

## NORWAY

### Hot STI issues

- Continuing economic diversification, building on the resource base and other strengths.
- Focusing on global challenges and green growth.
- Fostering innovation in services, including public services.
- Strengthening internationalisation and the attractiveness of Norway as a location for research.

**General features of the STI system:** Norway has one of the world's highest incomes per capita, owing in part to its rich and prudently managed natural resources (hydrocarbons in particular) but also to a highly productive economy, including business services. As noted in the *OECD Reviews of Innovation Policy: Norway*, the country's productivity performance indicates a level of innovation activity above what the country's rather modest GERD (1.69% of GDP in 2010) would suggest. BERD (0.87%) is below the OECD median (Panel 1<sup>(d)</sup>) but entrepreneurship indicators, notably venture capital (1<sup>(h)</sup>), exceed this benchmark. Indicators related to the science base (1<sup>(a)(b)(c)</sup>) are around or slightly above the OECD median. Norway's RTA in environment-related technologies is strong and has increased significantly over the past decade (Panel 3). It is underspecialised in bio- and nanotechnologies and ICT, despite some improvement. The ICT infrastructure is very strong and near the top of the OECD. Aspects of commercialisation, especially the filing of patents by universities and public labs, are moderate (1<sup>(p)</sup>).

**Recent changes in STI expenditures:** R&D expenditures increased to USD 4.7 billion in 2010. Between 2005 and 2010 GERD grew annually by 3.9%, and publicly financed R&D by 6.8%, indications of the resilience of the economy and government's commitment to STI. In 2009, industry funded 44% of GERD, government funded 47%, and 8% was funded from abroad.

**Overall STI strategy:** The *White Paper on Innovation Policy: An Innovative and Sustainable Norway* aims to increase innovation through creative people and undertakings. The *White Paper on Research (2009-13)* defines nine research policy goals (four horizontal and five thematic). Strategies for green growth and for biotechnology were presented in 2011; strategies for nanotechnology and ICT are to be completed in 2012. Ocean21 commenced in 2011 as a continuation of the previous "21-strategies". Research on the High North is also a long-term strategic priority. The Research Council of Norway (RCN) also develops research strategies, both thematic and for overarching issues such as internationalisation and innovation.

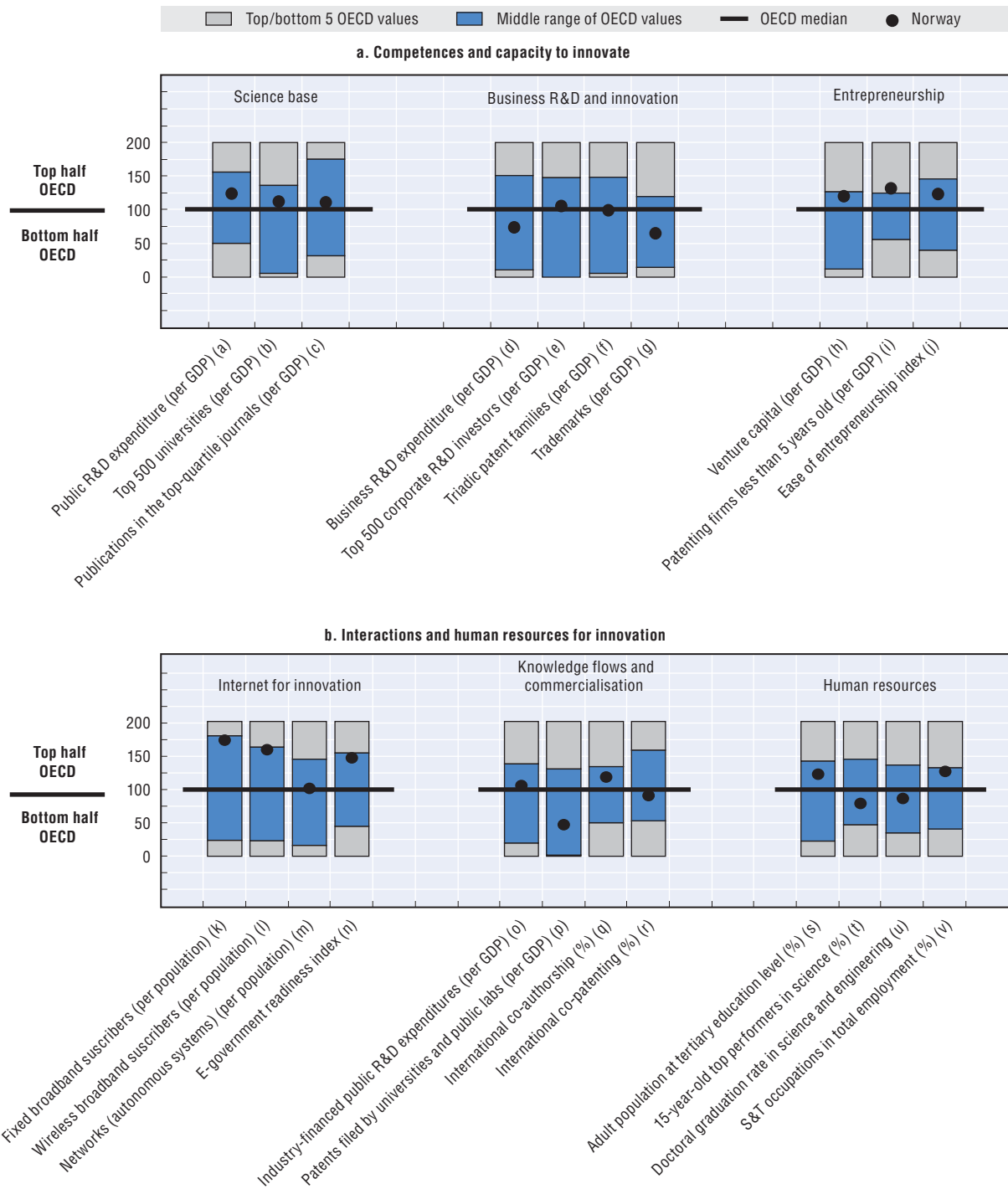
**STI policy governance:** The Norwegian ministries have overall responsibility for financing R&D in their sector. National priorities for research and innovation are formulated at government level. As the only research council in Norway, RCN is essential to the development and implementation of research and innovation policy and ensures co-ordination of research-related issues from basic research to innovation. RCN was reorganised as of 1 January 2011. Innovation Norway funds business innovation and regional development. It is now owned by the Norwegian Ministry of Trade and Industry (51%) and country authorities (49% on an equal basis). SIVA, the Industrial Development Corporation of Norway, provides practical

### Key figures

<b>Labour productivity, GDP per hour worked in USD, 2010</b> (annual growth rate, 2005-10)	<b>75.3</b> (-1.0)	<b>GERD, as % of GDP, 2010</b> (annual growth rate, 2005-10)	<b>1.69</b> (+3.9)
<b>Environmental productivity, GDP per unit of CO<sub>2</sub> emitted in USD, 2009</b> (annual growth rate, 2005-09)	<b>7.14</b> (+0.0)	<b>GERD publicly financed, as % of GDP, 2009</b> (annual growth rate, 2005-09)	<b>0.84</b> (+6.8)

Figure 10.31. Science and innovation in Norway

Panel 1. Comparative performance of national science and innovation systems, 2011



Note: Normalised index of performance relative to the median values in the OECD area (Index median = 100).

information and infrastructure services for innovation; it has part-ownership of science and research parks. The Norwegian Design Council promotes the use of design as a strategic tool for innovation. Innovation Norway and SIVA underwent a comprehensive evaluation in 2010. An evaluation of RCN is under way and expected to be completed in 2012.

**Science base:** The public sector is a major research performer in Norway. HERD is 0.55% of GDP and GOVERD is 0.28% of GDP. The government decided to discontinue the Research Fund from the beginning of 2012 as interest rate fluctuations undermined stable funding. It will be replaced by regular funding through the national budget. Performance and indicator-based allocation mechanisms are used in all branches of the public research system, including higher education institutions, to which 30% of the funds are allocated, research institutes and health trusts.

**Business R&D and innovation:** A relatively large share of BERD is performed by SMEs (Panel 2). The Skattefunn tax credit scheme is the single largest R&D support scheme for business, with an expected tax expenditure of USD 135 million for 2012. The main programme for R&D grants to businesses, BIA, is an open research arena in which firms compete on project quality without thematic restrictions. Sector-oriented and specific technology programmes are also in place. Special importance is given to design. There has been some shift from indirect to direct support for business R&D and innovation (Panel 4).

**Entrepreneurship:** There are several specific programmes for seed capital: Argentum, a fund-of-funds invests in VC and private equity funds from start-ups to buyouts. The investment firm Investinor AS invests equity directly in companies in the start-up and later-stage venture phase. For seed capital funds, state capital is provided as loans with a risk relief element.

**Clusters and regional policies:** Regional R&D and innovation are promoted in clusters via programmes such as the VRI and ARENA programmes as well as in centres of expertise (NCE), and are also financed by dedicated regional funds for R&D.

**Knowledge flows and commercialisation:** Several instruments foster knowledge flows, including centres of excellence (SFF), centres for research-based innovation (SFI) and centres for environment-friendly energy research (FME). In addition, the Industrial and Public Sector R&D Contract Programmes (IFU/OFU) stimulate innovative development co-operation. The FORNY 2020 programme and technology transfer offices promote commercialisation. A White Paper on intellectual property is expected in 2012.

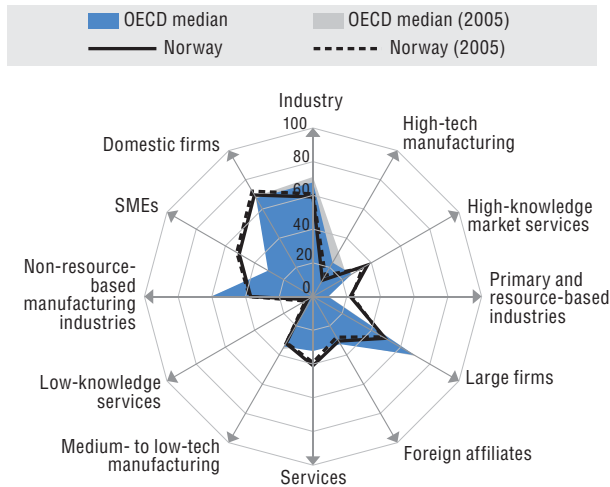
**Globalisation:** Internationalisation is an overall priority of the government's research and innovation policy. In 2010, RCN adopted a new internationalisation strategy under which all RCN activities must include clearly defined objectives and plans for international co-operation. In terms of funding, there is a shift from instruments dedicated to internationalisation towards including the internationalisation dimension in all activities. Norway actively promotes participation in European R&D programmes.

**Human resources:** Norway has a high share of the adult population with tertiary education (1<sup>(s)</sup>) and a high share of S&T occupations in total employment (1<sup>(v)</sup>). The Action Plan for Entrepreneurship in Education 2009-14 aims to strengthen students' personal skills, perspectives, creativity and innovative thinking. The Science for the Future Strategy 2010-14 promotes mathematics, science and technology. Career guidance and information is promoted via regional partnerships and career centres.

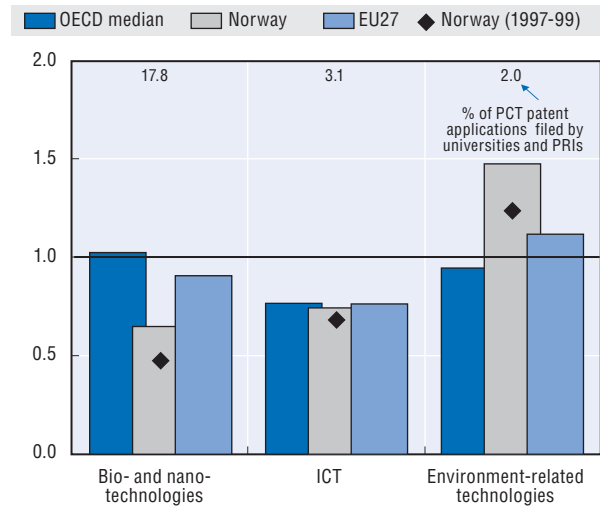
**Emerging technologies:** Green growth and environmental issues continue to develop as key areas for STI, alongside prioritised technology fields such as bio- and nano-technology, and ICT.

**Green innovation:** The Strategy for Green Growth supports green technology with a dedicated programme of USD 52 million (2011-13), including for offshore wind production facilities and green transport models. New centres for environment-friendly energy research (FME) have been established as has a new centre for climate research (Bjerknes Centre for Climate Dynamics).

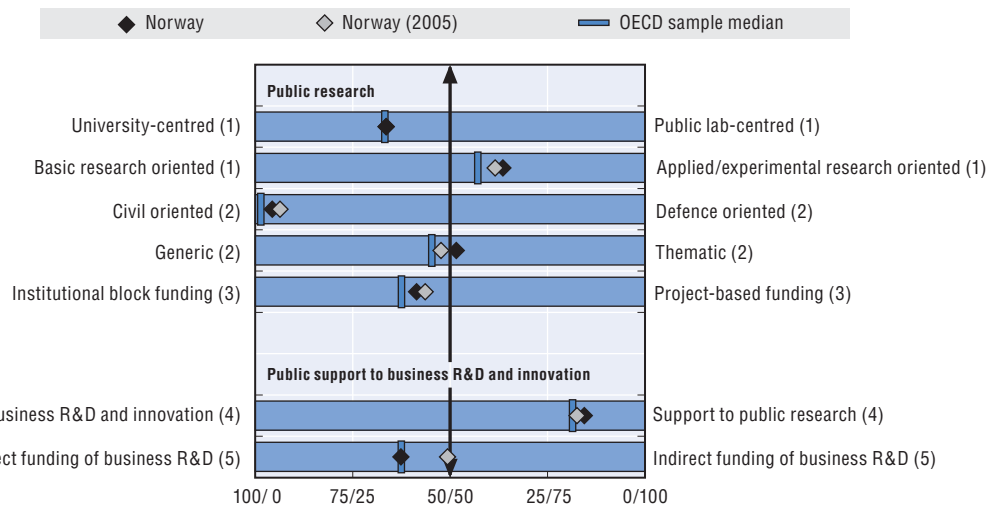
**Panel 2. Structural composition of BERD, 2009**  
As a % of total BERD



**Panel 3. Revealed technology advantage in selected fields, 2007-09**  
Index based on PCT patent applications



**Panel 4. Overview of national innovation policy mix, 2010**



1. Balance as a percentage of the sum of HERD and GOVERD.
2. Balance as a percentage of total GBAORD.
3. Balance as a percentage of total funding to national performers.
4. Balance as a percentage of the sum of HERD and GOVERD funded by government and higher education and components of (5).
5. Balance as a percentage of the sum of indirect funding of business R&D and innovation through R&D tax incentives and direct funding of BERD through grants, contracts and loans.

Source: See reader's guide and methodological annex.

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