



# FFA Årskonferanse 2019

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## **FULLY EXPLOITING THE POTENTIAL OF RESEARCH INSTITUTES FOR ACHIEVING THE TRANSITION OF THE NORWEGIAN ECONOMY**

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Oslo, 5 may 2019



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1. Overall context and key questions
2. Broad assessment of the Norwegian research institute sector
3. Back to the future: the recommendations of the Norway Innovation Policy Review 2017
4. A (not-that-new) mission for Norwegian research institute: new mission-oriented research



# OVERALL CONTEXT AND KEY QUESTIONS FOR NORWEGIAN RESEARCH INSTITUTES



# The starting point of the Innovation Policy Review of Norway 2017

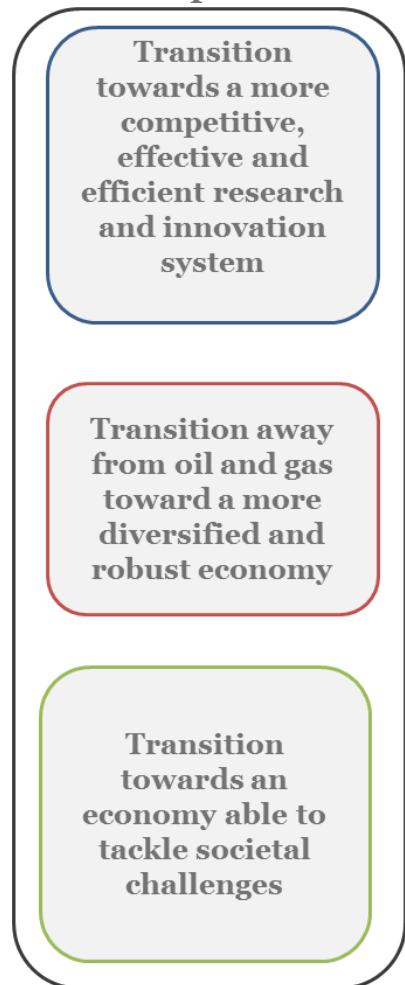
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- Norway has achieved a remarkable transformation into one of the leading national systems of innovation...
- But it is now facing a “triple transition” imperative
  1. towards a research and innovation system that produces excellent and relevant knowledge ...
  2. away from oil and gas toward a more diversified and robust economy
  3. ...including for addressing mounting societal challenges

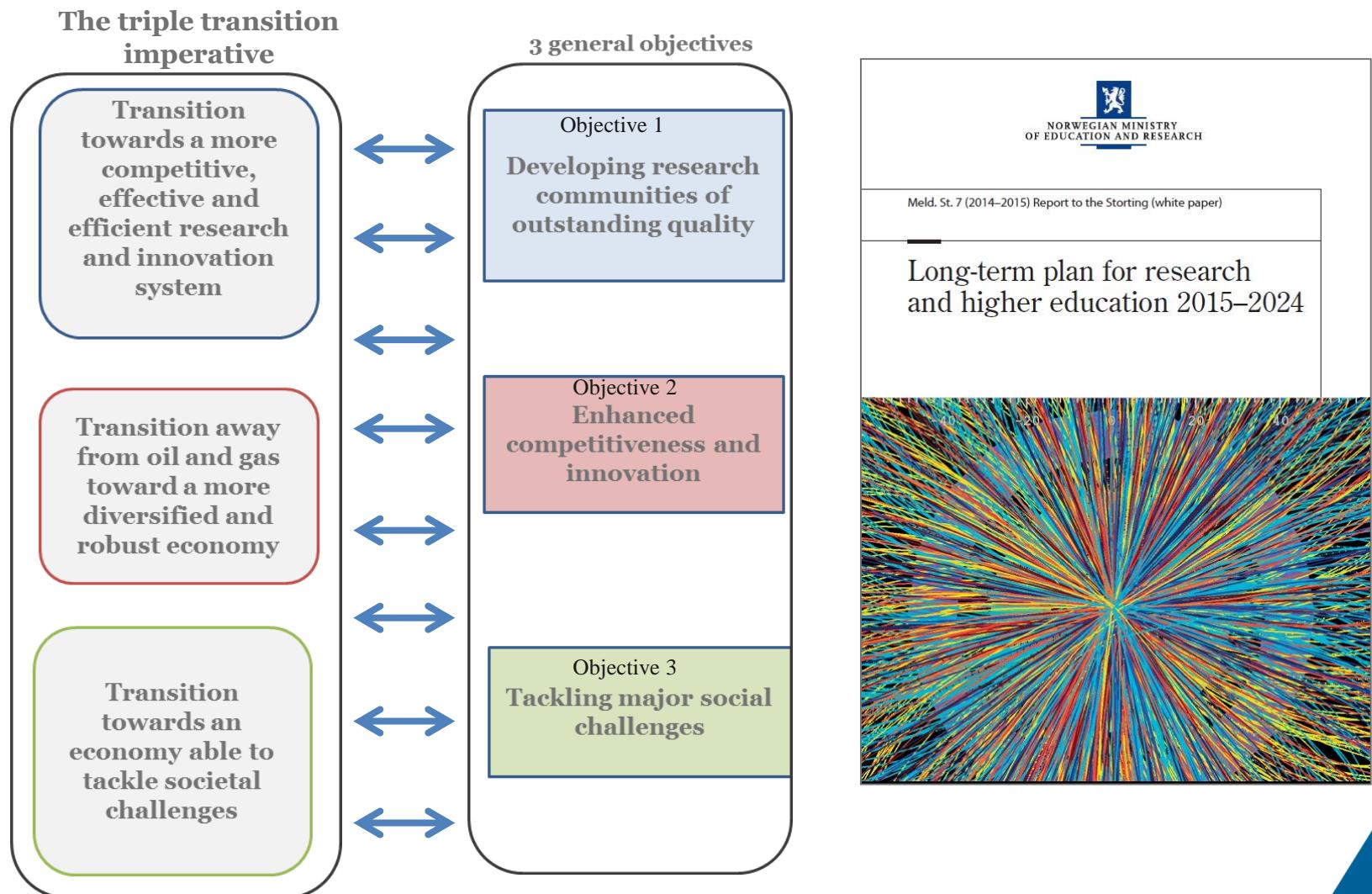


# The Long-Term Plan for Research and Higher Education 2015-2024 is a unique initiative to respond to these challenges

## The triple transition imperative



# The Long-Term Plan for Research and Higher Education 2015-2024 is a unique initiative to respond to these challenges





## Key questions

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- What is / could be the role of public research institutes in achieving this triple transition?
- What actions should be taken to improve the contribution of Norwegian research institutes to the triple transition?



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Share your ideas !



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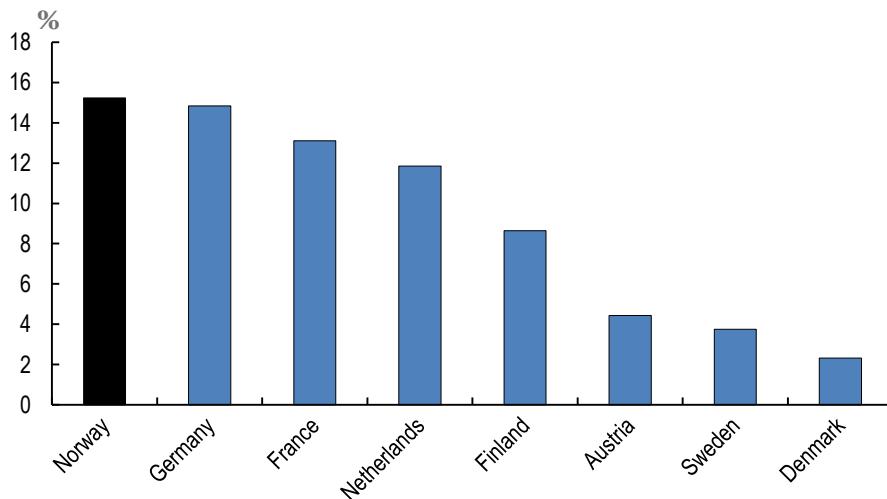
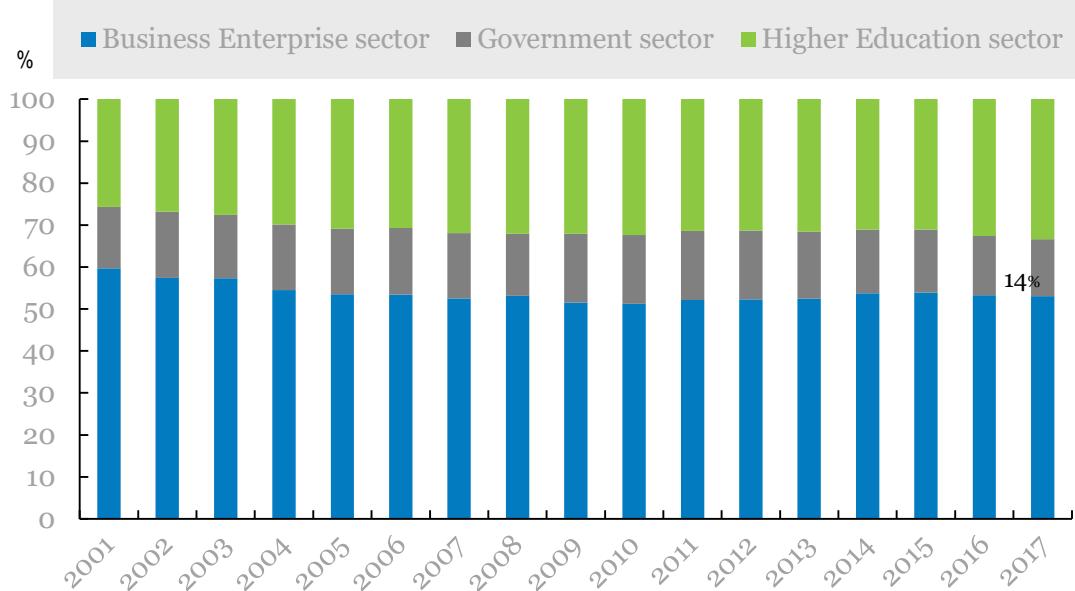


# BROAD ASSESSMENT OF NORWEGIAN RESEARCH INSTITUTES



# Public research institutes account for a significant share of R&D activities in Norway

Gross domestic expenditure on R&D (GERD) by performance sectors in Norway (in % of GERD)



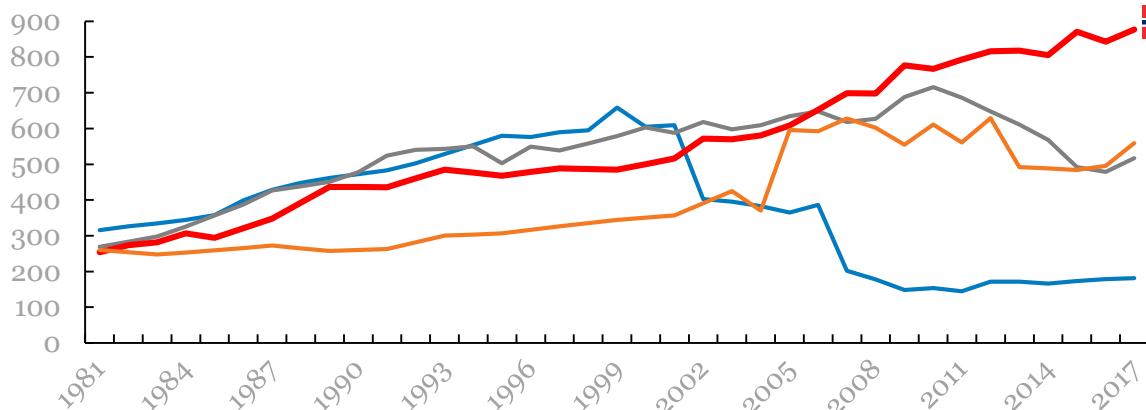
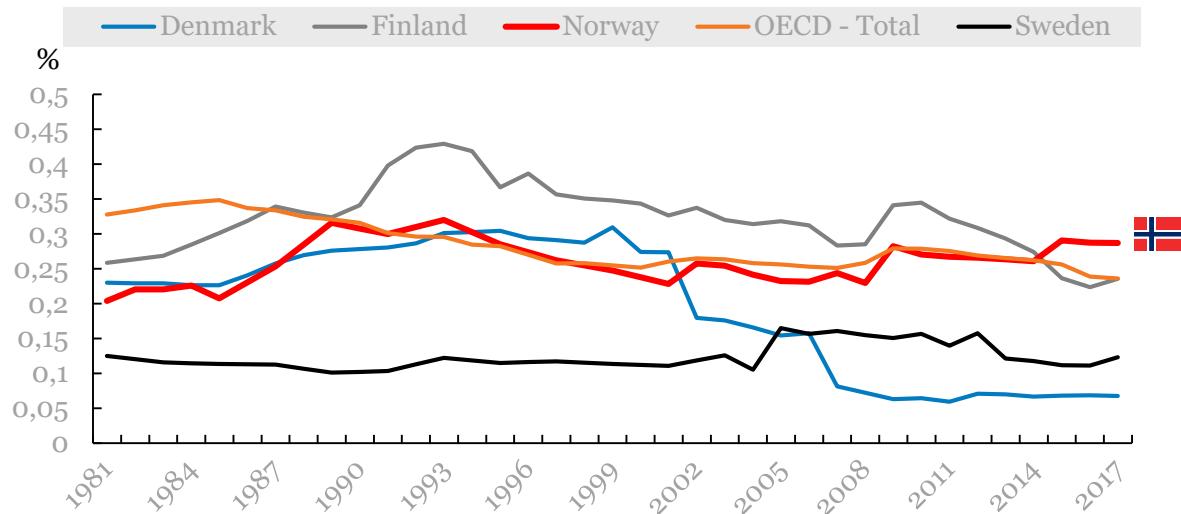
International comparison of the share of GERD performed by the government sector - 2014 (in % of GERD)

Source: OECD MSTI



# R&D activities of public research institutes in Norway has increased more rapidly than in comparator countries

Evolution of Government expenditure on R&D (GOVERD) in selected countries (in % of GERD)



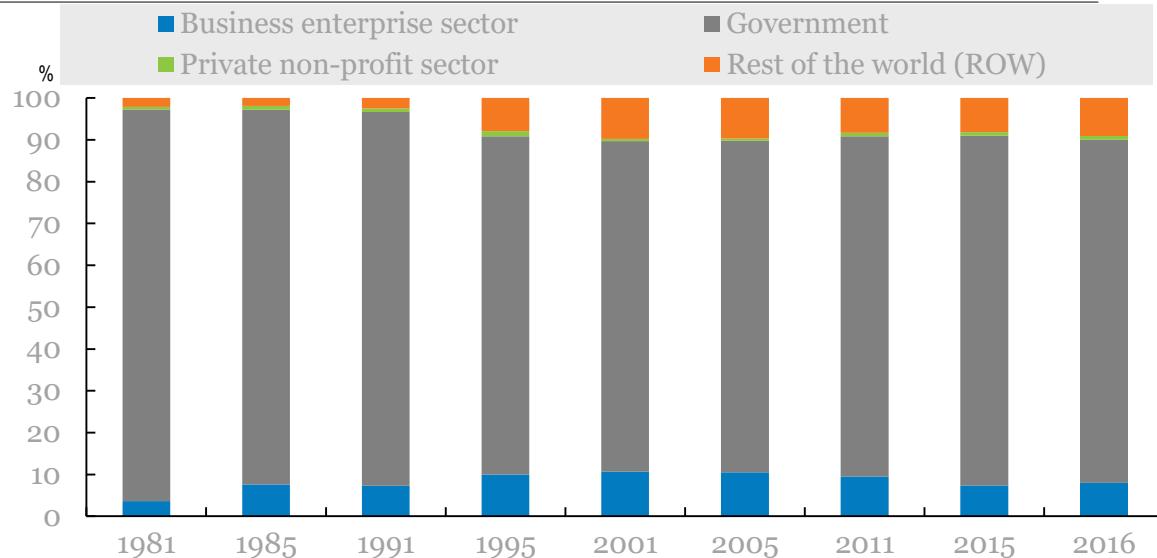
🇳🇴 Evolution of GOVERD in selected countries (in 2010 Dollars - Constant prices and PPPs)

Source: OECD MSTI



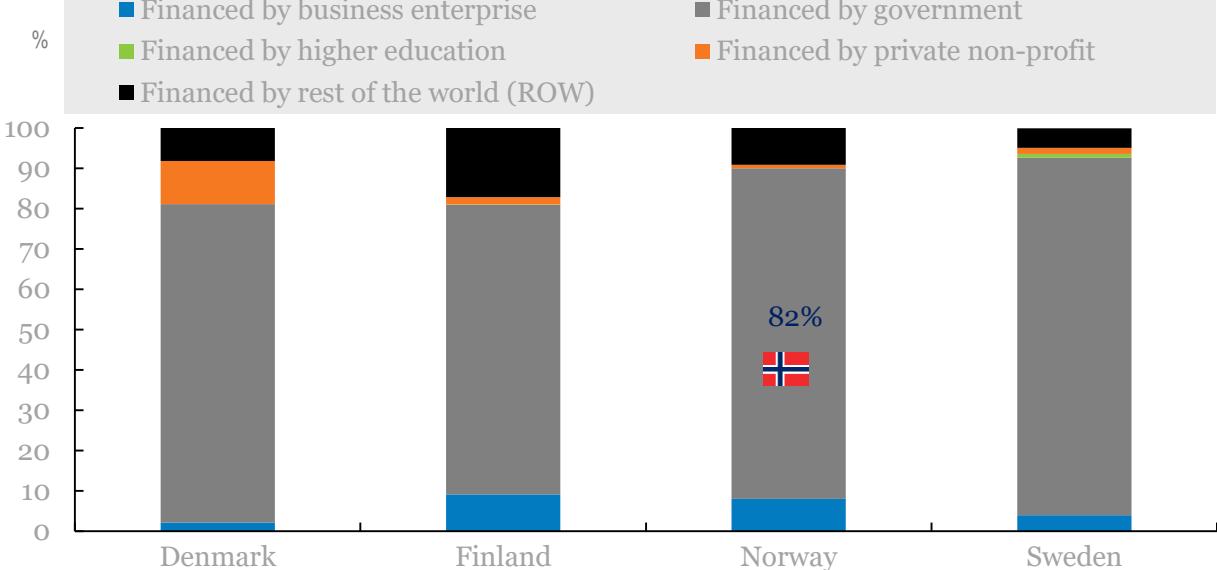
# Norwegian public research institutes depends on government funds

Sources of funds of  
GOVERD in Norway  
(in % of GOVERD)



■ Financed by business enterprise  
■ Financed by higher education  
■ Financed by rest of the world (ROW)

■ Financed by government  
■ Financed by private non-profit



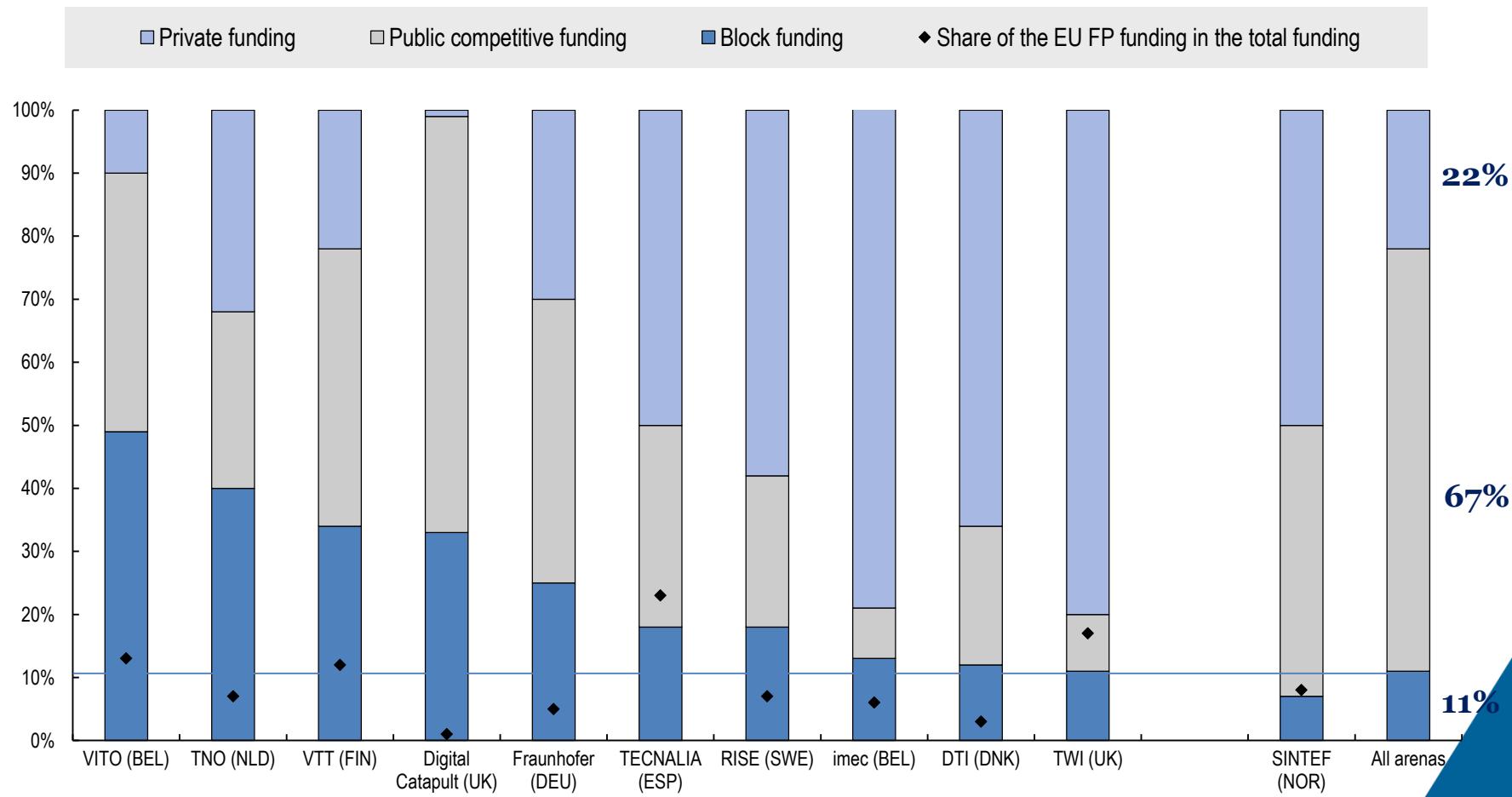
Sources of funds GOVERD  
in selected countries in  
2016  
(in % of GOVERD)

Source: OECD MSTI



# Norwegian public research institutes receive less generous basic funding

Comparison of the structure of funding of selected institutes in Norway and comparator countries (2014-2016)



Source: NIFU, RCN and various institutes



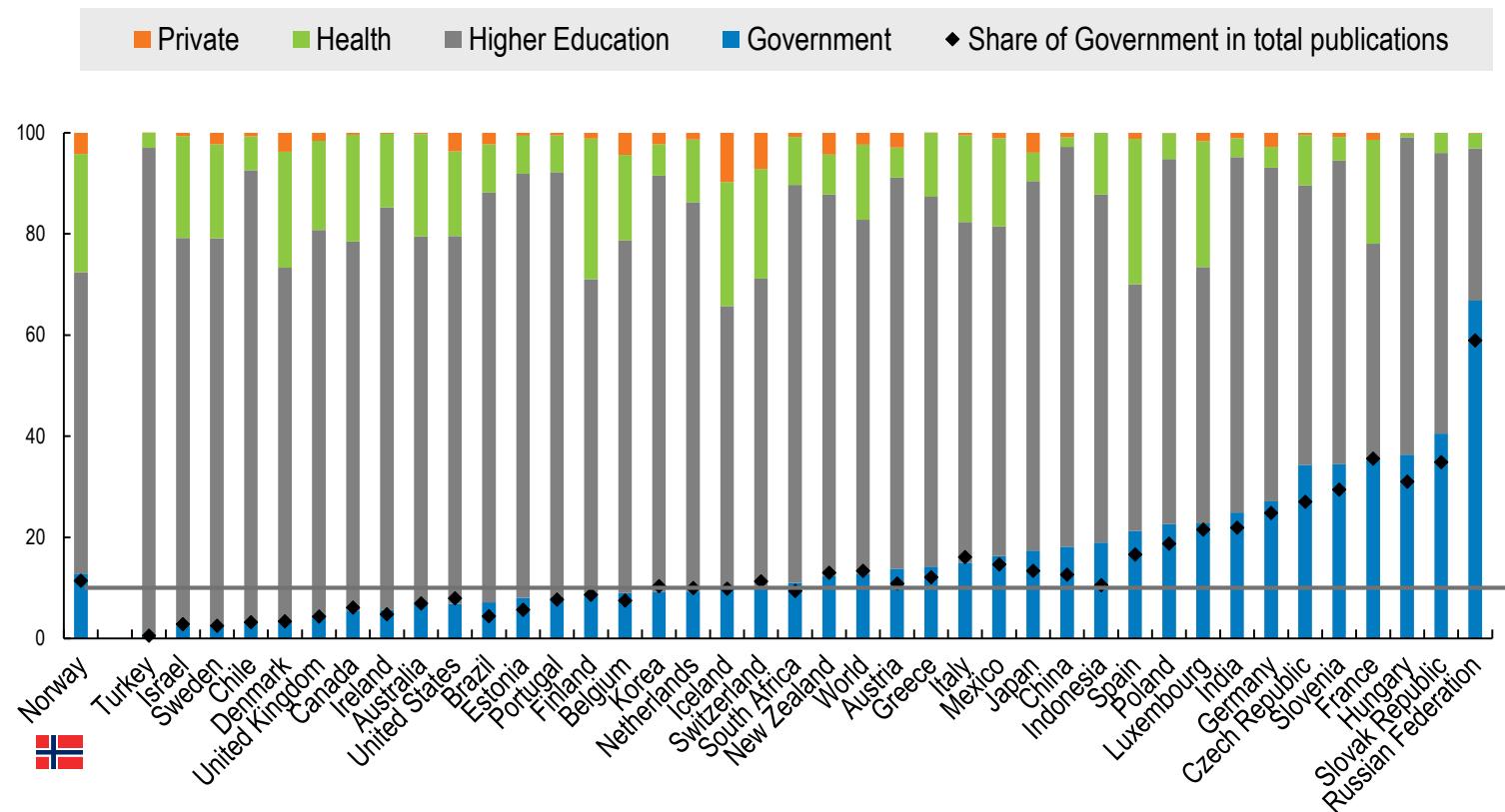


# Norwegian public research institutes have significant scientific impact

Distribution of top 10% most cited documents

– excellence – by sector, 2003-12

(as a percentage of all documents, whole counts)



Source: OECD bibliometric indicator compendium



# High relevance of Norwegian public research institutes for industry

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- A close relationship between the institute sector and industry
  - above-average number of Norwegian firms consider private research institutes as the most valuable innovation partners (CIS 2014)
  - 29% of all Norwegian businesses reporting R&D co-operation had co-operated with research institutes
  - 50% of cooperation reported by ‘Skattefunn firms’ are with research institutes
  - tangible impacts of cooperation with research institutes
  - strong contribution towards doctoral training in STEM subjects
- A successful model of collaboration that might hide some weaknesses on both sides



# Conclusion: A strong but fragmented research institute sector

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- Research institutes are key actors of the Norwegian research system, esp in engineering & technology and natural sciences.
  - around 14% of the total GERD
  - significant contribution to high quality scientific production (> DK, SE)
  - high rate of participation in EU programmes
  - undertakes applied research of relevance to industry, the public sector and society
- In international comparison, the Norwegian institute sector is
  - bigger in terms of number of organisations
  - more prominent in terms of their contribution to national R&D
  - but more fragmented and diverse



# Conclusion: insufficient public steering of Norwegian research institutes towards the transition

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- A challenging Norwegian Research institutes' funding model
  - still highly depend on public sector funding
  - but receive less generous institutional block funding
- An innovative institutional block funding, including 2 main components
  - performance-based component, with variation according to arenas (10% share only in Technical-Industrial Institutes)
  - strategic institutional initiatives (SIS) that are funded through dialogue between the institutes ministries and the RCN within each funding arena
- Relatively low RCN steering of PRIs
  - regular evaluations (by arena)
  - support to improvement and strategic planning



# BACK TO THE FUTURE: THE RECOMMENDATIONS OF THE NORWAY INNOVATION POLICY REVIEW 2017



# Funding model of research institutes

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- Increase the block funding for the institutes that
  - show good performance
  - demonstrate their ability to contribute to the industrial transition
- Adopt a more strategic approach based on
  - dialogue (including in the context of possible mergers)
  - the use of performance agreements (e.g. using indicators associated with knowledge transfer and industrial diversification activities)
- Ensure that the funds distributed directly by ministries to the research institutes are
  - related to strategic projects
  - in line with the government's defined priorities



# Advance structural reform of the sector via mergers but also encourage synergies between PRIs as well as with HEIs

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- Continue the structural reform of research institutes, including mergers across institutes and with universities, to increase critical mass and international competitiveness.
- Encourage collaboration across institutes, for instance by making collaboration across institutes a more important criterion in funding programmes

## Rationales:

- The fragmentation of the Norwegian PRI sector is a constraint in terms of competing in international areas and developing quality and competence
- In addition to formal mergers of institutes, there is scope for generating greater synergies between them and between PRIs and with HEIs



# Clearer incentives for innovation and knowledge transfer activities of institutes

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- Encourage knowledge-transfer activities of research institutes for instance by
  - creating additional funding streams (including dedicated commercialisation funds)
  - including knowledge-transfer indicators (not limited to, commercialisation) in the performance-based funding system

## Rationales:

- A more active role in innovation may be constrained by a lack of infrastructure for innovation and lack of / potential mismatch of incentives to engage in innovation.
- New plans for the development of multi-user facilities for testing, piloting, visualisation and simulation



# A (NOT-THE-NEW) MISSION FOR NORWEGIAN RESEARCH INSTITUTE: NEW MISSION-ORIENTED RESEARCH



# New mission-oriented research initiatives

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- Mounting pressure to solve societal challenges, SDGs are progressively shaping research agendas
- Growing interest of countries for “new” types of systemic research initiatives to support the transition
- New mission-oriented research initiatives : coordinated package of research and innovation activities aimed to address societal challenges
  - ⌚ possibly spanning the innovation cycle from research to demonstration and crossing various policy fields
  - 📠 using various instruments (supply-side and demand-side; top-down and bottom-up)
  - ⌚ targeted towards ambitious and concrete goals,
  - ⌚ in a defined time-frame



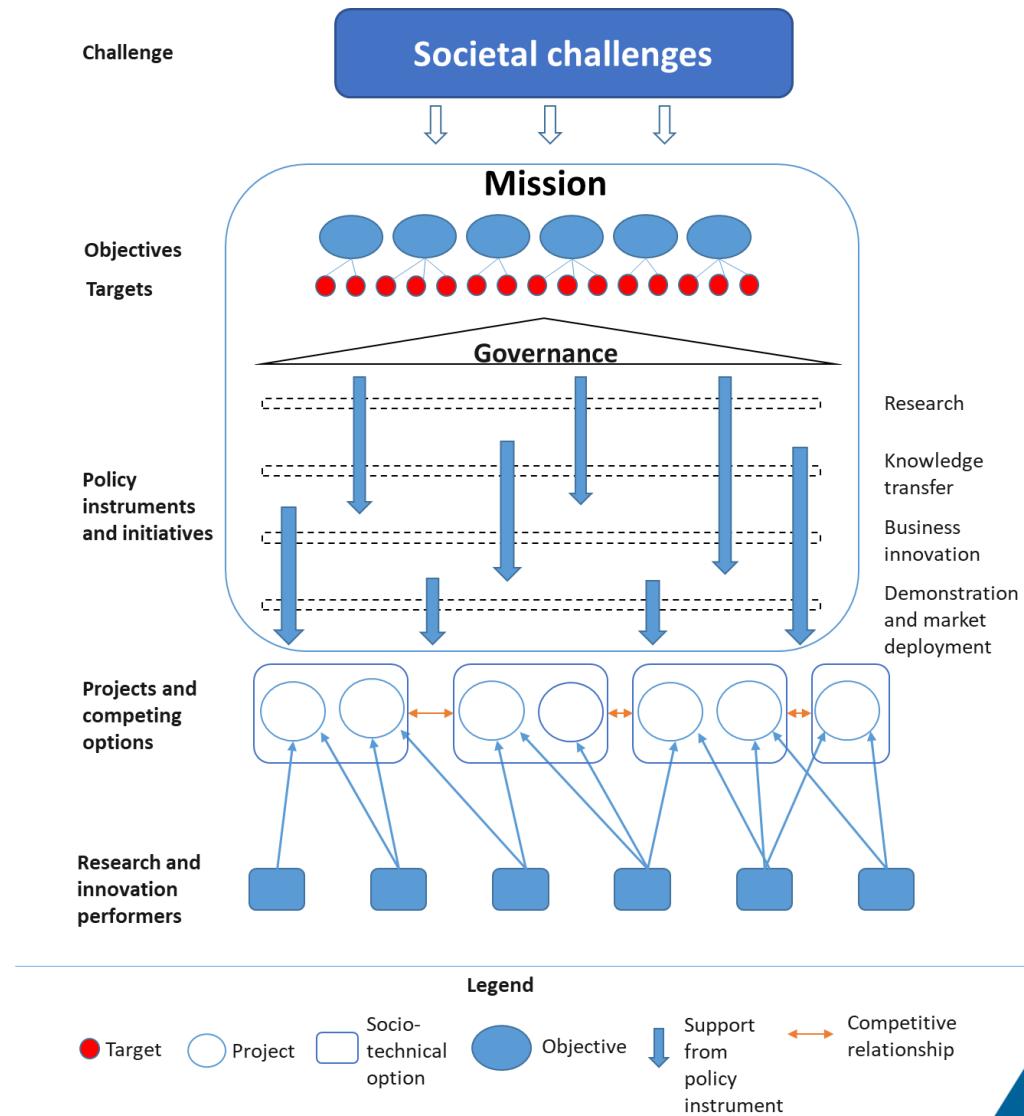
# New mission-oriented research initiatives



戦略的イノベーション創造プログラム  
Cross-ministerial Strategic Innovation Promotion Program



PILOT-E





# A ‘mission-oriented recommendation’ in the 2017 Innovation Policy Review

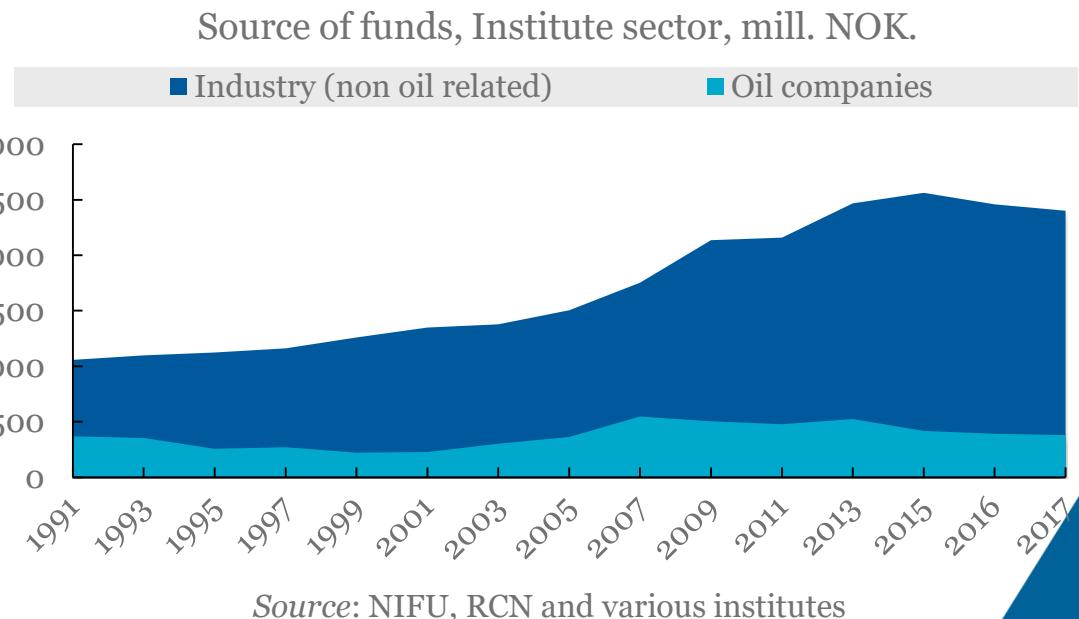
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- Devise broad integrated programmes that prioritise addressing societal challenges.
- These programmes should
  - be based on inclusive processes that engage a broad array of stakeholders, including users, concerned parties and experts, entrepreneurs, local public authorities (and even, for example, artists and immigrants)
  - launch studies and initiatives to examine regulatory frameworks, legislation and standards that could facilitate the widespread implementation of solutions to tackle societal challenges
  - promote interdisciplinary and multidisciplinary research
  - access a wide range of instruments, from specific research and innovation projects (including social innovation) to experimentation and public procurement
  - include foresight exercises and agree on strategies/visions that transcend sectoral boundaries and
  - include education, innovation and upscaling



# Norwegian Public research institutes are well placed to play a key role in new mission-oriented initiatives

- High excellence *and* relevance
- High level of participation in EU programmes, which are increasingly geared toward societal challenges
- Strong presence in RCN large-scale programmes related to societal challenges (Energix, Maroff, ...)
- An effective dialogue with ministries and RCN on strategies and structural change
- Strong and effective linkages with industry with a decreasing share of income stemming from oil companies





# Takk for oppmerksomheten!

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