

## THE NETHERLANDS

### Hot STI issues

- Building on strengths by focusing on the top nine performing sectors.
- Increasing R&D intensity to achieve GERD of 2.5% of GDP by 2020.
- Shifting the focus from subsidies to fiscal incentives and lower business taxes.
- Easing regulations to lower costs and increase efficiency and competitiveness.

**General features of the STI system:** The Netherlands has a well-performing knowledge economy, but GERD was a comparatively low 1.85% of GDP in 2010, similar to the level of three decades ago. BERD dropped from 1.07% of GDP in 2000 to 0.89% in 2010. It leans towards large manufacturing firms (Panel 2) and is leveraged by strong links with academia, with a high proportion of public research funded by industry (Panel 1<sup>(o)</sup>). The higher education sector produces world-class science and the relative number of PCT patents filed by universities and public labs is slightly above the OECD median (1<sup>(p)</sup>). The Netherlands' RTA is strong and growing in emerging technologies, has lost some momentum in environment-related technologies and has declined in ICT (Panel 3). Overall performance of human resources is good, with a tertiary attainment rate of 32% (1<sup>(s)</sup>), 39% of persons employed in S&T occupations (1<sup>(v)</sup>) and the sixth highest PISA scores in science for 15-year-olds (1<sup>(t)</sup>). The 6.2 researchers per thousand total employment is below the OECD median. Researchers are well integrated in international networks; 51% of scientific articles are produced with international co-authorship (1<sup>(q)</sup>), although a modest 19% of PCT patent applications are produced with international collaboration (1<sup>(r)</sup>). ICT infrastructures are well developed with 38 broadband and 44 wireless subscribers per 100 inhabitants (1<sup>(k)(l)</sup>). The Netherlands'

e-government readiness index is the second highest in the OECD (1<sup>(n)</sup>).

**Recent changes in STI expenditures:** GERD grew by a modest 0.9% a year over the five years to 2010, but is targeted to be 2.5% of GDP by 2020. In 2009, GERD was funded almost equally by industry (45%) and government (41%), and 11% was funded from abroad. Following the crisis, USD 214 million was made available to retain private-sector researchers in the labour force through secondment to universities and public research institutes. The Ministry of Education, Culture and Science (OCW) also reallocated USD 305 million to higher education.

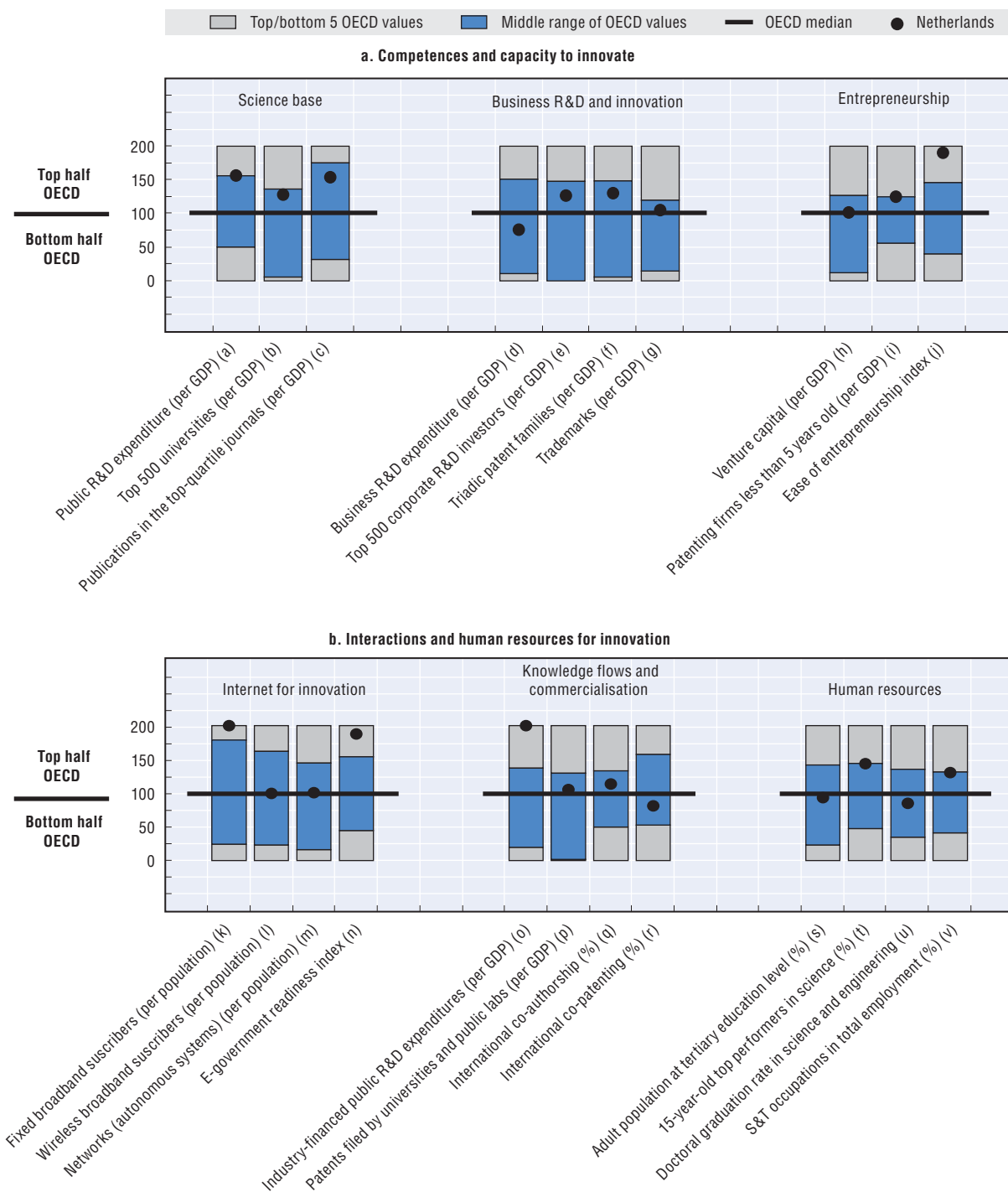
**Overall STI strategy:** A new strategy, To the Top: Towards a New Enterprise Policy, was launched in 2011 to reform an incoherent and ambiguous industrial policy and to become one of the world's top five knowledge economies. It focuses on nine top-performing sectors (agro-food, horticulture and propagating stock, high-technology materials and systems, energy, logistics, creative industries, life sciences, chemicals, and water), and on stimulating demand-driven innovation through access to corporate financing, better utilisation of knowledge infrastructure, and use of fiscal incentives. The strategy includes establishing public-private consortia for knowledge and innovation (Topconsortia voor Kennis en Innovatie – TKI), with funding of USD 662 million by 2015.

### Key figures

<b>Labour productivity, GDP per hour worked in USD, 2010</b> (annual growth rate, 2005-10)	<b>58.8</b> (+0.7)	<b>GERD, as % of GDP, 2010</b> (annual growth rate, 2005-10)	<b>1.85</b> (+0.9)
<b>Environmental productivity, GDP per unit of CO<sub>2</sub> emitted in USD, 2009</b> (annual growth rate, 2005-09)	<b>3.86</b> (+2.9)	<b>GERD publicly financed, as % of GDP, 2009</b> (annual growth rate, 2005-09)	<b>0.75</b> (+1.6)

Figure 10.29. Science and innovation in the Netherlands

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).

**STI policy governance:** To streamline a fragmented governance system, the Ministry of Economic Affairs, Agriculture and Innovation (EL&I) was created in 2010 and focuses on innovation. OCW focuses on education and science. The NL Agency is the central contact point for businesses, knowledge institutions and government bodies for information, advice, financing, networking and regulatory matters. The Dutch Research Council (NWO), the Dutch Academy of Science (KNAW) and the Dutch Bureau for Economic Policy Analysis (CPB) are also important governance organisations.

**Science base:** The Netherlands has a strong science base, with a high ratio of public R&D expenditures to GDP, highly rated universities and strong research publication outputs (1<sup>(a)</sup>(b)(c)). HERD was 0.75% of GDP in 2010, among the highest in the OECD.

**Business R&D and innovation:** The government recently reallocated USD 662 million to reduce business taxes; subsidies will be converted into loans. The *Research and Development R&D Promotion Act* (WBSO) is the main instrument for stimulating R&D by providing tax deductions on wages of R&D workers. The new Research and Development Deduction scheme introduced in 2012 offers tax relief for R&D-related investments. The Innovation Fund, with an annual budget of USD 159 million, provides loans and risk capital.

**Entrepreneurship:** There are few fast-growing SMEs and there is scope for improving the alignment of universities and enterprises (especially SMEs). The Ondernemersplein will be established as a 24-hour one-stop shop for information and advice for entrepreneurs in order to reduce administrative burdens for business. The Syntens Network assists SMEs through 15 national centres and 270 advisors. The Action Programme Education and Entrepreneurship is an EL&I/OCW initiative to stimulate entrepreneurship in education through exchanges between education institutions and entrepreneurs.

**ICT and scientific infrastructures:** To improve scientific research capabilities, the 2008 Roadmap for Large-Scale Research Infrastructure identified publicly funded facilities for boosting groundbreaking research with international collaboration. The Holst

Centre, a joint venture public-private partnership on shared technology roadmaps and research, and the SURF Foundation promote ICT innovation.

**Clusters and regional policies:** The top-sector approach builds on specialised knowledge developed in nine economic sectors chosen for that purpose, such as high technology, food and chemicals. Other schemes are Regional Attention and Action for Knowledge Circulation (RAAK) and Innovation Performance Contracts (IPC).

**Globalisation:** The Netherlands has a strong international orientation but has been unable to translate this into an inflow of foreign knowledge workers and knowledge-intensive businesses. The Higher Education Internationalisation Agenda and a number of bilateral agreements with other countries aim to increase international collaboration. The Innovation Research Incentives Scheme extends eligibility for NWO grants to foreigners. The Netherlands Organisation for International Cooperation in Higher Education (NUFFIC) and the Science Visa Package support internationalisation of education. Prepare2Start is a free service that promotes internationalisation.

**Human resources:** The National Platform for Science and Technology (Delta Beta Techniek) Initiative aims to promote STEM education in all age groups. The Innovation Research Incentives Scheme is a joint initiative of NWO, KNAW and universities to support researchers and promote the scientific profession. It has a budget of USD 199 million for 2012. In 2011 the Dutch Cabinet published a Strategic Agenda for Higher Education, Research and Science: Quality in Diversity to challenge entrepreneurs, researchers, teachers and students to excel. The Science Centre, NEMO, promotes a science and innovation culture.

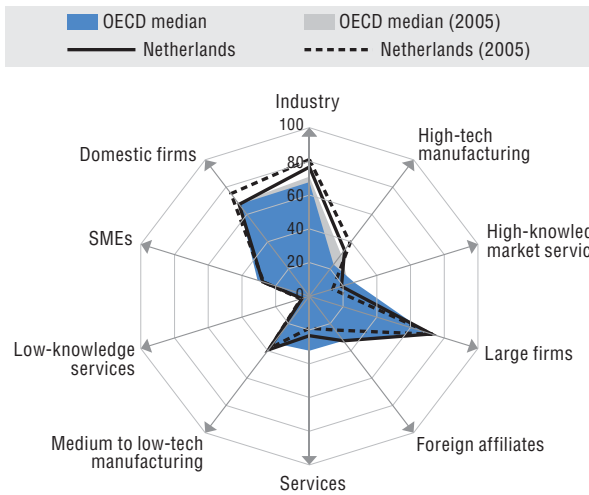
**Emerging technologies:** A number of emerging technologies are among the sectors listed in the Top Sector Strategy, e.g. high-technology systems and materials and life sciences. Point One conducts R&D on nanotechnologies, embedded systems and mechatronics.

**Green innovation:** Green innovation is a priority. A number of programmes support R&D in energy

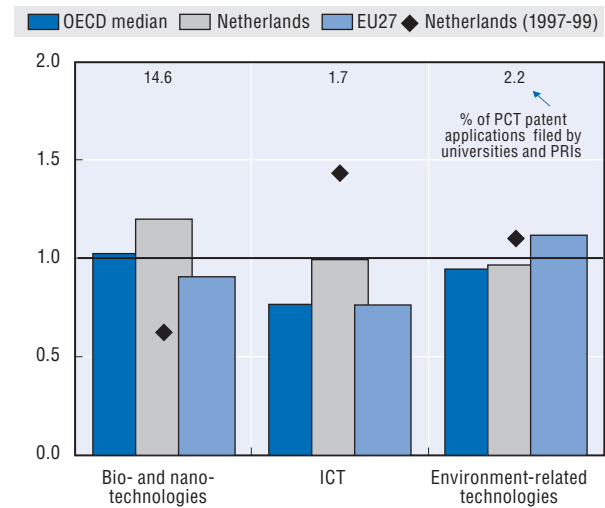
transition (EOS8 and UKR9) with a budget of USD 79 million. The Green Fund Scheme and the Venture Capital Scheme (TechnoPartner SEED

facility) provide tax rebates for investing in authorised green funds.

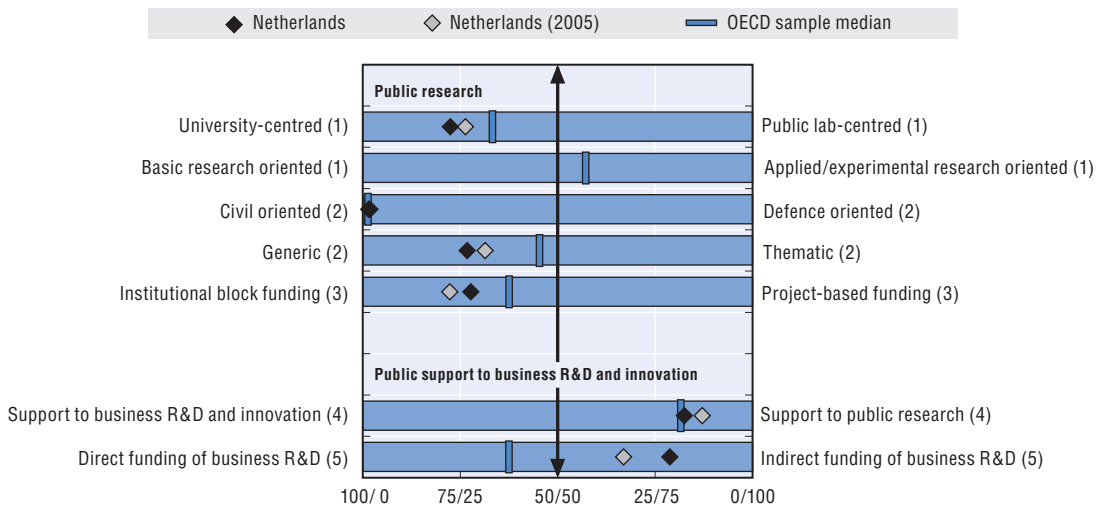
**Panel 2. Structural composition of BERD, 2009**  
As a % of total BERD



**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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