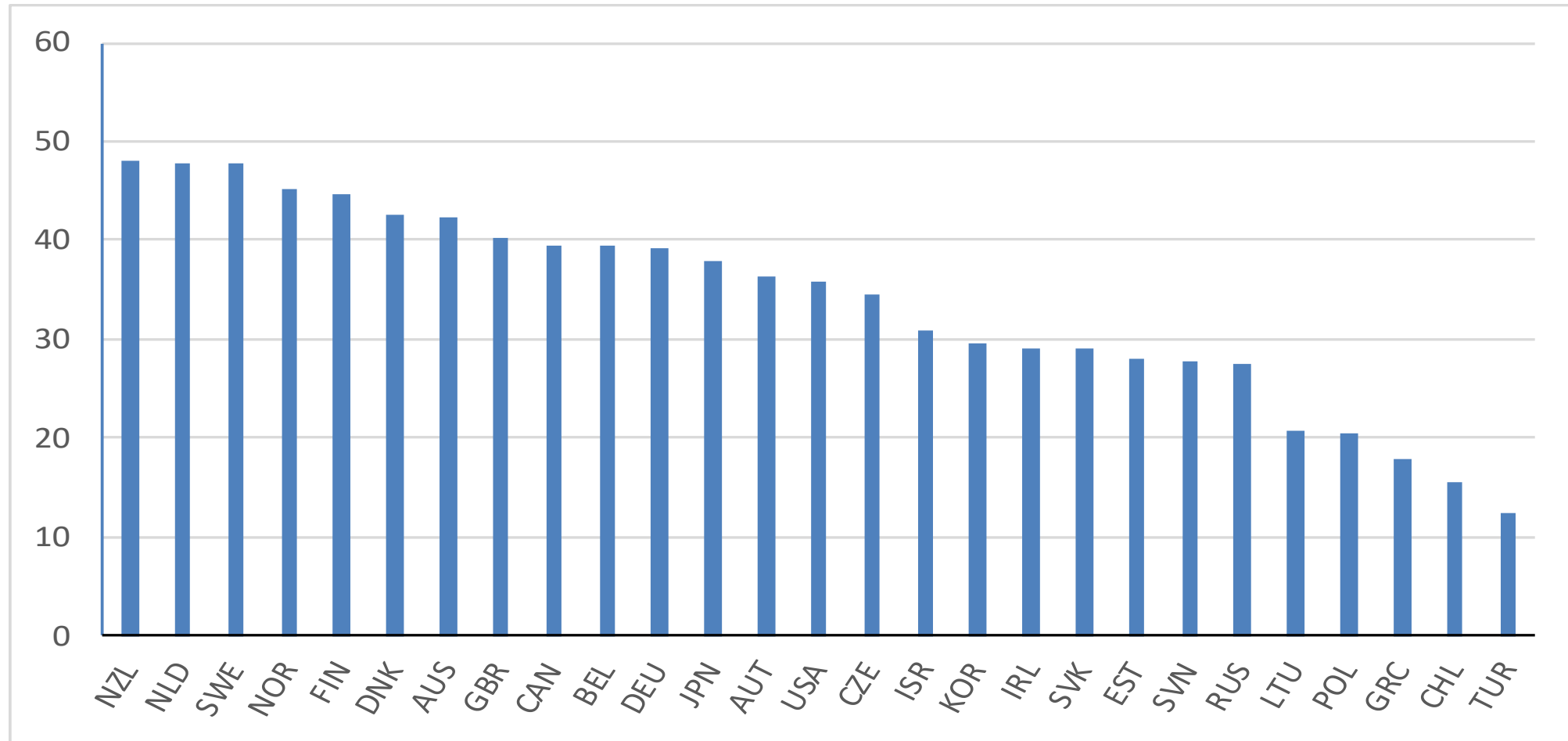


Source: OECD, Science, Technology and Innovation Scoreboard 2017, based on OECD, Education Database, September 2017.



... including the **skills to engage in, and benefit from, innovation, ...**

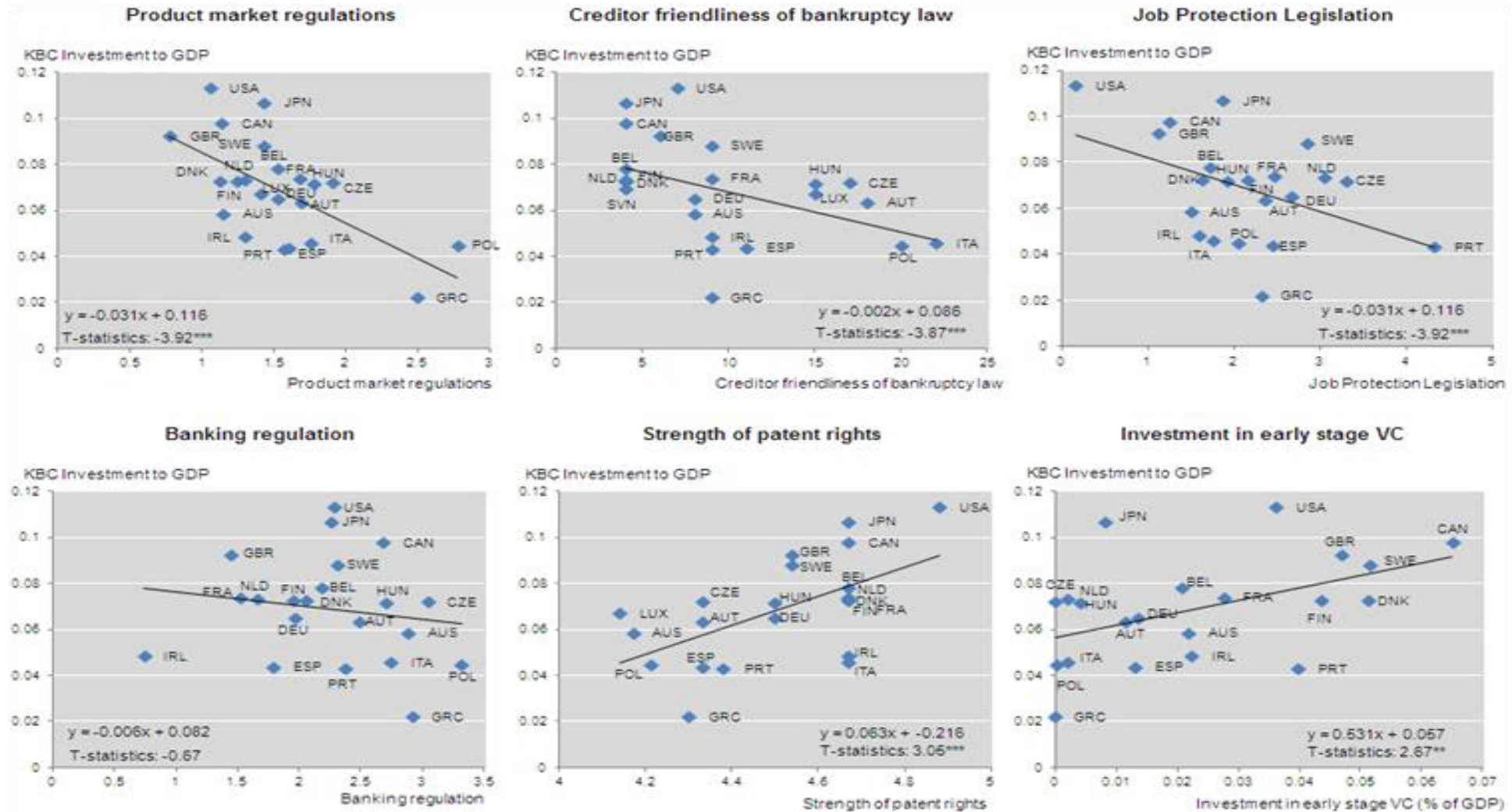
**Proficiency in problem solving in technology-rich environments among adults**  
(percentage of adults with medium to high performance, 2012 or 2015)



Source: OECD (2016), Skills Matter – Further Results from the Survey of Adult Skills.



# ... and sound framework conditions that support investment in innovation



Source: Andrews and Criscuolo (2013), [http://www.oecd-ilibrary.org/economics/knowledge-based-capital-innovation-and-resource-allocation\\_5k46bj546kzs-en](http://www.oecd-ilibrary.org/economics/knowledge-based-capital-innovation-and-resource-allocation_5k46bj546kzs-en)



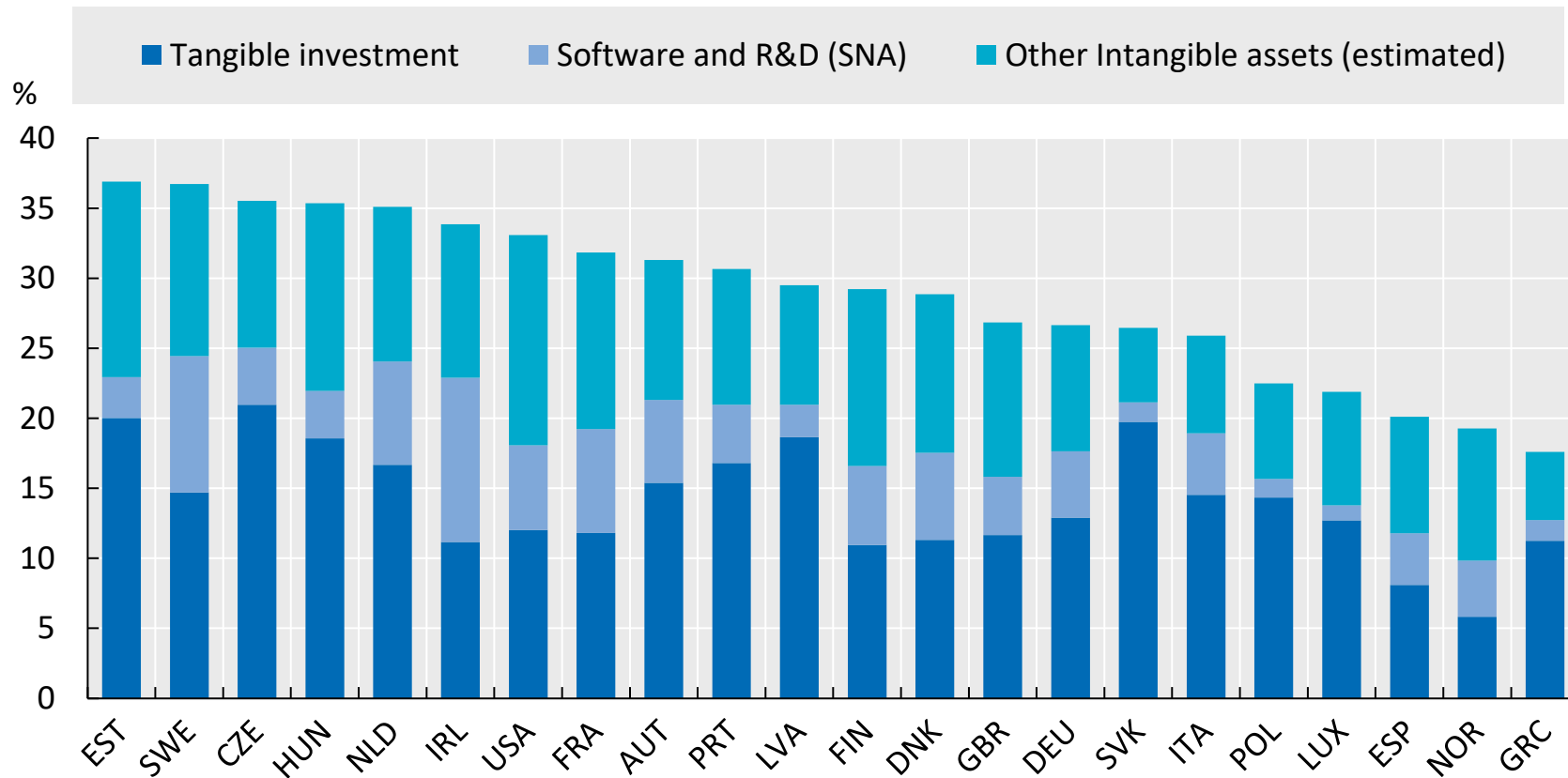
## *2. INVESTING IN INNOVATION IS MORE THAN R&D*





# Investment in innovation is often **larger** than investment in tangible assets and goes beyond R&D ...

## Business investment in fixed and knowledge-based capital, as a percentage of business sector gross value added, 2015



Source: OECD, Science, Technology and Innovation Scoreboard 2017



... as these investments are increasingly key to value creation in global markets

## R&D and patents



## Design



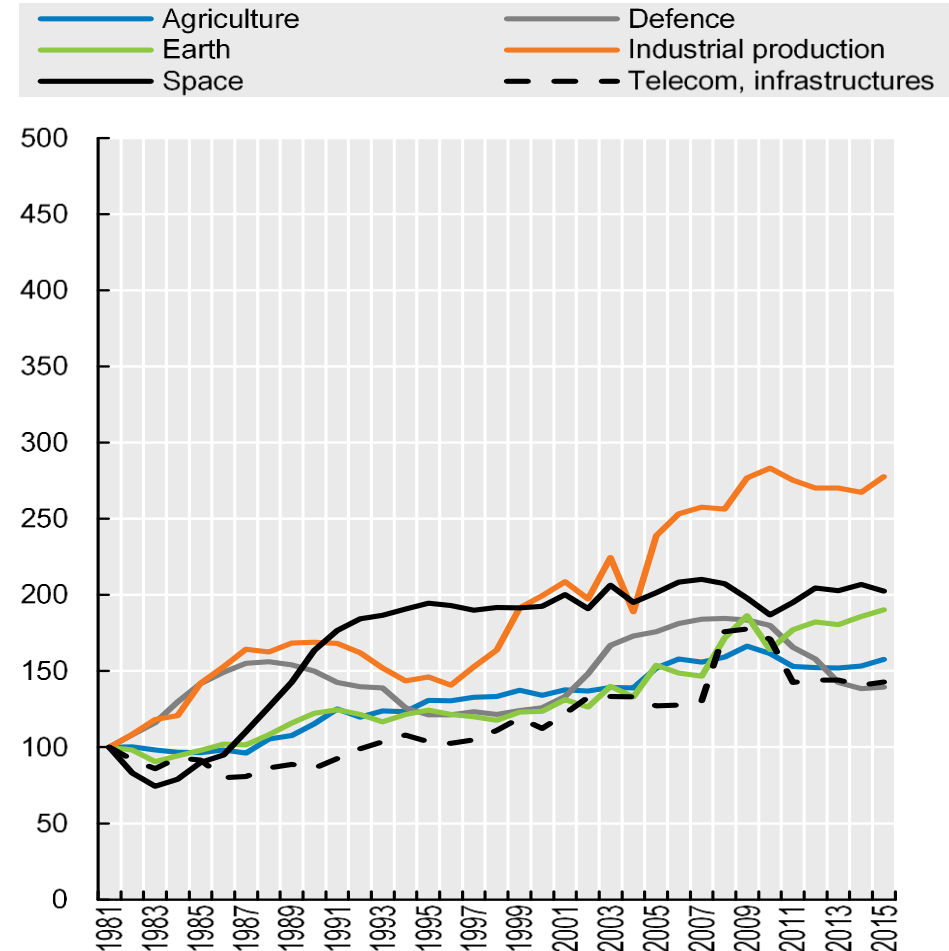
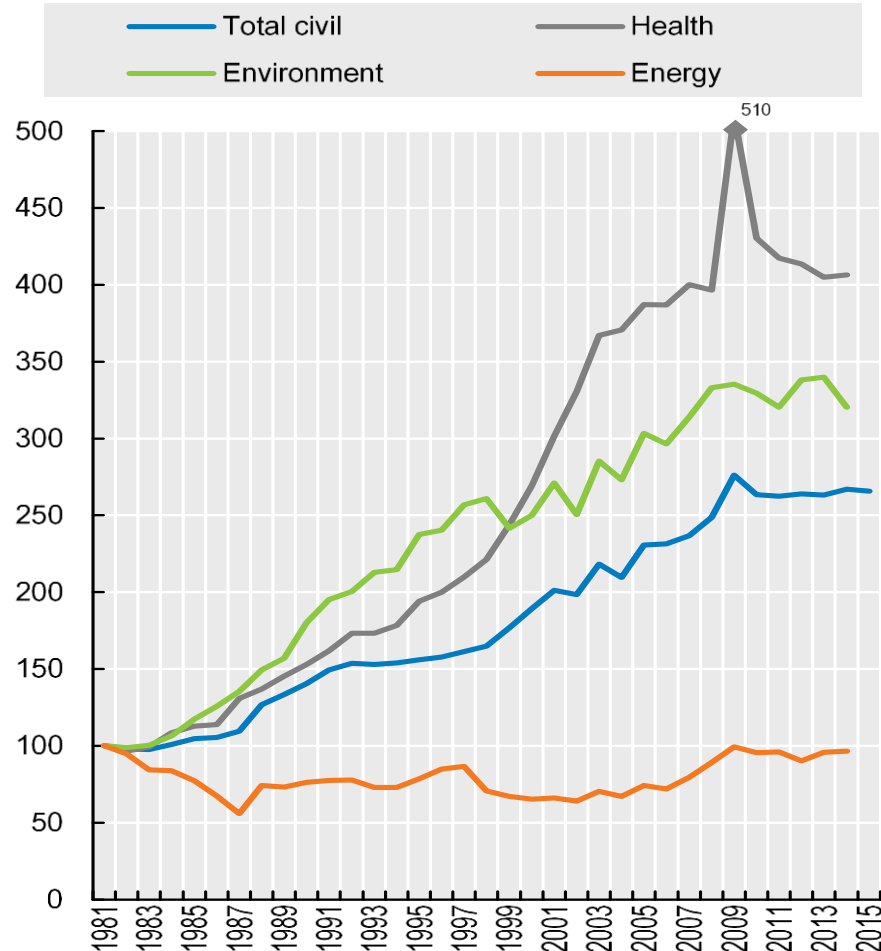
## Branding





# Investment in public research matters too and **supports long-term innovation, ...**

GBAORD, OECD index 1981=100, 1981-2015

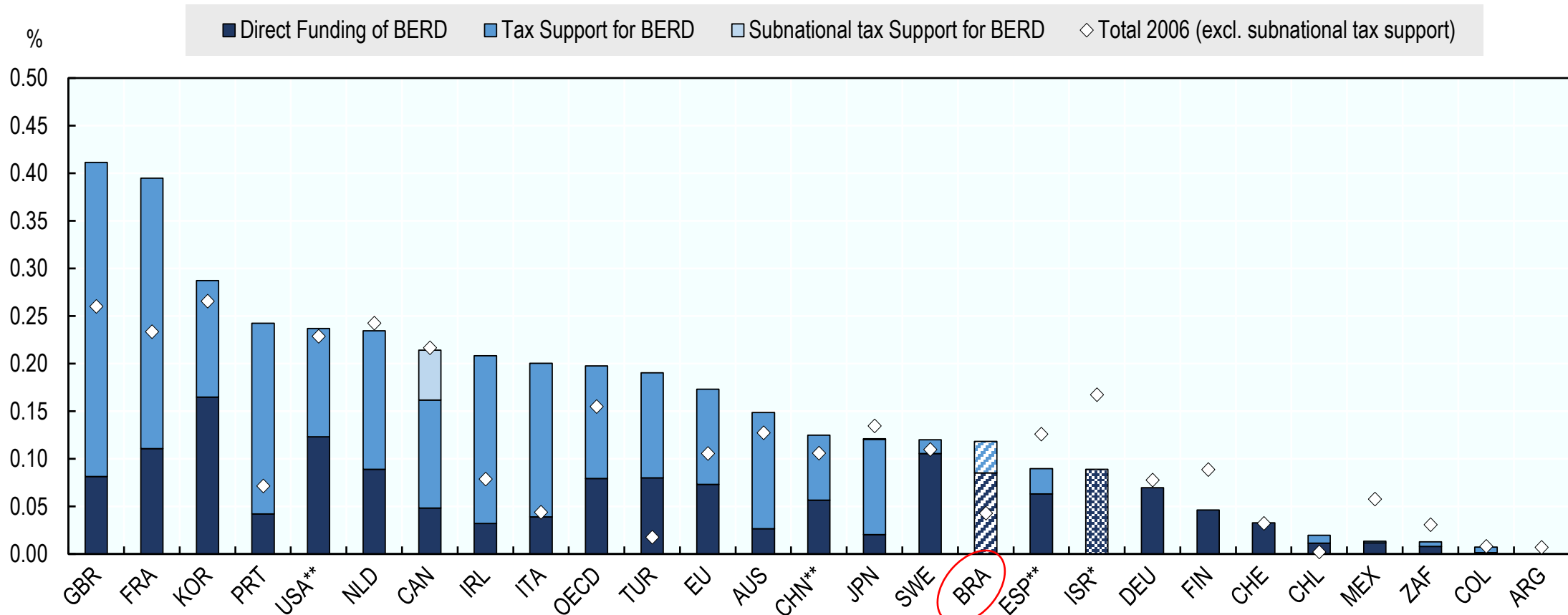


Source: OECD, Research and Development Statistics Database, [www.oecd.org/sti/rds](http://www.oecd.org/sti/rds).



# ... while well-designed support for business R&D can help foster innovation, ...

Direct funding of business R&D and R&D tax incentives, as a percentage of GDP, 2019 or latest available year



\* Data on tax support not available, \*\* Data on subnational tax support not available

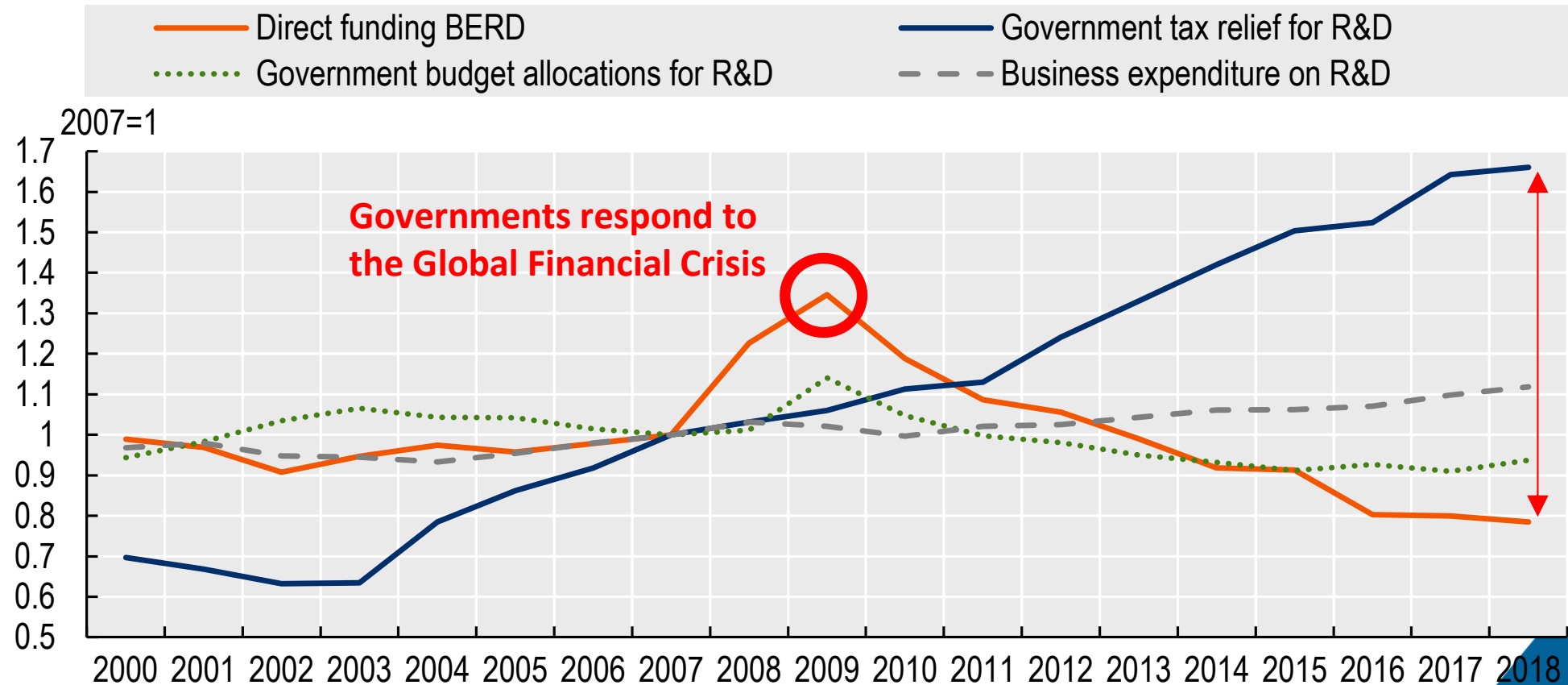


# ... with the mix in OECD countries changing over time towards tax incentives and less directed policies

Tax incentives have grown in the OECD while direct measures have declined

Greater directionality is important to address public policy challenges

## Shift in business R&D support policy mix OECD area, 2000-19





## Direct versus indirect support for business R&D

- OECD analysis finds that R&D tax incentives and direct funding are **both effective** in stimulating business R&D but have **different strengths** and complement each other
  - Direct support instruments (grants, public procurement) **are better suited to giving direction to R&D** (e.g. towards public policy goals, e.g. energy, health, climate change). R&D tax incentives stimulate all forms of R&D, are non-discriminatory and non-directional
  - Direct support is best suited to supporting basic and applied research, R&D tax incentives is best for experimental development (i.e. close to the market).
  - **Design matters** (e.g. for unprofitable firms, such as start-ups)
  - **Stability and predictability** of policies is key to encourage long-term investment in R&D








### *3. THE ROLE OF MISSION-ORIENTED POLICIES*



# What are Mission-Oriented Innovation Policies?

A co-ordinated package of initiatives (policy, regulatory, platforms,...) tailored specifically to mobilise science, technology and innovation in order to address a societal challenge.



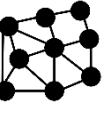
This co-ordinated package :

-  is aimed towards ambitious and concrete goals...
-  ... to be met in a defined time-frame
-  spans several stages of the innovation cycle from research to demonstration and market launch
-  crosses various siloes (disciplines, sectors, policy areas, etc.)
-  uses various instruments (supply-side and demand-side; top-down and bottom-up)





# What are the different types of Mission-Oriented Innovation Policies?

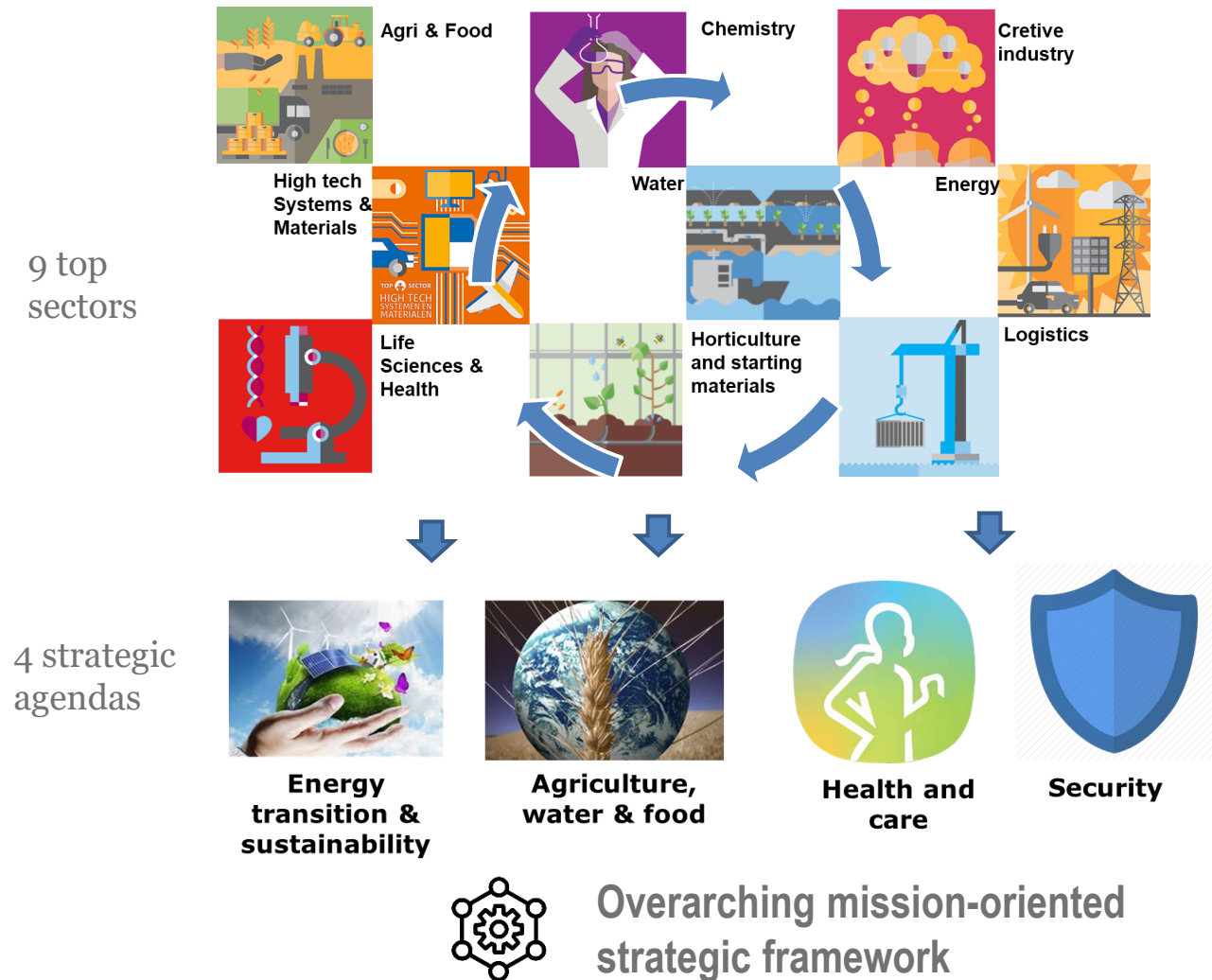
Type		Selected cases	
	<b>Overarching mission-oriented strategic frameworks</b>	<p><i>Large policy framework aiming to achieve ambitious, high level, national or transnational missions to address systemic challenges</i></p> <p>Covers a large part of the R&amp;I system</p> <ul style="list-style-type: none"><li>● Loose coordination, umbrella type</li><li>● Transaction costs</li><li>● Visibility and inclusiveness</li></ul>	<ul style="list-style-type: none"><li>● Horizon Europe's missions [EU]</li><li>● Mission-driven Top Sectors policy [NL]</li><li>● High Tech Strategy 2025 [DE]</li></ul>
	<b>Challenge-based programmes and schemes</b>	<p><i>Targeted agency schemes, aims to bring concrete solutions to a challenge</i></p> <ul style="list-style-type: none"><li>● Coordination of support along the innovation chain</li><li>● Articulation of supply and demand for knowledge</li><li>● Niche solutions, need scale up</li><li>● Focused on technological/engineering options</li></ul>	<ul style="list-style-type: none"><li>● Pilot-E [NO]</li><li>● The Future Innovator Prizes [IE]</li><li>● DARPA/ARPA agency programmes [US]</li></ul>
	<b>Ecosystem-based mission programmes</b>	<p><i>Mechanisms delegating to ecosystems of actors the development and implementation of strategic agendas to address societal challenges</i></p> <ul style="list-style-type: none"><li>● Strong legitimacy, ownership, commitment of all actors</li><li>● Risk of capture of missions by and in favor of leading / historical players</li></ul>	<ul style="list-style-type: none"><li>● Vision-Driven innovation milieus [SE]</li><li>● Growth engines [FI]</li></ul>



# An example: Mission-driven Top Sectors



- Basic principles
  - Initiated in 2011, became mission-driven in 2018, 25 missions in 4 challenge areas
  - Depending on the challenge area, different Top Sectors cooperated to develop strategic agendas (IKIAs), with a clearly identified leader.
  - The IKIAs include concrete Multi-year mission-driven innovation programs (MMIPs) for each of the 25 missions.





# Mission-driven Top Sectors



- Benefits
  - Targeted approach towards clear goals
  - Cross-sectoral cooperation to address societal challenges
  - Broad policy coordination (beyond STI)
  - Strong and formal engagement of public and private stakeholders (4-year Knowledge and Innovation Covenant (KIC) 2020-2023)



Overarching mission-oriented strategic framework



# Challenges with Mission-Oriented Policies

## Missions: what scope?

Most MOIPs pick problems, not solutions but remain limited to scientific and technological solutions!

## How to evaluate the additionality of missions?

MOIPs still rely on traditional (non-systemic) evaluation tools and methods – limited lessons learned



Strategic orientation



Policy coordination



Policy implementation

**Missions: how transformative?** Very few initiatives have set 'real' missions (bold, targeted, measureable, time-bound, etc.)  
Significant mission washing or mission dilution

**Where to anchor the missions?** Still driven by public bodies in charge of STI policies, sectoral ministries on the passenger seat

**How to practically connect the supply-side and demand-side policy instruments?**  
The 'instrument packages' are still not well integrated





# 4. *BRAZIL GOING DIGITAL*

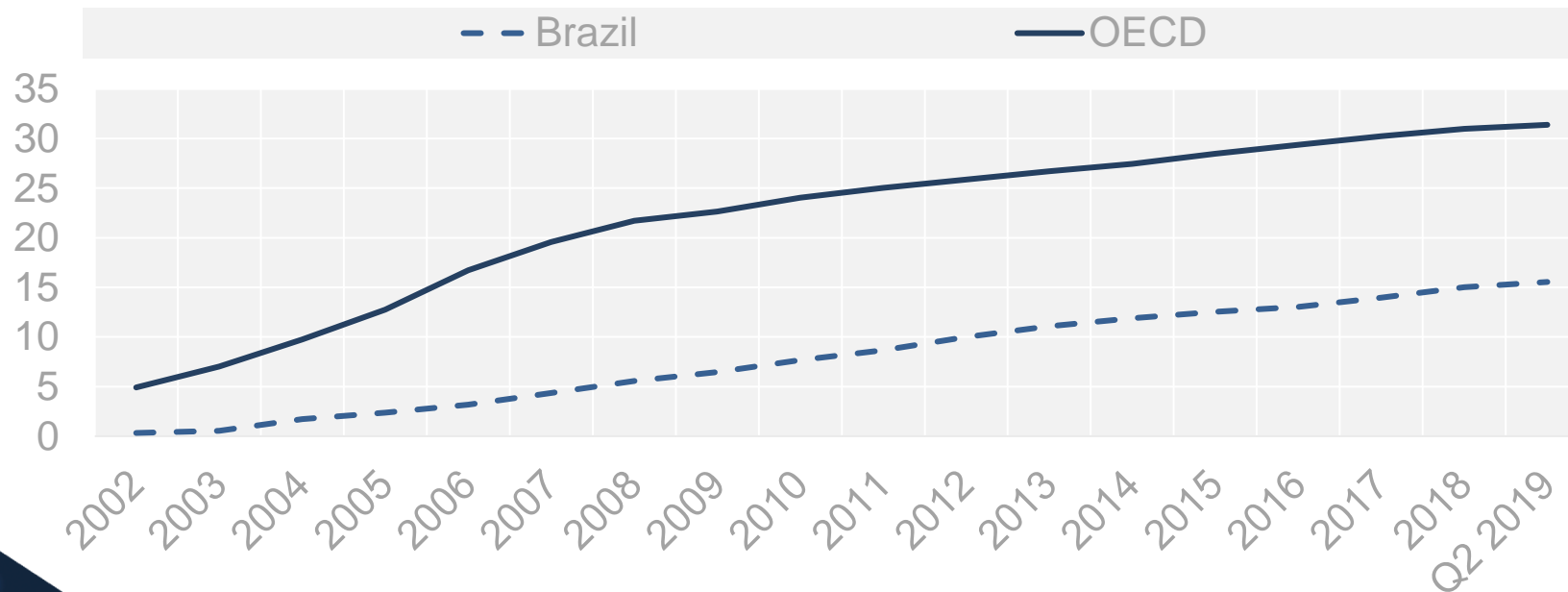




## Strong growth in mobile broadband from 2012 onwards...

...but gaps persist in fixed broadband, especially compared to OECD countries

Fixed broadband subscriptions per 100 inhabitants, OECD and Brazil

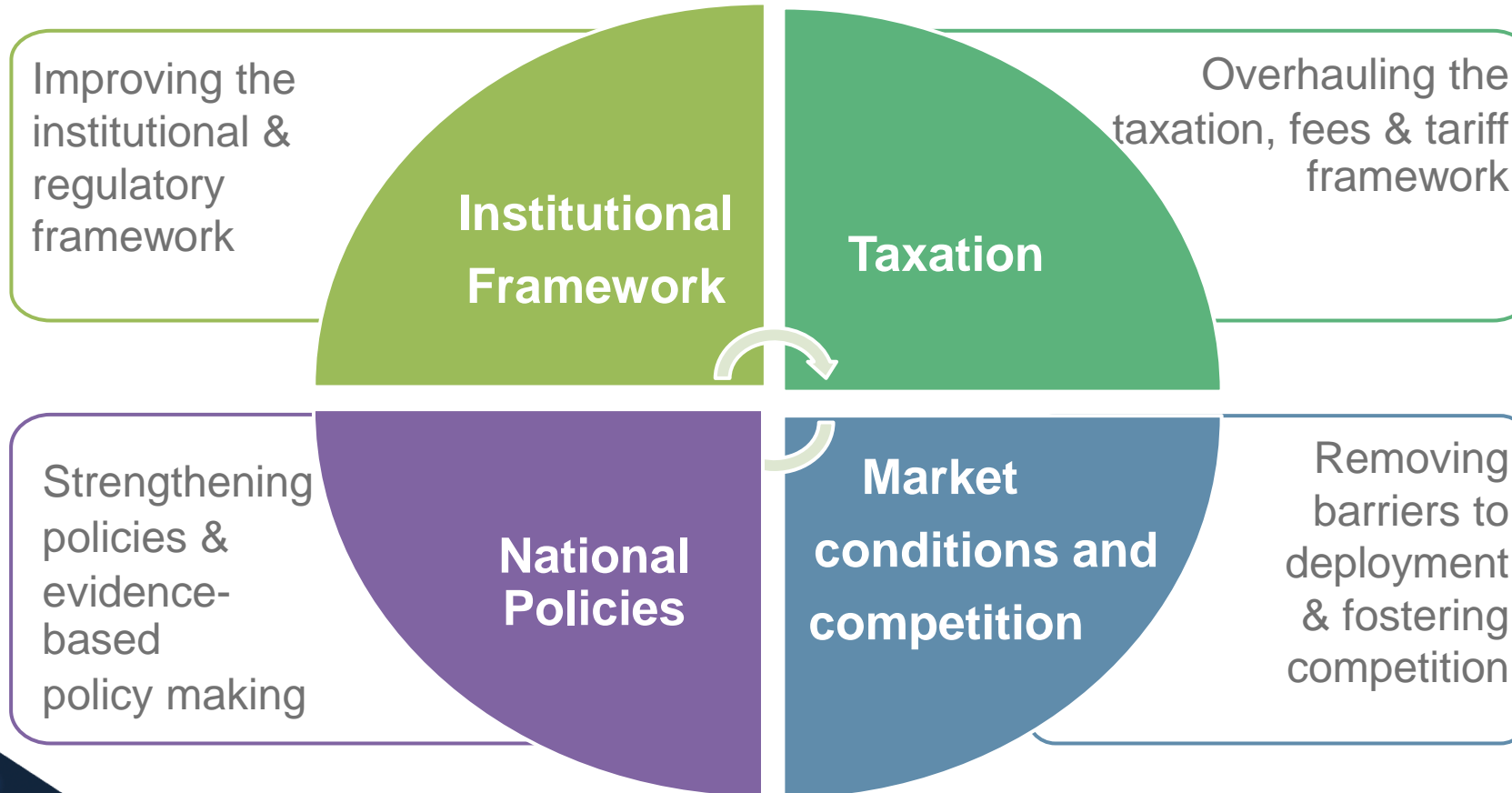


Source: Anatel





## To increase access to communication services, OECD recommendations are provided in four key areas





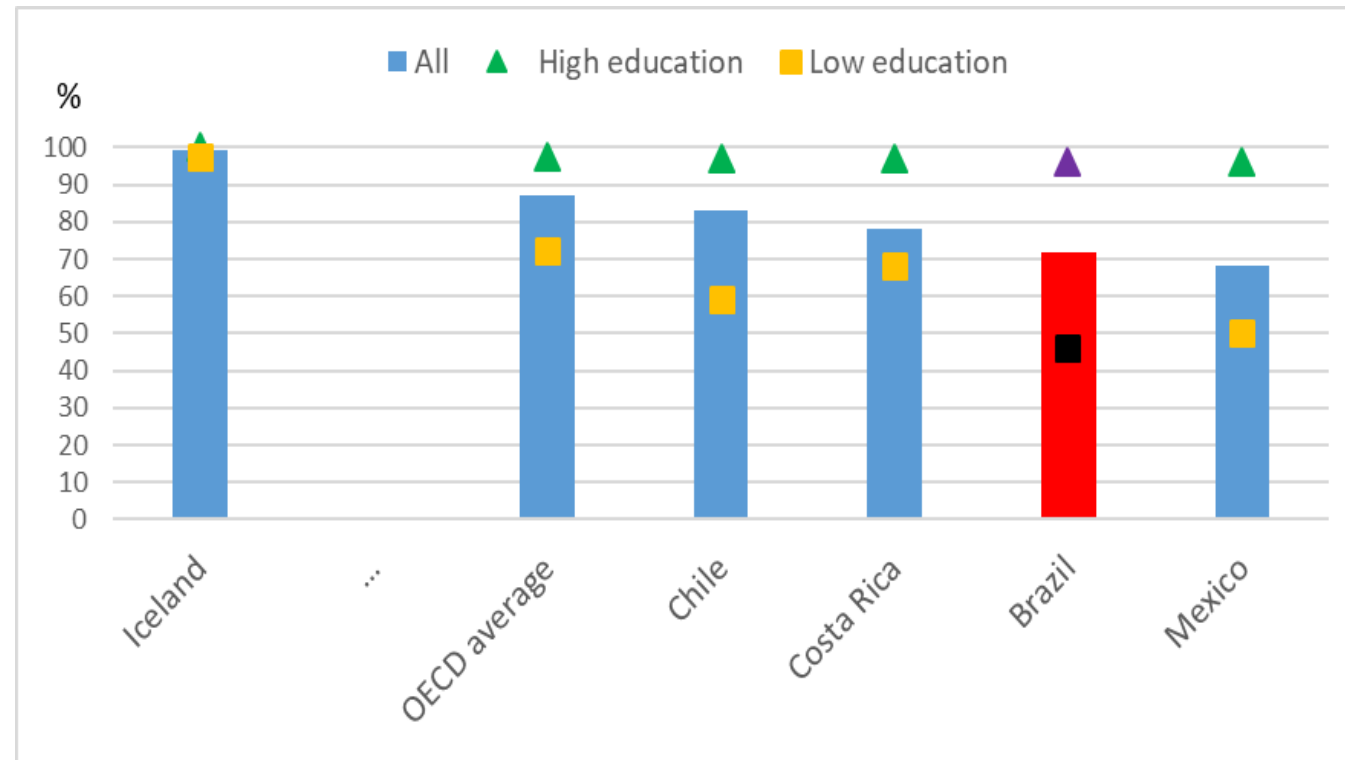
# Fostering digital uptake and use among individuals, firms and in the government

Brazil has made significant progress in improving access to the Internet in recent years.

However:

- 23% of the adult population had never used the Internet in 2018
- Only 54% of Brazilian enterprises (10 employees or more) had their own website in 2019, 78% in the OECD
- Brazilian micro-enterprises lag further behind

Internet users, by education level, 2019 or latest available year







# Fostering digital uptake and use among individuals, firms and in the government

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Brazil should put in place a wider set of policies to ***upgrade digital skills*** and ***address the digital divide***:

- ***raise awareness*** on the benefits of digital technologies, targeting individuals with ***low digital uptake*** and ***micro-enterprises***
- introduce ***tax incentives for technological upgrade***, training and ICT investments for all firms
- ***remove regulatory barriers to e-commerce***, e.g.: harmonise the rate of the tax on goods and services (ICMS) across states
- ***facilitate the formal recognition of skills*** acquired in online courses and vocational training
- ***increase funding for STEM students*** (science, technology, engineering and mathematics)



# Unleashing digital innovation

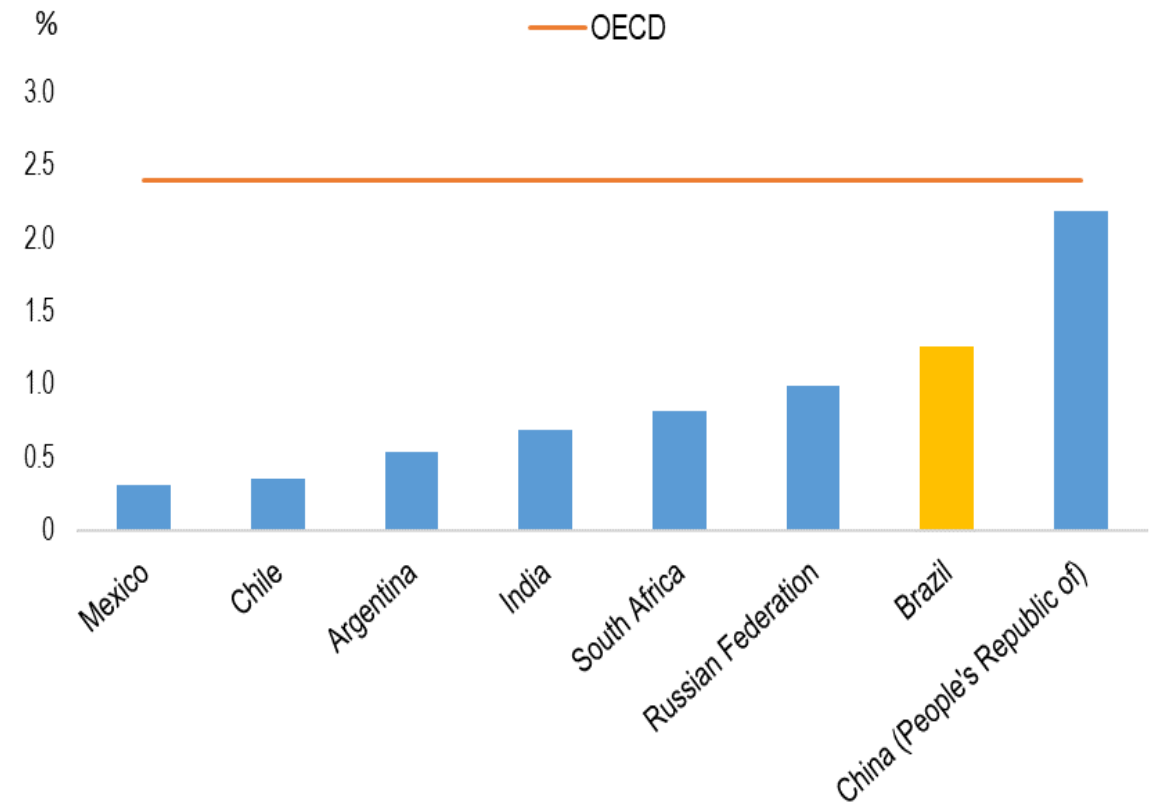
Brazil's R&D expenditures relative to GDP are above LAC countries...

... but still behind OECD countries.

Business expenditures account for a smaller share of total R&D in Brazil...

... particularly in the ICT sector.

Gross domestic expenditure on R&D, as a % of GDP, 2018 or latest available year





# Unleashing digital innovation

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To ***strengthen digital innovation***, Brazil should:

- orient public support to digital innovation towards ***mission-oriented research***, building on the model of the National IoT Plan
- ensure adequate, stable and predictable ***public resources for research in ICTs***
- develop clear ***roadmaps for advancement in key digital technologies***, e.g. AI and data analytics, with all stakeholders
- ***reform the Informatics Law*** so as to strengthen its support to innovation
- ***make the Good Law more suitable for young innovative firms*** through cash-refund or carry-forward provisions
- increase ***knowledge transfer between businesses and academia***
- strengthen ***innovation hubs for small and medium-sized enterprises***; open e-procurement to innovative start-ups.



## *5. CONCLUSIONS AND SOME RESOURCES*



# Some conclusions

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- **Policies for innovation, not just innovation policies:** Innovation relies on a wide range of policies – and a system – don't focus only on the ones specific to innovation. This includes:
  - Improved policy frameworks for investment in innovation, including **policies that enable resource allocation to innovative firms**
  - **A balanced set of innovation policies (e.g. R&D support, mission-oriented policies),** based on international best practice
  - Comprehensive action to strengthen the **digital economy and digital innovation**
  - Policies that enable entrepreneurship and strengthen business dynamism – **allow new firms to fail or scale and unproductive firms to exit**
  - **Greater integration in global value chains,** to draw greater benefits from the global frontier
  - **A comprehensive strategy to improve education and skills**
  - **A strong focus on evaluation – to learn from experience**
  - **A more strategic approach to innovation – across the government.**



# To learn more about S&T policies: STIP Compass, ....



**Explore** data through...



...**7 000+** STI policy initiatives



...**26** types of policy instruments



...**60+** STI policy themes

... and **50+** countries and territories

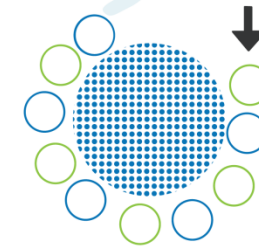


**Analyse** data with...

...**500+** interactive dashboards



... and **100 000+** data points



<https://stip.oecd.org/stip.html>



# ... and its toolkit on mission-oriented policies

Le 'Toolkit MOIP' en ligne

<https://stip-pp.oecd.org/stip/moip>



Explorable dashboards Policy learning Hub

## Welcome to the OECD Mission-Oriented Innovation policies online toolkit

This explorable guide helps policy makers design and implement Mission-oriented innovation policies. With the support of policy makers and building on partnerships with selected institutions, this toolkit aims to become the reference platform for all those who set up, implement or research and advise on mission-oriented innovation policies.

Explorable dashboards

Policy learning hub



Ongoing work:



OECD publishing

**THE DESIGN AND IMPLEMENTATION OF MISSION-ORIENTED INNOVATION POLICIES**  
A NEW SYSTEMIC POLICY APPROACH TO ADDRESS SOCIETAL CHALLENGES

OECD SCIENCE, TECHNOLOGY AND INDUSTRY POLICY PAPERS  
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**MISSION-ORIENTED INNOVATION POLICY IN NORWAY**  
CHALLENGES, OPPORTUNITIES AND FUTURE OPTIONS

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