Project description

R&D TARGETS: ASSESSING INNOVATION POLICY EXPERIENCE AND IMPACTS

2017-18 TIP project

Working Party on Innovation and Technology Policy
London, 12 April 2019

OECD
BETTER POLICIES FOR BETTER LIVES

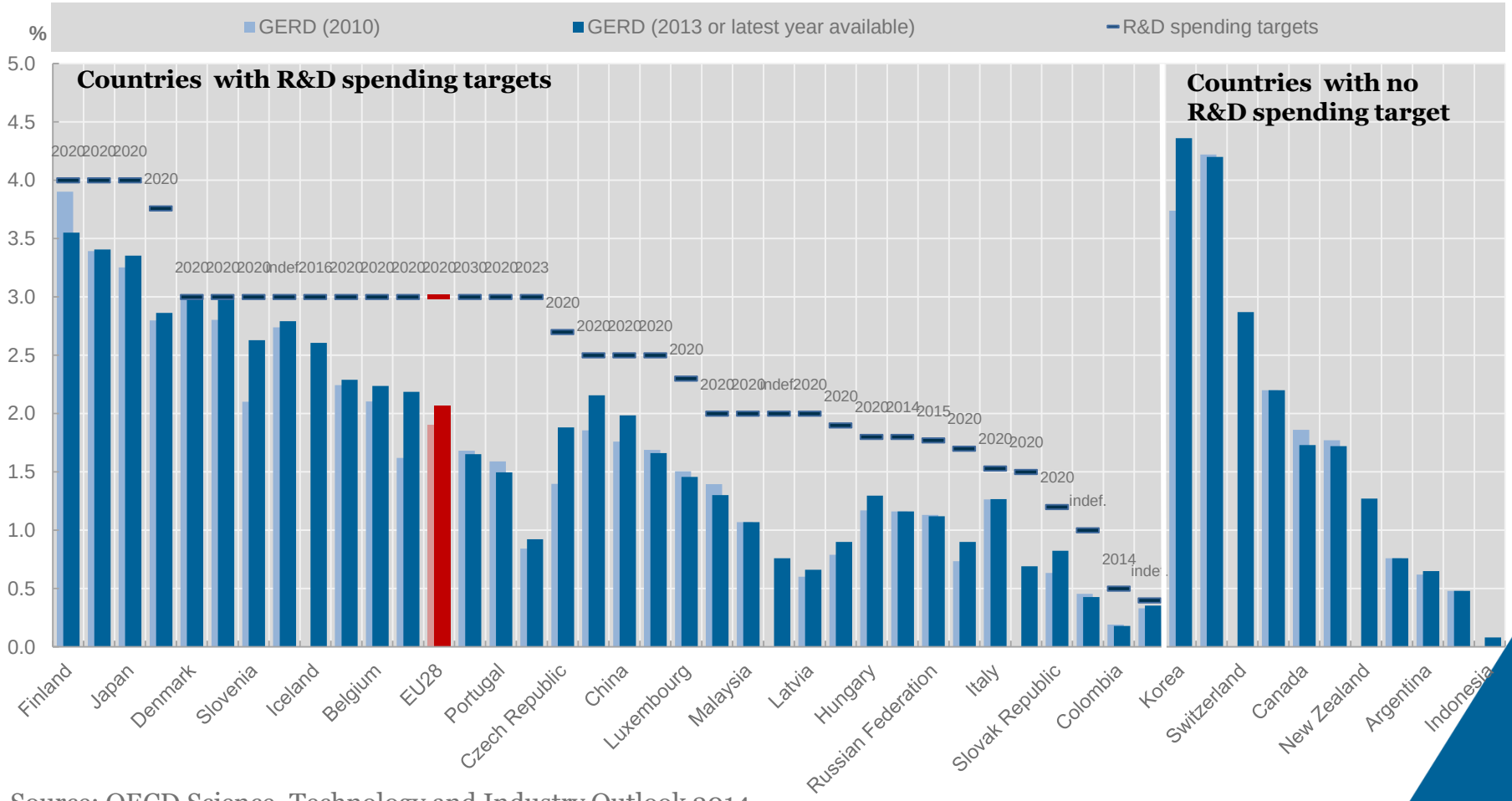
Why focusing on this topic?

R&D expenditures are a major **driver of innovation**

Many countries have established **R&D intensity** (i.e. R&D expenditure over GDP) as **main policy target** in innovation strategies

R&D intensity and targets

National R&D spending targets and gap with current levels of GERD intensity, 2014 (% of GDP)

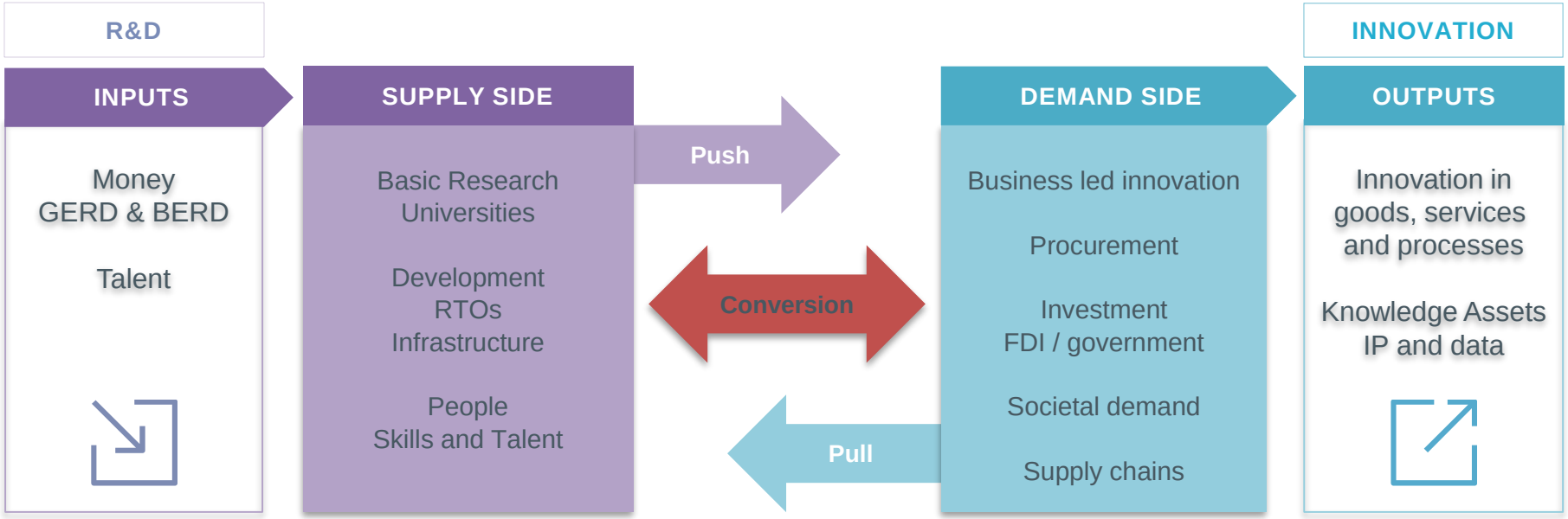


Source: OECD Science, Technology and Industry Outlook 2014

But…

… is it the **right** target?
… **how** to reach it?
… is reaching the target **enough**?

Conceptual Framework
R&D intensity conversion to innovation outputs



SUPPORTIVE FACTORS

Business environment – regulation, competition and industry structure

Demographics – age and skills of population

Location – clusters, proximity of research and business to markets

HINDERING FACTORS

Concentration of R&D

Size, culture and attitudes of firms

Technology adoption rates

Degree of appropriation and leakage of ideas abroad

Relevance of the target

Objective: Relevance of the target and/or relevance of indicators other than aggregate R&D intensity to reach the end target

Key issues:

- Relevance of R&D in the **digital / AI age** for innovation & productivity of R&D with digitalisation
- Introduce **distributional dimensions** to the R&D intensity target (geography)

Leveraging insights from the digital innovation project

Structural characteristics behind aggregate dynamics of R&D intensities

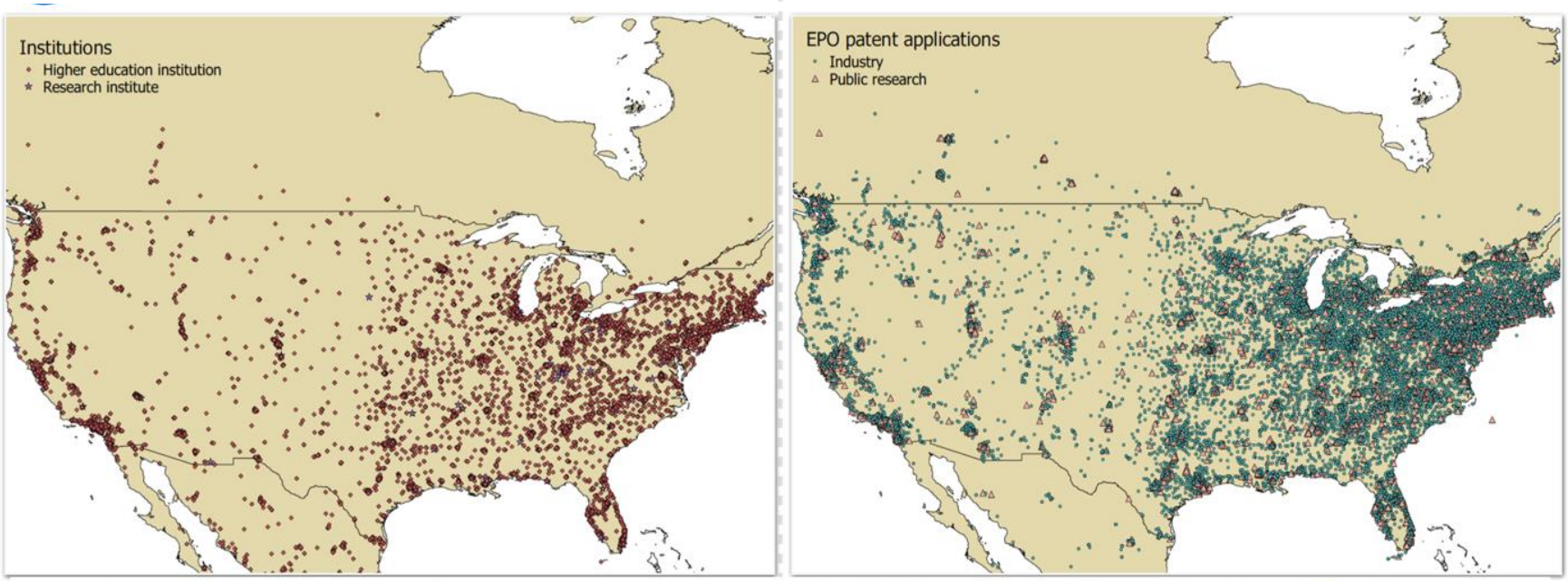
Objective: Better understand how **structural characteristics** affect R&D intensities

Key issues:

- Geographic concentration versus variety
- Sectors of high and low R&D intensity
- Firm disparities

Leveraging the database on delocalised patents and research institutions

Geography matters: universities & inventive industry collocate

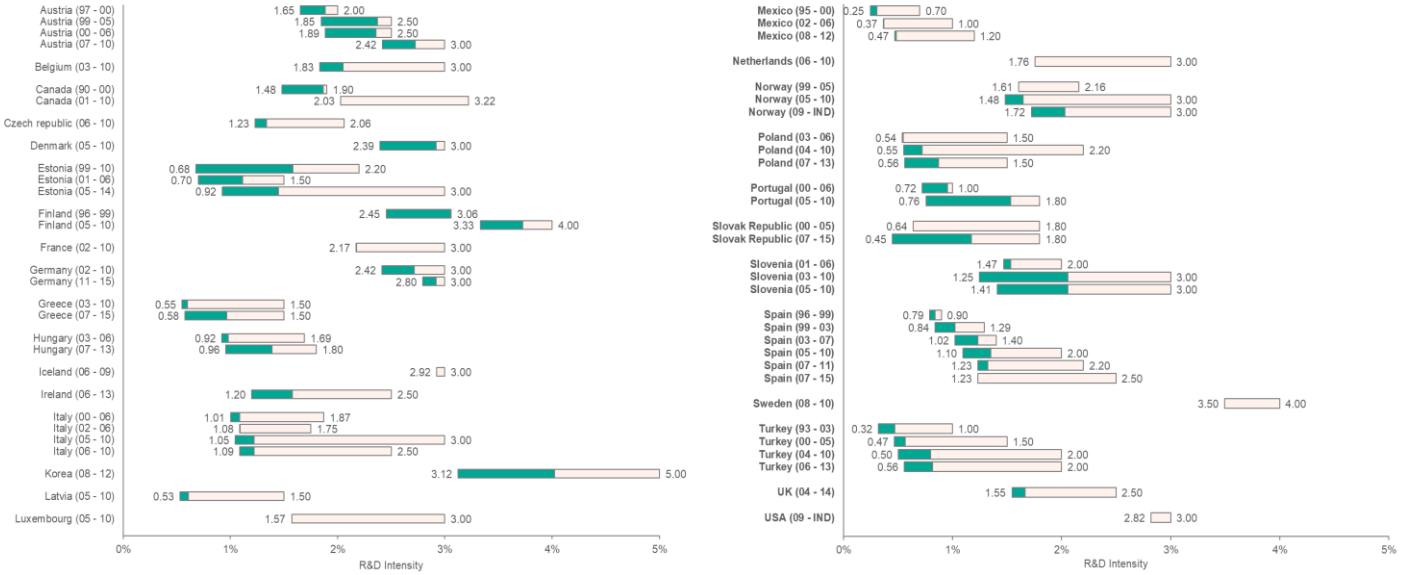


Proximity to university is positively associated with **local industry patent applications**, irrespective of local business dynamics

It is very rare for a country to achieve its R&D intensity target

- The chart shows the countries who have had an R&D intensity target that was due to be met in 2015 or earlier.
- None of the countries shown achieved their target. Some do make progress and these 'incremental gains' do lead to R&D intensity increases over time (e.g. Austria). This is not necessarily the result of policy.

International comparison of past R&D intensity targets and the increases achieved



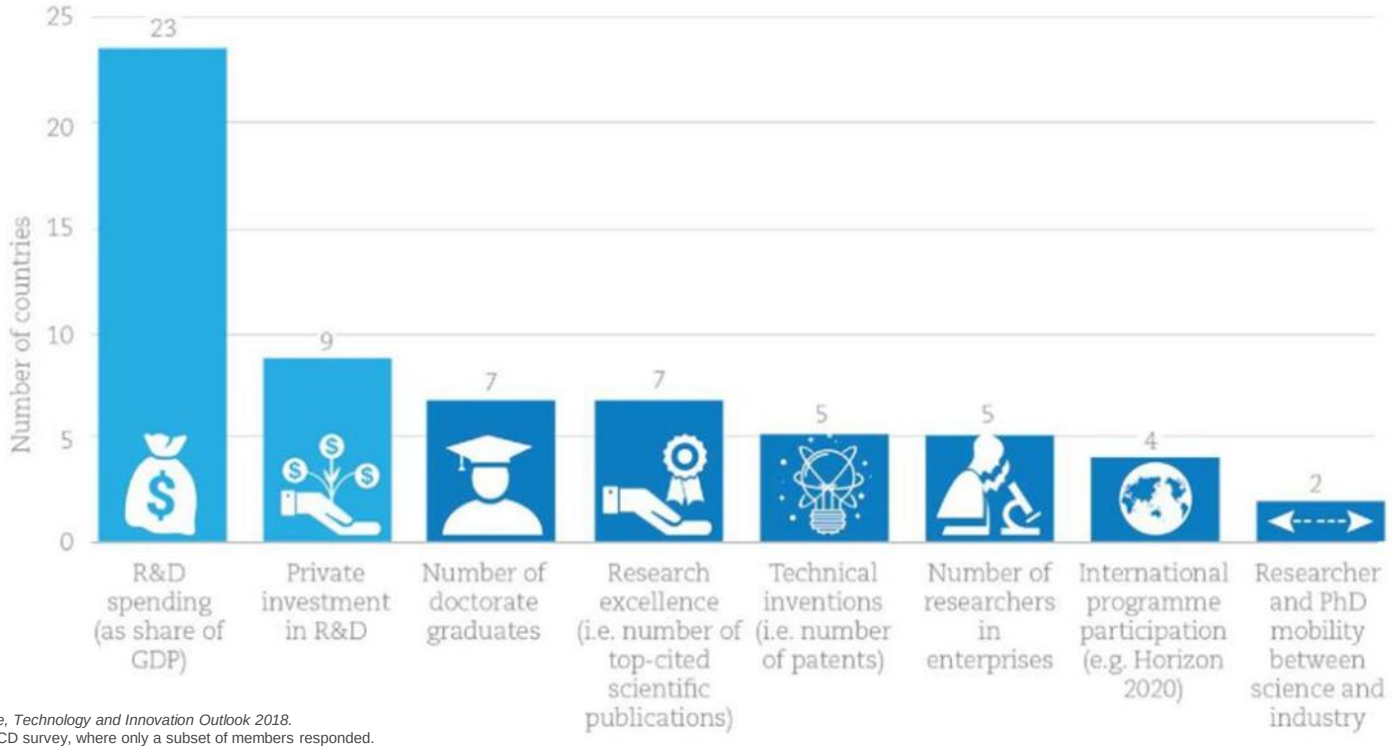
Source: Carvalho (2017), updated with 2018 OECD MSTI data

Start and end years for meeting targets are provided by the countries' names and the start and end R&D intensity values are provided on either end of the bars. Progress made towards a target is indicated by the green area of each bar.

A range of OECD nations have also set targets against other objectives

Although *R&D intensity targets are the most common*, other countries have set targets against private investment in R&D, the number of doctorate graduates, research excellence, and patents.

Quantitative targets included in national R&D strategies for OECD nations



Source: OECD Science, Technology and Innovation Outlook 2018.
Note: based on an OECD survey, where only a subset of members responded.

Policy experience across countries: requiring inputs from experiences

Objective: Better understand the experience in **defining and reaching R&D targets** over past decades

Key questions to address:

- What experiences have been most successful? Which failed?
- How are structural country characteristics taken into account in the policy mix?
- What behavioural changes took place when aiming to reach those targets?
- Are complementary targets also set in policies?
- How is international dimension of R&D taken into account?
- How do policies address skills needs to increase R&D spending?

Some possible avenues …

- Relevance of R&D in the **digital / AI age** for innovation & productivity of R&D with digitalisation
- Introduce **geographic distribution** to the R&D intensity target & understand its contributions to R&D intensity
- **National policy experiences** in aiming for the target (country case studies ?)

Evidence collection template and analysis plan

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Evidence collection plans

1st phase: fact finding

- **Collecting & exploiting evidence** at country level on drivers of R&D intensity and existing policies

Template for country evidence collection, building on UK Innovate survey

2nd phase: policy exploration

- In-depth analysis of country **policy experiences**, possibly through peer-review processes

Policy exploration

Phase 1: Template for country evidence collection

- Build a comparative **evidence-base on policy practice** building on **national sources**

- Take the **survey used for the event as basis**, focusing on core factors judged of most interest

Template for country evidence collection

Evidence on R&D intensity targets

1. **Does your country have a national R&D intensity target** (R&D expenditure as % of GDP)? If so, please specify:
   - The target and deadline to achieve it
   - Name of the policy strategy or other document that sets it, and date of adoption
2. **Has the target changed over the past 10 years?** If so, please specify:
   - What was the previous target
   - What was the document setting the previous target
   - When did it change and why
3. Does your country have **R&D intensity targets at the regional, local or sectoral level?** If so, please specify:
   - The targets and deadlines to achieve them
   - The name of the policy strategy(ies)/other documents setting them
4. Do your innovation strategies/other documents include **other innovation targets to complement the R&D intensity target?**

Template for country evidence collection (ii)

Evidence on drivers of R&D intensity

Sector of activity

5. Are business R&D expenditures (BERD) highly concentrated in some sectors of the economy (e.g. high-tech sectors)?

Specific firms

6. Are business R&D expenditures (BERD) highly concentrated in a small number of firms?

Regional distribution

7. Are R&D expenditures highly concentrated in some regions?

Multinational enterprises

8. Are MNEs foreign affiliates main drivers of BERD ?

Template for country evidence collection (iii)

Policy experience in targeting R&D intensity

9. What are the most important policy initiatives (max 5) implemented in your country with the aim of achieving the national R&D target?
10. Which policies have been most successful in driving R&D intensity?
11. Are there any examples of policies implemented in the past to drive R&D intensity that are considered not successful?
12. How are structural characteristics of the country taken into account in the policy mix applied to reach R&D targets? (e.g. measures to promote the distribution of R&D expenditures across the economy, beyond high-tech sectors or specific firms)
13. What characteristics of public research and business sector in your country:
    - particularly support high levels and growth of R&D investments?
    - particularly hinder high levels and growth of R&D investments?

Phase 2: Policy exploration

- **Exploring the policy experience in targeting R&D intensity**, possibly national study & peer discussion

- **Possible focus:**
  - **Reasons for success / challenges** in reaching the target and the evolution of approaches to R&D intensity with peer exercise
  - **Distribution** of R&D intensity at regional and/or sectoral level
  - Experience with **complementary indicators**
  - Other?

Questions

- What factors should be gathered to find the right evidence?
- What would be the best approach to thinking about policy case studies?

Thank you