



# Horizon 2020 Policy Support Facility

## Peer Review of the Estonian R&I System

Marja Makarow

Erik Arnold

Lena Tsipouri

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# Our mission and team

## Mission

- Assessment of the effectiveness of the R&I system, especially strengths and bottlenecks, governance, priority-setting, exploiting the Estonian science base and maximising knowledge exchange
- Focus on the R&I system in adding value to business sector productivity, how to increase innovation and technological capacity, facilitating entrepreneurship, framework conditions and how to attract foreign direct investment (FDI)

## Team

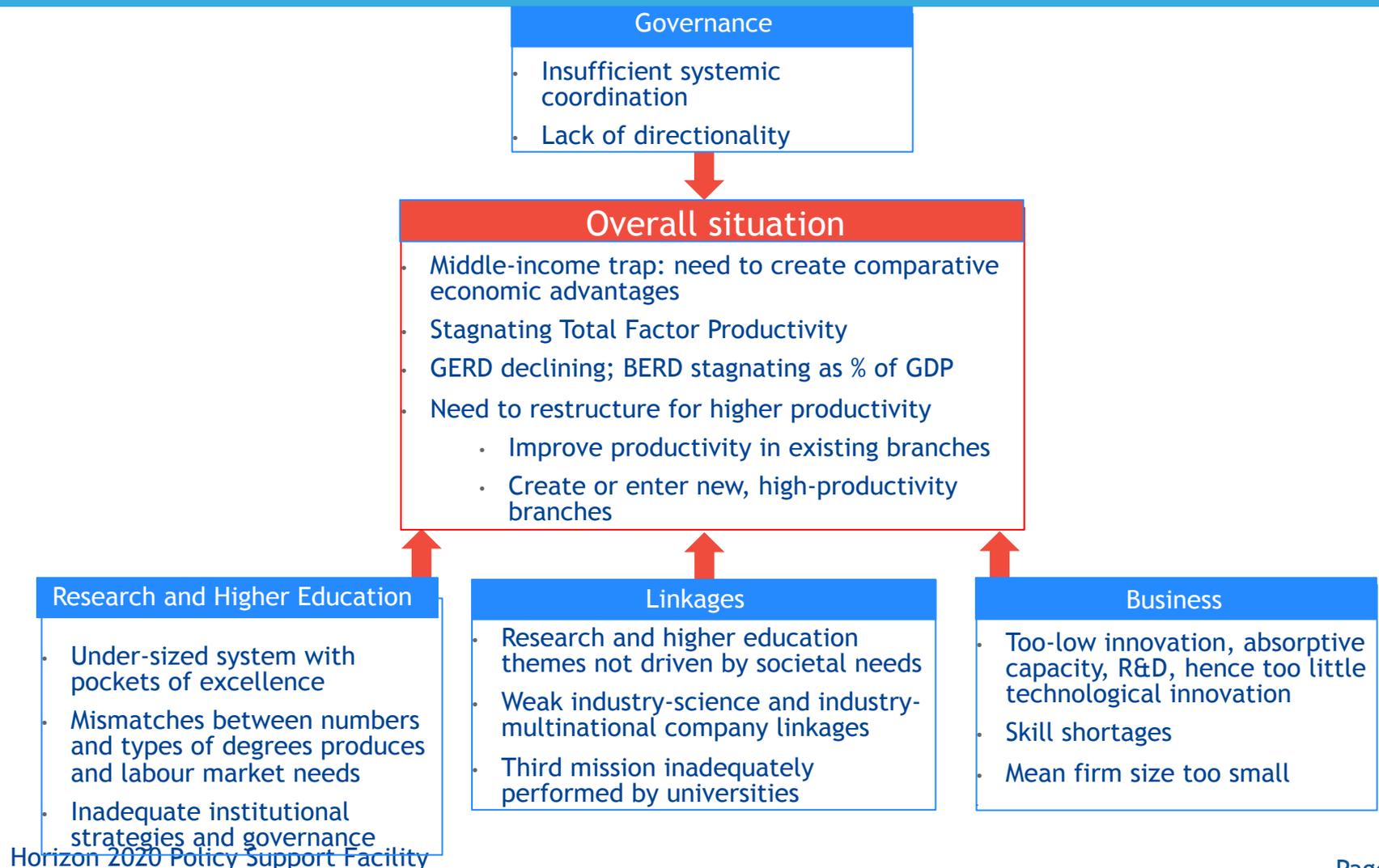
### Independent Experts

- Marja Makarow (Chair)
- Erik Arnold (Rapporteur)
- Luigi Mercuri
- Ian Tracey
- Lena Tsipouri

### National Peers

- Dermot Mulligan (Ireland)
- Martin Schmid (Austria)
- Patrick Vock (Switzerland)

# Systemic diagnosis of the research & innovation component in Estonian economic performance



# Our reflections are grounded in international thinking about R&I

- The most important driver of economic development is innovation, especially innovation based on R&D
- The capabilities necessary to generate innovations enable the national innovation system to learn, generate human capital, keep up with scientific and technological progress and maintain productivity and competitiveness
- Innovators do not innovate alone but in national and international ‘innovation systems’ that involve many actors and institutions. Policymakers need to ensure that the policy mix is in balance and that interventions across the innovation system are coordinated

# R&D-based innovation is crucial, creating new opportunities by extending the state of the art

Innovation: “putting new or significantly improved products on the market or finding better ways (through new or significantly improved processes and methods) of getting products to the market. R&D may or may not be part of the activity of innovation”

## R&D

- Basic research
- Applied research
- Experimental development

## Must be

- Novel
- Creative
- Uncertain
- Systematic
- Transferable and/or reproducible

Technological risk

## Not R&D

- (Non-experimental) development
- Industrial design
- Manufacturing engineering
- Production and plant engineering
- Marketing, sales, distribution

Commercial risk

Technological innovation

Commercial innovation

Source: OECD, Frascati Manual

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# Government and society

- Despite committing to the EU's R&D spending goal\* in 2011, government has been unable to implement this
- But new efforts are being made to meet the goal, and the Prime Minister's R&D Council could effectively coordinate these, given political will
- Drafting the Estonia 2035 strategy offers a powerful way to bring together different ministries and regions, which needs to be reflected in relative priorities and implementation across government
- Estonia should address the societal challenges so it contributes in ways that benefit the Estonian economy

# Business innovation

- Good framework conditions for business, FDI and entrepreneurship, but demographics, emigration and mismatches in education drive skills shortages
- Wages are rising faster than prices, despite stagnant total factor productivity. Gross and business expenditures on R &D grow no faster than GDP
- Industry structure is fairly stable, with some growth in ICT, scientific and technical services
- Estonia has comparatively few big and many small firms
- Overall, industry has low levels of ‘absorptive capacity’ and ability to do R&D

# Innovation support

- Estonia has chosen to invest large sums on research, business and broadly-defined innovation
- The Estonian Research Council funds a little R&D-based innovation, but Enterprise Estonia's investment is also small, leaving a funding gap that corresponds to business' absorptive capacity gap
- That needs to be addressed through funding programmes and the creation of 'innovation intermediaries' to support R&D-based industrial innovation

# Foreign Direct Investment (FDI) and R&D-based entrepreneurship

- FDI has hitherto been key to Estonia's growth and export performance
- However, R&D has not been a focus in FDI policy. This and other ways to increase national learning from FDI need more policy effort
- State agencies have supported the lively start-up scene, mostly generating software and Internet-based firms. Better-performing, more focused knowledge exchange from the universities can help diversification
- Estonia has made some progress in procurement-driven innovation, but could use more demand side policy

# Higher education and research

- The higher education and research system has many institutions, given the small size of Estonia
- It has inherited research which is scientifically successful but is not always sufficiently relevant to business or the state, and which exacerbates mismatches in higher education
- The low status of some parts of vocational education also needs correction, better to address market needs
- Modernisation of the universities is impeded because most have out-dated governance that makes strategy formulation and implementation difficult

# Bold changes in research & innovation policy are needed

- Ensure political commitment to the importance of R&I in national policy and the 1% target for government spend on R&D
- Establish and implement thematic priorities for R&I policy, in the light of the societal challenges and the smart specialisation strategy
  - Other countries work intensively with societal challenges. Establish a strategy ('directionality') to let Estonia make money from them
- Establish an innovation agency to support R&D and build absorptive capacity
- Strengthen the system of 'intermediary organisations' able to support industrial innovation
- Modernise and 'profile' research at the universities, making them better adapted to innovation and the production of human capital to meet national needs