



FFA Årskonferanse 2019

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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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

- 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

**Transition
towards a more
competitive,
effective and
efficient research
and innovation
system**

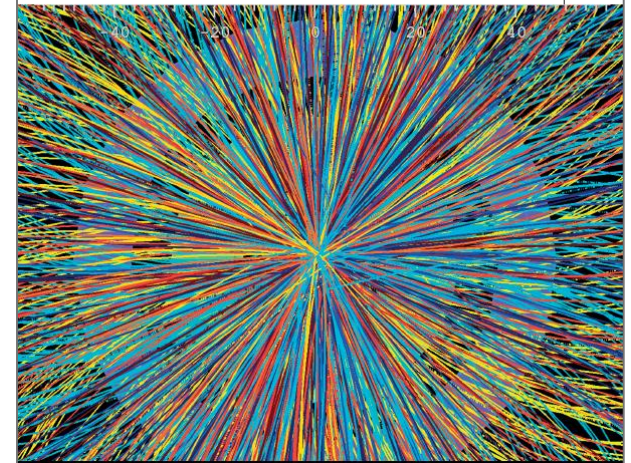
**Transition away
from oil and gas
toward a more
diversified and
robust economy**

**Transition
towards an
economy able to
tackle societal
challenges**



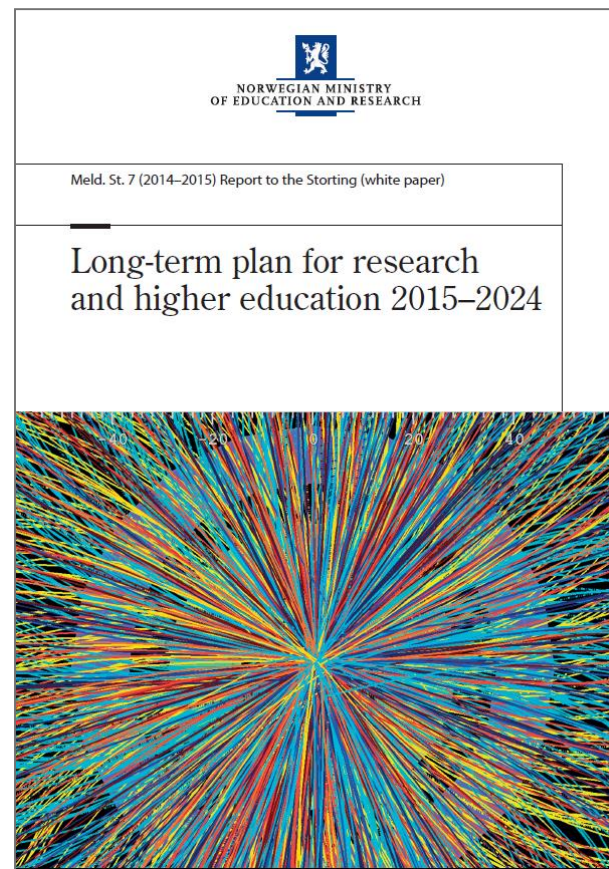
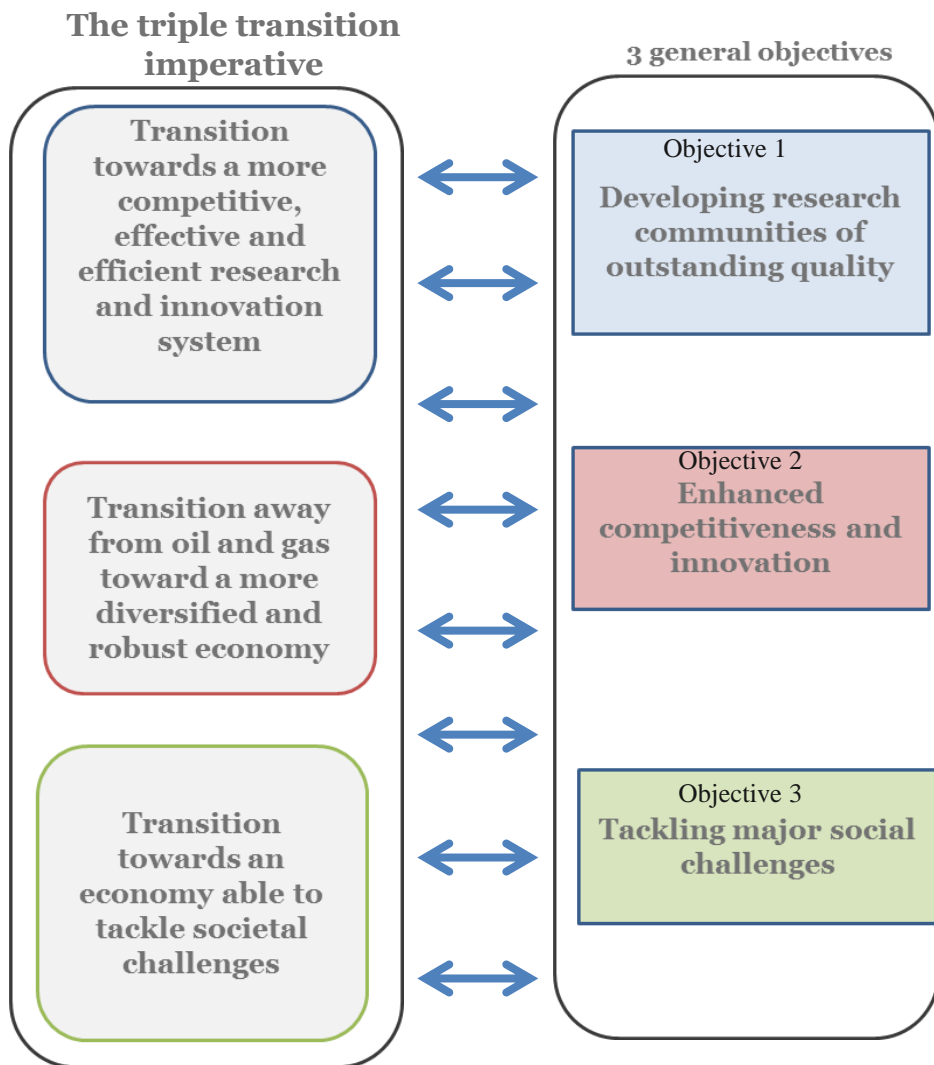
Meld. St. 7 (2014–2015) Report to the Storting (white paper)

Long-term plan for research and higher education 2015–2024





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





Key questions

- 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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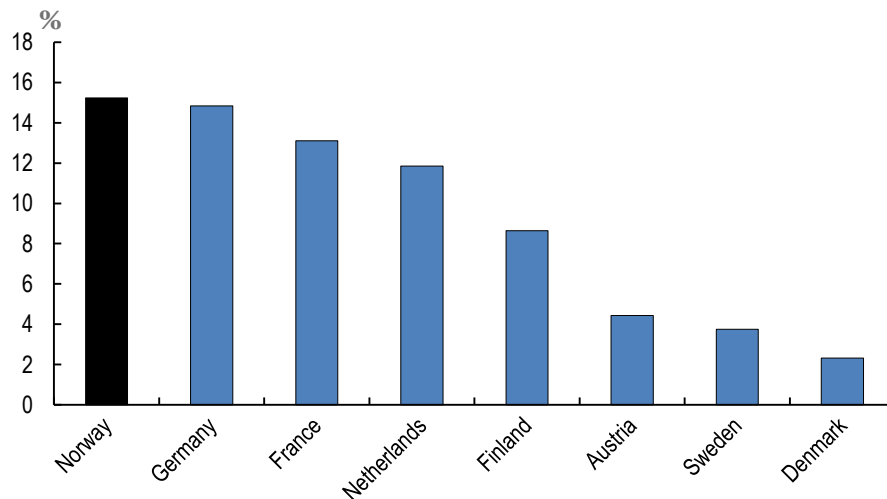
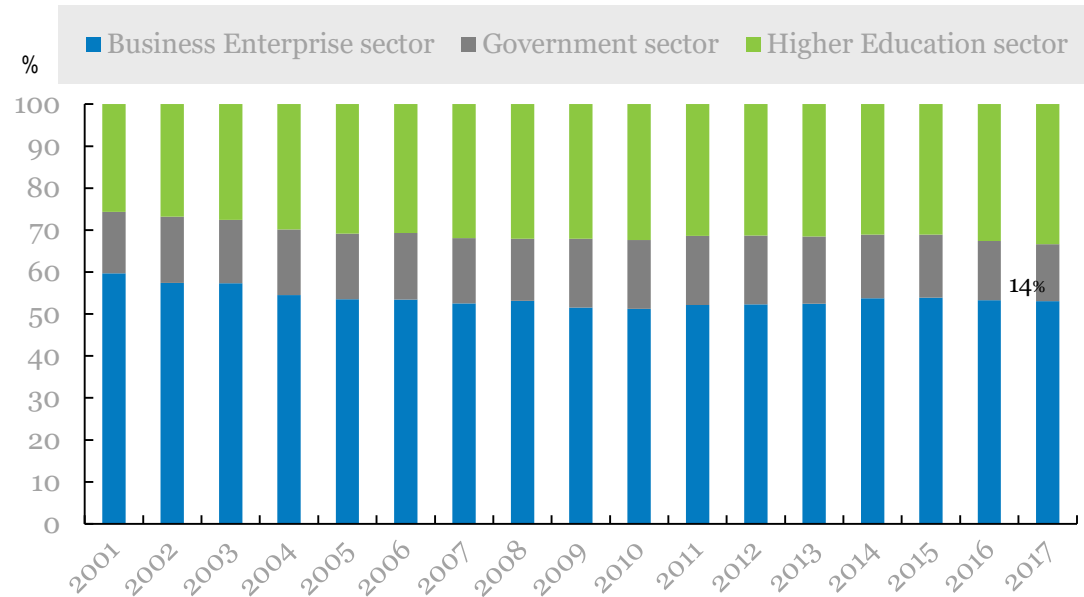


BROAD ASSESSMENT OF NORWEGIAN RESEARCH INSTITUTES



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)



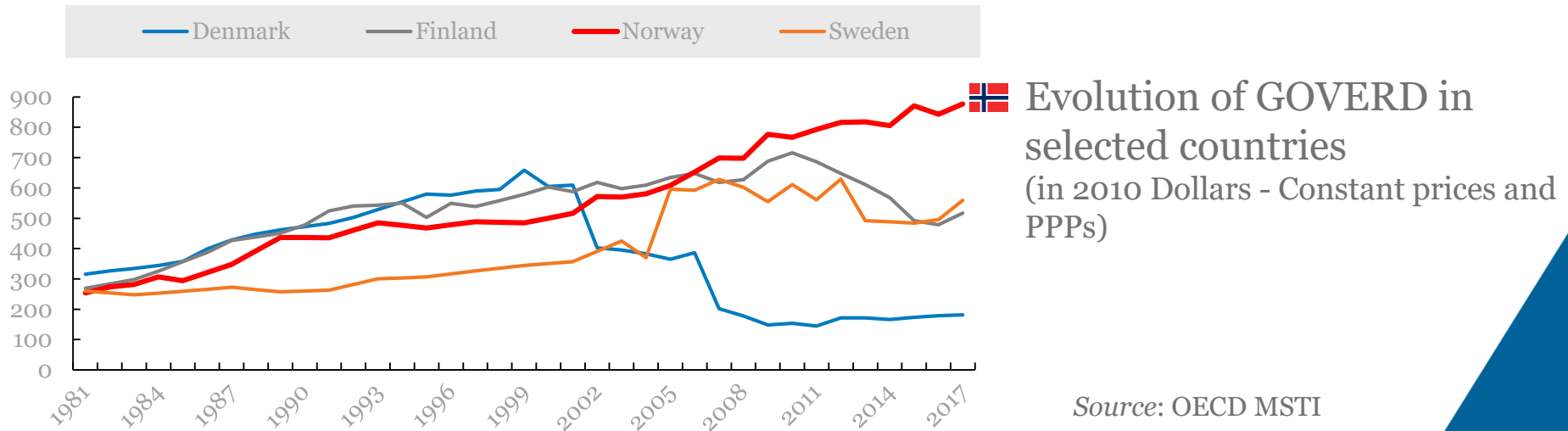
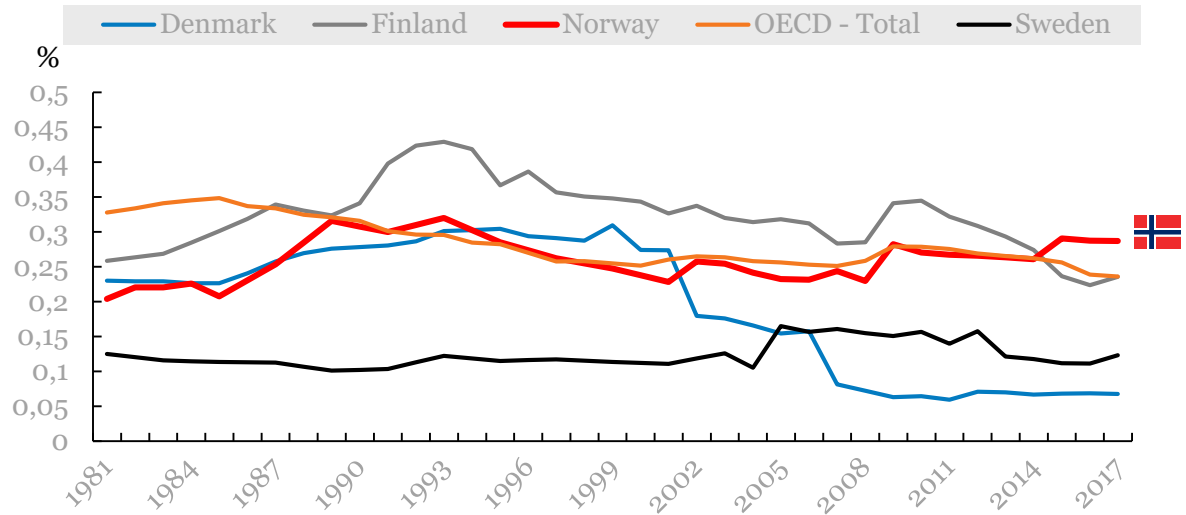
International comparison of the share of GERD performed by the government sector - 2014 (in % of GERD)

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)

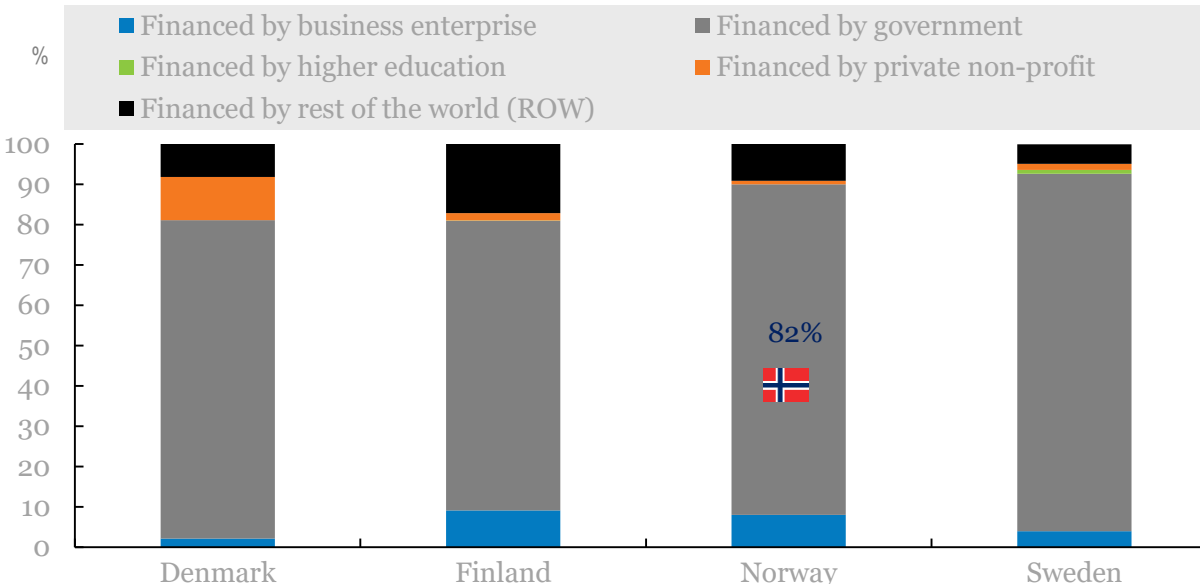
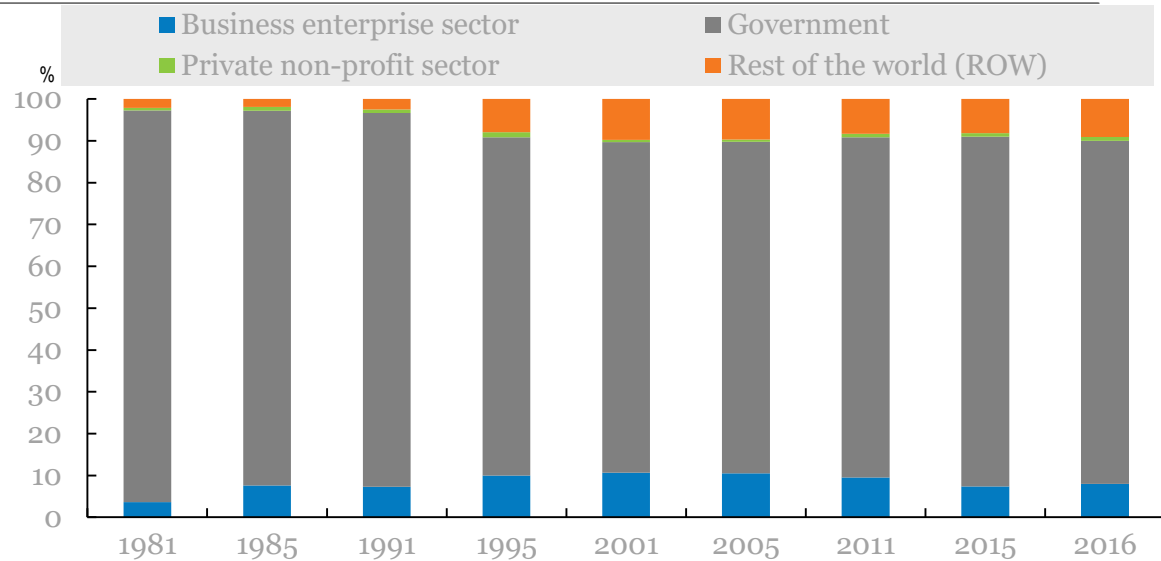


Source: OECD MSTI



Norwegian public research institutes depends on government funds

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



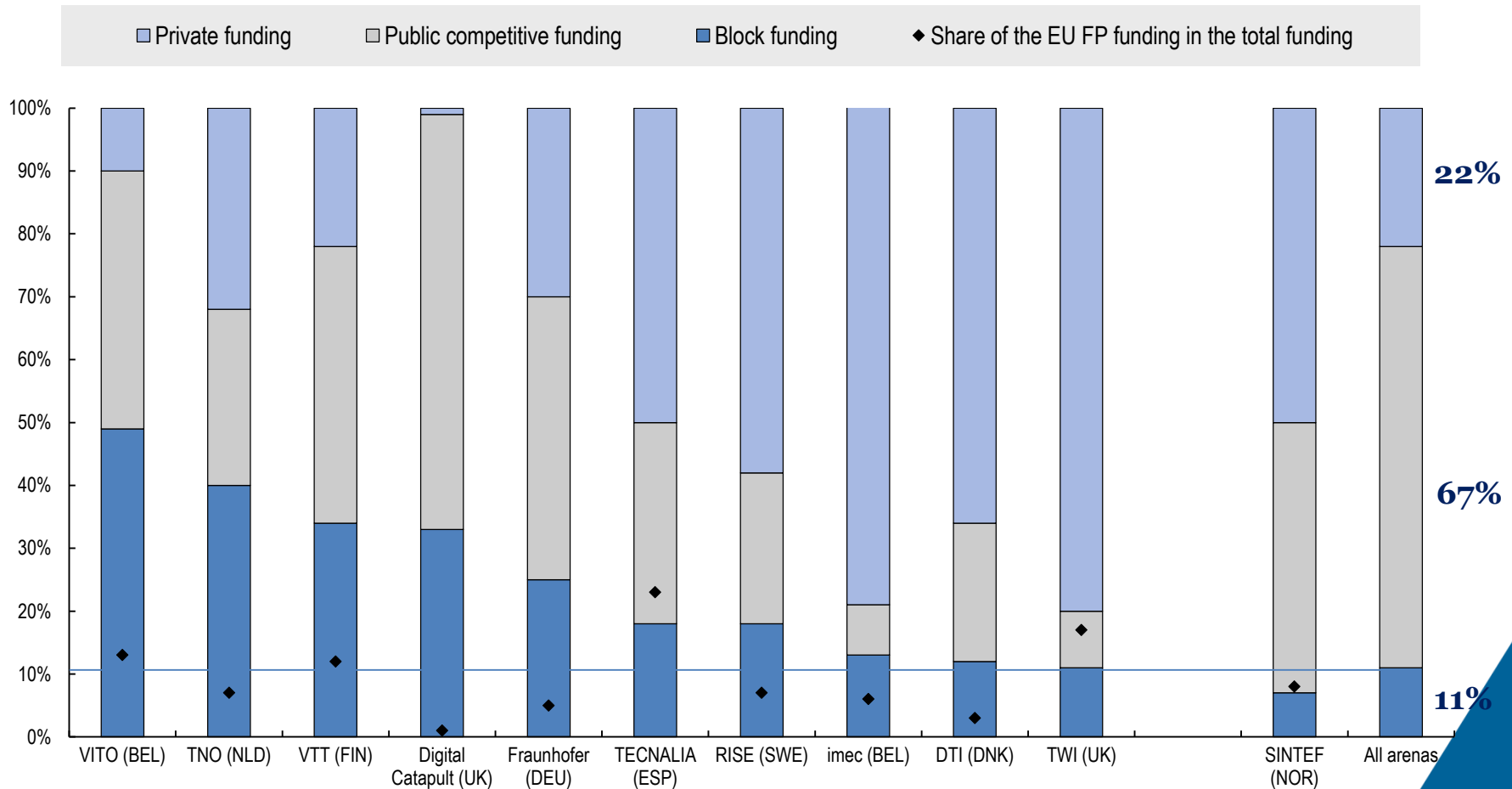
Sources of funds GOVERD in selected countries in 2016 (in % of GOVERD)

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)



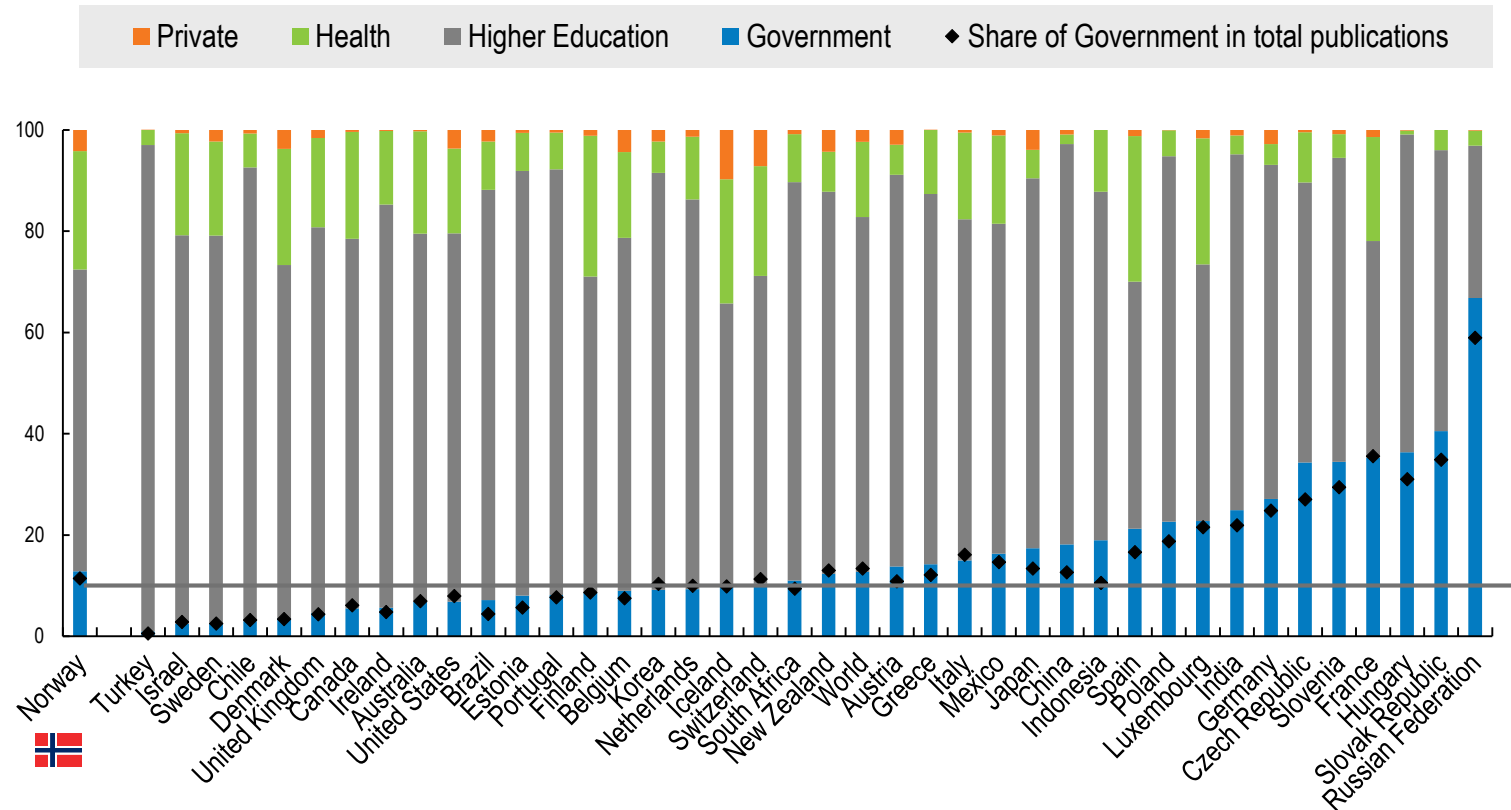
Source: NIFU, RCN and various institutes





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

- 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

- 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

- 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

- 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

- 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

- 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-THAT-NEW) MISSION FOR NORWEGIAN RESEARCH INSTITUTE: NEW MISSION-ORIENTED RESEARCH



New mission-oriented research initiatives

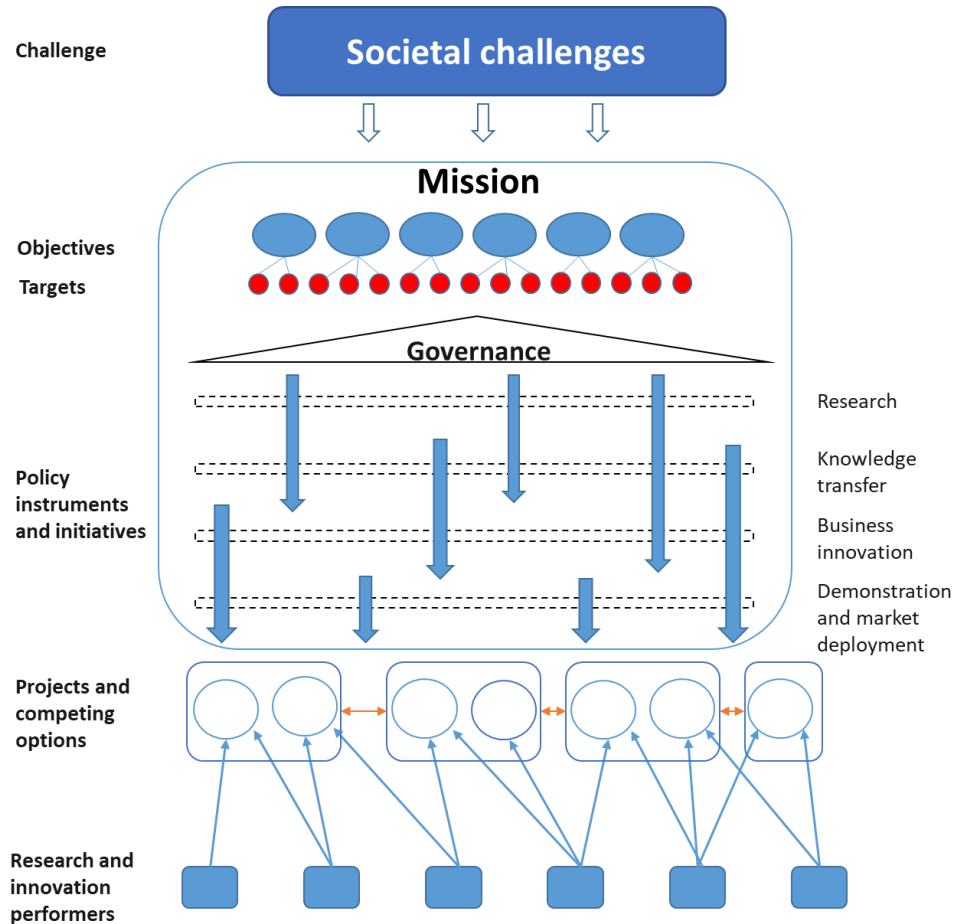
- Mounting pressure to solve societal challenges, SDGs are progressively shaping research agendas
- Growing interest of countries for “new” types of systemic research initiatives to support the transition
- New mission-oriented research initiatives : coordinated package of research and innovation activities 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



PILOT-E





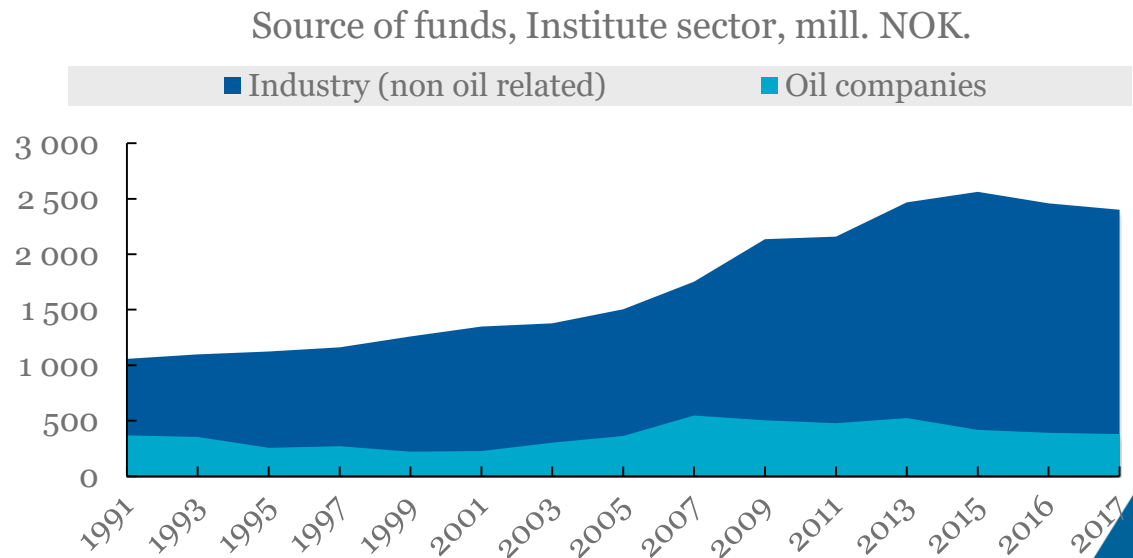
A 'mission-oriented recommendation' in the 2017 Innovation Policy Review

- 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



Source: NIFU, RCN and various institutes



Takk for oppmerksomheten!

