

**2015**

# Enterprise Policy Monitor



Ministry of Economic Affairs



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## Executive summary

The *Enterprise Policy Monitor 2015* is an annual publication by the Ministry of Economic Affairs and provides a detailed overview of the current progress of the enterprise policy. The Monitor is an annex to the *Report on Enterprise Policy 2015; 'Working Together on Innovation'*, which outlines the main policy developments. The Monitor sets out the most important facts and figures.

*Key data on enterprise policy, including top sector approach, 2010-2015*

	2010	2011	2012	2013	2014	2015
GCI (international position)	8	7	5	8	8	5
R&D intensity (as % of GDP)*	1.83	1.9	1.95	1.98		
of which Private R&D intensity*	0.83	1.08	1.10	1.10		
R&D intensity in top sectors (as % of added value)	-	4.2	4.2	4.2		
PPP projects (in millions)	-	-	-	622	814	
of which private share in PPP (in %)	-	-	-	35	44	
Labour productivity (international position)	5	4	5	5	6	5
Number of WBSO businesses	19,450	20,530	22,230	22,640	22,970	
Number of RDA businesses	-	-	13,860	16,160	16,620	
Science and technical student enrolments	84,085	78,958	79,180	79,670	80,205	
Relative development of top sectors versus overall economy						
Added value (2010=100)	100	100.7	100.7	102.3	100.7	
Labour productivity (overall economy=100)	100	100.9	101.5	102.1	100.2	

\* The year 2010 is the Ministry of Economic Affairs' own calculation based on change in unrevised figures for 2011/2010.

### The three central ambitions of the enterprise policy

- ✓ The Netherlands is to be among the world's top five knowledge economies (by 2020)
- ✓ An increase in Dutch R&D efforts to 2.5% of GDP (by 2020)
- ✓ Top consortiums for Knowledge and Innovation to which public and private parties contribute more than €500 million, of which at least 40% is financed by the business sector (by 2015)

### *The Netherlands to be back in the top five knowledge economies*

After a two-year absence, the Netherlands again ranks among the world's top five knowledge economies, according to the World Economic Forum (WEF) Global Competitiveness Index. In 2013 and 2014 the Netherlands was in eighth position, but rose to fifth in 2015. In doing so, it overtook Japan, Hong Kong, and Finland. The Netherlands improved its position primarily as a result of the positive macro-economic developments (a smaller government deficit and overall savings), labour market developments, and reforms to the financial sectors.

### *R&D efforts continue as before*

R&D investment – and private R&D investment in particular – has been increasing for a number of years now. This is a favourable development, as private R&D investment levels had previously lagged behind the international norm for some time. However, progress stagnated between 2012

and 2013. Provisional figures from Statistics Netherlands suggest that R&D investment by the top sectors increased by around 2% in 2013. Nonetheless, R&D intensity remained at the same level because the added value rose by a similar degree. The enterprise policy encourages investment in R&D in different ways. Of these, the WBSO and the RDA are the two largest schemes in terms of budget and target group penetration. The year 2014 saw a further increase in the number of businesses using these R&D tax-incentive schemes.

*Public and private investment in PPP projects well in excess of ambition for 2015*

The level of public and private resources in public-private partnerships (PPP) in 2014 is estimated to have been more than €800 million, with private contributions amounting to 44% on average. Compared to 2013 there was a substantial increase in the levels of private investment, as a result of which both objectives for 2015 were actually achieved in 2014. For PPPs for which a TKI (Top Consortia for Knowledge and Innovation) supplement may be applied, the 2016 Ministry of Economic Affairs budget contains a new target of €800 million for 2020, of which at least 40% concerns private funding.

*The Netherlands has a high level of labour productivity*

The Netherlands has one of the highest labour productivity rates in the world. This year, the country has maintained its fifth position. Labour productivity is a measure that gives an indication of the competitiveness of a business and of the prosperity of a country. The high level of labour productivity in the Netherlands is due, in part, to the top sectors, which in international terms are performing above average in that area.

*Greater of numbers of people with scientific and technical qualifications*

An important priority of the enterprise policy is that of raising the number of people with scientific and technical qualifications. Last year saw a further increase in the number of students enrolling on science and technical courses. This is the case with HBO (Higher Professional Education), WO (universities), MBO (Senior Secondary Vocational Education) – levels 3 and 4 – programmes.

*Top sectors growing faster than the rest of the economy*

Between 2010 and 2014, the added value of the top sectors grew faster than that of the economy as a whole. However, the growth in 2014 was lower, as a result of the decrease in the production of natural gas (which forms part of the Energy top sector). In the case of the figures 'corrected' for natural gas production, the added value in the top sectors increased by 4.6% in 2014, compared with 2.2% for the economy as a whole (excluding the energy sector).

This edition of Monitor also includes the following notable results:

- The enterprise policy makes a significant contribution to societal challenges and to the sustainability of the economy. Around €1 billion of the financial innovation instruments relates to sustainable initiatives (see Section 2.3).
- As a general purpose technology, ICT is important for innovation, and therefore for productivity and sustainable economic growth. The Netherlands is one of the world's leading digital economies and benefits from ICT more than other countries in relative

terms. Although ICT investments are not great from an international perspective, the degree to which ICT facilities are used in the production process of the Dutch business sector is higher than the EU average. In short, the Dutch business sector is very effective and efficient in its use of ICT (see Sections 3.3 and 3.5).

- Adults and students in the Netherlands are highly skilled compared to those in other countries. This was shown in previous international surveys, such as the OECD PISA (Programme for International Student Assessment) and PIAAC (Programme for the International Assessment of Adult Competencies). The country's eighth position on the Human Capital Index of the WEF in 2015 reaffirms this (see Section 3.4).
- Investment in intangible items (such as data, software, patents, designs, and new organisational processes) is relatively high in the Netherlands, when compared to other countries, and is increasing at a faster rate than are tangible items. Such investment makes a significant contributions to the increase in productivity (see Sections 3.2. and 3.5).
- Entrepreneurial capacity in the Netherlands has been on the rise for several years now. By international standards, the country is one of the most entrepreneurial in Europe. This can be largely attributed to the marked increase in the number of sole traders (see Section 3.6).
- The OECD has described the Netherlands as having the 'most competition-friendly regulatory environment'. And the country is taking further measures. Regulatory pressures are being relieved in various fields. Of the proposed €2.5 billion reductions in regulations, some €1.35 billion were achieved in 2015 (as measured in April 2015). The initial bottlenecks in the tailored approach were also resolved (see Section 3.6).
- Finally, each of the top sectors has its own unique and specialised knowledge base. These are often deployed beyond the scope of the sector in question and combined with the knowledge specialisations of other sectors – referred to as 'cross-overs'. The analysis of the TKI research programmes suggests that a large part of the research is aimed at uniting and combining the complementary knowledge specialisations of the various sectors (see Section 5.1).





## 1. Introduction: the progress of the enterprise policy

The *Enterprise Policy Monitor 2015* is an annual publication by the Ministry of Economic Affairs and provides a detailed overview of the current progress of the enterprise policy. The Monitor is an annex to the *Report on Enterprise Policy 2015: 'Working Together on Innovation'*, which outlines the main policy developments. The Monitor sets out the most important facts and figures, stating their economic relevance where possible.

### Purpose of this Monitor

The purpose of the enterprise policy Monitor is to enable entrepreneurs and administrators, members of parliament, researchers and other interested parties to gain an insight into the current progress and development of the enterprise policy. The Monitor helps make transparent what the enterprise policy does and delivers. Among other things, it gives a numerical overview of the use and effectiveness of the policy instruments. It also discusses the developments taking place in the top sectors. The figures from this Monitor, supplemented with specific qualitative information, provide input for the Progress Report on Enterprise Policy that is presented to the House of Representatives.

The Cabinet attaches great value to the monitoring of the enterprise policy and the measurement of its impact, in part due to the recommendations of the Theeuwes Committee.<sup>1</sup> The future policy results can only be properly measured if all relevant data are carefully monitored and recorded over time. The Ministry of Economic Affairs is therefore committed to ensuring that the progress of the enterprise policy is effectively monitored. This Monitor is an example of its efforts. It has recently been noted that the Ministry is increasingly better placed to demonstrate how it uses its resources (such as through the [volginnovatie.nl](http://volginnovatie.nl) website) and that, from an international perspective, it is at the forefront when it comes to exploring the options for reliable measurements of effects.<sup>2</sup> The OECD recently described the current evaluation methods associated with the enterprise policy as a strong point of Dutch innovation policy.<sup>3</sup>

### What is the enterprise policy?

The enterprise policy is a modern form of enterprise and innovation policy (or, put another way, a modern industrial policy), the key aspects of which are the creation of an outstanding enterprise climate and strengthening the innovative capacity of the Dutch economy. Enterprise and innovation make up the two most important pillars for growth in productivity, and therefore for sustainable economic prosperity and growth.

Three central ambitions were set down at the time of the launch of the enterprise policy, which are covered by this Monitor:

- ✓ The Netherlands is to be among the world's top five knowledge economies (by 2020);

<sup>1</sup> See response to 'Durf te meten: Eindrapport Expertwerkgroep Effectmeting' (Theeuwes Committee), 13 December 2012.

<sup>2</sup> Dialogic, 2015, INNOVEREN EN ONDERNEMEN MET BELEID; Analytische achtergrondstudie van de beleidsdoorlichting artikel 12 (innovatie) en 13 (ondernemingsklimaat) ministerie van Economische Zaken.

<sup>3</sup> OECD Reviews of Innovation Policy: Netherlands 2014. [http://www.oecd-ilibrary.org/science-and-technology/oecd-reviews-of-innovation-policy-netherlands-2014\\_9789264213159-en](http://www.oecd-ilibrary.org/science-and-technology/oecd-reviews-of-innovation-policy-netherlands-2014_9789264213159-en).

- ✓ An increase in Dutch R&D efforts to 2.5% of GDP (by 2020);
- ✓ Top consortiums for Knowledge and Innovation (TKIs) to which public and private parties contribute more than €500 million, of which at least 40% is financed by the business sector (by 2015).

As the ambitions for TKIs were formulated for the years up to 2015, the Ministry of Economic Affairs budget for 2016 contains new a target of €800 million for 2020, of which at least 40% concerns private funding.<sup>4</sup>

The enterprise policy has a largely *generic* character (aimed at and in principle open for all businesses, be they start-ups, young companies, or established firms in the Netherlands), the primary purpose of which is to promote innovation, to reduce regulatory and administrative burdens, to ease access to venture capital, to improve the services provided by public bodies (such as the Chambers of Commerce, *Ondernemersplein*, and *E-overheid*) and to enhance fiscal and other support for businesses.

The enterprise policy also has a *specific* track as part of its top sector approach. Top sectors are clusters of businesses and knowledge institutes in which the overwhelming majority of Dutch research and development expenditure is concentrated, and which are generally export intensive. The top sector approach involves businesses, researchers, education institutes and government bodies working hand-in-hand on developing and implementing innovation agendas and on competition strategy. This specific policy approach has an integrated character, as it is aimed at the formation of the programmes of joint research agendas (through the TKIs) as well as at the availability of technical and other employees (Technology Pact), at targeted and coordinated economic diplomacy, at attracting foreign investment, at identifying and eliminating laws and regulations that form a burden for a particular sector, at participating in European research programmes, at using ICT applications, and at promoting more environmentally friendly energy consumption based on biomaterials. Because the specific character of each of the top sectors (technology, nature of the economic activity, specific burdens) is different, there is a corresponding variation in specific policies and approaches for each sector. This involves a tailor-made approach aimed at more and improved public-private partnerships, in which it has been established that it would increase the likelihood of innovative enterprise.<sup>5</sup> Innovation-related problems are not addressed in isolation (or in relation to one single facet), but collectively. In practice after all, financing problems, the availability of the right people, and the elimination of burdensome regulations have to be tackled at the same time.

The enterprise policy assists in the growth of prosperity because much of the innovation and renewal of products, production processes, services, and businesses not only create added economic value, but also contribute towards solutions to societal bottlenecks, such as in the field

<sup>4</sup> This relates only to PPP projects that serve as a basis for a TKI supplement.

<sup>5</sup> For example, see: Faems, D., Looy, B. van & Debackere, K. (2005). Interorganizational Collaboration and Innovation: Toward a Portfolio Approach. *Journal of Product Innovation Management*, Vol. 22, pp. 238-250; Hulsing, J.P.J. de & Hulsink, W. (2010). Patterns of innovation networking in Dutch small firms. *EIM Research Reports*, H201002.

of medical technology, water management, and the sustainable use of energy and materials. By way of example, technologies and innovations of this kind offer better protection against flooding, they lead to better levels of health, while at the same time creating new opportunities for Dutch businesses in domestic and international growth markets. This benefits productivity, prosperity, and well-being in the Netherlands.

The launch of the new enterprise policy in 2010 marked an essential change to the character of the policy approach. A systemic break with the past was achieved (more tax facilities, fewer subsidies, incentives to encourage more venture capital and private contributions, and greater public-private collaboration). Since the adoption of the new policy, businesses, knowledge institutes, and government have been working shoulder to shoulder to make the Netherlands economically strong and internationally competitive, whilst simultaneously tackling the relevant societal challenges.<sup>6</sup> Top sectors are not traditional sectors, because their activities extend beyond the traditional sector boundaries ('cross-overs').

### Increasing amounts of information on the enterprise policy

Every year, the information on the enterprise policy is becoming increasingly detailed. This year, for example, the Monitor includes an international comparison of the top sectors; it also presents the first results of 'cross-overs' between top and other sectors. Statistics Netherlands has again carried out a survey for the top sectors.<sup>7</sup> For each top sector, a large quantity of key indicators and figures are now available for the years 2010-2013. As well as a flash estimate for 2014 for the top sector as a whole, there have this year, for the first time, also been flash estimates for each top sector for a number of key variables, allowing as up-to-date a picture as possible.

Although the amount of information about the enterprise policy is increasing, it is not yet possible to make any definitive statements on how effective or efficient it – or any part of it – is. The eventual effects of the enterprise policy on 'outcome' variables like economic growth and productivity will only become apparent in the medium to long term. However, this does not detract from the fact that the developments relating to key indicators described in this Monitor give an indication of the progress that the enterprise policy has brought about.

### Structural versus cyclical aspects

As in the two previous editions, many of the statistics presented in this Monitor underline the sound structural foundations and strong starting points of the Dutch economy, and in particular of the Dutch business sector. The Netherlands has one of the highest levels of prosperity and productivity in the world. The Dutch economy is a small open economy that depends very much on developments elsewhere in the world. The figures on the developments relating to the enterprise policy cannot therefore be viewed in isolation from global economic circumstances.

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<sup>6</sup> See '*Nederlandse oplossingen voor wereldwijde uitdagingen*', an annex to the letter of Minister Kamp and State Secretary Dekker to the House of Representatives in November 2013 (TK 2013-2014, 32637, No. 70). This Monitor provides an up-to-date account of the proportion of sustainability and green growth in the innovation instruments (see Section 2.3).

<sup>7</sup> The Statistics Netherlands Monitor Top Sectors 2015 is being published simultaneously with this edition of the Monitor.

Last year, the Dutch economy showed signs of a cautious recovery, a trend that has continued this year. According to the Netherlands Bureau for Economic Policy Analysis (CPB), the economy will grow in 2015 and 2016 by 2.0 and 2.4% respectively, despite the lower levels of gas production.<sup>8</sup> As ever, world trade is an important factor for open economies such as that of the Netherlands. However, the greater levels of spending – by consumers and investors alike – are now also important elements for the growth of the economy. The improving economic situation is providing a boost to the employment market, too. Employment in the private sector, for example, grew by 1.0% in 2015, and is set to rise by 1.3% in 2016. Unemployment, meanwhile, fell to 620,000 in 2015 and will stand at 600,000 in 2016, according to the CPB.

The adverse macroeconomic conditions at the time of the launch of the enterprise policy are visible from the performance of the business sector, and in particular in that of the top sectors. The developments in the top sectors can be viewed in context by comparing the results from the top sectors with macroeconomic developments.

#### What sources were used?

This Monitor contains the most important data for the enterprise policy. The data has been derived from various sources, such as Statistics Netherlands (including the publication '*Monitor Topsectoren 2015*'), Eurostat, the Dutch Central Bank (De Nederlandsche Bank, DNB) and the Netherlands Enterprise Agency (RVO.nl). Wherever possible, Dutch data is compared over time as well as internationally, drawing on such sources as the OECD and the World Bank. The basic data, including technical explanations, are available from [topsectoren.nl](http://topsectoren.nl) and [volginnovatie.nl](http://volginnovatie.nl).

#### Guide for the reader

The Monitor is organised as follows. Chapter 2 sets out the logical policy framework of the enterprise policy and its relationship with productivity, sustainable economic growth, and prosperity. It also shows where the Netherlands stands with regard to productivity, reducing the environmental burden, and the proportion of sustainability and green growth in its range of instruments. Chapter 3 gives an insight into important factors behind productivity such as R&D, ICT and other investments, human capital, and the business climate. The policy mix of the enterprise policy is designed to influence these factors behind sustainable productivity growth. An explanation is provided on why and how the enterprise policy is connected to these factors. Chapter 4 casts light on the importance and the development of the top sectors. It offers a summary of the most important data, places the top sectors in their international context, analyses the use of instruments by top sectors and describes the progress made towards achieving the ambitions of the enterprise policy. Finally, Chapter 4 contains two special topics, i) cross-overs and top sectors, and ii) regions as network partners of the enterprise policy. Cross-overs between sectors, including top sectors, are an important part of the top sector approach, where PPP projects form the heart of the innovation policy in the top sectors. The second special topic looks at the importance of the regions as network partners in the enterprise policy.

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<sup>8</sup> For the most recent estimates, see: <http://cpb.nl/>. The lower levels of gas production are reflected in the performance of the Energy top sector (see Chapter 4).

## 2. The enterprise policy and sustainable economic growth

### 2.1 Policy theory and policy logic

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*The creation of an outstanding enterprise climate and strengthening the innovative capacity of the Dutch economy are the key aims of the enterprise policy. Enterprise and innovation make up the two most important pillars for growth in productivity, and therefore for sustainable economic prosperity and growth. Growth in labour productivity therefore occupies a prominent position in the policy logic of the enterprise policy. The logical policy framework describes the relationship between productivity, sustainable economic growth, and prosperity.*

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Growth in labour productivity occupies a prominent position in the enterprise policy. Labour productivity is a measure that gives an indication of the competitiveness of a business. This is because productivity indicates how efficiently a business is operating. Being more productive than your competitors or more than in the past means you are producing more with the same number of people (labour) and machines (capital) – in other words, you are creating greater added value. This indicator is also important for a country, as it says something about prosperity and economic growth.

Growth in productivity is, as well as the growth of supply of labour, the most important determinant of economic growth. Over time it is, after all, the growth in labour supply and that of labour productivity that determine the potential extent of the economic growth of a country. Because the Netherlands has to depend primarily on growth in productivity – given the predicted reduction in the supply of labour<sup>9</sup> – the emphasis in the policy objectives lies on determinants behind growth in productivity: innovation and the quality of the business climate. In short, greater productivity increases the international competitive strength of businesses, is an important driver for achieving sustainable economic growth, improves the prosperity of the population, and expands the economic potential for government expenditure.

Many present-day innovations not only create added economic value, but also contribute towards solutions to societal bottlenecks, such as in the field of medical technology, water management, and the sustainable use of energy and materials. This benefits productivity, prosperity, and well-being in the Netherlands and beyond. A cleaner environment is therefore not necessarily a hindrance to economic growth.<sup>10</sup>

Figure 2.1 sets out the logical policy framework of the enterprise policy and its relationship with productivity, sustainable economic growth, and prosperity. This policy framework has been inspired by the endogenous growth theory and distinguishes five determinants of labour productivity growth – R&D and innovation, market conditions and human capital, capital deepening

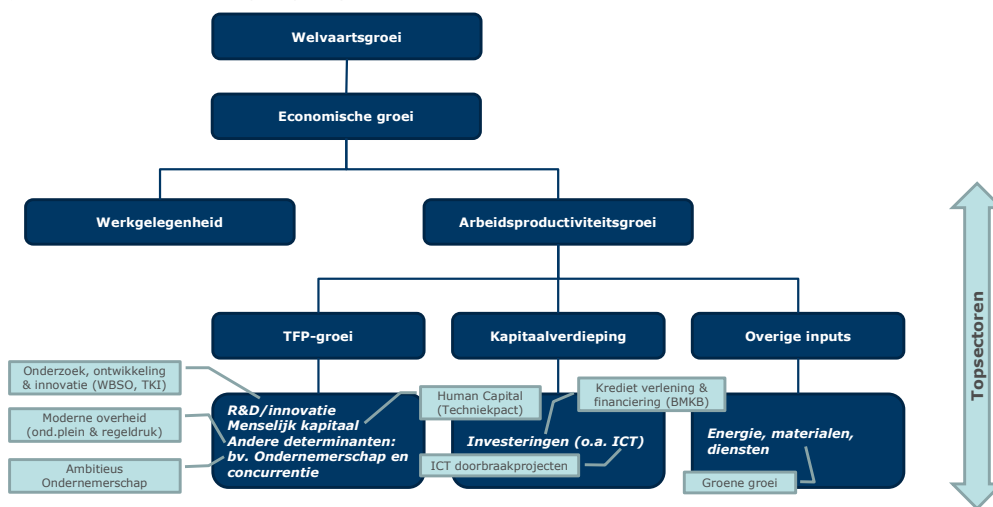
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<sup>9</sup> See CPB, 2014, Roads to recovery.

<sup>10</sup> GDP is a narrow definition of prosperity. For example, GDP takes no account of the quality of the natural living environment, as this is not reflected in a market price. The same thing applies to such aspects as leisure time and social cohesion. However, these are all covered by the broader definition of prosperity. In other words, GDP may rise while prosperity declines.

or investments and other inputs such as energy and materials. The first three factors in particular are, according to the endogenous growth, crucial for growth in productivity in the long term. Economic research has shown that R&D/innovations, human capital, and the business climate are determining factors behind the growth of total factor productivity (TFP) – the smart and combined use of production factors.<sup>11</sup>

Figure 2.1 Relationship between policy themes and growth in labour productivity, economic growth, and increase in prosperity.



The light blue blocks in Figure 2.1 set out in outline terms the deployment of the various components of the enterprise policy that are relevant to certain factors behind growth in productivity.<sup>12</sup> The enterprise policy is based in the first instance on a traditional economic motivation behind government policy: the *market perspective*, with an emphasis on imperfections in how the market operates and in government behaviour. In the market perspective, individual businesses and the business environment are the cornerstones, and the emphasis lies in removing imperfections in the operations of the market. Government policy is legitimised by the existence of market imperfections, such as positive external knowledge and other effects (as in the case of stimulating R&D, for example), preventing negative external effects (as in the case of sustainable raw materials, for example), information asymmetry (on the capital market), and deficiencies in coordination (in the case of public-private partnerships).

The enterprise policy is undergoing a transition from a *market perspective* to a more systemic-theoretical motivation behind government policy: the *system perspective*, with an emphasis on imperfections in the operations of innovation and eco systems. The key element in the system perspective is not just the entrepreneur, but also the interaction between businesses, knowledge

<sup>11</sup> According to neoclassical thinking, TFP is growth in productivity that is not caused by more inputs or investment.

<sup>12</sup> It should be pointed out that the components of the enterprise policy often relate to more than one determinant. In the long term, the growth in employment is determined primarily by labour market institutions and by the size of the population of working age.

institutes, and government bodies. This is the case in the top sector approach and the Technology Pact, for example. The emphasis then lies on the elimination of imperfections in how innovation and eco systems operate, such as inadequate or missing links between businesses, knowledge institutes, or government bodies.

Figure 2.1 is the basis for the subsequent structure of this Monitor. Later in this chapter, we examine in Section 2.2 the position of the Netherlands in terms of productivity and competitiveness. Section 2.3 of this chapter concludes with the developments relating to green growth and the societal challenges and their relationship with sustainable economic growth. In concrete terms, this section shows what the latest proportions of green growth and sustainability are in the budgets and projects of the innovation instruments.

## 2.2 Productivity and competitiveness

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*The Netherlands has one of the highest labour productivity rates in the world. This year, the country has maintained its fifth position. Between 2009 and 2012, growth in labour productivity lagged clearly behind countries like the USA. This recovered after 2012. The high level of productivity in the Dutch economy is determined in large part by the good productivity performance of industry, when compared to other countries. After a two-year absence, the Netherlands again – in fifth place – ranks among the world's top five knowledge economies. This represents a rise of three places from 2014. The Netherlands improved its position primarily as a result of the positive macro-economic developments (a smaller government deficit and overall savings), labour market developments, and reforms to the financial sectors. Areas for attention remain R&D expenditure, the labour market, and the financing market.*

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### Productivity

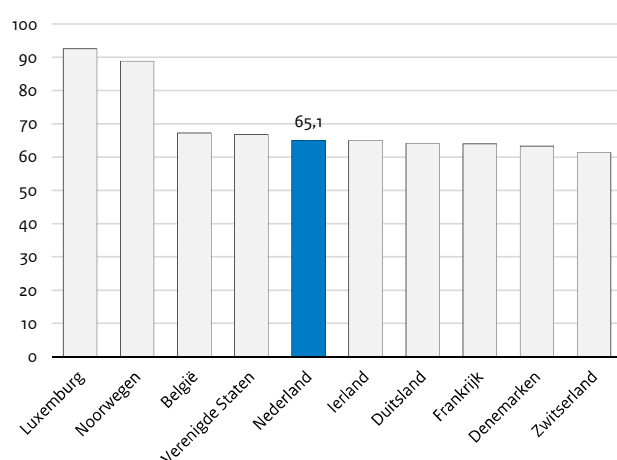
For many years, the Netherlands has had a high level of labour productivity, when compared to other countries. Figure 2.2 shows the top 10 countries. As in the previous two years, the Netherlands has been ranked fifth in the worldwide rankings, according to the most recent figures from the Conference Board. A high level of labour productivity suggests that businesses in the Netherlands generally operate innovatively and efficiently. Luxembourg has the highest level of labour productivity, closely followed by Norway. Both countries scored relatively favourably because of their specific production structure (the financial sector in Luxembourg, and oil and gas production in Norway).

In the case of the Netherlands, the historic comparison with the USA is of particular interest. Worldwide, the USA is regarded as a leader when it comes to productivity, and indeed ranks fourth on the Conference Board list. Compared to the USA, the development of productivity in the Netherlands in recent years has been disappointing (see Figure 2.3). From the mid-1970s, the Netherlands achieved greater productivity than the USA for more than thirty years. This has not been the case since 2009.

Between 2009 and 2012 especially, it lagged behind the USA when it came to growth in productivity. It appears that the Netherlands was hit harder by the unfavourable financial and

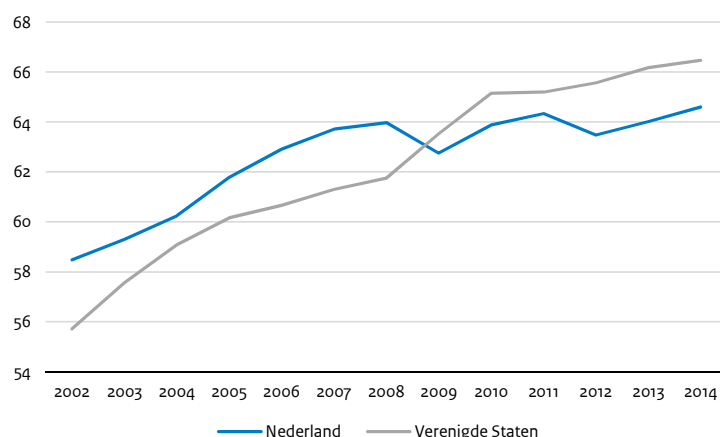
economic conditions of the time. As was described in the Enterprise Policy Monitor last year, the disappointing levels by which productivity rose in recent years was due largely, according to the CPB, to the fact that Dutch businesses got rid of fewer people during the recession – the ‘labour-hoarding effect’.<sup>13</sup> This effect was a significant aspect of the first few years of the economic crisis in particular. The combination of extensive financial resources and the shortage on the labour market prior to the economic crisis made businesses cautious about laying off employees whom they may have subsequently needed. Labour productivity rose again last year, and productivity is again expected to increase this year.

Figure 2.2 Top 10 countries with highest level of labour productivity (in hours worked), 2015



Source: Calculations based on The Conference Board Total Economy Database, January 2015  
<http://www.conference-board.org/data/economydatabase/>.

Figure 2.3 Labour productivity per hour worked: Netherlands and United States, 2002-2014



<sup>13</sup> Labour hoarding is where businesses keep employees on whom they do not actually need at the time. Businesses are expecting their turnover to recover and do not wish to lose their employees. This saves on redundancy costs and the expenses involved in looking for new employees.

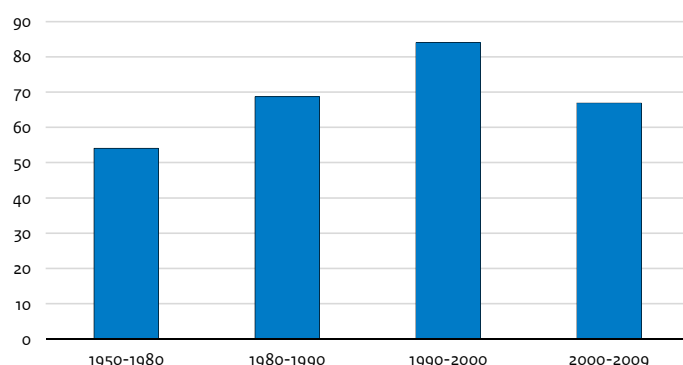


Source: Conference Board (2015); in \$, converted to 2014 price level, with updated 2011 PPPs.

The sound position of the Netherlands at the macro level is determined largely by the strength of its economic structure, including the top sectors. On average, the top sectors have a high level of productivity compared to those in other countries. This is examined separately in Section 4.3. Here, we look at the productivity of Dutch industry, which incidentally makes up a significant proportion of the top sectors. Internationally, Dutch industry ranks in the top three. Compared to American industry, it is 25% more productive. The productivity performance of industry is also very important for the development of macro-level productivity. For example, the contribution by industry to the rise in labour productivity of the entire Dutch economy amounted to almost 70% between 2000 and 2009 (see Figure 2.4).

The relatively high level of productivity at the macro level and in industry is related to the great efforts made in the field of innovation, human capital, and the favourable business climate in the Netherlands. These areas are dealt with in greater detail elsewhere in Monitor.

*Figure 2.4 Contribution by industry to growth in labour productivity in the Dutch economy, 1950-2009*



Source: Statistics Netherlands, EZ's own calculations.

### Competitiveness: Global competitiveness index

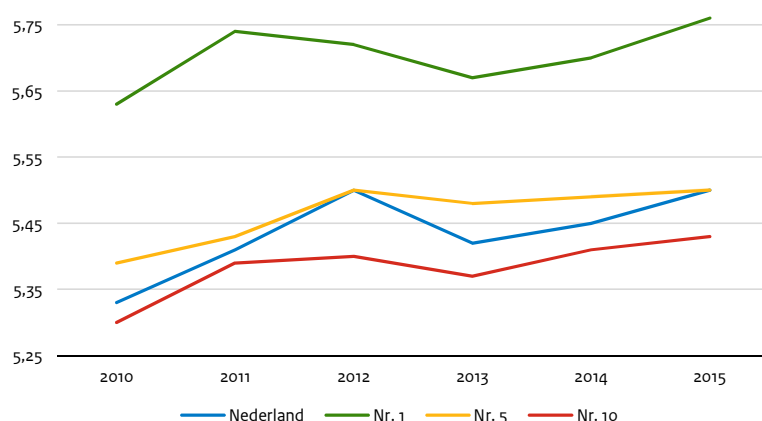
One of the main ambitions of the enterprise policy is for the Netherlands to be among the world's top five knowledge economies by 2020. This ambition is measured against the Global Competitiveness Index (GCI) of the World Economic Forum (WEF). The position of each country on this index is determined on the basis of more than 100 indicators, divided across twelve themes. The information that is used for compiling the index is taken from data from the World Bank, the IMF, UNESCO, and elsewhere. To measure the more qualitative and subjective aspects of the business climate, and to acquire information for indicators for which no data is available, GCI also uses a self-devised survey among business people and top-level company managers.<sup>14</sup>

<sup>14</sup> More than 13,000 managers are surveyed worldwide; in 2015, this included 83 respondents in the Netherlands.

After a two-year absence, the Netherlands has returned to the top five. It overtook Japan, Hong Kong, and Finland and now occupies fifth place. Only Switzerland, Singapore, the USA, and Germany are above the Netherlands.

Its improved position in the rankings was evident last year when it was performing better in absolute terms (see Figure 2.5). The distance from the top five shrank, but this did not result in an immediate improvement of its position in the rankings. In 2015, the Dutch score rose by another 0.05 points. This was the result of regaining a top-five position in the knowledge economy rankings. However, the distance by which it trails the top-placed country remains unchanged.

*Figure 2.5 Position of the Netherlands in global competitiveness index, 2010-2015*



Source: World Economic Forum, 2015, Global Competitiveness Index.

Its rise in the rankings can be largely attributed to improvements in areas where the country performed less well in recent years. There was a particularly notable improvement (from 39th to 26th) in the 'macroeconomic environment' category. This is strongly related to the steps that have been taken to reduce the budget deficit and to get the government's finances in order. The Netherlands also moved upwards in the 'labour market' and 'financial market' categories, from 21st to 17th and from 37th to 31st respectively. A notable aspect of the latter theme is that the absolute score actually fell (by 0.12 points), but the same was true of other countries – sometimes to a greater degree.

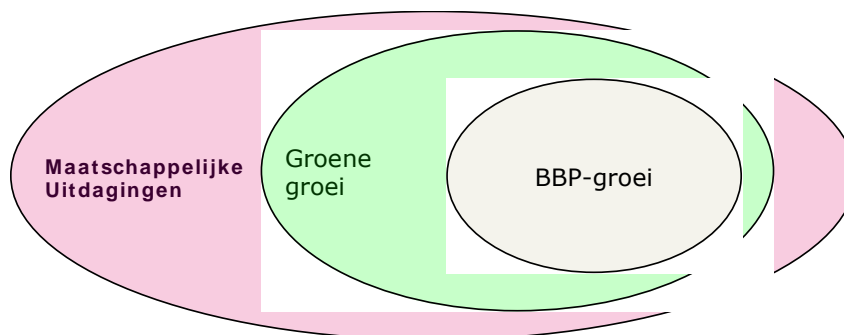
The WEF also pointed out certain areas for attention. Continued dedication to innovation will be needed, not least as other countries are active in this area. The Netherlands fell five places in the 'capacity to innovate' category, and the WEF referred to the possibility of declining private R&D investment (18th position). Otherwise, the labour market and the financial market continue to be areas for attention. The absolute score for the Netherlands for the financing category is now one full point lower than it was before the economic crisis (in 2007).

## 2.3 Sustainability and green growth in the enterprise policy

*The enterprise policy makes a significant contribution to societal challenges and to the sustainability of the economy. Around €1 billion of the financial innovation instruments relates to sustainable initiatives. Dutch businesses help towards meeting societal challenges in such areas as food, energy, security, health, water, mobility, climate, reduction in dependency on fossil fuels, and sustainability. For many indicators, there is an absolute disconnection between environmental pressures and economic growth. In the case of energy, there is a relative disconnection – energy use has grown less quickly than has the economy. It is striking that the environmental pressures in the top sectors decreased even more strongly than in the Netherlands as a whole because a number of top sectors such as Energy, Chemicals, Logistics, and Agri & Food have traditionally had relatively high environmental pressures.*

New technologies and innovations play an important role in making the Netherlands greener. Innovations lead to new products, services, materials, production systems, and energy sources that can be used in resolving societal issues, including making the economy greener (such as sustainable energy, sustainable materials, sustainable transport, material and energy-efficient machines). This will make production processes less environmentally burdensome, while dependency on fossil materials and fossil energy sources will diminish. Such innovations also offer new opportunities for Dutch companies in domestic and international growth markets. This means that the enterprise policy is contributing to societal prosperity along two routes: 1) innovation has the effect of increasing productivity, and 2) it provides solutions to sustainability and societal challenges.

Figure 2.6 Decoupling the concepts of sustainability, societal challenges, and green growth



This section provides a picture of the degree to which the enterprise policy contributes towards sustainability, societal challenges, and green growth. The concepts of sustainability, societal challenges, and green growth are sometimes erroneously used synonymously. Figure 2.6 shows how the terms can be defined in relation to each other:

- ✓ *Sustainability* is the broadest term. When developing indicators for sustainability policy, it is standard practice in the Netherlands to use the description that has been devised by Statistics Netherlands, the National Institute for Public Health and the Environment (PBL),

and the CPB, and which is used in the Sustainability Monitor of the Netherlands.<sup>15</sup> It defines sustainability as 'a development that meets the needs of the present generation without compromising the development potential of future generations or people in other parts of the world.' This broad definition of sustainability contains multiple dimensions, including prosperity and health, personal living circumstances, security, social inequality and social participation, natural, human, economic and social capital, environment and raw materials, and trade and aid. The Sustainability Monitor of the Netherlands reports in detail on this *broad definition of sustainability* every two years.

- ✓ The enterprise policy uses a *narrow definition of sustainability* that is closely related to the description of the societal challenges that are used in the EU's Horizon 2020 Grand Challenges programme; an extensive report on this appeared in the previous edition of the enterprise policy Monitor.<sup>16</sup> This narrow definition of sustainability is limited to the general aspects that are relevant to the enterprise policy: green transport, a safe society, clean energy, climate, resource and raw material efficiency, food safety, sustainable agriculture and bio economics, health and prosperity, and the 'inclusive' society.
- ✓ One of the important societal challenges is of course the 'greening' of the Dutch economy, as set out in the '*green growth*' policy of the present Cabinet, in which the relationship between economic growth and environmental burdens is a key feature (absolute and relative decoupling).<sup>17</sup> The aim here is economic growth in tandem with more sustainable use of energy, materials, raw materials, and water, while limiting environmentally harmful emissions into water, the air, and the ground. The 'green growth' strategy of the Cabinet is aimed at the fields of energy, bio-based economy, climate, construction, food, mobility, and water. A report was recently issued on this by the Cabinet in the '*Tussenbalans Groene Groei*'.<sup>18</sup>

This section gives the latest information on the most important indicators relating to green energy, based on the figures recently published by Statistics Netherlands. It also presents the initial results from several green growth indicators for the top sectors. In addition, it provides – for the first time – a complete and cohesive overview of the degree to which the innovation policy instruments contribute to both the 'societal challenges' (according to the narrow definition of sustainability) and 'green growth'. This statistical overview shows that stimulating innovative and competitive strength substantially helps promote sustainability and green growth in the Netherlands.

### What progress has the Netherlands made in the field of green growth?

Economic activities in the Netherlands are causing less and less harm to the environment in the country because of the decrease in emissions and in the use of raw materials. The emissions of greenhouse gases, the discharge of heavy metals into water, and the overall amount of waste produced have fallen since 2001, even though the economy has grown in the meantime (see Figure 2.7). This is primarily the result of improvements in environmental efficiency and production

<sup>15</sup> Statistics Netherlands, *Monitor Duurzaam Nederland 2014: indicatorenrapport*; The Hague, 2015.

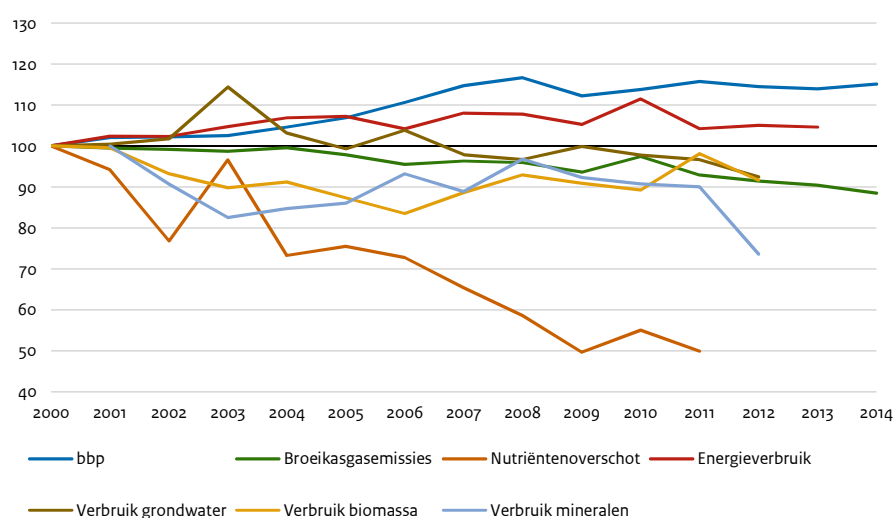
<sup>16</sup> Response to the motion by parliamentarian Van Tongeren regarding the sustainability proportion of innovation instruments, annex 4 to the '*Tussenbalans Groene Groei*', Parliamentary Document: 18-06-2015.

<sup>17</sup> Letter to the House of Representatives, '*Tussenbalans Groene Groei*', 18-06-2015, p. 2.

<sup>18</sup> '*Tussenbalans Groene Groei*' Report, Parliamentary Document, 18-06-2015.

processes. This means that there is now absolutely no connection between environmental pressures and economic growth. In the case of energy, there is a relative disconnection – energy use has grown less quickly than has the economy. Compared to other EU countries, the Netherlands occupies a middle-ranking position when it comes to the environment and energy efficiency.<sup>19</sup>

Figure 2.7 The development of GDP and indicators of environmental pressures (2000=100), 2000-2014



Source: Statistics Netherlands (2015).

The lower levels of industrial production have led in recent year to less waste, fewer emissions, and less pollution. In the second quarter of 2015, however, there was an increase (after corrections for the weather) in CO2 emissions of 2.7%, while the economy grew by 1.6%.<sup>20</sup> This increase is due to greater economic activity and transport flows, in combination with changes to the fuel mix used by Dutch power plants, which used more coal and less natural gas to generate energy. It is not yet possible to say whether or not this is a reversal of the trend shown in Figure 2.7.

#### Green growth and top sectors

Table 2.1 compares the development of several green growth indicators between the Netherlands and the top sectors as a whole. In the case of the Netherlands and the top sectors alike, there has been a relative decoupling with every green indicator: the indices are below 100. The top sectors are seeing a stronger relative decoupling in relation to emissions of heavy metals, energy consumption, and water consumption. The relatively favourable development of 'degreening'

<sup>19</sup> See Statistics Netherlands, 'Monitor Duurzaam Nederland' 2014. In the OECD Energy Sustainability Index 2014, the Netherlands is ranked 14<sup>th</sup>.

<sup>20</sup> Statistics Netherlands, *environmental calculations, quarterly figures*, August, 2015.

among the top sectors (greenhouse gas emissions and heavy metals) is notable because top sectors such as Energy, Chemicals, Logistics, and Agri & Food have traditionally had relatively high environmental pressures.

*Table 2.1 Relative green growth indicators (2010=100); comparison between the Netherlands and the top sectors*

	2011	2012	2013	2014
<b>Netherlands</b>				
Greenhouse gas emissions	93.9	93.5	93.0	90.2
Emissions of fine particles	90.8	89.4	88.9	88.9
Discharge of heavy metals into water	92.1	95.2		
Emissions of nutrients	95.6	94.7		
Net energy consumption	92.8	94.0	93.5	
Water consumption	96.7	94.2		
<b>Top sectors</b>				
Greenhouse gas emissions	93.0	90.8	88.9	88.3
Emissions of fine particles	89.4	89.1	88.2	90.2
Discharge of heavy metals into water	90.7	90.9		
Emissions of nutrients	97.2	95.6		
Net energy consumption	92.3	92.8	90.3	
Water consumption	96.1	91.1		

Source: Own calculations, based on Statistics Netherlands, 2015, green growth indicators. This concerns the relative development, where the environment indicators are related to changes in GDP (the totals for the Netherlands and for the top sectors), where 2010=100.

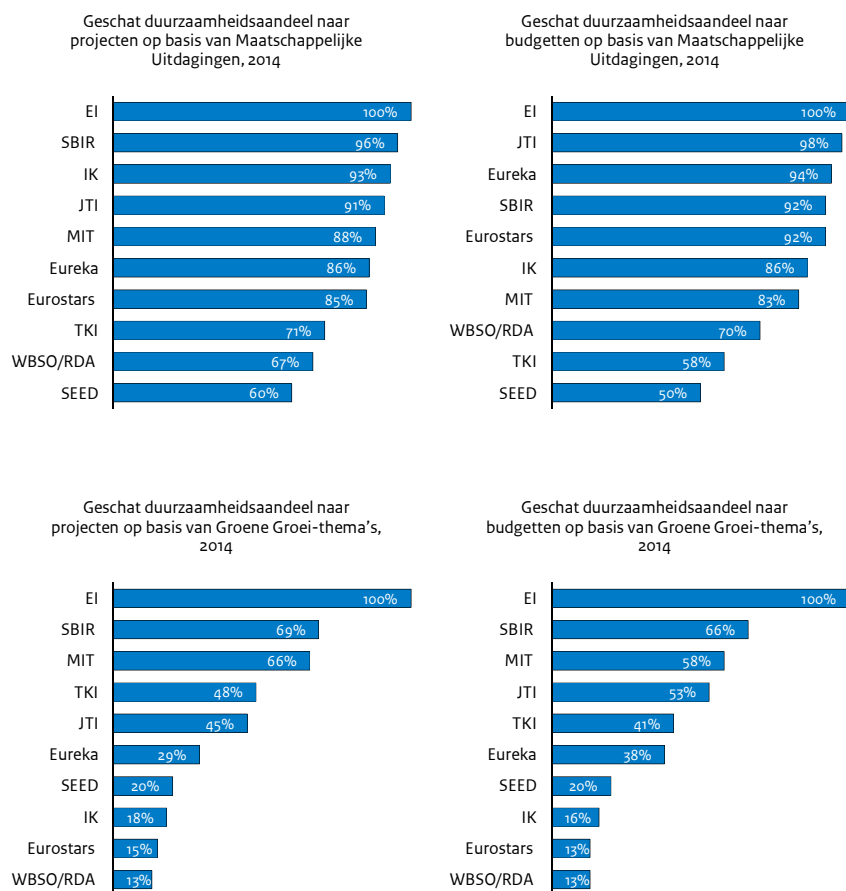
### The contribution of the enterprise policy to sustainability and green growth

The contribution of the enterprise policy to sustainability (societal challenges)<sup>21</sup> and green growth is high. Of the projects and the financial innovation instruments budget, around 70% relate to sustainable initiatives (according to the narrow definition).<sup>22</sup> The contribution of the instruments to green growth is obviously lower than that for sustainability, but is an average of 14% and 22% respectively for the projects and the budget. In total, almost €1 billion of investment has been made in sustainable innovation initiatives with the help of the innovation instruments. The innovation instruments provide nearly €300 million of investment to the 'green growth policy'.

*Figure 2.8 Estimated proportion of sustainability and green growth in innovation instruments, 2014*

<sup>21</sup> Narrow definition of societal challenges, based on Horizon 2020.

<sup>22</sup> The figures have a margin of error of 5% either way.

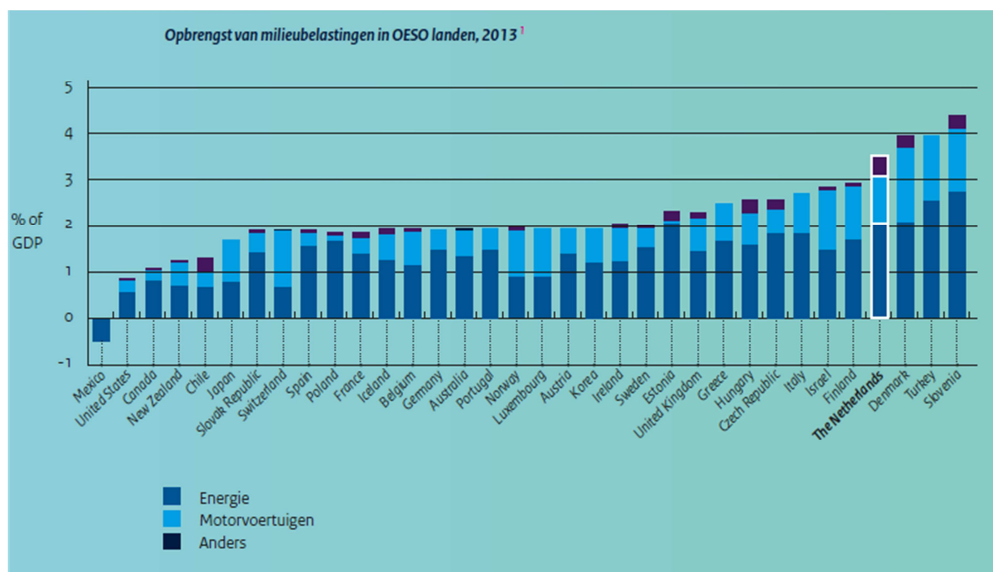


Source: RVO.nl; NB: the figures have a margin of error of 5% either way. EI = Energy Innovation; JTI = Joint Technology Initiatives; IK = Innovation Credit.

The innovation instruments of the enterprise policy therefore make a substantial contribution to green growth and to sustainability initiatives. Compared to EU and OECD countries, the Netherlands also has one of the highest proportions of environmental taxation (see Figure 2.9). In other words, as well as promoting innovation through its innovation instruments, the Netherlands often uses financial incentives for stimulating green growth.<sup>23</sup>

Figure 2.9 Yield from environmental taxes in OECD countries, 2013

<sup>23</sup> The proportion of the overall tax yield will further rise in the next few years, because of the Sustainable Energy Surcharge.





### 3. Generic enterprise policy

#### 3.1 Introduction

This chapter gives an insight into important factors behind productivity such as R&D, ICT and other investments, human capital, and the business climate. The policy mix of the enterprise policy is designed to influence these factors behind sustainable productivity growth. An explanation is provided on how the enterprise policy is connected to these factors. Innovation is the subject of Section 3.2. Section 3.3 examines the relationship between ICT and innovation. Section 3.4 looks at human capital. Investments, especially those in ICT, are discussed in Section 3.5. In Section 3.6, the general conditions – the business climate – in which businesses in the Netherlands operate are covered. In this section, we deal with such matters as regulation, the financing climate, and globalisation.

#### 3.2 Innovation

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*The Netherlands is progressing moderately well in the field of innovation: it has risen from sixth to fifth on the list of innovative countries in Europe. R&D expenditure has risen since 2008. Although private R&D intensity did not increase between 2012 and 2013, the upward trend was driven largely by additional private R&D expenditure, in line with the aims of the enterprise policy. This is a favourable development, as it had previously lagged behind the international norm for some time. Corrected for differences in economic sector structure, Dutch companies actually invested more in R&D than the OECD average. In the case of non-technological knowledge investment too, Dutch businesses are relatively active when it comes to innovation. These investments are contributing to the growth in productivity alongside, and indeed in combination with, 'hard' technological R&D. As a result, the Netherlands is achieving high levels of productivity for its average investments in hard R&D, when measured against international standards.*

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Innovation is one of the most important sources of economic growth and prosperity. Product and process innovation by businesses lead to greater added value and higher productivity. Improved products (including services) have a greater added value (per unit of input), and improved processes (through the use of new machines, for example) mean that production can be organised more quickly, more efficiently, 'greener', and less expensively. Businesses invest in innovation (through R&D, for example), because better or new products open up lucrative new markets, thereby strengthening their market position and competitiveness. Added to this, innovations also have a wider social significance because new products and production processes also contribute towards the removal of social bottlenecks in such diverse fields as health, ageing, depletion of resources, climate change and food quality.

Recently published research underlines the importance of private R&D investment to productivity.<sup>24</sup> The research concluded, on the basis of various international empirical estimates that ten per cent more private R&D capital leads to around 0.6% more productivity. This implies that a one-euro investment in private R&D will eventually lead to an added value of around 4.6 euros for businesses. Taking additional account of extra investment in physical capital by businesses, then the overall effect on the added value will be almost seven euros.

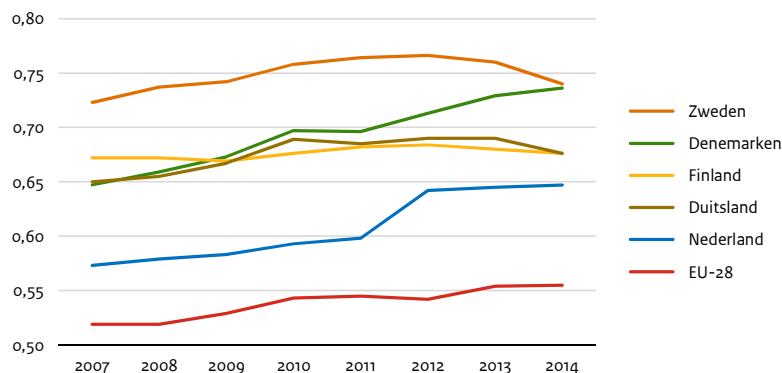
#### Examination of enterprise policy: innovation instruments are legitimate and transitional

The recent examination of the enterprise policy described the innovation instruments as legitimate and largely effective.<sup>a</sup> It also concluded that the innovation policy in particular is undergoing a transition, from an approach aimed primarily at solving market failures, to one in which efforts are being made to institutionally improve the innovation system. This is expressed most notably in the top sector approach, in which the Ministry of Economic Affairs collaborates in the TKIs. In line with the European Horizon 2020 programme and the Cabinet's Vision on Science, this collaboration ensures that the needs of businesses (potential commercial applications) and government bodies (solutions to societal challenges) are becoming a more important driver of the mostly outstanding research that is carried out in the Netherlands. This means that knowledge institutes have to attract more resources for research from the private sector, and to compete more for public-sector resources.

The examination of the policy also showed that the creation of the enterprise policy has brought about a transition from direct subsidies to businesses to fiscal innovation schemes – WBSO, the RDA (since 2012), and the Innovations Box (which is going to be evaluated by the Ministry of Finance this year). Risk-bearing loans are now also more widely available for businesses via so-called revolving funds (which are repaid with interest, in the case of success), such as innovation credit, which will continue under the umbrella of the new future fund. The aim of these transitions is to enhance the effect the relevant public resources have on knowledge and innovation.

<sup>a</sup> See Dialogic (2015).

Figure 3.1 Development of top 5 and EU-28 average in IUS, 2015, 2007-2014



Source: European Commission (2015). Innovation Union Scoreboard 2015.

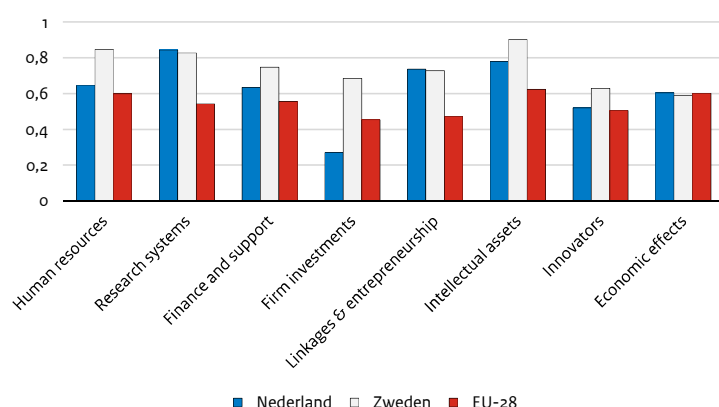
Where do we currently stand internationally, in the field of innovation? Every year, the European Commission publishes the Innovation Union Scoreboard (IUS). The report contains a list of rankings according to the competitiveness of the 28 EU countries, based on 25 indicators related to research and innovation. This year, the Netherlands rose one place compared to a year ago,

<sup>24</sup> Koopmans, C. and Donselaar, P. (2015). Een meta-analyse van het effect van R&D op productiviteit. ESB, Volume 100 (4717), pp. 518-521.

from sixth the fifth (see Figure 3.1), and also became the leader of an 'innovation followers' group. This was due to a better overall score by the Netherlands, as well as to the fact that Luxembourg's score fell (it was in fifth place last year). The Netherlands' score rose by 0.3% more than that of the EU average (0.2%), narrowing the gap between itself and the 'innovation leaders'. However, it is still a long way off from this group. Of the countries in the group, Sweden, Finland, and Germany saw their performance deteriorate, while Denmark improved on theirs.

The indicators in the IUS report are divided across eight groups. The strong points of the Netherlands are, in particular, quality of research and enterprise, and intellectual property (see Figure 3.2). A relatively weak area is that of business investment in R&D.

Figure 3.2 IUS 2015: Netherlands, Sweden and EU-28 average according to innovation dimensions



Source: European Commission (2015). Innovation Union Scoreboard 2015.

Below is a more detailed examination of how the Netherlands is doing in the field of innovation and the relevant policies that are being pursued. The areas looked at are investment in knowledge-based capital, knowledge diffusion, and international innovation programmes.

### Investment in knowledge-based capital

Recent research (such as by the OECD) demonstrates that investment in R&D and other knowledge-related investment are a major source of growth in productivity, as this combination is important for converting 'hard' technology into marketable products. Such investment in knowledge-based capital (KBC) includes investments in software and databases, design and marketing, intellectual property, as well as company-specific knowledge and organisational capacity. Innovations that result from this are sometimes referred to as social innovations.

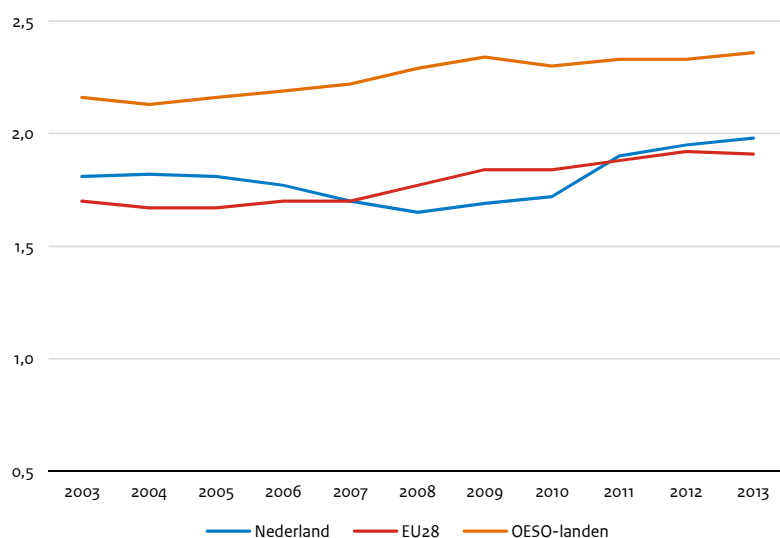
Statistics Netherlands recently published a study into the effects of knowledge-based capital on productivity in the Netherlands, based on new data. 'The results show that knowledge-based capital (consisting of investment in R&D, among other things) is an important driver of productivity, with supposedly above-average returns – that is, its contribution to economic growth

is greater than what might be expected on the basis of the cost share. This result points to the existence of spill-over effects: investment in knowledge benefits not only the company that makes it, but also to the branch of the industry as a whole, because businesses learn from their competitors, for example.<sup>25</sup>

#### R&D

Against the background of the European strategy for growth and jobs – EU 2020 – the Netherlands is aiming for its R&D investments to amount to 2.5% of GDP by 2020. This is also one of the goals of the enterprise policy. Figure 3.3 suggests that the Netherlands is on the right track and has overtaken the EU28 average, but is still short of its target.<sup>26</sup>

Figure 3.3 Total R&D expenditure as a percentage of GDP, 2003-2013



Source: OECD.

The total R&D expenditure consists of both public and private-sector R&D. In 2013 (the most recent year for which data is available), public-sector R&D in the Netherlands amounted to 0.9% of GDP – above the EU average of around 0.7%.

Table 3.1 Long-term overview of government resources for innovation and research (in millions of euros)

	2013	2014	2015	2016	2017
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<sup>25</sup>Statistics Netherlands (2015). Translation of Dutch summary of the report, ICT and Economic Growth.

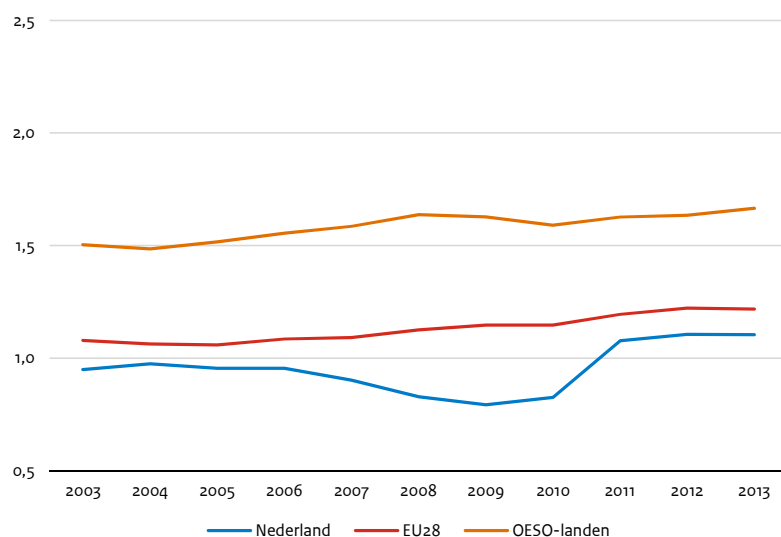
<sup>26</sup> The OECD has been used as the source for making the international comparison. For some years, the figures for the Netherlands differ by several hundredths of a percentage point from those in Statistics Netherlands Statline because of more recent data or adjustments carried out by Statistics Netherlands in the last few years. The increase in 2011, compared to 2010, was partly the result of a methodological alteration by Statistics Netherlands whereby, among other things, R&D investment by small companies is also included.

<b>Fundamental research</b>	3,066	3,163	3,217	3,193	3,176
<b>Applied research</b>	450	428	364	346	334
<b>Departmental expenditure</b>	1,444	1,518	1,335	1,207	1,140
<b>Fiscal resources for R&amp;D and innovation</b>	1,628	1,694	1,668	1,571	1,556
<b>Total</b>	6,588	6,803	6,584	6,316	6,205

Source: Netherlands National Reform Programme 2015, based on TWIN 2015 (Rathenau Instituut). It has not yet incorporated the 2016 budget or taxation plan.

Public-sector R&D expenditure in the Netherlands is largely financed by the central government. In recent years – a period when funds were tight – the Cabinet has ring-fenced the resources for research and innovation. For the next few years, the Rathenau Instituut has calculated that the central government resources for research and innovation will fall as a percentage of GDP, to around 0.8%, by 2018. Table 3.1 shows the different types of government expenditure on innovation and research between 2013 and 2018.

Figure 3.4 Private R&D expenditure as a percentage of GDP, 2003-2013



Source: OECD.

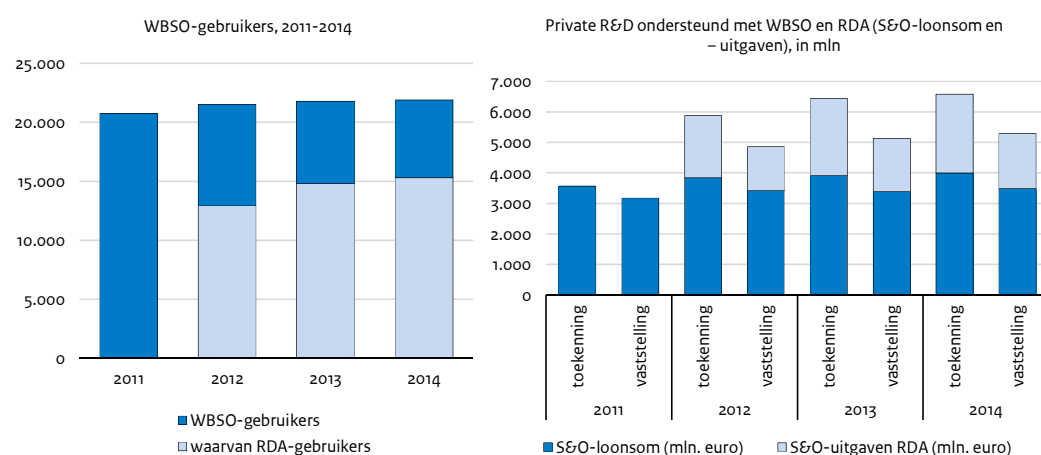
Private R&D intensity has been below the EU average for a long time, and well below the OECD average (see Figure 3.4). Since 2009, it has been catching up with the EU-28, although its progress stagnated between 2012 and 2013. However, the OECD has made calculations that appear to show that if account is taken of differences in sector structures, the Netherlands comes just above the OECD average.<sup>27</sup> This means that the businesses in the Netherlands that invest in R&D are not, on average, doing so to a lesser extent than are their foreign competitors (actually more than German companies, but less than Scandinavian ones). The difference in private R&D intensity is largely a result of the fact that the R&D-intensive sectors in the Netherlands make up a smaller proportion of the economy than is the case in other OECD countries. Any future

<sup>27</sup> OECD (2013). STI Scoreboard 2013.

improvement in private R&D intensity will therefore require a structural character, for example by attracting new foreign R&D investment to the Netherlands, or by a rapid growth in the number of small – often young – R&D intensive companies. The fact that the relatively R&D intensive top sectors are growing more quickly in terms of added value than the rest of the economy (see Chapter 4) is contributing to this.

The most important instruments that the enterprise policy uses to stimulate private R&D (in budgetary terms) are the R&D Promotion Act (WBSO) and the Research and Development Deduction (RDA) tax schemes. Companies can use the WBSO and, since 2012, the RDA to lower their research and development costs. The WBSO reduces the salary costs associated with R&D, while the RDA offers tax relief on non-salary costs and R&D-related investment. Examples include prototypes and research equipment. The instruments will be merged into one integrated WBSO scheme in 2016. Figure 3.5 (left) illustrates that the use of these instruments has continued to increase in recent years, while Figure 3.5 (right) shows that they were used to support 5.3 billion of private R&D expenditure in 2014.<sup>28</sup> This means that more than 70% of private R&D investment received assistance.

Figure 3.5 Some key WBSO and RDA data, 2011-2014



Source: RVO.nl

### Non-technological innovation

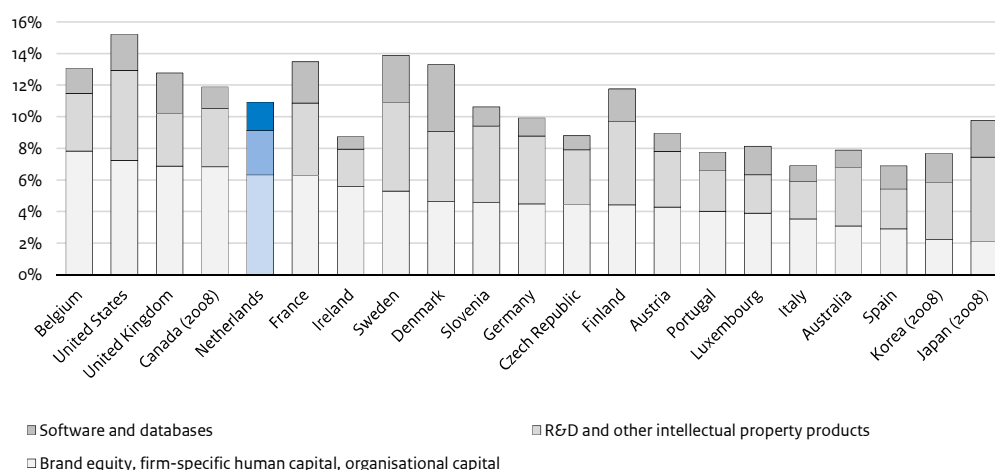
To successfully introduce technological innovations (be they products or processes) to the market, businesses also invest in non-technological innovations, such as marketing and organisational innovation. Together with R&D, intellectual property, software, databases and human capital,

<sup>28</sup>The reason for the discrepancies between WBSO and RDA being awarded and actually taken up is that businesses decided during the course of the year that certain innovation projects for which approval had been given would not go ahead after all.

these investments form the 'intangible assets' (also known as knowledge based capital), an important source of the growth in productivity in the market sector.<sup>29</sup>

According to OECD data, businesses in many countries invest a large part of their knowledge based capital not in R&D, but in other components – especially brands, and human and organisational capital. Figure 3.6 shows that Dutch companies performed well in comparison to those in other countries in 2012. This way, it appears that Dutch companies partly compensate for their relatively low investment in R&D and ICT (see Section 3.5). More recent data will show whether or not this pattern is structural.

Figure 3.6 Investment in knowledge-based capital by businesses in 2010 (in percentages of added value of the private sector)

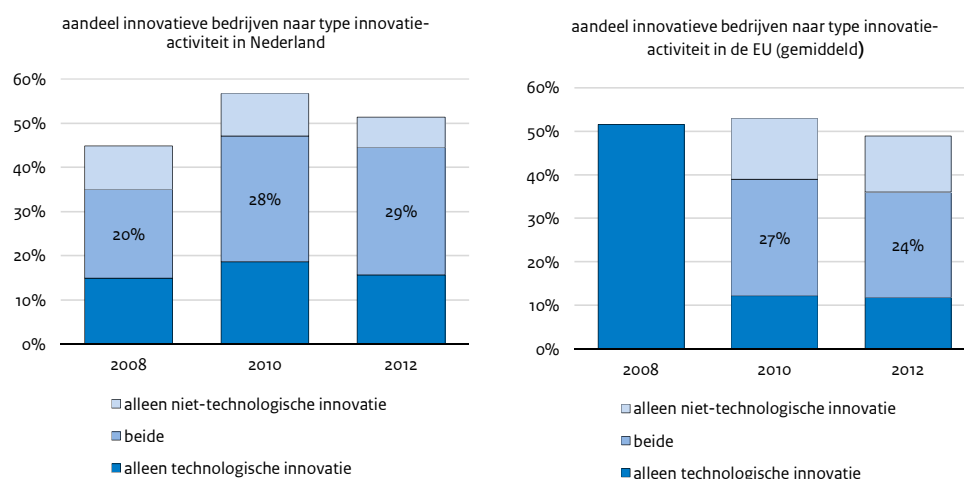


Source: OECD (2013), STI Scoreboard 2013.

Figure 3.7 compares the percentage of companies (with at least ten employees) in the Netherlands (left) and the EU average which in the last three years have been engaged with technological or non-technological innovation, or both, in 2008, 2010, and 2012. The proportion of innovative companies in the Netherlands was greater than the EU average in 2010 and 2012. Dutch companies are relatively active when it comes to technological innovation, and more especially when in combination with non-technological innovation. The proportion of the latter group also rose in 2012, despite the overall fall in innovation activity, and the fact that it fell in the EU.

<sup>29</sup> OECD (2015). The Future of Productivity.

Figure 3.7 Proportion of innovative companies (in %), according to type: Netherlands and EU, 2008-2012



Source: Eurostat (CIS data). No information based on type of innovation activity is available for the EU in 2008.

## Knowledge diffusion

According to the OECD, there are major differences in productivity between businesses in the same branch of industry, which could be explained by inadequate diffusion of knowledge between businesses and to and from knowledge institutes.<sup>30</sup> Promoting knowledge diffusion is therefore an important part of the enterprise policy. Among the ways that diffusion occurs is making knowledge public by registering intellectual property, or as a result of parties working together

### Intellectual property

Applications for intellectual property rights are a measure of the degree to which organisations that carry out R&D see opportunities for using scientific and technological knowledge for commercial purposes. With regard to patents, the Netherlands Enterprise Agency Patent Centre has devised a modified indicator for this edition of Monitor, which uses the latest possible data (2012) and counts applications that can also be applied to markets outside Europe.<sup>31</sup> Figure 3.8 (left) shows that the Netherlands is just in the top ten of OECD countries (tenth), and sixth in the EU.

Applications are also made for trademarks and – to a lesser degree – models in order to register innovation-oriented intellectual property. In the case of industrial product innovations, trademark applications are often made together with a patent application (27%) or with a model (18%).

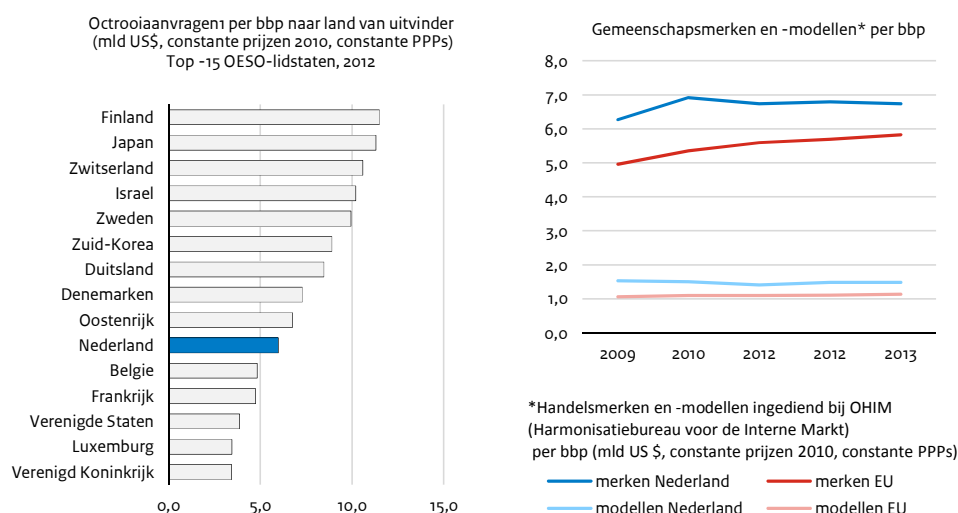
<sup>30</sup> OECD (2015). The Future of Productivity.

<sup>31</sup> Patent applications that build on from another patent (patent families) are counted just once, as the indicator is intended to provide information on quality. Many patent applications are made by international companies. In order to be as relevant as possible to the location in which the R&D is taking place, the indicator uses data about the country in which the inventor resides. This number is subsequently corrected according to the size of the economy (GDP in billions of euros, taking account of purchasing power standards).



Service-related innovations are often combined with copyright protection (19%).<sup>32</sup> Figure 3.8 (right) shows that between 2009 and 2013, Dutch businesses applied for around seven trademarks per billion euros of GDP – almost the same as the number of patent applications – and 1½ models per billion euros of GDP. Both are above the EU average, although the difference in the case of trademarks shrank during the period in question.

Figure 3.8 Patent applications and Community Trade Marks and models



Source (left): OECD Patstat, processed by the Netherlands Enterprise Agency. Patent applications per billion of GDP in OECD member states, 2012 (Patent filings PCT + direct EPO in numbers of patent families, fractional counting; GDP in billions of US\$, constant prices 2010, constant PPPs). Source (right): Innovation Union Scoreboard 2015.

#### Collaboration between businesses and knowledge institutes

Knowledge diffusion also occurs as a result of collaboration between businesses (open innovation) and between businesses and knowledge institutes. In addition, research by Faems et al. (2005) and De Jong & Hulsing (2010) shows that businesses that work closely together with knowledge institutes more frequently create innovations that are 'new to the market' – the more disruptive innovations.<sup>33</sup>

The proportion of innovating companies that has collaborated with universities or public research institutes in the last three years offers an insight into the degree to which such companies involve knowledge institutes with their research and innovation. Table 3.2 suggests that this proportion is slightly lower in the Netherlands than the EU average, but that it has grown compared to the period 2008-2010. This is one of the aims of the top sector approach, the TKI supplement, and the Scheme to Promote SME Innovation in Top Sectors (MIT scheme). It is notable that, in each of the

<sup>32</sup> See Flikkema, M. et al. (2015). Revealing the link between trademarks and innovation. World Trademark Review, December 2014/January 2015.

<sup>33</sup> Faems, D.; Looy, B. Van & Debackere, K. (2005). Interorganizational Collaboration and Innovation: Toward a Portfolio Approach. Journal of Product Innovation Management, 22, pp. 238-250; Jong, J.P.J. de & Hulsing W. (2010). Patterns of innovation networking in Dutch small firms. EIM Research Reports, H201002, January 2010.

three years, more companies stated that they had collaborated with universities than with research institutes. This was the case in both the Netherlands and the EU (average).

*Table 3.2 Collaboration between innovative businesses and knowledge institutes*

	2006-2008	2008-2010*	2010-2012
Proportion of innovative businesses that worked with public parties in the field of science and technology:			
Research institutes (EU average)	10% (6%)	6% (6%)	8% (9%)
Universities (EU average)	14% (10%)	8% (11%)	11% (13%)

Source: Eurostat (results of biennial Community Innovation Survey, in which companies are asked about their innovation activities during the previous three years).

\* Survey method amended in the Netherlands.

To encourage companies to collaborate more often with knowledge institutes, it is important that clients are satisfied with the services provided and that they are able to use the acquired knowledge in some way. The Vision on Applied Research states that in future the Cabinet intends to evaluate the TO2 institutes on their quality and the societal impact of their research.<sup>34</sup> To that end, a uniform evaluation and monitoring framework is being developed this year, by which the institutes will be evaluated in 2017. This year, all TO2 institutes have also adopted a new uniform method for measuring client satisfaction and use of knowledge. The scores in Table 3.3 show the values achieved for all the research that the institutes have been commissioned to carry out (in other words, they concern PPP research, and research carried out on behalf of private clients and the public sector, unless otherwise stated). Each of the customer satisfaction scores is just below or above eight (out of ten), and 85% or more of the knowledge generated is used by clients.

*Table 3.3 Client satisfaction and use of knowledge – TNO, Netherlands Aerospace Centre, Netherlands Energy Research Centre, Marin, and Deltares, 2014*

	Client satisfaction	use of knowledge
<b>TNO</b>	8.3 (n = 608)	94.5% (n = 537)
<b>Netherlands Aerospace Centre</b>	8.7 (n = 138)	99% (n = 138)
<b>Netherlands Energy Research Centre</b>	8.6 (n = 85)	89% (n = 85)
<b>Marin</b>	9.0 (n = not yet known)	95% (n = not yet known)
<b>Deltares</b>	7.9 (n = 80)*	not available
<b>DLO</b>	not available	85% (n = 178)**

Source: TO2.

\* This result has been measured differently to the other results (different questions and different random sample solely of projects partly or wholly financed by public funds).

\*\* Concerns 2013.

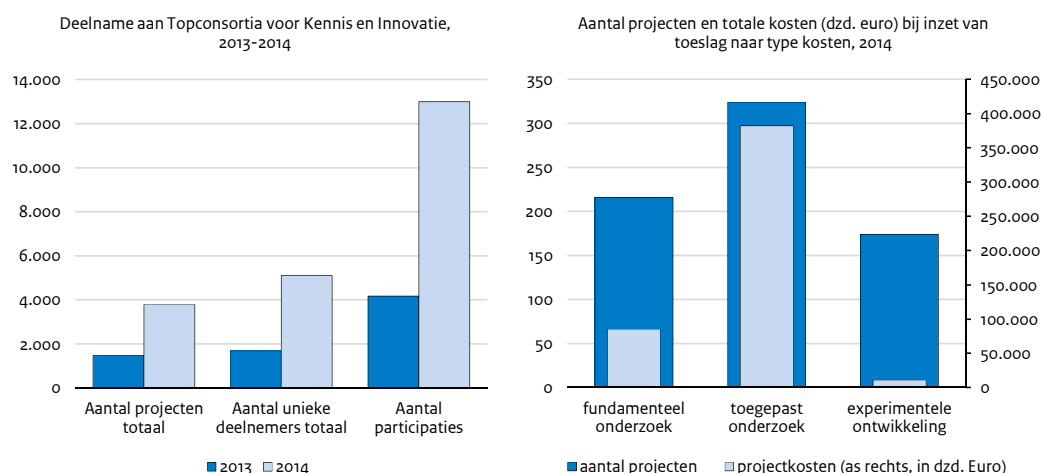
#### **Public private partnership**

The applied research institutes play an important role in the TKIs. In these TKIs, businesses, knowledge institutes, and government bodies programme, organise, and finance joint research and innovation. This public-private collaboration takes place with the help of themed roadmaps, which are based in part on societal challenges. Every attempt is made to make them as relevant

<sup>34</sup> See letter to House of Representatives, 2012–2013, 32 637 no. 68.

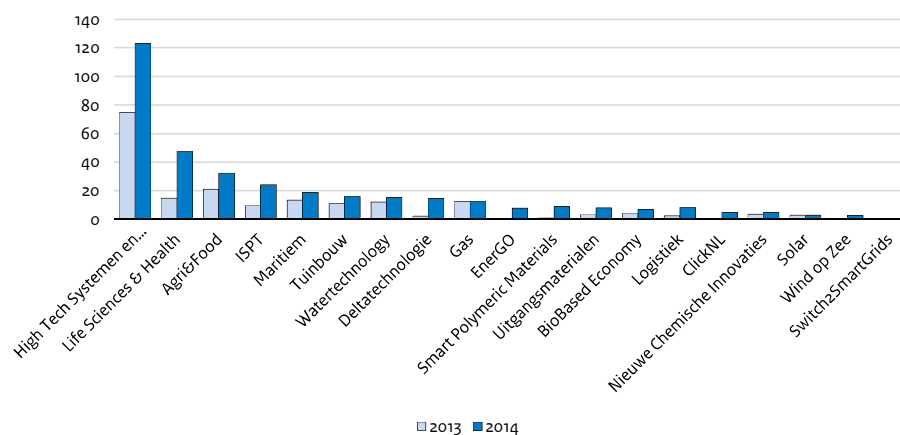
as possible to European programmes (see Section 3.4). To encourage businesses to take part in these TKIs by privately investing in PPP projects, the government introduced a TKI supplement in 2013. Figure 3.9 (left) shows that the number of unique participants grew strongly, from 1,682 to 5,092. Many of them took part in more than one of the 3,787 projects, as evidenced from the almost 13,000 participations in 2014.

Figure 3.9 TKI key data, 2014



Source: RVO.nl

Figure 3.10 Private contributions (in millions of euros) to TKIs, 2013-2014



Source: RVO.nl

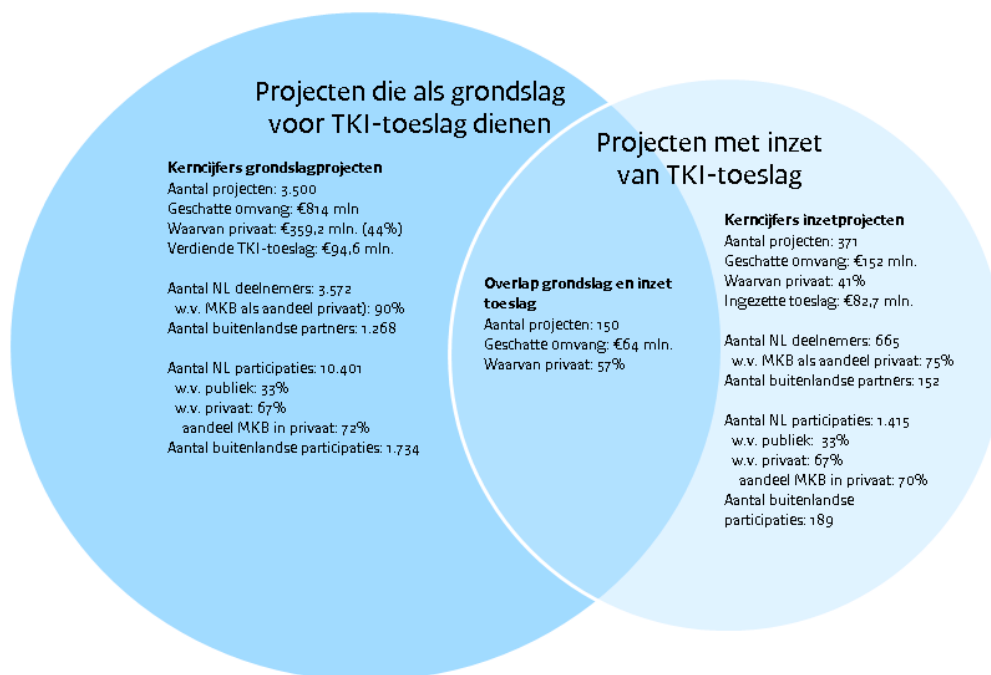
#### TKI supplement

PPP is not just about participation, but also the joint investments by the participants. Figure 3.10 shows that private contributions to most TKIs grew substantially between 2013 and 2014. This also generated more TKI supplement for the TKIs. Figure 3.9 (right) shows that in 2014 the

supplement was used primarily for funding or co-funding applied research (worth €382 million). In terms of numbers of projects, the supplement was also used to a substantial degree for fundamental research (far removed from the market).

One objective of the enterprise policy is to ensure that supplement-earning PPP projects are carried out to the tune of more than €500 million by 2015, with private parties contributing at least 40%. Figure 3.11 shows that the extent of overall public-private collaboration (including supplement-earning projects that were launched with the TKI supplement) in 2014 was estimated to be around €900 million, of which more than €800 million concerned supplement-earning projects with private contributions amounting to 44% on average. This means that the target for 2015 was actually achieved in 2014. For public-private collaboration as a whole, the 2016 Ministry of Economic Affairs budget contains a new target of €800 million for 2020, of which at least 40% concerns private funding. This relates only to PPP projects that serve as a basis for a TKI supplement. For the intervening years, it is expected that the overall scope will initially fall – to around €750 million in 2016 – not least as a result of the termination of Economic Structure Enhancing Fund programmes.

Figure 3.11 Public-private partnership in TKIs, key data 2014



Source: RVO.nl

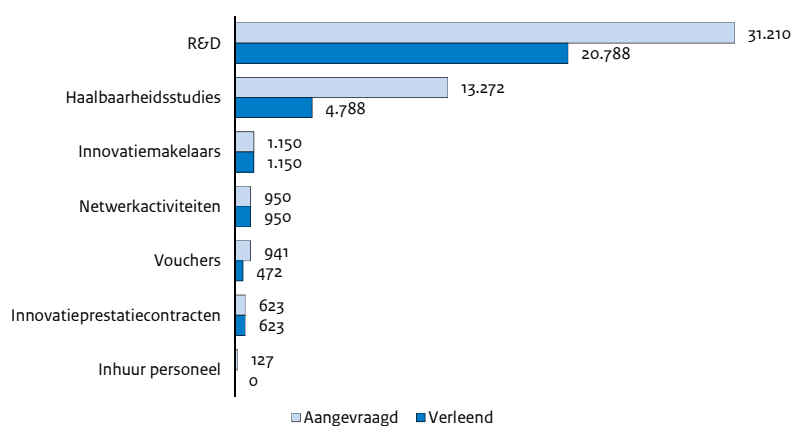
Figure 3.11 shows that large numbers of SMEs take part in TKI projects. This is important for knowledge diffusion in the Netherlands.

*Scheme to Promote SME Innovation in Top Sectors (MIT scheme)*

As a means of increasing the involvement of SMEs with top-sector innovation plans, the MIT scheme has been in existence since 2013. To link up as closely as possible with the business activity in each sector, the MIT provides scope for a tailored approach. Top sectors can choose between R&D collaboration projects, feasibility studies, knowledge vouchers, hiring of highly-qualified staff, network activities, innovation brokers, and innovation performance contracts (IPC). These are elements that can promote both technological and non-technological innovation.

Figure 3.12 shows that in 2014 almost 90% of the resources for the MIT scheme ended up in R&D collaboration projects and feasibility studies. This demonstrates that the instrument is used primarily for scientific and technological innovation. The budget difference between MIT applications and awards in the diagram shows that there was greater demand among SMEs for these types of largely technological projects with support from the MIT scheme than there was funding available. Partly for this reason, a partnership with the regions was entered into in 2015, in which government resources function as a national safety net (see box).

Figure 3.12 Number of MIT applications and awards, according to instrument ( $\times \text{€}1,000$ ), 2014



Source: RVO.nl

## MIT collaboration between the central government and the regions

For the first time, the regions (provinces) and the Ministry of Economic Affairs are this year carrying out the MIT scheme together. Harmonising and linking up national and regional innovation stimulation instruments as much as possible will make it easier for businesses to identify them, and therefore increase the level of interest among businesses. Part of this collaboration involves the simultaneous making available of the instruments – nationally, and in every region. This forms a response on the part of the central government and the regions to the needs of SMEs. This box provides more information on this.<sup>a</sup>

*Table of available, requested, and granted MIT budget according to type of allocation method, national and regional totals for 2015 (in millions of euros.)*

	Knowledge vouchers, innovation advice, feasibility (first come, first served)	R&D collaboration* (tender)	total
Available	17.2	31.1	48.3***
Requested	28.6	49.1	77.7
Granted	14.1 **	not yet known	not yet known

Source: Netherlands Enterprise Agency.

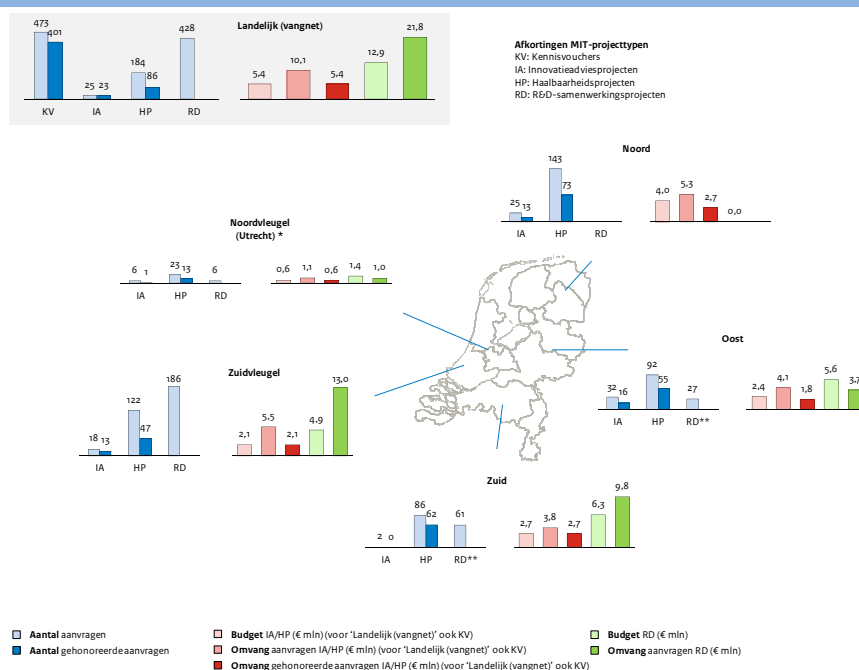
\* Including a pilot scheme in Zuid-Holland for large collaboration projects of up to €350,000.

\*\* Provisional data; in the Noord, Oost, and Utrecht regions, more than €3 million of applications were still to be dealt with in late September.

\*\*\* There is another €2.2 million available for networking activities and innovation brokers by TKIs.

The table shows that a total of more than €50 million of funding was available for the MIT scheme in 2015. Of this, more than 17 million euros' (around 30%) worth was used for distributing knowledge vouchers, innovation advice, and feasibility projects on a first come, first served basis, with 31 million (70%) via tenders. The national budget functions as a safety net for the regions. The widespread interest among SMEs is evident from the applications amounting to nearly €80 million. This is more than was applied for in 2014 (around 50 million; see Figure 3.12). Of this, it is estimated that 20 to 30% will be rejected on matters of substance. The diagram below shows, for each region and for the national safety net, how much budget was available in 2015, how many applications had been submitted by the end of September for which type of instrument, and how many had been granted.

- a) This means that the undertaking regarding this matter in the AO enterprise policy of 10 March 2015 and in the written answers to parliamentary questions dated 10 June 2015 (Parliamentary Document: ah-tk-20142015-2525).



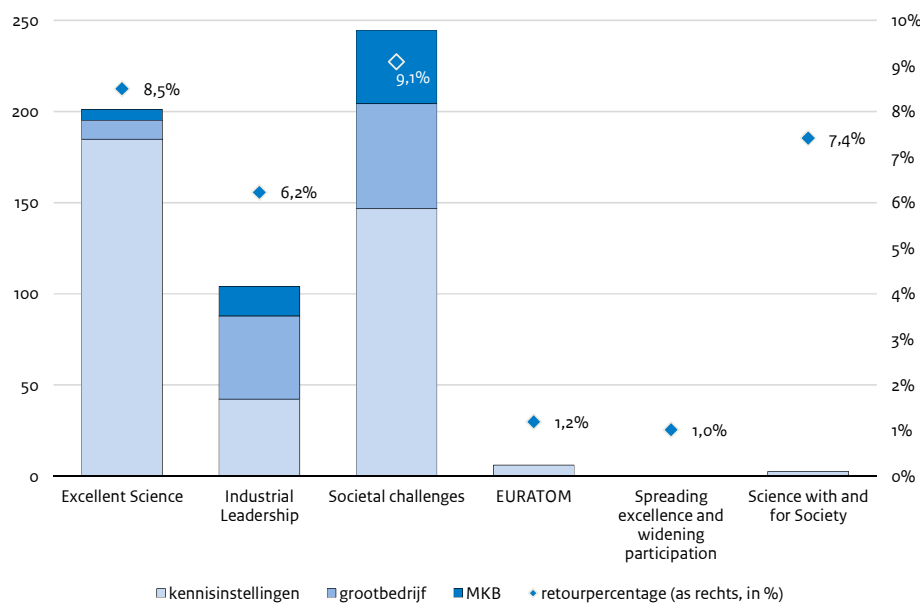
### International programmes for innovation

The development of knowledge and innovation do not stop at national boundaries – on the contrary. Thanks to its relatively small but open knowledge economy, the Netherlands benefits from international R&D collaboration. Among the ways in which the government promotes this is through contributing (co-funding) to largely European programmes for research and innovation. An essential aspect of this is the links between the top sectors and the EU programmes in the field of knowledge and innovation. The top sector approach is also aimed at bilateral contacts and economic diplomacy (see Section 3.6 and Chapter 4).

#### Horizon 2020

The best-known and largest (in budgetary terms) EU programme for research and innovation is Horizon 2020, which was launched in 2014. Figure 3.13 shows the extent of the subsidies received by Dutch participants (public and private), for each part of Horizon 2020. Companies received the most from 'Societal Challenges' (€98 million) and 'Industrial Leadership' (€62 million), of which €57 million went to SMEs. In addition, the diagram on the right shows how high the rate of return (amounts received in relation to the estimated input amount) was. The differences between the six programmes are clearly visible. The programmes in which the Netherlands has a low rate of return are aimed at specific groups that are particularly strongly represented outside the country: Euratom is aimed at the nuclear industry, while 'Spreading excellence and widening participation' is intended to improve the R&D results in certain member states that are lagging behind.

Figure 3.13 Subsidies received and rate of return for the Netherlands from Horizon 2020, according to work programmes and pillars, 2014



Source: RVO.nl

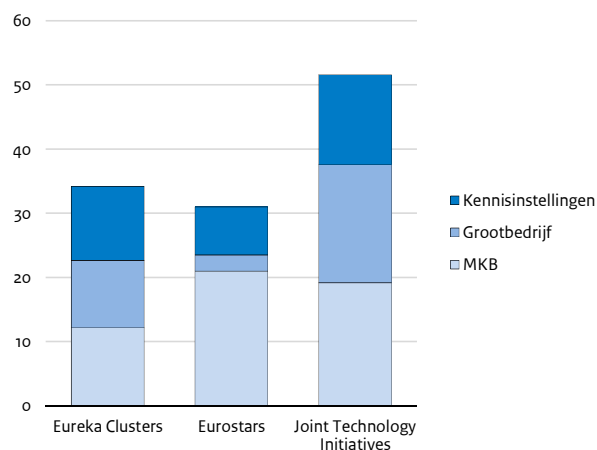
### *Eureka, Eurostars, Joint Technology Initiatives*

As well as Horizon 2020, businesses and knowledge institutes can use complementary schemes that involve international collaboration in research and innovation:

- ✓ Eureka clusters offers offer countries a platform for jointly drawing up a research and innovation agenda and the instruments for implementing it. This means that it forms a bridge between national innovation programmes of the member states.
- ✓ Eurostars helps small companies carry out market-oriented technological development. The aim is to reduce the time-to-market of these new technologies and to lessen the technical risks.
- ✓ Joint Technology Initiatives (JTIs) are a type of collaboration of public and private parties (European Commission, national governments, businesses, knowledge institutes) that engage in cross-border research programmes.

Figure 3.14 illustrates how many Dutch parties have taken part in the three programmes in recent years. It is clear that the JTIs attract the greatest number of participants, of which a large proportion are SMEs. In the period concerned, Eureka clusters and Eurostars attracted more or less the same number, but Eurostars is clearly more strongly oriented towards SMEs.

*Figure 3.14 Participation in EU programmes, average for 2009-2014*



Source: RVO.nl

The Netherlands scored very well in the first three calls in Eurostars 2. Of the 34 countries in Eurostars, the Netherlands is in third position (behind Germany and Spain) with regard to the number of submitted project proposals. In terms of the numbers of approved project proposals, the Netherlands is second, after Germany. This means that the success rate of Dutch companies was 32%, the highest percentage except for that of Switzerland.

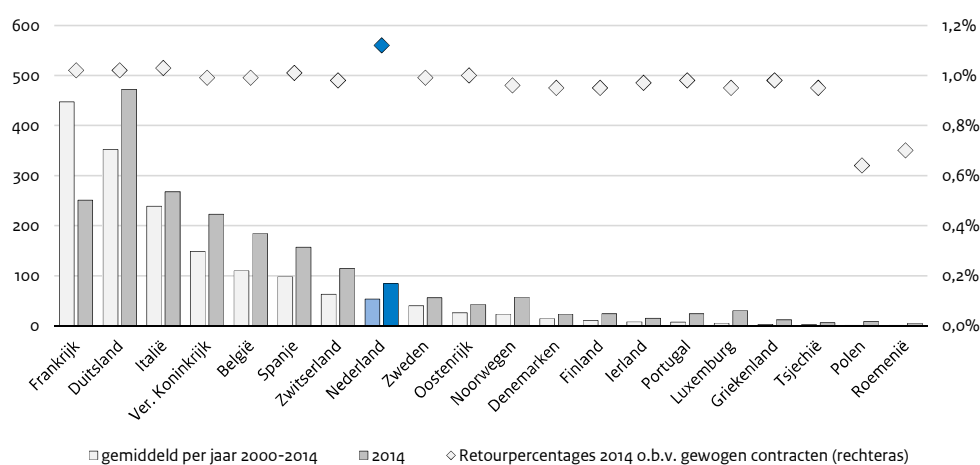
*Table 3.4 Participation in Eurostars 2 (first three calls) 2015*



	applications	approvals	success rate
Switzerland	169	60	36%
Netherlands	196	63	32%
Germany	261	79	30%
France	163	48	29%
United Kingdom	170	50	29%

Source: RVO.nl

Figure 3.15 Size of contracts and rate of return from the European Space Exploration Programme for each ESA member state, weighted according to R&D content



#### Space exploration

Space exploration technology makes a high-level technological contribution to various sectors, science, and societal challenges (examples that come to mind include not just material-based knowledge and the development of scientific instruments, but also satellite information for communications services, precision agriculture, climate, and water management). For businesses in the space exploration cluster, the government is in many cases the lead customer. To get the most from scale benefits and knowledge distribution, the European countries have a joint space exploration programme. It consists of the programmes of the European Space Agency (ESA), the Copernicus earth observation programme (EU + ESA), the Galileo navigation programme (EU + ESA), and of part of the European research and innovation programme, Horizon 2020. The financial contributions made by governments to the ESA for space exploration programmes are awarded in contracts, through open competition, to companies and knowledge institutes (Geo Return System). Figure 3.15 shows that the Netherlands' geo return – when weighting the size of contracts with a factor for R&D content – was very high in 2014, not least because of the location of ESTEC, in Noordwijk. The diagram also shows that the weighted contract size in most countries was higher in 2014 than the average for the period 2000-2014. The size of the contracts for each country varies markedly and is closely related to the level of national investment in ESA space exploration programmes.

For the approximately eighty high-tech companies in the Netherlands that have taken part in recent years, the ESA programmes make up an important form of innovation-based purchases by European government bodies. It is notable that a large proportion of these companies do *not* use the space exploration component of Horizon 2020. The difference in use of the two programmes indicates that there is scope for the Netherlands Enterprise Agency to work with the Netherlands Space Office on increasing awareness among space exploration companies of the opportunities offered by Horizon 2020.

### 3.3 ICT and innovation

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*As a general purpose technology, ICT is important for innovation, and therefore for productivity and sustainable economic growth. Empirical research suggests that this is also true of the Netherlands. The Netherlands is one of the world's leading digital economies and benefits from ICT.*

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ICT is a general purpose technology that has a place in almost every economic activity, and which is increasingly becoming a source for innovative products and services, thereby resulting in greater productivity and prosperity. The economy is fast becoming digitised. Thanks to the emergency of mobile internet in particular, it is not just devices used by people that are becoming connected to the internet, but all kinds of other objects ('things', like sensors and actuators): the Internet of Things. Large quantities of data are increasingly becoming available that can be better used as a result of the greater possibilities associated with ICT. 'Big data' is leading to many new products and services – in other words, to innovation.

The economic significance of ICT lies primarily in its combination with other technologies and with non-technological innovation facets ('intangibles', like marketing, business organisation, logistics, and skills). In the process, ICT generates new revenue models, new products and services, and new markets.

#### How is the Netherlands doing?

The Netherlands is one of the world's leading digital economies. Although the economic importance of ICT for innovation is clear, there is little empirical material that scientifically backs up this importance, thanks in part to limitations in the data. Nonetheless, recent research for the Netherlands has shown that ICT is, and has been, important for innovation in the country, and especially for the service industry.<sup>35</sup>

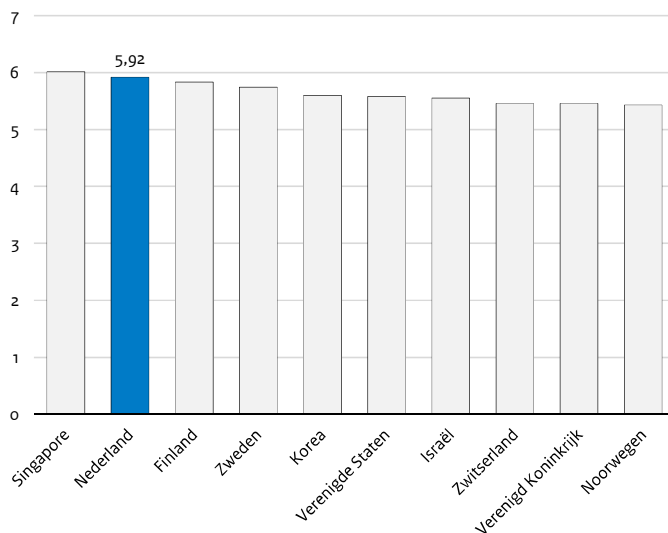
There are more indications that the Netherlands is performing well with regard to the relationship between ICT and innovation. On the Network Readiness Index 2015 of the WEF, the Netherlands is in fourth position. This index measures how countries apply and use ICT. Although the indicators are still being developed, the Netherlands is in second place according to the WEF, just behind Singapore, when it comes to the economic and social impact of ICT on the economy (see Figure

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<sup>35</sup> M. Polder, G. van Leeuwen, P. Mohnen and W. Raymond (2010), Product, process and organizational innovation: drivers, complementarity and productivity effects, UNU-Merit, WP2010-35.

3.16). This indicator concerns, among other things, the effects of ICT on the development of new products, new processes and organisational models, but the social consequences are also included in the measurement.

Figure 3.16 Networked Readiness Index: top 10 countries, effect of ICT on the economy, 2015



Source: WEF (2015) Network Readiness Index.

### What is the policy framework?

The 2011 DigitaleAgenda.nl is the policy framework for ICT policy. In recent years, new activities have been launched against the background of this framework (in addition to the ongoing activities based on the digital agenda), such as the ICT breakthrough projects and the Smart Industry Action Plan.

#### ICT breakthrough projects

ICT is causing radical changes throughout society. The ICT breakthrough projects programme seeks to use opportunities that have come about as a result of these changes. Nine projects are underway. Some results from the past year:

- *Big data for export.* Independent platform Floridata has reduced debtor risks in the floriculture sector. Up-to-date data on around 100 clients in and outside the Netherlands and monthly market reports allow every business to see where opportunities and risks lie. Three-quarters of all floriculture exporters are affiliated.
- *Personalised digital learning.* Ten learning labs for digital learning have been launched in secondary education, adapted to the learning achievements of individual pupils. 220 schools have signed up for 60 available places.
- *Online for care for the elderly.* OZO Verbindzorg is improving collaboration between elderly people still living in their own homes, their volunteer carers, and care professionals. The online platform lays the basis for a new way of collaborating in the field of care for vulnerable elderly people. This initiative, in Overijssel, is set to expand with the support of the Achmea healthcare insurance company, and others.

ICT breakthrough projects seek to contribute to economic growth, regulatory reductions, improvements in quality and in the competitive position of the Netherlands by through the more efficient and more widespread use of ICT. Societal issues are resolved by creating breakthroughs in the use of ICT, with a clear and identifiable effect for businesses and citizens alike. The framework gives an impression of the progress of a number projects.

### 3.4 Human capital

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*Adults and students in the Netherlands are highly skilled compared to those in other countries. This was shown in previous international surveys, such as the OECD PISA (Programme for International Student Assessment) and PIAAC (Programme for the International Assessment of Adult Competencies). The country's eighth position on the Human Capital Index of the World Economic Forum in 2015 reaffirms this. An important priority of the enterprise policy is that of raising the number of people with scientific and technical qualifications. As was the case last year, the numbers of students starting scientific and technical degree programmes is increasing. Intake numbers for MBO (Senior Secondary Vocational Education) are falling, although those for levels 3 and 4 are increasing. A clear intensification of public-private collaboration took place in education in 2014/2015: dozens of PPPs came into being, and 492 top sector grants have now been issued. The labour market for engineers is showing signs of recovery. The same applies to demand for ICT professionals. As in other countries, there is a focus on possible shortages of ICT professionals and ICT skills.*

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A well-qualified working population substantially contributes to greater productivity and therefore to a more prosperous society. The Netherlands is a knowledge-based economy and therefore dependent on the application of knowledge and the implementation of innovations for its economic growth. That knowledge comes from people – from smart researchers to skilled professionals. Investing in human capital, such as in the talents and ICT and other skills of people (young and old) makes it possible to create extra added value for each working person. It is therefore essential that the working population possesses the right skills, including digital skills, that will enable them to apply up-to-date knowledge and new technologies in their work.<sup>36</sup> That will make the Netherlands more productive and more prosperous.

The importance of human capital for productivity in the Netherlands was recently calculated by Statistics Netherlands in its publication, 'ICT and Growth' (2015). Of the average economic growth of 1.6% per year between 2002 and 2011, almost one third (0.5%) can be attributed to a shift towards the greater skills among employees and the self-employed.

#### How is the Netherlands doing?

Compared to other countries, the Netherlands is doing well with regard to human capital, digital skills, and the use of the internet.

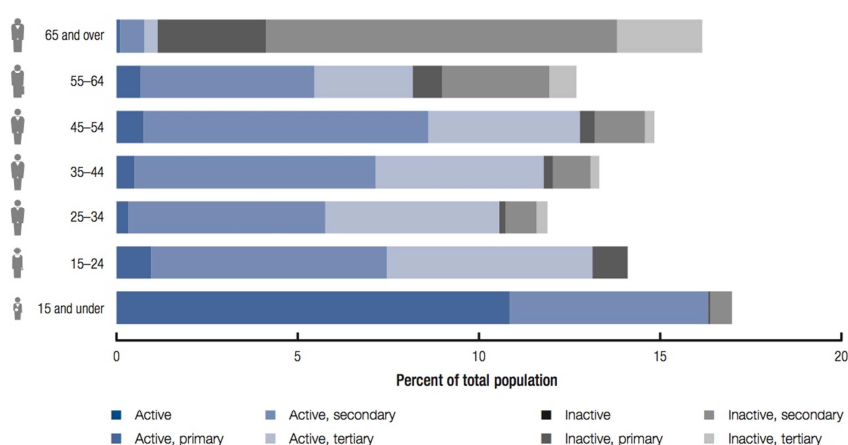
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<sup>36</sup> Technological developments always place different demands on the skills of employees and businesses. ICT knowledge is becoming an increasingly crucial element of employees' skills. This concerns not only the professional skills of ICT specialists, but also the digital skills of non-ICT specialist employees for using and applying ICT.

In the most recent survey by the World Economic Forum into human capital, the Netherlands ranked eighth worldwide. This is lower than in 2014, when the country stood in fourth place. However, it is difficult to draw any conclusions from this as there were changes to the methods used in the survey. The new method involves the drawing up of sub-indices for age groups. In the 15-24 age range, the Netherlands achieves its best position, fourth, while its lowest ranking – for those aged 65 or over – is eighteenth. The lower ranking of the country for those aged 65 and over (and for the 55-64 age group) is related to the fact the levels of employment among these groups is relatively low. In this context, it is difficult to disregard the pension system that the Netherlands has (see Figure 3.17). The same observation can be made of countries with a relatively low retirement age (such as France and Italy). Looking at countries that rank higher (like Switzerland and Finland), they stand out favourably compared to the Netherlands as a result of a level of education that is higher than average for this group, and an unemployment rate that is lower. The report also mentions that the Netherlands, with a score of 47.5%, occupies ninth position when it comes to the proportion of high-skilled employment.

Figure 3.17 Proportions of education levels according to age group

#### Education and workforce distribution



Source: World Economic Forum.

The results of the survey by the WEF are in line with previous international research, such as PISA (Programme for International Student Assessment) and PIAAC (Programme for the international Assessment of Adult Competencies) measurements of the skill and competency levels of the population (see [www.piaac.nl](http://www.piaac.nl) and <http://www.oecd.org/pisa/>). Here, too, the Netherlands is among the best-performing nations.

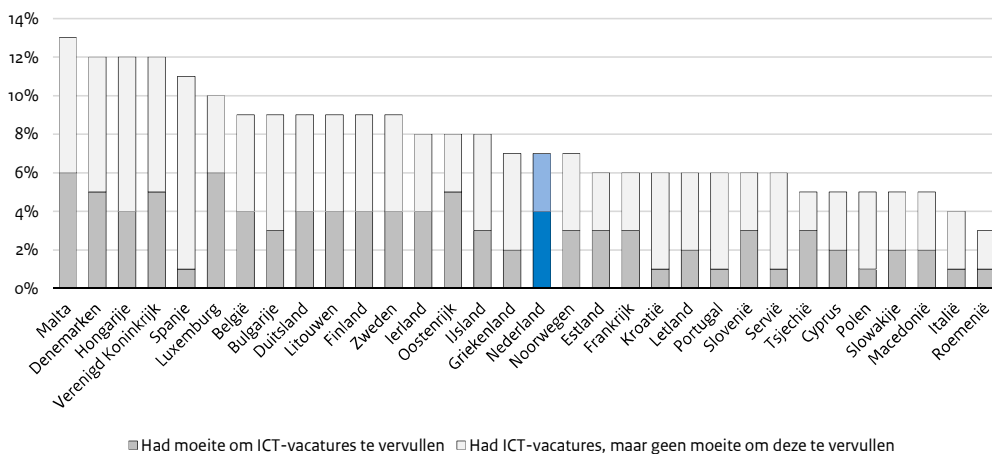
The Netherlands is one of the leaders in Europe as far as digital skills and use of the internet are concerned. 74.7% of the population possesses minimum basic skills, putting the country in fifth

place in the EU behind Luxembourg (82.1%), Finland (79.4%), Sweden (77.9%), and Denmark (76%), and ahead of the United Kingdom (72.8%), Estonia (69.2%), and Germany (68.5%).

Compared to other EU countries, the number of ICT professionals in the Netherlands is average. The proportion of ICT professionals of the total working population is higher in Sweden and Finland (6%) than in the Netherlands (4% in 2013). It should be noted that no account has been taken in these results of the sector structure. For example, the ICT sector in Sweden and Finland is relatively larger than in the Netherlands, and there are relatively many ICT professionals working in this sector.

In recent years, the economic and financial crisis had a significant impact on the labour market. This resulted in fewer vacancies, including for ICT professionals, and higher unemployment. Recent figures have highlighted a cyclical recovery of the labour market, including the demand for ICT professionals. The number of vacancies in the ICT sector rose from 6,500 at the end of 2013 to 7,800 a year later.<sup>37</sup> Concerns about a structural problem with vacancies and possible shortages exist not only in the Netherlands – there is also a need for more ICT professionals in other countries (see Figure 3.18). In relative terms, the number of ICT vacancies at companies in the Netherlands is not particularly noteworthy when compared to the situation elsewhere. The proportion is around the EU average.

Figure 3.18 Percentage of companies with ICT vacancies (excluding the financial sector)



Source: Eurostat.

### Policy framework

Having a well-qualified and skilled working population that can meet the needs of the market is something that requires continuous attention, including by policymakers.

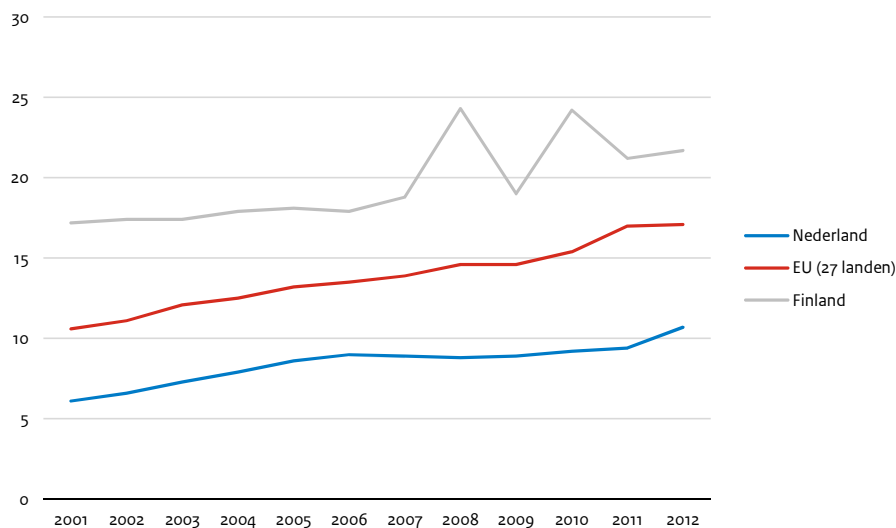
- ✓ Investing in people's knowledge has a spill-over effect, whereby it is not only the person in question who benefits from the investment, but society as a whole. The existence of this

<sup>37</sup> Statistics Netherlands (2015), ICT, kennis en economie.

spill-over effect offers a highly legitimate basis for governments to be involved with investing in knowledge.

- ✓ In a world that is becoming increasingly international in orientation, the market for talent is also becoming more mobile. The legal and regulatory framework concerning the mobility of international talent (researchers, start-ups, knowledge employees) is of great importance as far as the climate for setting up businesses in the Netherlands is concerned. It enables ambitious start-ups to base themselves in the Netherlands or to attract people from elsewhere with the required skills to the country, without being hindered by unnecessary laws and regulations.
- ✓ Finally, it can more effectively align the supply of knowledge and skills with market demand, which leads to economic growth. Reducing this mismatch results in greater levels of employment, and therefore to potential economic growth. In the context of the enterprise policy, the Ministry of Economic Affairs is working closely with other relevant ministries, such as the Ministry of Social Affairs and Employment (for example, sector planning in Technology Pact), the Ministry of Security and Justice (for example, start-up visas and work permits), and the Ministry of Education, Culture, and Science (for example, Technology Pact and Human Capital Agendas) on all these aspects – correct knowledge and skills, reducing the mismatch, and the legal and regulatory framework.

*Figure 3.19 Proportion of engineering graduates, aged 20-29, among the well-educated population, per 1,000 inhabitants*



Source: Eurostat.

The most important priority of the theme of human capital in the enterprise policy is that of raising the number of people with high-level scientific and technical qualifications. The aim is to achieve improvements in terms of quality and quantity. From studies by the UWV and others, shortages can be expected in the science and technology sector in particular, given the extent of the

predicted demand (quantity).<sup>38</sup> By international standards, relatively few people in the group of those with high-level qualifications are choosing science and technology-related degree programmes or courses. The proportion of graduates from Dutch universities with science and technology-related degrees is 10.7%, one of the lowest rates in Europe (see Figure 3.19). This percentage may also reflect the specific sector structure and demand in the Netherlands, which means it is not by definition a problem. At the same time, studies by the UWV, the Research Centre for Education and the Labour Market, and others show that there are various technical professions for which shortages are forecast – now, and in the medium to long term.<sup>39</sup>

#### *Progress in the Technology Pact ambitions*

The Technology Pact contains 22 methods for increasing the supply of well-qualified technical employees. An important element of the pact is that of public-private collaboration, often in regional labour markets. This year, an integrated monitor has been produced that keeps track of the progress in each of the blocks in the Technology Pact – choosing, learning, working (<http://techniekpact.nl/monitor>). Where possible, the Technology Pact monitor also looks back in time in order to highlight any trends.

The Technology Pact has a systemic approach for strengthening the supply of well-qualified technical employees. A notable feature of this is that in order to achieve the main objective, the entire system must 'cooperate'. For example, if you succeed in generating extra interest in science and technology among children, but do not have the extra teachers or learning pathways that this additional interest would require, then there is a risk that the target would not be reached. The approach involves three themes, each with its own area of action and sub-targets. It all starts with children who choose science and technology (including a special focus during primary education) and continues with teaching and learning (teachers, learning pathways) and working in the science and technology sector (including retraining, refresher courses). Table 3.5 summarises the quantitative progress of the Technology Pact, along these lines. The Technology Pact monitor contains more detailed information.

During the past year, there has been an increase in the number of university students electing to take science degree programmes. This means that the proportion has risen over the past ten years from 26% to 35% for universities, and from 18% to 22% for universities of applied sciences. The intake levels at MBO (Senior Secondary Vocational Education) continue to be a concern: there has been a fall in since 2005 from 32% to 30%, although intake numbers at levels 3 and 4 have risen. The Technology Pact monitor highlights as an area of concern the fact that the intake numbers for teacher training courses are declining. It is expected that more science and technology teachers will be needed in the future.

With regard to learning in the technology sector itself, the past year has seen the appearance of more training companies, several dozen new public-private partnerships, and more internship

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<sup>38</sup> <http://www.uwv.nl/overuwv/Images/20150210%20Welke%20beroepen%20bieden%20kansen.pdf>.

<sup>39</sup> <http://www.uwv.nl/overuwv/Images/Samenvatting%20Techniek.pdf>.



places for MBO students who are taking the BOL vocational education learning track, which emphasises classroom learning. However, there was a fall in the number of BBL places, the vocational learning track which is more apprenticeship based. Businesses have to pay for these and they require intensive supervision, and it is possible that they are reluctant to provide this option; the tracks also entail an element of uncertainty. The number of companies involved with the Centres for Innovative Craftsmanship and Centres of Expertise (COEs) has remained the same. This concerns a total of more than 1,800 businesses. Another striking outcome is that 492 top sector grants have been awarded (compared to 205 in 2013/2014).

Table 3.5 Key data, Technology Pact, 2013-2015

	2013/14	2014/15
<b>I Choosing science and technology</b>		
Science and technology enrolments;		
universities: New students	20,853	21,507
universities of applied sciences: New students	18,663	19,123
MBO: New students	40,154	39,575
Teacher training course enrolments	1,971	1,891
<b>II Learning science and technology</b>		
Development of internship places:		
BOL (BBL)	50,535 (70,532)	55,295 (57,655)
Training companies	104,325	105,878
Public-private partnerships		
VMBO (preparatory secondary vocational education)-MBO PPP: skills + technology route	-	48 + 9
MBO PPP: Regional investment fund	-	47
MBO PPP: Centres for Innovative Craftsmanship (CIVs)	18	17
higher professional education PPP: COEs	24	24
Number of companies involved (CIVs + Centres)	1,601	2,120
<b>III Working in science and technology</b>		
Scientists and technicians in the working population	1,464,000	1,545,000
Vacancies	23,100	27,900
Unemployment among scientists and technicians	7.1%	7.3%
<b>IV Other quantitative objectives</b>		
Involvement of companies with Jet-Net	84 companies, 35 partners	85 companies, 45 partners
Involvement of companies with TechNet	PM	3,460 companies
Number of top sector grants	205	492
Number of technical sector plans (first and second tranche)	-	28
Private co-funding sector plans	-	215 million
Number of technology coaches	PM	75
Number of technology service points	14	10

Source: Technology Pact monitor 2015. Figures regarding studying refers to the academic year; other data to the calendar years (that is, 2013 and 2014).

The Technology Pact monitor concludes that demand for ICT professionals (and highly qualified scientists and technicians) is considerable. Here in particular and in a number of technical professions, the UWV envisages a shortage. The Ministry of Economic Affairs is currently deploying various policy and other instruments to address this. Below, we explain two of the instruments – Digivaardig and the Human Capital Agenda ICT.

#### *Digivaardig*

The aim of the Digivaardig public-private programme is to strengthen the digital skills of the Dutch working population (now and in the future) in order to increase the innovative capacity and labour productivity of the Dutch economy. The activities of the programme are targeted at, among other things, government employees and those in top and other sectors, in the education sector, ICT professionals, small and medium-sized businesses, and sole traders.

An example of part of this programme is the 'Geef IT Door!' ('pass IT on') campaign. This involves ICT professionals giving guest lessons to school pupils, students, and teachers, in which they describe the future opportunities and multi-faceted career options that ICT professionals have. The campaign was launched in 2014 and 143 ICT professionals have now signed up to it, while 62 schools are in the database. There will be 29 guest lessons in 2015. To improve the digital skills of business people and to enable them to benefit more from the possibilities offered by ICT, the [www.slimmerondernemenin1minuut.nl](http://www.slimmerondernemenin1minuut.nl) online course has been developed. The course started 2013 with 12 modules – now, there are 27. Over the years, a total of 11,714 SMEs have signed up, of which 78% have actually made changes to their company. As a follow-up to this, the online course was extended to employees in 2014. No fewer than 12,932 participants have signed up.

#### *Human Capital Agenda ICT*

In order to reduce specific ICT shortages (qualitative and quantitative) on the labour market, the ICT Innovation Team is working<sup>40</sup> on a Human Capital Agenda. As well as an analysis of the labour market for ICT professionals, this ICT Innovation Human Capital Agenda contains proposals for better aligning education and the labour market and for enhancing the sustainable employability of employees. The areas of action are directed at increasing the numbers entering ICT education, at improving the participation of the business sector in education, and at stimulating lifelong learning. The action to be taken is currently being formulated with the stakeholders. The Human Capital Agenda will be presented in October, and the implementation phase will begin. The first results are expected in 2016. The action featured in the ICT Innovation HCA will be in line with the HCAs of the top sectors, the ICT and Smart Industry Sector Plans, and the Technology Pact.

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<sup>40</sup> <https://zoek.officielebekendmakingen.nl/stcrt-2014-28095.html>.

## 3.5 Investment

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*After being in the doldrums for a long time, business investment in physical capital goods increased again last year. This upward trend continued even more markedly in 2015. ICT investment, which makes an important contribution to productivity, has been recovering for some time and is still showing year-on-year increases. Although ICT investment in the Netherlands is not great from an international perspective, the degree to which ICT facilities are used in the production process of the Dutch business sector is higher than the EU average. Investment in intangible items is relatively high in the Netherlands, when compared to other countries, and is increasing. Such investment makes a significant contribution to the increase in productivity. Thanks to two large projects (Google and the Gemini wind farm) the size of investment in foreign projects rose sharply in 2014.*

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### 3.5.1 Importance of investment

Investment in physical capital such as buildings, machines, and ICT increases the production capacity of businesses, as a result of which they are able to produce more. In other words, investment leads to capital deepening – a greater quantity of physical capital per unit of work, allowing labour productivity to be increased (see Figure 2.1).

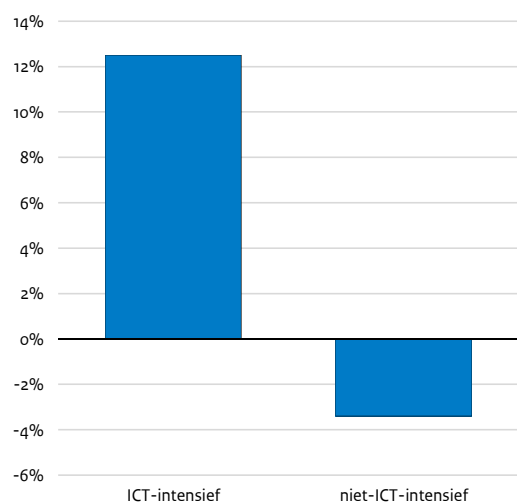
We will highlight ICT. By investing in ICT, businesses can make their production processes faster and more efficient and better align their products to the wishes of their customers, leading to greater productivity among their employees. ICT is used throughout the economy, from agriculture to healthcare. ICT investment concerns not just computer hardware and software, but also electronic networks. A good ICT infrastructure forms the basis for all digital communications, applications, and work processes. Without a good ICT infrastructure, employees have no or inadequate access to mail servers, for example, or database servers, the internet, applications, or company software.

The importance of investment in ICT by businesses is underlined in the report recently published by Statistics Netherlands.<sup>41</sup> In businesses sectors where companies invest extensively in ICT, labour productivity rose by a total of 12.5% between 2000 and 2010 (see Figure 3.20). Non-intensive ICT sectors actually saw a decrease: in 2010, labour productivity was 3.4% lower than in 2000. Moreover, the number of employees at the more productive companies in the ICT intensive business sectors went up. This positive shift effect gave an extra boost to the growth in productivity there. In fact, non-ICT intensive sectors underwent a shift to less productive companies. A possible explanation for this 'reallocation difference' is, according to Statistics Netherlands, that ICT intensive sectors are more competitive and innovative than those that use ICT to a lesser degree. Market shares of businesses in ICT-intensive sectors are more volatile in nature.

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<sup>41</sup> Statistics Netherlands, 2015, ICT and Economic Growth.

Figure 3.20 Changes in labour productivity of business sectors according to ICT intensity, 2000-2010.



Source: Statistics Netherlands, 2015, ICT and Economic Growth.

### 3.5.2 How is the Netherlands doing?

The economic difficulties between 2009 and 2013 are clearly reflected in the investment made by the business sector. Except in 2011, overall investment by businesses in other fixed assets decreased (see Table 3.6). Last year, businesses started investing more again – a trend that increased more strongly in 2015, according to Statistics Netherlands. Companies are expanding their production capacity in order to be able to meet the growing demand from the Netherlands and elsewhere.

Table 3.6 Investment in physical capital goods, 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015
<b>Investment by businesses in other fixed assets</b>	6.1	-10.5	-2.9	12.9	-3.9	-2.9	4.4	6.8
<b>of which Investment in ICT</b>	5.2	-2.9	3.4	6.4	2.3	1.5	not known	not known
	level							
<b>Investment quote (d)</b>	17.1	15.9	15.2	16.7	15.9	15.5	16.0	16.6

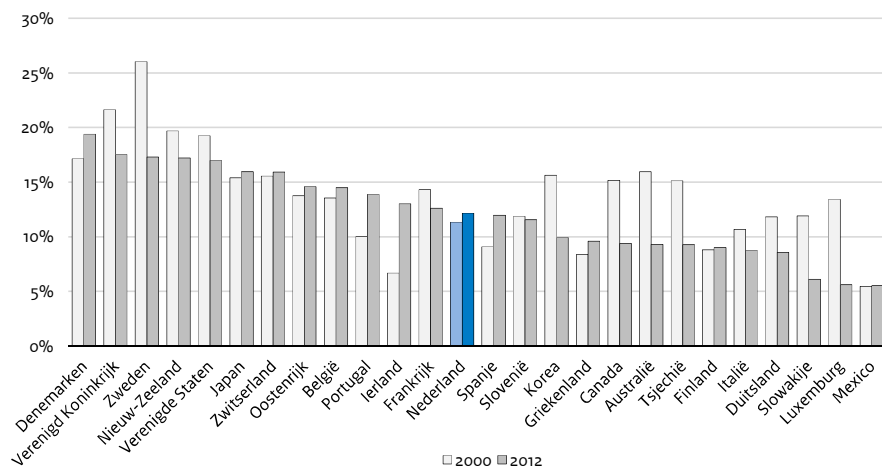
Source: Statistics Netherlands, 2015, Macro Economische Verkenning 2016; (d) Investment by businesses in other fixed assets as a percentage of the gross added value (in basic prices) of businesses, excluding the real estate sector.

The investment quote (investments as a proportion of the added value) recovered further in 2015 and is almost at the level of just before the economic crisis. A rising investment quote increases the economy's potential for growth.

Looking at how ICT investment has developed, it can be seen that businesses in this type of capital good continued to invest. The only exception was 2009. Nonetheless, ICT investment as a proportion of the overall investments in the Netherlands was not the highest in international terms (see Figure 3.21), but the proportion has improved since 2000. Differences between sector

structures form an important explanation for the differences between countries. The ICT intensive sectors, for example, are strongly represented in the Danish and British economies. Figure 3.21 also reveals that countries that invested relatively heavily in 2000, such as Sweden, the United Kingdom, and Korea, did so much less in 2012. At first sight, this looks like 'over investment'.

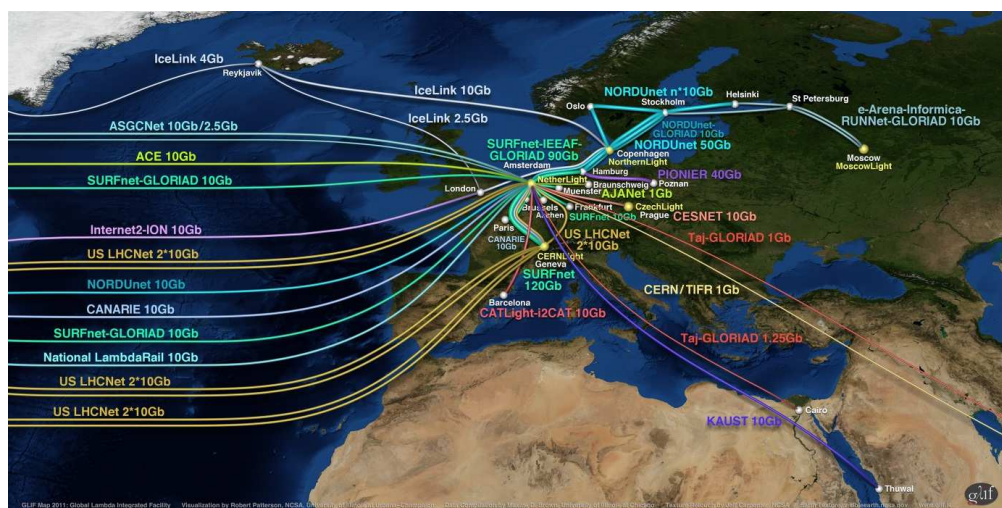
Figure 3.21 OECD: proportion of ICT of overall investments, 2000 and 2012



Source: Statistics Netherlands (2015), ICT Kennis en Economie 2015.

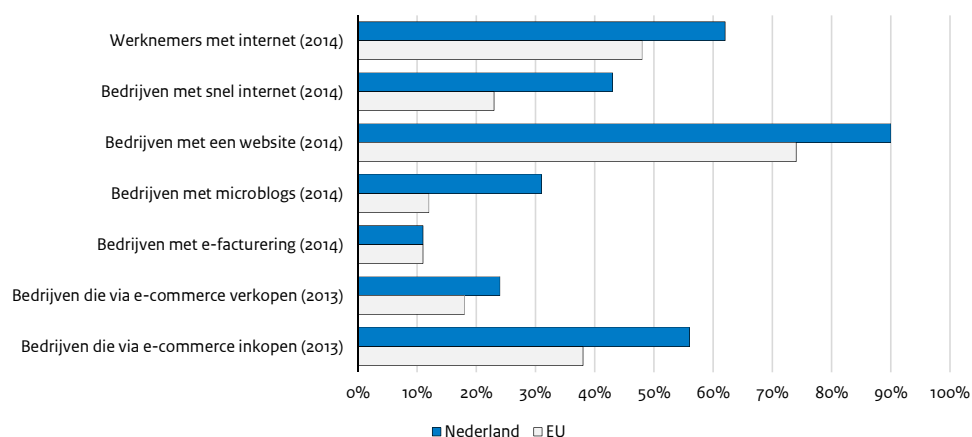
For ICT connections, the Netherlands is one of the most important internet exchange points in Europe, as shown in Figure 3.22.

Figure 3.22 The Netherlands: the international internet exchange point



ICT facilities are used in the production process of the Dutch business sector more than the EU average. Figure 3.23 shows that employees have greater access to the internet and that the connections are faster, and the businesses make more use of e-commerce, websites, and microblogs. It is only in the area of e-invoicing that the Dutch business sector is not above the EU average.

Figure 3.23 Some key data on the use of ICT facilities: Netherlands versus the EU



Source: Statistics Netherlands, ICT Kennis en Economie 2015

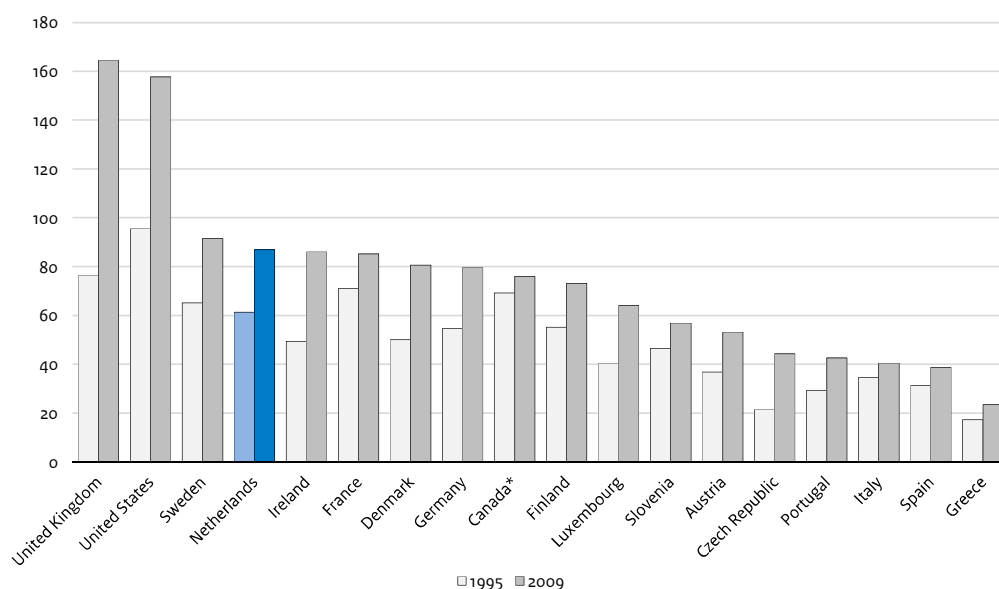
### Intangible investments

A new direction in the endogenous growth theory concerning where the growth in production comes from is that of the importance of intangible investments. This entails not just investments in R&D, but also in data, software, patents, designs, new organisational processes, specific company skills through training courses, and others. This is referred to as knowledge based capital (KBC). Just like R&D and human capital, this type can be seen as a type of investment that contributes to increases in productivity. Nonetheless, data of this kind (except R&D) are not currently regarded as investments by statistics offices in national accounts guidelines, but as intermediate expenses. Partly as a result of this, the available data on this type of investment is limited, while research into its importance is still in its infancy. At the initiative (in part) of the OECD, a number of researchers are currently collecting and constructing this data in order to be able to identify the effects of intangible assets on productivity using the growth accounting method. A database has been made for this purpose, some of the data of which we are showing below.<sup>42</sup>

Figure 3.24 shows that KBC investments are growing more quickly than are traditional physical investments in every country. In the UK and the US, the size of KBC investments is actually greater. This is not yet the case in the Netherlands, but the proportion in the Dutch business sector is high in international terms.

<sup>42</sup> See, inter alia, Corrado, Carol; Jonathan Haskel, Cecilia Jona-Lasinio and Massimiliano Iommi, (2012), 'Intangible Capital and Growth in Advanced Economies: Measurement Methods and Comparative Results' Working Paper, June, available at <http://www.intan-invest.net>.

Figure 3.24 KBC investments in relation to physical investments; 1995-2009



Source: OECD (2013).

What do investments in KBC deliver in terms of growth in productivity? The OECD recently devoted a study to the importance of KBC.<sup>43</sup> Calculations for the EU and the US show that investments in KBC by businesses contribute 20 to 34% of the growth of labour productivity.<sup>44</sup>

### Foreign investments in the Netherlands

Foreign investors create sound employment opportunities in the Netherlands and encourage innovation. Previous research by Statistics Netherlands has demonstrated that foreign investors often do more in terms of innovation and are more productive than are Dutch companies without foreign owners (Statistics Netherlands, *Internationaliseringsmonitor*). In that sense, attracting foreign investment contributes towards the objectives in the enterprise policy. Research has also shown that these foreign companies prompt domestic businesses to invest more in R&D, and therefore to become more productive (Statistics Netherlands, 2008).<sup>45</sup>

When attracting foreign investment, the focus in the Netherlands lies on high-quality strategic investments in top sectors. Examples of high-quality activities of foreign companies are head

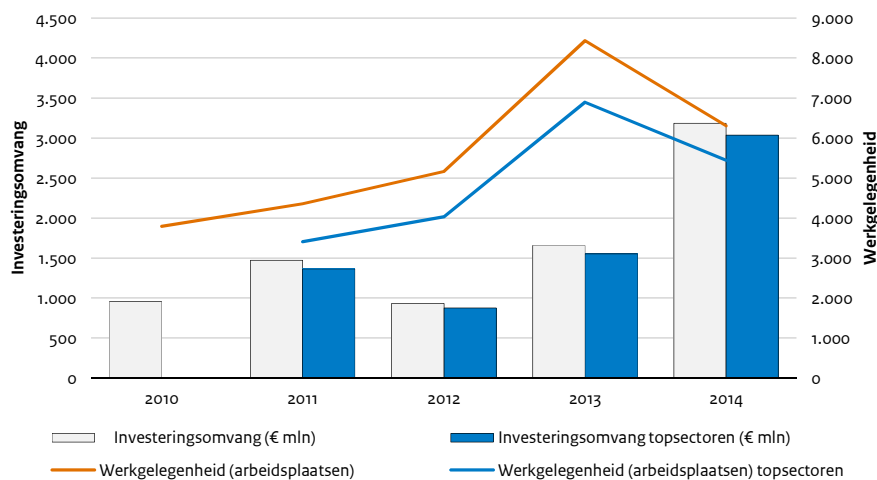
<sup>43</sup> OECD (2013), *Supporting Investment in Knowledge Capital, Growth and Innovation*, OECD, Paris.

<sup>44</sup> Corrado, C., J. Haskel, C. Jona-Lasinio, and M. Iommi, (2012), 'Intangible capital and growth in advanced economies: Measurement methods and comparative results', IZA discussion paper no. 6733, Institute for the Study of Labor (IZA), Bonn.

<sup>45</sup> Wiel, H. van der, H. Creusen, G. van Leeuwen, and E. van der Pijl, 2012, 'The Dutch productivity performance: cross your border and look around', Chapter 14 in M. Mas and R. Stehrer (eds.), *Industrial Productivity in Europe, Growth and Crisis*, Edward Elgar, pp.337-368.

offices, distribution centres, and R&D establishments. The Netherlands Foreign Investment Agency (NFIA) plays an important role in attracting foreign investment.

Figure 3.25 Extent of acquisition of NFIA foreign investment projects, 2010-2014



Source: RVO.nl

The investment volume of foreign investment projects continued to rise in 2014 (see Figure 3.25). Foreign investment in the Netherlands rose sharply last year because of the arrival of Google and the funds that Northland Power invested in the Gemini wind farm. The strong increase is also apparent in the top sector data, where foreign investment features particularly in the Energy and HTSM top sectors. Employment opportunities associated with these foreign investment projects fell between 2013 and 2014, despite the substantial increase in the volume of investment. The projects secured in 2014 were obviously less 'labour intensive' than those in 2013.

### 3.5.3 Policy framework

The enterprise framework focuses primarily on funding of investments through the GSF and BMKB (credit guarantee funds), for example. It should be pointed out that investments in innovation are often more difficult for companies to finance, due to uncertainty for example, than in physical capital, which is why many funding instruments are aimed at innovation (see Section 3.6.3).

The government, including the Ministry of Economic Affairs, actively pursues policies in relation to the development and maintenance of ICT infrastructure (public or otherwise). For 2014-2016, a subsidy has been granted to SURF to keep the Dutch ICT infrastructure of knowledge institutes competitive, and to inform the business sector about the possibilities that innovative ICT solutions offer. SURF manages the ICT infrastructure of Dutch universities and education institutes. This infrastructure is important for research and innovation. After all, research is becoming more and more intensive and in order for it to be carried out properly, significant computing power and fast connections between research and education institutes in and outside the Netherlands are needed.



Upgrades to the SURF Cartesius super computer were achieved in 2014, which have helped make Cartesius one of the top 50 most powerful computers in the world.

## 3.6 Business climate

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*Entrepreneurial capacity in the Netherlands has been on the rise for several years now. By international standards, the country is one of the most entrepreneurial in Europe. This can be largely attributed to the marked increase in the number of sole traders. In comparison with OECD countries, the Netherlands also scores well in terms of laws and regulations, with regulatory burdens decreasing in various areas. In addition, €1.35 billion of cost reductions have been achieved (as measured in April 2015), and the initial bottlenecks in the tailored approach have also been resolved. From the EU eGovernment benchmark, it appears that the services provided by the government in the Netherlands are digitised to a high degree when compared to the EU average. The process of obtaining business funding was different before the economic crisis. The funding landscape, including the Ministry of Economic Affairs instruments, has become more varied. Most instruments were used more in 2014 than they were in 2013. Thanks to the Dutch Venture Initiative, additional risk-bearing capital was secured for investment in innovative companies that are likely to succeed. At the same time, the proportion of credit requests being rejected decreased, although the number remains high compared to other countries.*

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### 3.6.1 Enterprise

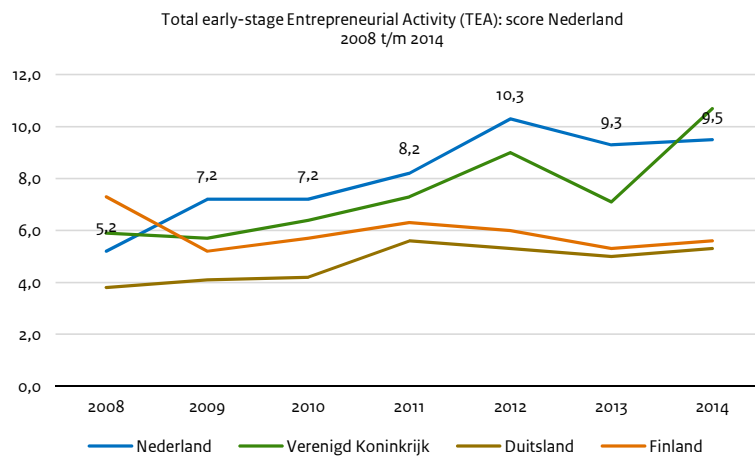
Enterprise and innovation are very closely related. Enterprise creates the necessary market dynamics, and that makes an important contribution to productivity growth. New market parties introduce new products, services, and business models, which leads to product differentiation and greater competition. In theory, the effect is twofold. A number of new market parties have been successful because they have managed to offer more added value than existing suppliers. They then edge out less productive companies, and then have the potential to scale up. In addition, new parties prompt existing companies to perform better and to become more productive. As well as entering existing markets, new businesses also play an important role in discovering new markets and new industries.

A dynamic business climate with effective entry and exit processes requires first and foremost the right conditions for starting a company and, when successful, for it to flourish. These conditions cover everything – from laws and regulations to a well-operating capital market and a culture with a positive attitude towards doing business.

#### How is the Netherlands doing?

Figures from Statistics Netherlands show that between 2009 and 2014, the number of self-employed people increased, even though the size of the working population was shrinking. The increase of 113,000 meant that 16% of the working population was self-employed by the end of 2014. The growth in the number of self-employed was also striking in international terms. By Europe standards, the Netherlands is one of the most entrepreneurial in Europe (see Figure 3.26).

*Figure 3.26 Total early-stage Entrepreneurial Activity, 2008-2014*



Source: Global Entrepreneurship Monitor.

The annual publication, 'Entrepreneurship at a Glance' (OECD 2015, p26) confirms that the increase in entrepreneurship in the Netherlands is also striking from a broader international perspective. There was no other country in the OECD in which more companies were started up in the 'industry' and 'service' sectors between 2008 and 2012 than the Netherlands. In terms of the type of business, it is noteworthy that there are particularly many sole traders in the Netherlands. Of the countries in the OECD, the Netherlands has the greatest number of sole traders in the working population except Poland.

The strong growth in the number of companies in the Netherlands in recent years is therefore due to the extensive growth in the number of sole traders. There seems to be a certain type of market dynamic in the Netherlands that provides flexibility for sole traders, companies with employees, and the labour market as a whole. On the other hand, Dialogic recently noted that the existing instruments encourage entrepreneurship, making it doubtful whether they make a net positive contribution to the growth in productivity and prosperity.<sup>46</sup> The OECD had previously observed that there are very few countries where the percentage of entrepreneurs who remain as sole traders (in other words, who do not expand) is higher than that in the Netherlands.

There is only a limited amount of international data concerning the setting up and termination of businesses, although the OECD is taking steps in this direction. This is certainly the case for the Netherlands. It is therefore not yet possible to make an international analysis based across several years. At first sight, it appears that the increase in entrepreneurship in the Netherlands has not led directly to more creative destruction among companies with employees. For the process of creative destruction, the OECD applies the 'churn rate'. In 2012, the Netherlands had the lowest churn rate for companies with employees of any country in the OECD. On the other hand, the OECD noted that new businesses in the Netherlands survive for a relatively long time – 53% of the businesses

<sup>46</sup> See Dialogic, 2015.

that were set up in 2007 still existed five years later. This is a good deal higher than the OECD average of 44%. According to the OECD, the survival rate is an important indicator for the business climate, as a high 'death rate' among start-ups could have the effect of discouraging both entrepreneurs and investors in a country. That in turn could stifle innovation and economic growth in the long term.

*Table 3.7 A number of key data on entrepreneurship, 2010-2014*

		2010	2011	2012	2013	2014
<b>Entrepreneurs in the working population</b>						
<b>Statistics Netherlands</b>	% of working population that is self-employed	14.2	14.6	14.8	15.4	16.0
<b>GEM</b>	recently started businesses (TEA)	7.2	8.2	10.3	9.3	9.5
<b>Conditions for doing business</b>						
<b>World Bank</b>	Overall position			30	26	27
<b>World Bank</b>	Position for starting a business			66	18	21
<b>Business dynamics</b>						
<b>GEM</b>	%TEA that expect to employ at least five people in five years' time	27	22	18	15	20
<b>Statistics Netherlands</b>	% fast growers	3.7	3.7	4.0	3.2	3.1
<b>Statistics Netherlands</b>	% of start-ups that are growing	7.4	6.9	6.4	6.4	
<b>Statistics Netherlands</b>	Increase in employment among start-ups that are growing	59,150	55,900	36,400	27,200	

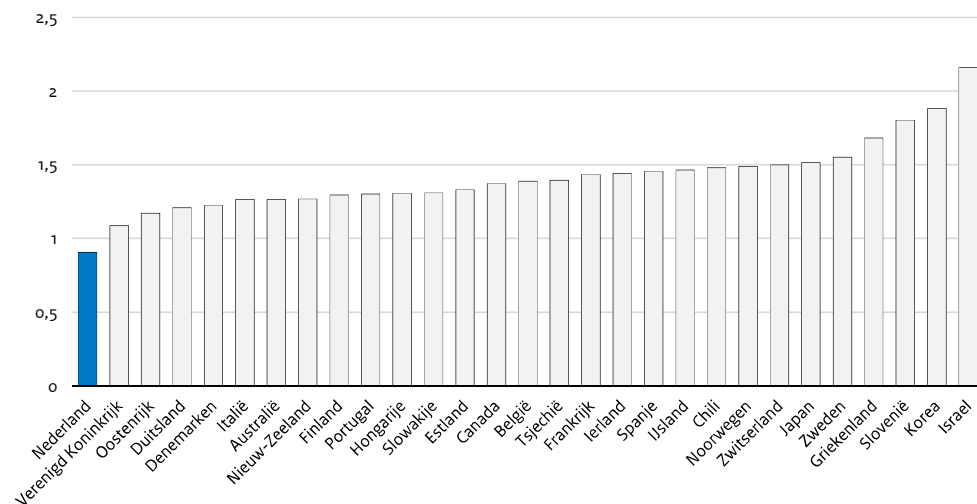
### 3.6.2 Regulation

The quality of laws and regulations and the elimination of unnecessary regulatory and administrative burdens is an important part of creating a business-friendly climate. It encourages established companies to innovate and entrepreneurs to set up businesses – both help increase productivity economic growth.

#### What progress has the Netherlands made in the field of regulatory burdens?

According to the OECD, the Netherlands is performing well in the field of regulatory burdens. The OECD has described the Netherlands as having the 'most competition-friendly regulatory environment'. This is because the country is ranked first in the most recent product market regulation (PMR) (see Figure 3.27). The PMR index shows the degree to which policy promotes competition for product markets and whether there are any obstacles in the way of entrepreneurship or international trade and investments. The lower the index, the more competition-friendly the country in question is. In the Netherlands, in other words, there are relatively few obstacles to entrepreneurship or international trade and investments.

Figure 3.27 Product Market Regulation Index, OECD, 2013



Source: OECD (2014).

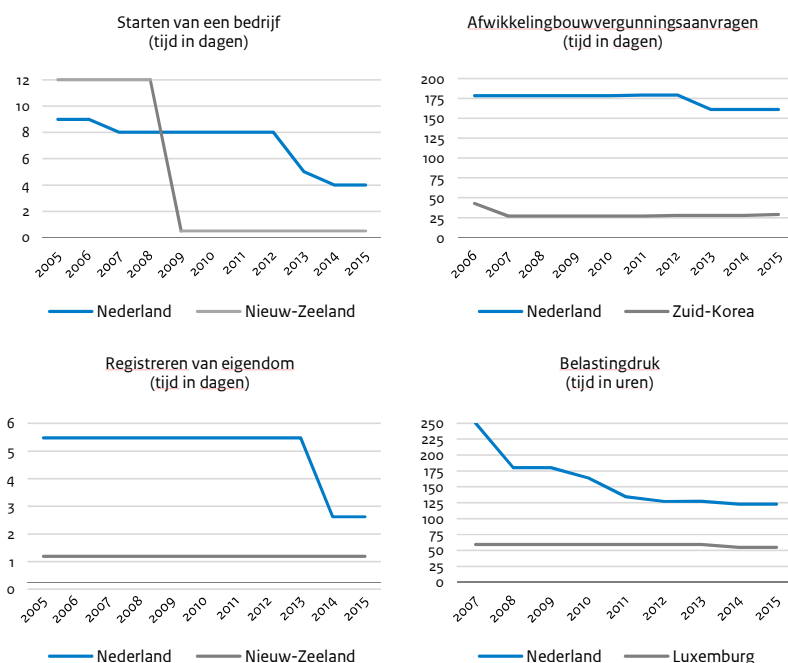
The 'Doing Business' report by the World Bank also provides an insight into the regulatory burden in the Netherlands compared to other countries. According to the latest available version of the 'Doing Business' index, the Netherlands this year ranks 27th of the 189 countries, down one place from last year. This index looks at more aspects than just regulations, and the Netherlands particularly scores less well in areas that are not related to regulation or regulatory burdens. The report shows indeed that regulatory burdens in the Netherlands have continued to diminish (see Figure 3.28).

### Dutch policy in the field of regulatory burdens

The Cabinet has set itself the target of visibly reducing regulatory burdens for businesses, citizens, and professionals. The approach is aimed at creating better conditions for the business sector in the Netherlands. If regulatory burdens are reduced, entrepreneurs are able to spend less time and resources complying with laws and regulations.

The Cabinet's approach consists of six interrelated action areas: 1) fewer regulatory burdens by improving the quality of legislation; 2) structural reductions in regulatory burdens; 3) visible reduction of regulation in tightly regulated areas (the 'tailored approach'); 4) less regulatory stacking, smarter supervision; 5) fewer regulatory burdens through administrative collaboration (with other government bodies, Europe) and, 6) better digital and other services. What are the results so far? We will highlight the results in three areas: structural reduction of the regulatory burden, the 'tailored approach', and better services.

Figure 3.28 Some data on regulatory burdens in various field, 2005-2015

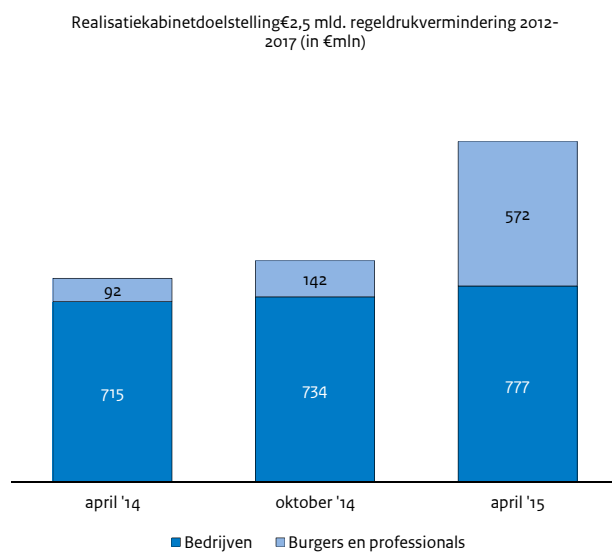
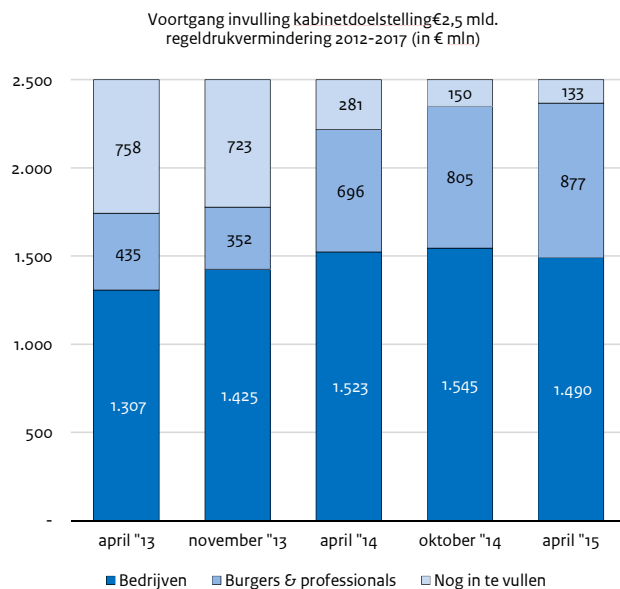


Source: World Bank (2015) Doing Business; the Netherlands is compared here to 'best practices'.

### Structural reduction of the regulatory burden

The Cabinet has set itself the target of structurally reducing the regulatory burden by €2.5 billion between 2012 and 2017 for citizens, businesses, and professionals. By April 2015, the Cabinet had identified measures worth €2.37 billion. This was an increase of around €150 million, compared to April 2014 (see Figure 3.29). It was achieved entirely in relation to 'citizens and professionals'. By contrast, there has been a slight deterioration as far as businesses are concerned, because the regulation burden-related effects of a number of measures had to be adjusted as a result of policy changes. This meant several proposed reductions being abandoned. Figure 3.29 gives a picture of what has so far been achieved. Of all the plans, €1.35 billion's worth had been realised by April 2015. This is slightly more than 55% and is a strong increase compared to the position in April 2014, when the figure stood at €0.81 billion. The increase during 2014 and the early part of 2015 is overwhelmingly due to the implementation of measures in relation to citizens and professionals, but also to around €65 million for businesses.

Figure 3.29 Progress and fulfilment of reduction in regulatory burden, April 2015



#### Tailored approach for tightly regulated areas

The tailored approach for the regulatory burden on businesses is the result of the ambition in the coalition agreement to 'reduce the less measurable, but very noticeable regulatory burden'. What is new about this integrated approach is that it puts the point of view of business first. This way, there is a focus on the elimination of regulatory burden bottlenecks encountered by businesses in practice, but it looks beyond the area of laws and regulations. Discussions with the relevant parties make it clear what type of regulatory burdens need to be addressed and how service-related obstacles to innovation and growth can be removed. Resolving these bottlenecks makes this

approach an important addition to the aforementioned quantitative approach towards regulatory burdens.

*Table 3.8 Tailored approach; identified and resolved bottlenecks<sup>47</sup>*

	Bottlenecks identified (position in 2015).	Bottlenecks resolved	
		2014	2015
<b>Construction</b>	12		6
<b>Agro</b>	29		6
<b>Logistics</b>	22		7
<b>Banks</b>	14		
<b>Healthcare</b>			
<b>Chemicals</b>			
<b>Hospitality</b>	6		
<b>Metal</b>			
<b>Childcare</b>	23		
<b>Life Sciences &amp; Health</b>			
<b>Creative Industry</b>	11		

Table 3.8 shows the status of the bottlenecks identified in the various sectors. The bottlenecks in four sectors have not yet been identified. For the Healthcare sector, the bottlenecks are integrated in the regular approach to regulatory burdens; an inventory of the bottlenecks in Life Sciences & Health is being drawn up; the inventory of the bottlenecks in the Metal sector is undergoing analysis; while an action plan for the Chemicals sector is to be presented in the autumn.

The table also gives a picture of the bottlenecks that have been resolved so far. The years 2013 and 2014 were mostly about the launch and analysis. For a number of sectors, 2015 was the first real 'harvest year' of the tailored approach. We will look more closely at two tailored approach tracks – construction and logistics.

*Two tailored approach tracks highlighted:*

A 'Vlottrekken' team was set up as part of the tailored approach for construction on 1 January 2015. Working together with Bouwend Nederland and VNO-NCW (Confederation of Netherlands Industry and Employers)/MKB-Nederland, the aim is to help local authorities and businesses to comply with national laws and regulations with as little regulatory interference from regulations as possible, and to reduce the burden of local regulations. Local authorities and businesses that face bottlenecks of this kind can contact the team for knowledge and expertise. Another part of the tailored approach is the 'Ontslakken' project, in which the regulatory stacking of government interference in construction projects is addressed. The objective is to speed up construction projects and to improve service provision to businesses. A total of 24 local authorities are currently in the process of slimming down the regulations, operational methods, attitudes, and behaviour.

<sup>47</sup> Since 2013: Healthcare, Logistics, Agri & Food, Banks, Construction, Life Sciences & Health, Chemicals. Since 2014: Metal, Hospitality, Childcare. Since 2015: Creative Industry.

The plan of action for the tailored approach to logistics was sent to the House of Representatives at the start of this year. It describes 50 bottlenecks of which 22 can be addressed within the next two years by the Cabinet, working in conjunction with the business sector and government bodies.

The efforts have subsequently delivered the following results:

- Fewer fines are being issued as a result of not allowing 'Eurovignettes' to expire. The EVO, TLN and the Tax Authorities information campaigns have the aim of alerting businesses when their Eurovignettes are due to expire to enable them to acquire a new one on time. The information campaigns appear to be effective;
- Extension of delivery times. In Amsterdam, an experiment involving the extension of delivery times has resulted in a decision to make the arrangement permanent. This will save transport companies time and enable them to deliver on time.
- It is been made easier to comply with hazardous substance regulations. Using a newly developed app, businesses are able to learn in an uncomplicated way about relevant laws and regulations; in April 2015, the app had been downloaded 16,100 times.

### *Reduction of regulatory burden through digital service provision*

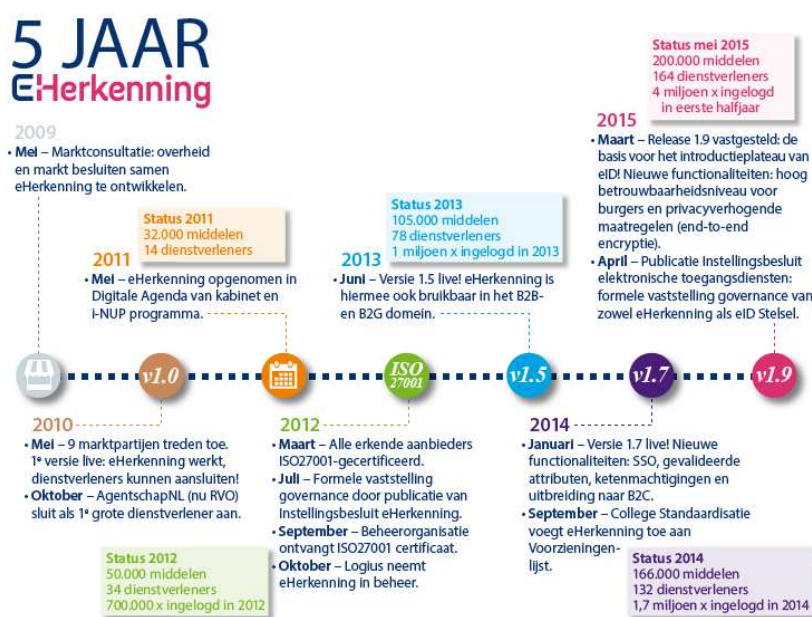
The Cabinet is working on the digitisation of government services for businesses. Digitisation reduces the regulatory burdens on businesses and makes the services provided by the government less costly and better in terms of quality. A number of public-private facilities and standards have been developed that form a cohesive 'digital government for businesses' such as an information portal (ondernemersplein.nl), a log-in facility (eHerkenning) and standards for exchanging information (such as Standard Business Reporting and e-invoicing).

- ✓ Ondernemersplein.nl ensures that businesses spend less time looking for government information that is relevant to them. It was launched in the spring of 2014 and has experienced strong growth, from 30,000 visitors at the start to 500,000 per month now. It also now has more than 50,000 followers on Twitter, and there are in excess of 600,000 links that refer to the site;
- ✓ eHerkenning makes transactions possible that could previously only be done using paper. Since its launch in 2010, eHerkenning has undergone steady growth to more than 200,000 business users and 160 government organisations that have made their services available via eHerkenning (see Figure 3.30). In the past eighteen months, the number of affiliated government organisations has doubled. This mostly concerns local authorities, but the Netherlands Enterprise Agency also requires eHerkenning for its services in the field of agriculture and for all its subsidies;
- ✓ Every year, businesses are obliged to supply financial reports to the Tax Authorities, the Chamber of Commerce, Statistics Netherlands, and to banks. Setting up a business administration on the basis of Standard Business Reporting (SBR) means that data can be recycled efficiently. Since 2013, SBR has been the sole method for making system-to-system income tax and corporation tax declarations to the Tax Authorities; the same has been true of turnover tax since 2014. The number of declarations being made using SBR



are rising sharply. In 2013, the Tax Authorities received three million declarations via SBR, nearly eight million in 2014, and more than 6.5 million up to July 2014. Since 2014, the annual accounts of minor legal persons may only be filed in the Trade Register using SBR or the online 'Zelf deponeren jaarrekening' (ZDJ) service. Chambers of Commerce received more than 100,000 annual accounts via SBR and ZDJ in 2014, and almost the same amount in the first seven months of 2015. From 2015, it has been possible to supply some of the reports that have to be submitted to Statistics Netherlands via SBR.

Figure 3.30 Five years of eHerkenning, 2010-2015



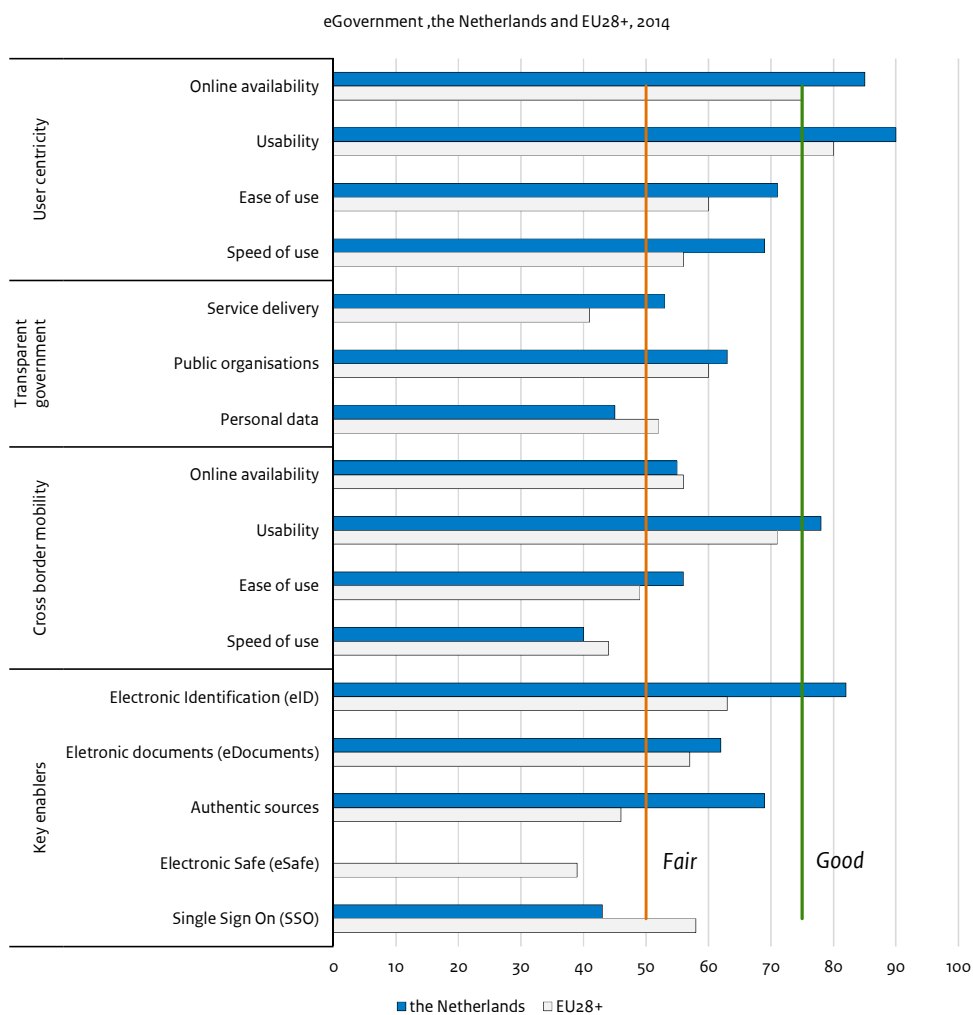
The Cabinet is also working on digital tools for help with rules – these are intended to provide clear information for businesses on which rules apply to their organisations, and what they should do in order to comply with them. VNO-NCW and MKB Nederland have stated which tools they regard as having a priority. Of the total of seventeen of these tools, thirteen are now up and running. Examples are the tools for the Activities (Environmental Management) Decree, fire safety, Legionnaires' disease, and playground equipment. The aim is for another ten tools to be ready by the start of 2016.

From the EU eGovernment benchmark<sup>48</sup>, it appears that the services provided by the government in the Netherlands are digitised to a high degree when compared to the EU average. The Netherlands scores particularly highly when it comes to the availability and user-friendliness of

<sup>48</sup> <https://ec.europa.eu/digital-agenda/en/news/eu-egovernment-report-2015-shows-online-public-services-europe-are-smart-could-be-smarter>.

digital services for citizens and businesses, the availability and use of digital identification methods, and the use of key registers by the government, where citizens and businesses are asked to provide their data just once, and which the government can then use again and again.

Figure 3.31 eGovernment: Netherlands versus EU, 2014



Source: Eurostat (2015).

Finally, research conducted on behalf of the Ministry of the Interior and Kingdom Relations has underlined the need for continued efforts towards the next steps in digitising government services.<sup>49</sup> Government organisations are increasingly expanding and improving their digital services..

<sup>49</sup> [www.rijksoverheid.nl/ministeries/bzk/nieuws/2015/06/03/tevredenheid-over-overheidsdienstverlening-weer-licht-gestegen.html](http://www.rijksoverheid.nl/ministeries/bzk/nieuws/2015/06/03/tevredenheid-over-overheidsdienstverlening-weer-licht-gestegen.html).

### 3.6.3 Financing climate

Financing the costs of and investments in innovation is an important aspect of entrepreneurship. Between the aims of businesses (such as restructuring, growth, or innovation) and the actual accomplishment of these aims, being able to obtain sufficient financial resources is often a decisive factor. For this reason, the degree to which the financial sector is able to provide enough funding against conditions that are acceptable is important for the development of businesses, and for the promotion of entrepreneurship and innovation. In a panel study involving 76 countries between 1988 and 2010, Statistics Netherlands found a strong link between access to financing and innovation, and therefore the macroeconomic performances of countries.<sup>50</sup> It is estimated that around 20% of the decrease in innovation-related performance in 2007/2008 can be ascribed to reduced access to finance.

Determining empirically whether access to finance is limited, and to what extent, is a complex matter. What is well-documented in economic literature is the existence of different forms of market imperfection that result in perfectly healthy companies not being able to attract the financing that they need in order to be able to invest. These imperfections include information asymmetry (insufficient understanding of the potential profitability of a business), transaction costs (relatively high evaluation costs of an application, given the returns), externalities (positive societal benefits of an innovation that do not fully accrue to the business and financier), and coordination problems (supply and demand that are broad-based and varied, and which are not sufficiently compatible). This is particularly the case with young, small, and/or innovative companies. Such companies do not usually have any past reputation or track record.

#### Financing in the Netherlands: what is the current picture?

The credit crisis of 2008 and the subsequent five-year long economic downturn have had a strong impact on the supply of and demand for business finance. There was initially a fall in demand, and therefore less finance was needed. At the same time the crisis, and new international regulations that followed it, prompted the major Dutch banks to reassess their position on the capital markets. Until the start of 2008, the amount of credit being granted to the business sector was increasing fast. The rate of increase then declined, although the amount was still growing. Since 2013, there has been a decrease. In July 2015, the amount loaned stood at 295 billion, ten per cent less than two years earlier (see Figure 3.32).

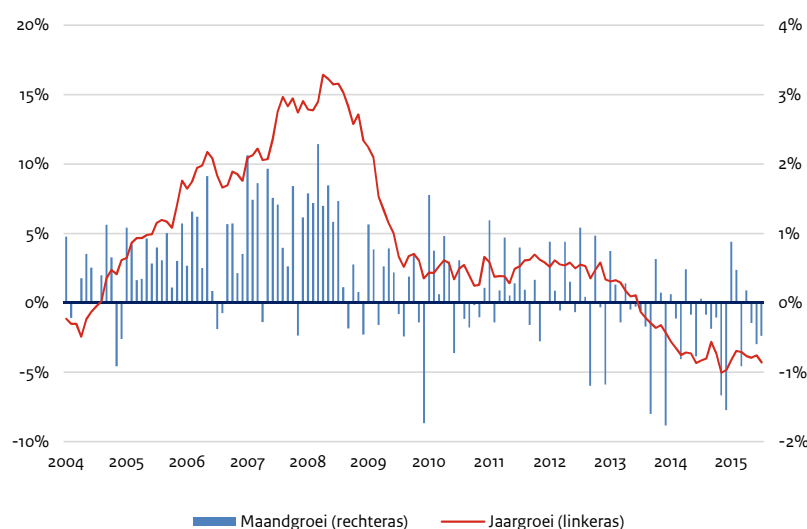
According to the Dutch Central Bank and the Netherlands Authority for Consumers and Markets, the Dutch market for business loans to SMEs remains, even after the crisis, very concentrated. This raises questions about how effectively the market is performing, and whether access to finance in the Netherlands is as it should be. Developing and encouraging alternative suppliers has been mentioned as a significant solution. In the dynamics of a changing capital market, several new alternative forms of finance have emerged in the last few years. Examples include credit unions, supply-chain financing, and crowdfunding. Although modest in volume, with transactions worth €78 million in 2014, the Netherlands is one of the top five countries in terms of how

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<sup>50</sup> <http://www.cpb.nl/publicatie/het-effect-van-toegang-tot-externe-financiering-op-innovatie-een-macro-economische-benadering>.

developed this market is. The new 'Nederlands Investerings Instituut' (Netherlands Investment Institute, NLII) is a private initiative for making the Netherlands attractive to large institutional investors. So far, the NLII has launched two funds.

*Figure 3.32 Credit granted by Dutch MFIs to non-financial companies in the Netherlands*

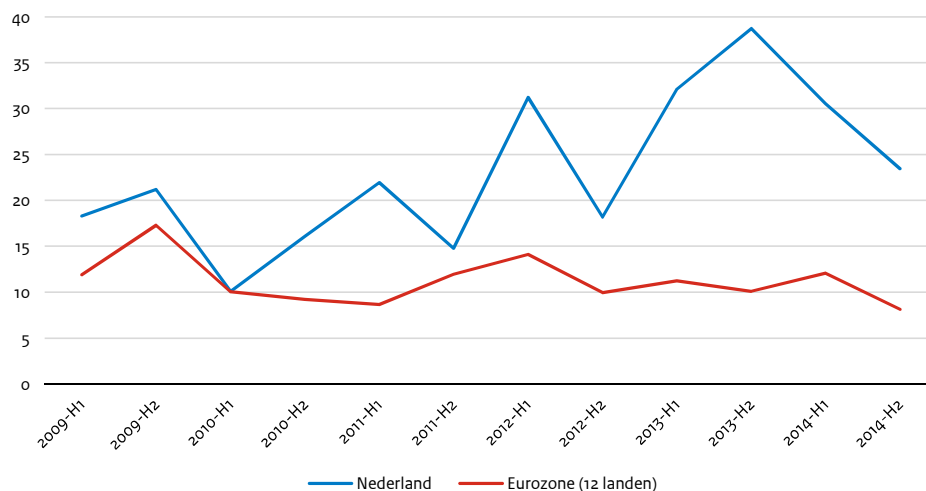


Source: Dutch Central Bank.

A feature of the risk-bearing capital market during the years of the economic crisis was the reduction in the activities of major investors. Banks and institutional investors such as pension funds made fewer resources available to private equity funds. In addition, many innovation and other grants for the business sector from the central government were stopped and replaced in part by revolving instruments. Following the creation of the Dutch Venture Initiative (DVI), in collaboration with the ECB, private equity funds have acquired more capital in the past year.

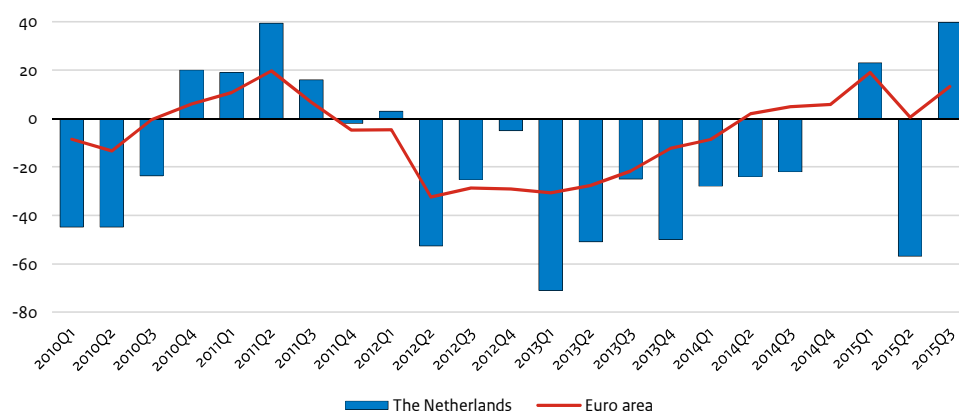
In European terms, the proportion of loan applications that are rejected is high in the Netherlands. This looks more than incidental: an overview for the years 2009 to 2014 shows that the proportion was structurally higher than average, and in many case the highest among EU nations. It is difficult to give a conclusive explanation for this. However, research by the Dutch Central Bank shows that there were relatively many applications from businesses with a poor financial position, in comparison with other countries.

*Figure 3.33 Results of applications by SMEs to banks for loans, percentage of 'applied, but rejected', 2009-2014*



Source: ECB, SAFE survey.

Figure 3.34 Demand for credit



Source: ECB: Bank Lending Survey.

After a long period of falling demand in Europe and the Netherlands alike, the banks reported in the first and third quarters of 2015 that demand for credit was again on the rise (see Figure 3.34.). This picture was confirmed in the quarterly statistics of the Dutch Central Bank concerned outstanding loans to SMEs. The first quarter of 2015 was the first since the statistics were compiled (2013-Q3) in which the volume of outstanding loans to SMEs had grown. As previously stated, the overall level of credit made available to the business sector is still falling. The most recent financial monitor from Panteia reports that a smaller percentage of businesses have sought finance. This is not necessarily contradictory, as this concerns absolute numbers of businesses, and not the actual amount of finance. A positive signal from the finance monitor is that companies are increasingly frequently looking for financing for the purpose of investment (their number

comes primarily from those looking for operating capital) and that the proportion of credit applications that are rejected in full is decreasing.

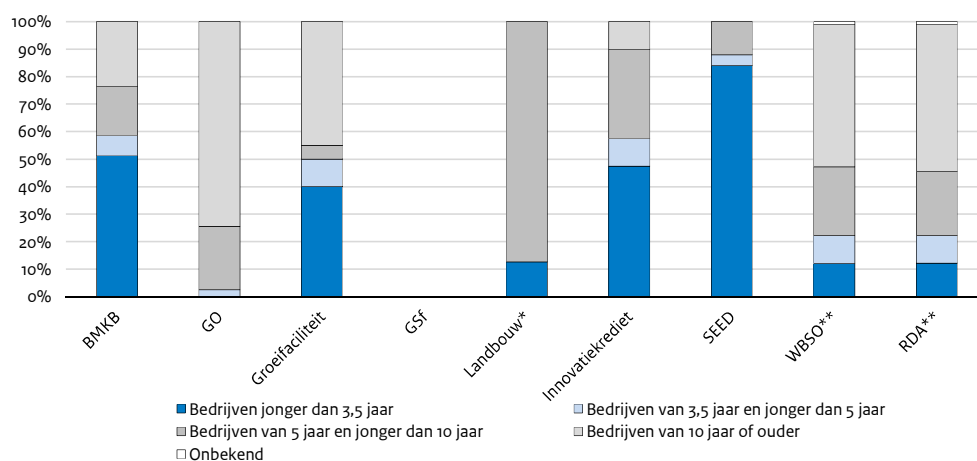
### Policy framework

The starting point of finance instruments is that funding businesses is, in principle, a market activity. Using targeted incentives for specific groups and financing issues, the instruments are aimed at creating more supply. It is hoped that this can be achieved at minimum cost to the taxpayer. It involves the providers of finance paying for the use of a government guarantee (the conditions vary, according to the situation) so that it is both additional and cost-covering to a significant degree (this is the aim). In the area of risk-bearing capital, the target is for as high a revolving level as possible (depending on the stage of life and the target group).

The most prominent target group of the instruments is SMEs: by virtue of their size, they find it more difficult to attract financing. At the same time, it is not the case that the only reason SMEs have difficulty in attracting financing is their size. SMEs form a highly heterogeneous group of companies that includes sole traders, the self-employed who employ a small number of people, family firms, starters, those that are growing, innovative SMEs, multinational SMEs, and knowledge-intensive R&D companies. The features of these differences among SMEs can bring additional complications. For starters, for example, the lack of a track record is a factor, while for R&D companies, it is the high level of uncertainty about future returns. Some sectors, such as agriculture and shipping, have their own particular problem areas. All of this means that there is a demand in the market for a range of instruments that can offer a tailored approach.

Different instruments benefit new, small, fast-growing and innovative companies that set up new businesses or take over existing ones. Figure 3.35 gives an insight into the degree to which the generic financing and innovation instruments affect businesses according to the ages of the businesses. The BMKB and GO (business financing guarantee) are aimed at the providers of credit in the relatively lower risk sector of the capital market, at smaller and larger credits respectively. The Growth Facility Scheme is aimed at guarantees in the higher risk sector. It can be concluded that the WBSO, RDA and the Growth Facility largely cover the business sector, with around 50% of companies older than ten years, and a similar proportion of firms that have existed for less than ten years. It is generally younger companies that benefit from the SEED, Innovation Credit, and BMKB. SEED assists very young companies (the main focus on those in existence for less than 3½ years). The BMKB and Innovation Credit do the same, but also assist relatively many companies of between 3½ and ten years old. These schemes, in other words, mainly enable small companies to take the next steps in their development.

*Figure 3.35 Use of instruments, according to age of company, 2014*



Source: RVO.nl. \* A different categorisation is used in the case of the 'Garantstelling Landbouw' scheme. Of the applications, 13% met the 'starters' criterion; this concerns entrepreneurs aged under 40 with no previously experience of operating an agricultural business entirely at their own expense and risk. This subdivision includes 'Garantstelling Landbouw Plus'. No applications to this scheme were made by starters in 201. \*\* The subdivision into categories in the case of the WBSO and the RDA is slightly different: instead of '3.5 years', read '3 years'.

Table 3.9 Financing instruments: number of awards, 2010-2014

	2010	2011	2012	2013	2014
<b>Guarantees + Qredits</b>					
<b>BMKB</b>	3,701	4,325	2,640	1,983	1,949
<b>GO</b>	99	40	32	20	34
<b>Growth Facility</b>	30	20	21	16	20
<b>Garantie Landbouw</b>	242	319	289	192	64
<b>Qredits</b>	549	1,000	1,134	1,021	1,192
<b>Future fund</b>					
<b>Innovation Credit</b>	27	37	36	35	40
<b>SEED</b>	29	39	37	33	19
<b>VFF</b>					8

Source: RVO.nl

Most financing instruments have been used more this year than last – this is an indication that more financing has been made available for investments by the business sector. Between 2009 and August 2015, more than €5.5 billion in guarantees and financing were issued to companies to enable to them to start, grow, and innovate. This meant that the financing in the market amounted around €10 billion. The most important developments in terms of use and effect of the various instruments aimed at improving access to finance a summarised in the table below. More detailed information can be found in the 'Benuttingsbrief' and at volginnovatie.nl.

Table 3.10 Financing instruments: amount (in billions), 2010-2014

	2010	2011	2012	2013	2014
<b>Guarantees + Qredits</b>					

BMKB	742	909	486	344	372
GO	487	219	114	59	106
Growth Facility	24	13	14	9	35
Garantie Landbouw	53	68	56	45	35
Qredits	9	16	20	16	28
Future fund					
Innovation Credit	56	48	53	53	50
SEED	20	12	16	12	22
VFF					2.3

Source: RVO.nl

### 3.6.4 Globalisation

The globalisation of business activities is obviously crucial for the continued growth of companies based in the Netherlands. By international standards, the country has a relatively small domestic market. Research by Statistics Netherlands has shown that businesses that are more internationally oriented are more productive and more innovative, and more often succeed in improving their competitive position (Statistics Netherlands, *Internationaliseringsmonitor*). The enterprise policy supports businesses by promoting exports (trade missions), through the network of innovation attachés, and via the route of development cooperation.<sup>51</sup>

#### *Economic missions with government ministers*

To meet potential business partners, to expand international networks, to get a better view of market opportunities, to exchange knowledge, and to raise their profile, Dutch companies can take part in economic missions with government ministers. The purpose of economic missions with government ministers is to enable business people to open doors that normally remain closed. For that reason, missions form a useful step up to a market position abroad.

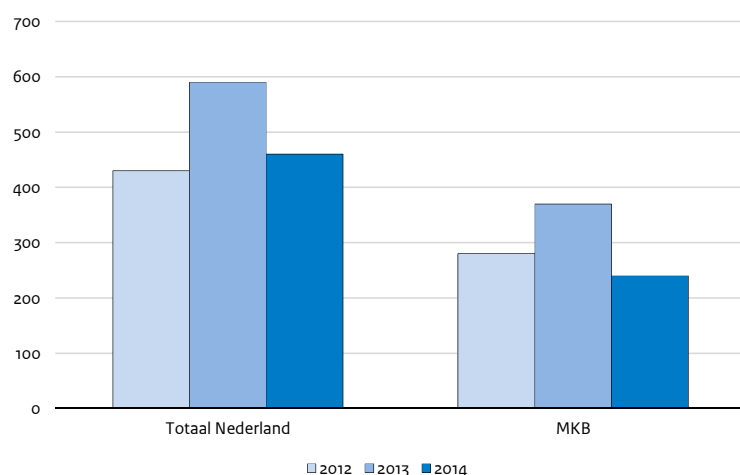
In 2014, twenty missions were organised involved a total of 460 unique businesses/institutes, including 240 SMEs (see Figure 3.36). The number of unique participations was a good deal higher in 2013: 590 businesses/institutes, including 370 SMEs. The recent decline in the number of participants can be explained by the fact that 2013 was an exceptionally good year regarding the numbers taking part in trade missions. The two important missions, with an unusually high number of participants in 2013 were one to Germany (with 100 participants) and one to Indonesia (125). The fall in the number of organisations participating is located in the group of SMEs (370 taking part in 2013, compared to 240 a year later). The number of large firms – that is, those with more than 250 employees – to accompany ministers in 2014 remained the same as the year before.

It should also be pointed out that some companies/institutes took part in more than one mission, as the total number of participants among companies/institutes was 580 in 2014.

<sup>51</sup> In previous years, this monitor reported on some data regarding development cooperation (including private-sector investment (PSI), PPPs, and infrastructure (ORIO)). In the final quarter of this year, the Ministry of Foreign Affairs will report on the progress of the instruments in relation to development cooperation, including the Dutch Good Growth Fund.



Figure 3.36 Participation in missions with government ministers, by companies/institutions, 2012-2014



Source: RVO.nl

#### Innovation attachés

The Innovation Attaché Network (IAN, formerly the Technical and Scientific Attachés) supports Dutch businesses, knowledge institutes, and in particular the top sectors in their international innovation ambitions. The IAs are based at embassies and consulates in fourteen of the countries that are most relevant – in terms of innovation – to the Netherlands, and are engaged in 'economic diplomacy' in technology and knowledge, identifying opportunities for R&D collaboration, and joint innovation. The IAN acts worldwide and supplies services to businesses, knowledge institutes, and governments, often in public-private collaboration organised around top sectors or as part of meeting societal challenges. Against the background of the State visit to Japan and South Korea in late 2014, for example, much effort went into forging links between Dutch companies and opportunities in the two countries in the field of cyber security, which led to numerous new contacts and contracts.

Table 3.11 Some key figures concerning the Innovation Attaché Network, 2012-2014

	2012	2013	2014
Questions or requests for information	2753	3123	2782
Linking potential foreign R&D counterparts	495	585	715
Missions and conferences	284	450	440
Seminars	109	199	230
Formalised collaborative partnerships	50	65	115

In 2013, all the key indicators such as answering questions, the organisation of missions, and collaboration partnerships that had been established showed a considerable improvement

compared to 2012 (see Table 3.11). This was not the case last year. The key indicators concerning the formation of networking and collaboration have improved, but the one for knowledge acquisition and transfer (in practice, answering questions or requests for information) has fallen back. Because the top sectors are a controlling force for globalisation, the task of linking Dutch networks to potential foreign counterparts is picked up even more quickly by the IAN. This process involves a great deal of knowledge transfer from IAN to Dutch parties, but they are part of this more intensive dialogue and can therefore not be regarded as separate questions.

## 4 Top sectors

*The added value of top sectors is growing more quickly than in the rest of the economy, especially when corrections are made for the decline in natural gas production in 2014. R&D in the top sectors is increasing, although R&D intensity has remained the same. By international standards, the Dutch top sectors are performing above average as far as labour productivity is concerned. Compared to other national sectors too, they are productive.*

### 4.1 Introduction

The enterprise policy has two tracks – the generic track discussed in Chapter 3, and another specifically aimed at strengthening the top sectors. This chapter deals with the enterprise policy and developments in the top sectors. The enterprise policy is based on three principles: public-private collaboration, an integrated approach, and joint organisation and financing of research and innovation. The policy is carried out through cooperation between the business sector, knowledge and research institutes, and national and local government. The parties involved, who have been brought together in 'top teams', jointly identify the opportunities and bottlenecks and define the agenda; they also state where public and private resources should be deployed.

#### **Logistics top sector, as opposed to transport and storage**

The Logistics top sector comprises all the logistics activities that take place in the business sector. In other words, it goes beyond the activities of the transport and storage sector. However, for Statistics Netherlands, it is only possible to construct data for a number of variables based on the functional description that are representative of the Logistics top sector. Where applicable, this data will be presented in Monitor; if this is not possible, only data for transport & storage will be presented. This concerns such variables as R&D and the degree to which instruments are used where the difference between the two definitions is less relevant.

There are nine top sectors: Agri & Food<sup>52</sup>, Chemicals, Creative Industry, Energy, High-Tech Systems and Materials (HTSM), Life Sciences & Health (LSH), Logistics, Horticulture & Propagation Materials (HPM),<sup>53</sup> and Water. A feature of these sectors is their high rate of labour productivity, their emphasis on exports, and their high level of R&D expenditure. To continue to maintain this strong position in the future, a policy aimed at innovation and sustainability is needed. The top sectors therefore have a key role in the enterprise policy and in particular in innovation, human capital, regulatory burdens, and globalisation. Moreover, many bottlenecks and challenges in the field of knowledge, education, and regulatory burdens are sector-specific in nature. Responding to these requires a tailored approach and a specific mix of policy instruments. On the other hand, the resolution of societal issues is becoming an increasingly important aspect of various top sectors, which also leads to cross-overs. This latter topic is discussed in the first special topic of Chapter 5.

This year, too, new and more data about the top sectors has become available, in comparison with the previous Monitor. Figures are now available for each top sector for the years 2010 to 2013. The figures for the years to 2012 are definitive; those for 2013 are provisional. This has made it

<sup>52</sup> The core of Agri & Food consists of the primary production and processing of food (and food ingredients) in the food industry. This is the demarcation used in this chapter unless otherwise indicated. The Agri & Food top sector also includes the special logistics, trade and financial services that are used for foodstuffs, and research and development in the field of agriculture and the food industry.

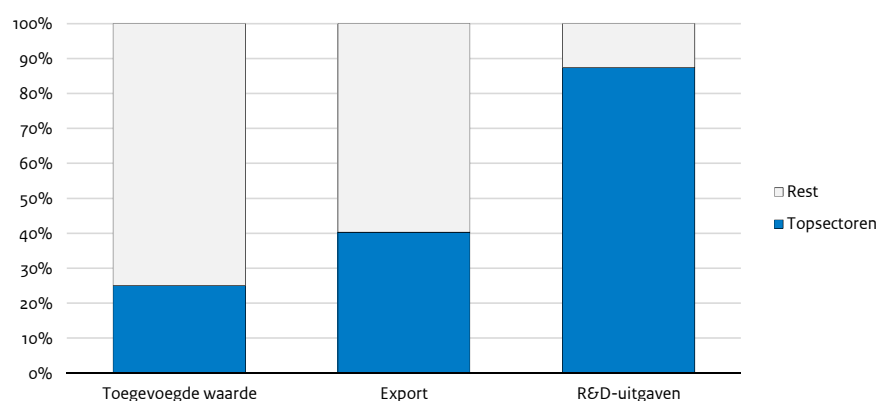
<sup>53</sup> Wherever possible, figures are also presented for HPM for the 'Horticulture Complex'. These figures consist of the results of research by the LEI into the agri-complex.

possible to monitor developments in the top sectors since the start of the enterprise policy. In addition, Statistics Netherlands has released data using a flash estimate for 2014 for the top sector as a whole for a number of key variables, allowing as up-to-date a picture as possible to be drawn. For the top sectors, a similar flash estimate for 2014 for a number of indicators is now available for the first time. This flash estimate has a certain margin of error, as Statistics Netherlands does not yet have all the data at its disposal. This year, an international comparison of the Dutch top sectors has been carried out with similar sectors in other countries. The data shows that the top sectors as a whole have a very healthy starting position in the international arena (see Section 4.3).

## 4.2 Structure and developments in top sectors

This section highlights several key data from the 2015 top sectors Monitor by Statistics Netherlands. The first part of this section deals with the importance and the structure of the top sectors in the Netherlands on the basis of the proportion of added value that these sectors deliver – in R&D expenditure and overall export of goods. The second part describes the developments between 2010 and 2014. There is also a focus on the dynamics of added value, employment, and labour productivity in the top sectors.

Figure 4.1 Share of top sectors in the Dutch economy, 2012.



Source: Statistics Netherlands (2015), Monitor Top Sectors 2015.

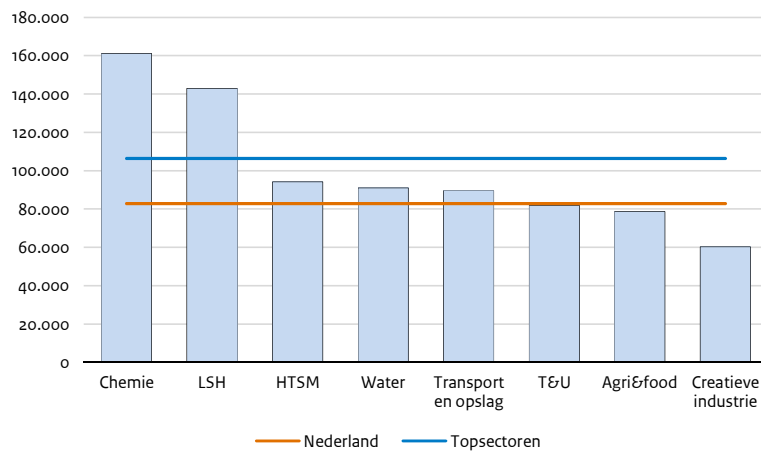
### Importance and structure of top sectors in the Netherlands

The share of the nine top sectors in added value, R&D expenditure, and overall export of goods underlines their importance to the Netherlands (see Figure 4.1).<sup>54</sup> The share of the top sectors in the added value of the Netherlands is 25%. In addition, the nine sectors are together responsible for 88% of private R&D expenditure. This high percentage illustrates the knowledge-intensive nature of the top sectors. They account for around 40% of total Dutch exports of goods.<sup>55</sup>

Figure 4.2 Labour productivity level (euros per FTE), 2012

<sup>54</sup> Like last year, we look again at the proportion in 2012. Whereas the figures last year were provisional, they are now definitive.

<sup>55</sup> Corrected for re-exports, the percentage is a good deal higher.

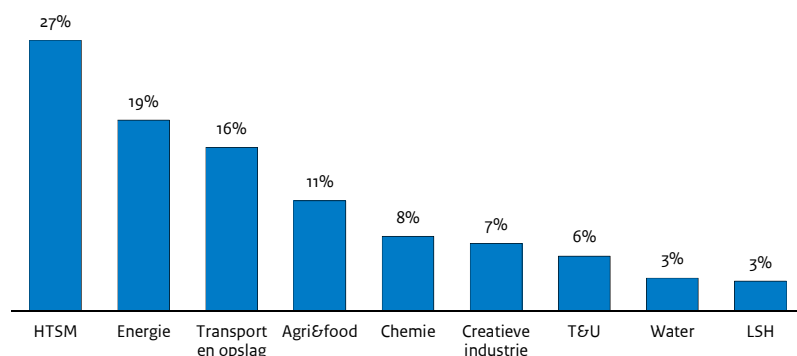


Source: Statistics Netherlands (2015), Monitor Top Sectors 2015.

On average, the top sectors have a higher rate of labour productivity, defined as the added value for each FTE, than the average for the Dutch economy (see Figure 4.2). Among the reasons for this difference is that the top sectors are more capital intensive and more knowledge intensive. The Energy top sector in particular (not shown) has a high rate of labour productivity – four times higher than the top sector average and more than five times higher than the Dutch average. An important reason for this high productivity level is that this top sector is very capital intensive. The Chemicals and LSH top sectors are also well above the average. These are both sectors that combine a high degree of added value with a relatively limited deployment of people.

The HTSM, Water, and Transport and Storage sectors are just above the Dutch average. The Creative sector has a relatively low level of labour productivity. There are few scale benefits in this sector, making it labour intensive. It includes many SMEs. Every year, many new starters join this young sector, but they are generally less productive than the more established companies.

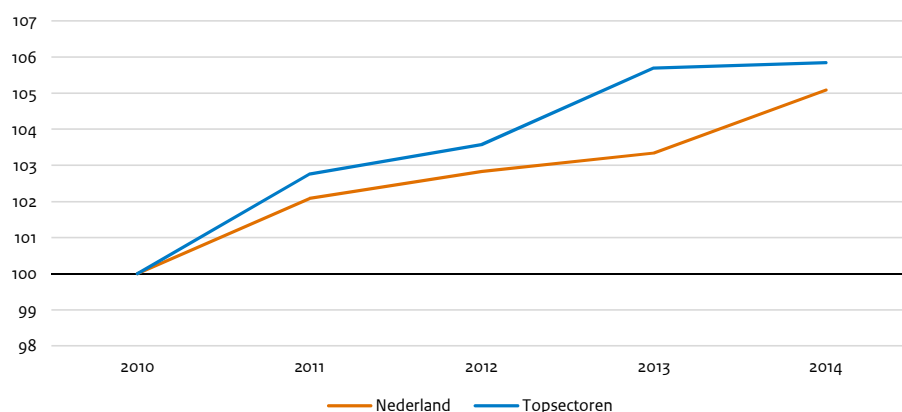
Figure 4.3 Share of top sectors in added value of top sectors as a whole, 2013.



Source: Statistics Netherlands (2015), Monitor Top Sectors 2015.

In terms of added value, HTSM is by far the biggest top sector (see Figure 4.3). This sector is responsible for more than a quarter of the added value of the nine sectors combined. Measured in terms of added value, the relatively smaller top sectors are HPM, Water, and LSH.

Figure 4.4 Added value, 2010-2014 (2010=100)



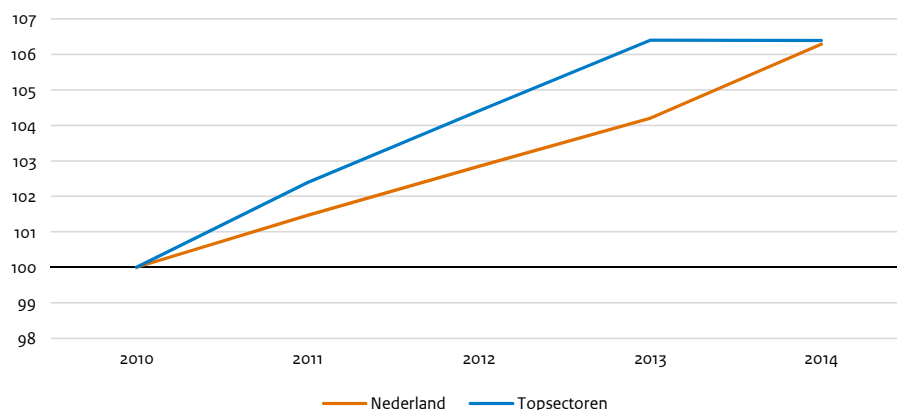
Source: Statistics Netherlands (2015), Monitor Top Sectors 2015.

#### Progress of top sectors compared to the Netherlands as a whole

Between 2010 and 2014, the added value of the top sectors grew faster than that of the economy as a whole, although the rate of growth was lower in 2014 (see Figure 4.4). This was caused by the decrease in the production of natural gas, which forms part of the Energy top sector. In the case of the figures 'corrected' for natural gas production, the nominal added value in the top sectors increased by 4.6% in 2014, compared with 2.2% for the economy as a whole (excluding the energy sector).

The greater labour productivity in the top sectors was also higher than in the Dutch economy as a whole between 2010 and 2014 (see Figure 4.5). Here, too, the performance of the top sectors overall was distorted by the decrease in gas production. Correcting this effect results in the labour productivity of the top sectors rising even more strongly.

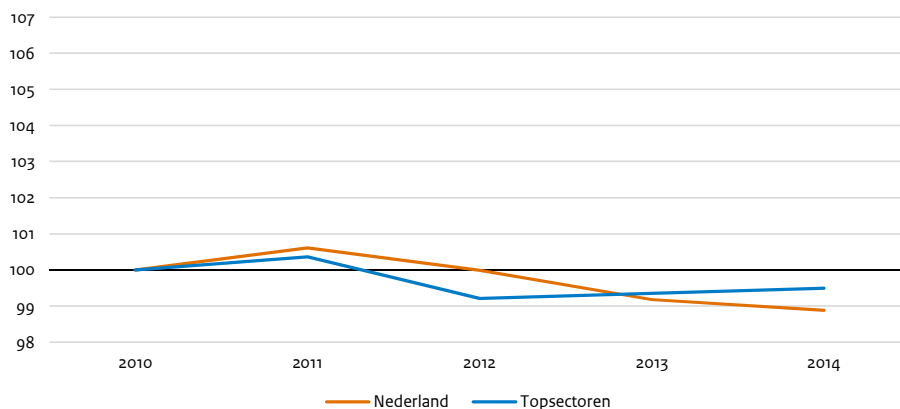
*Figure 4.5 Labour productivity, 2010-2014 (2010=100)*



Source: Own calculation based on Statistics Netherlands (2015), Monitor Top Sectors 2015.

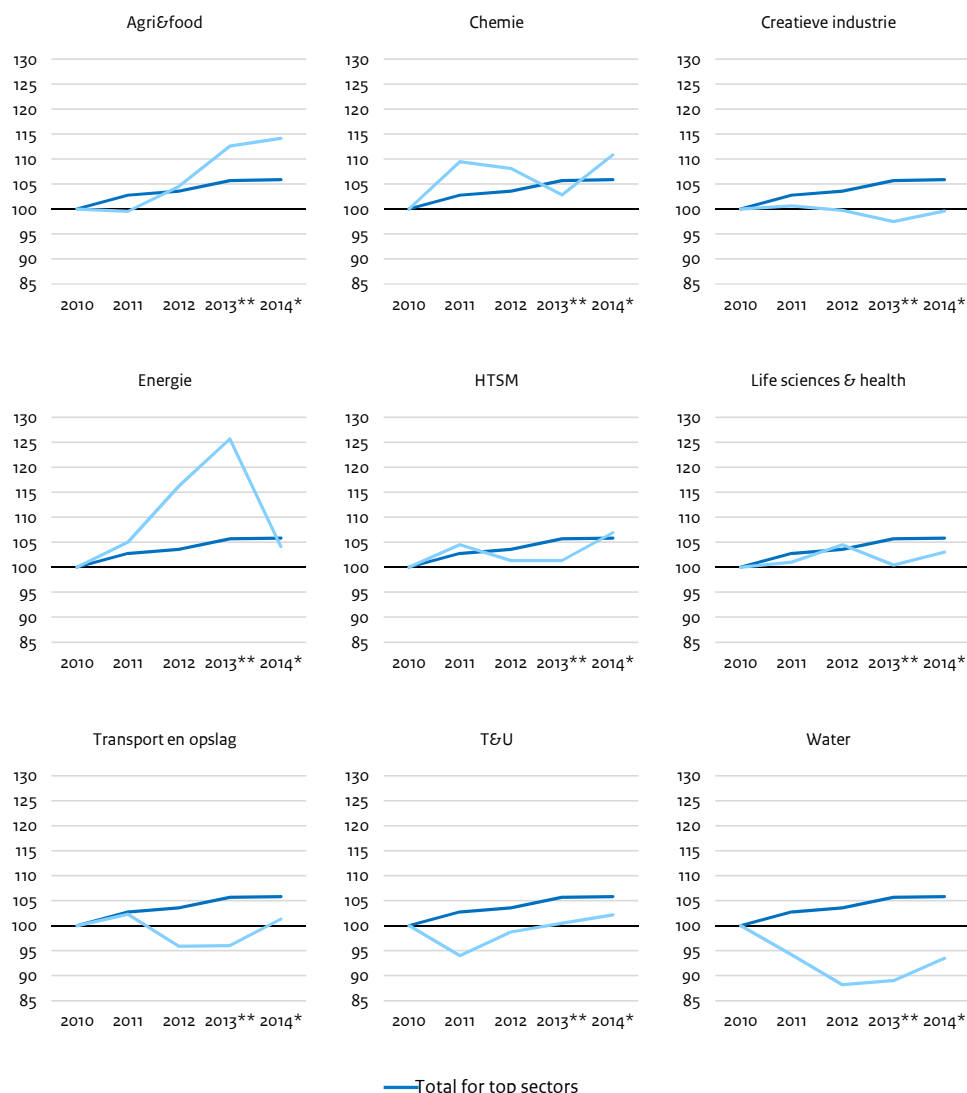
Between 2010 and 2014, employment fell in the top sectors and in the Netherlands as a whole. As demonstrated in publications by the CPB and Statistics Netherlands, there were no signs of recovery in 2014. In the case of the top sectors, however, a slight recovery has been underway since 2012. This year, the CPB expects employment to rise (in the private sector).

*Figure 4.6 Employment, 2010-2014 (2010=100)*



Source: Statistics Netherlands (2015), Monitor Top Sectors 2015.

Figure 4.7 Added value (basic prices), top sectors, 2010-2014 (2010=100)



Source: Statistics Netherlands (2015), Monitor Top Sectors 2015.

### Developments in the top sectors

Figure 4.7 shows how added value has progressed in the various top sectors between 2010 and 2014. The figures for 2014 concern a flash estimate by Statistics Netherlands; the margins of error differ from one top sector to another.<sup>56</sup> There are three things that stand out. First, two top sectors, Chemicals and Agri & Food, performed above average: their added value between 2010 and 2014 grew more strongly than that of the top sectors as a whole. These top sectors are very much dependent on exports, which were healthier than domestic purchases. Second, the

<sup>56</sup> The figures for 2014 are therefore only indicative. For Agri & Food and Chemicals, the margin of error is negligible. Because of the small size of the sector, the margin of error for Water is wide.

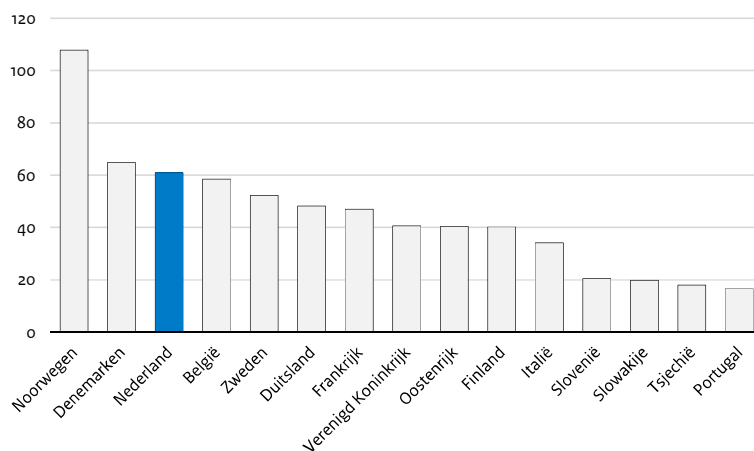


production volume of most of the top sectors was higher in 2014 than was the case in 2010. The Water top sector was an exception to this. In 2012, it saw a sharp fall in its production levels; however, it has shown signs of recovery since then, especially in 2014. A third notable feature is the progress of the added value of the Energy top sector. As already mentioned, the added value of this sector fell markedly in 2014. This is due entirely to the drop in gas production and the falling price of oil.

#### 4.3 International-level comparisons with top sectors

For many companies in the top sectors, their foreign counterparts are their most important competitors. Until now, however, there has not been much information available about the international performance of the Dutch top sectors. For that reason, the Ministry of Economic Affairs recently commissioned TNO to create a detailed dataset for 1995 to 2010 for almost twenty OECD countries, including information about added value, labour productivity, and employment. The dataset has been used to replicate the demarcation limits of Dutch top sectors as accurately as possible. This means that there is a sector/sector equivalent for each country, thereby making international comparisons possible.<sup>57</sup> This section presents the initial results from an international comparison of the productivity levels for 2010. The analysis offers an insight into the competitive position of the Dutch top sectors before the top sector policy was launched in 2011.

Figure 4.8 Labour productivity in top sectors: an international comparison, 2010



Source: Calculations by the Ministry of Economic Affairs based on database compiled by TNO.

By international standards, the Dutch top sectors are performing above average as far as labour productivity is concerned (added value per hour worked). As explained in Chapter 2, labour productivity gives an indication of how competitive a company or sector is. With a figure of nearly

<sup>57</sup> These demarcation limits are close to the ones used for the top sectors by Statistics Netherlands on behalf of the Ministry of Economic Affairs. However, in the Statistics Netherlands figures for the Netherlands, the demarcation limits for some sectors were adjusted on the basis of variety of sources. At international level, only sectoral information is available and not the underlying company-specific information. The data relating to the demarcated top sectors is therefore only an approximation.

61 euros per hour worked, the Netherlands is in third place (see Figure 4.8). Thanks to oil and gas extraction, Norway is the runaway leader, with almost 108 euros per hour worked. In Denmark, the counterparts in the LSH top sector are performing particularly well.

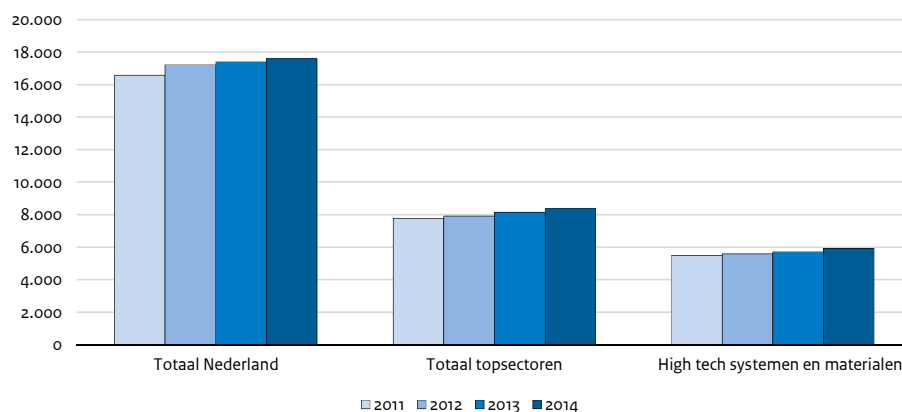
#### A global look at the top sectors

Looking at the position of the various Dutch top sectors from an international perspective, six of the nine ranked in the top three most labour productive in 2010. Labour productivity in the HPM top sector in the Netherlands is the highest of any country. The country is in second place for the Agri & Food, Chemicals, and Energy sectors. The labour productivity in the Water and Logistics sectors, meanwhile, ensured third and fifth place respectively. LSH and Creative Industry both ended seventh. In more than half the sectors, in other words, the Netherlands achieved a position in the top two.

## 4.4 Use of instruments by top sectors

The generic instruments of the enterprise policy are available to businesses in the top sector – young or old, large or small, starters or more established companies. The top sector policy is also used for the formation of the programmes of joint research agendas (through the TKIs) as well as for making available technical and other employees (Technology Pact), for targeted and coordinated economic diplomacy, for attracting foreign investment, and for identifying and eliminating laws and regulations that form a burden for a particular sector. To the extent that the matter has not been discussed elsewhere, we deal below with how some of these instruments are used by the top sectors.<sup>58</sup>

Figure 4.9 Number of companies that use WBSO, according to top sector, 2011-2014



Source: RVO.nl

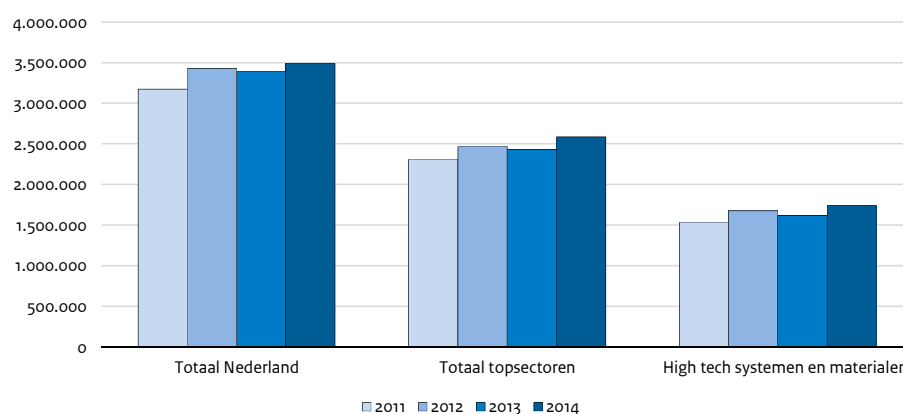
### R&D Promotion Act (WBSO)

<sup>58</sup> Detailed information on the use of instruments by the top sectors can be found on the Statistics Netherlands website.

The number of companies that use WBSO has again risen, for the Netherlands as a whole and for the top sectors (see Figure 4.9).<sup>59</sup> The growth among the top sectors is slightly higher than the Dutch average. HTSM has also been included in this diagram, because the companies in this top sector always use the WBSO the most, by some distance, and the number has again risen this year (+200 companies).

The definitive R&D salary costs for the Netherlands have grown by almost three per cent, and by more than six per cent for the top sectors, in comparison with last year (see Figure 4.10). In the HTSM top sector, the definitive R&D salary costs are by far the greatest in volume, and they rose the most in 2014, in both absolute and relative (7.5%) terms.

Figure 4.10 Definitive R&D salary costs (in thousands of euros), according to top sector, 2011-2014



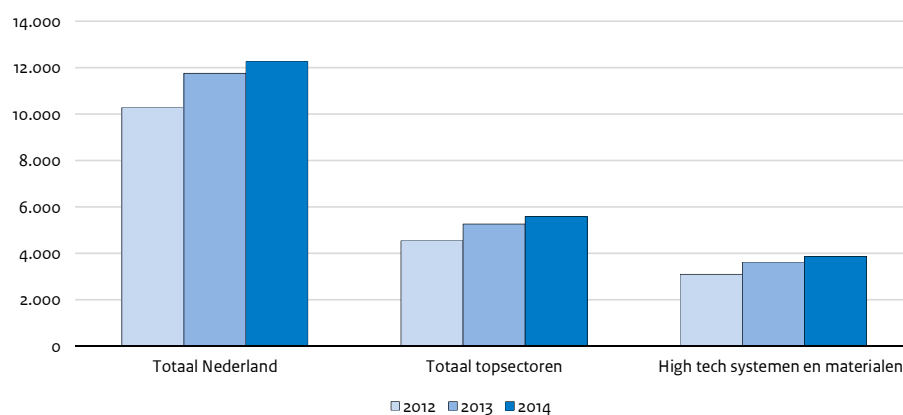
Source: RVO.nl

#### Research and Development Deduction (RDA)

Figures 4.11 and 4.12 show that the number of businesses that use RDA and of the definitive R&D expenses has risen for two years in a row – for both the Netherlands as a whole and for the top sectors. The increase in the number of companies using this scheme is slightly higher among the top sectors than the Dutch average – by six and four per cent respectively. This pattern also holds true for the definitive R&D expenditure – five and 3.5 per cent respectively. The number of companies in the HTSM top sector that use this instrument has gone up by almost seven per cent, while the definitive R&D expenditure was more or less the same as last year.

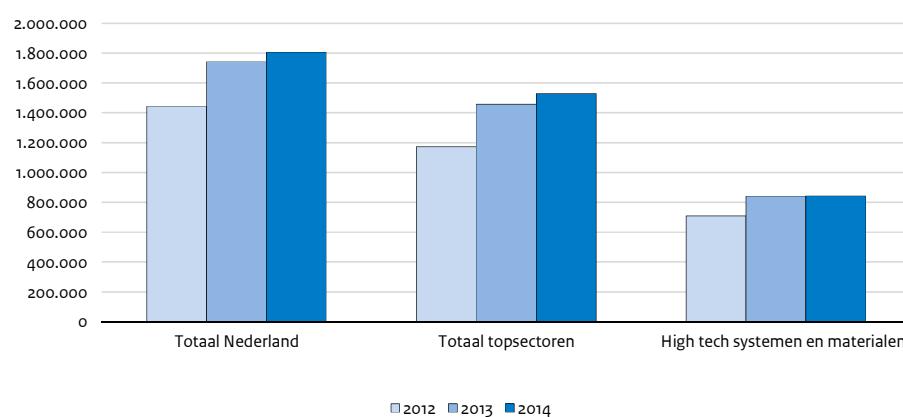
<sup>59</sup> The WBSO/RDA figures in this section refer to figures that have been definitively confirmed retrospectively. They are lower than the figures from the Annual Report and those presented in the enterprise policy progress report. They deal with *awards* in advance. The reason for the discrepancies between WBSO and RDA being awarded and actually taken up is that businesses decided during the course of the year that certain innovation projects for which approval had been given would not go ahead after all.

Figure 4.11 Number of companies that use RDA, according to top sector, 2012-2014



Source: RVO.nl

Figure 4.12 Definitive R&D salary costs, RDA (in thousands of euros), according to top sector,



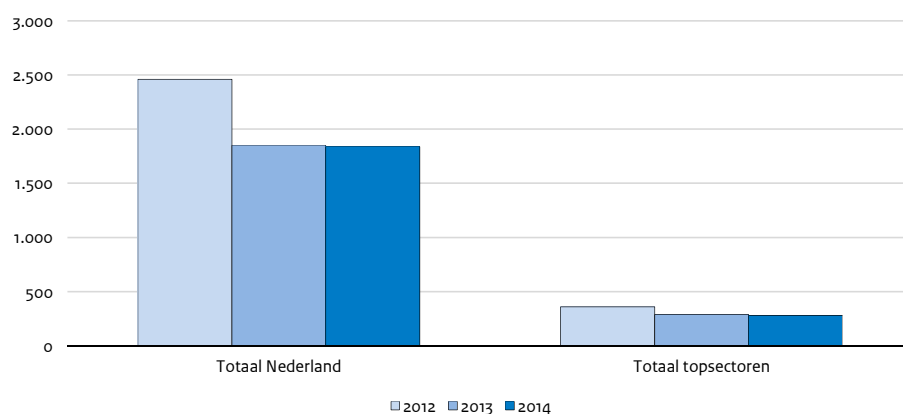
2012-2014

Source: RVO.nl

#### Use of BMKB (SME credit guarantee scheme)

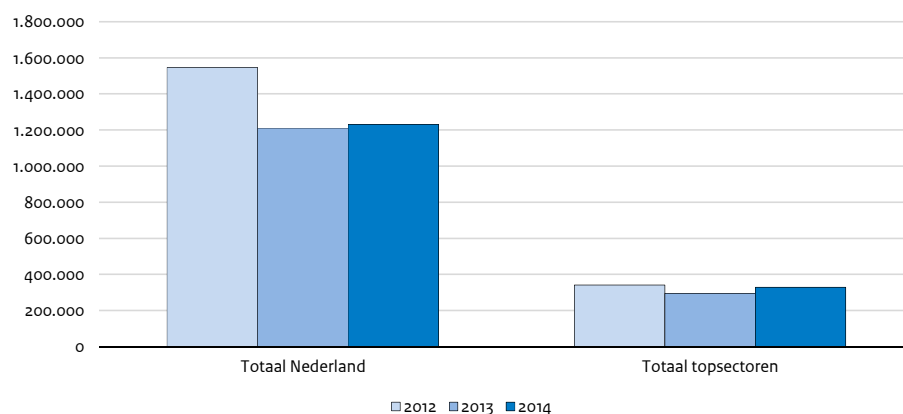
Companies used the BMKB in 2014 at around the same rate as they did in 2013, but less so than in 2012 – this applied to the Netherlands as a whole and to top-sector businesses. However, the total amount of bank loans did increase slightly in 2014, as shown in Figure 4.14. Both diagrams show that the degree to which the top sectors use this financing instruments is relatively low. A possible explanation is that this instrument is intended for SMEs and the proportion of SMEs in the top sectors is smaller than in the rest of the economy.

Figure 4.13 Number of companies that use the BMKB, totals for the Netherlands and for the top sectors, 2012-2014



Source: RVO.nl

Figure 4.14 Total amount of BMKB bank loans (thousands of euros), totals for the Netherlands and



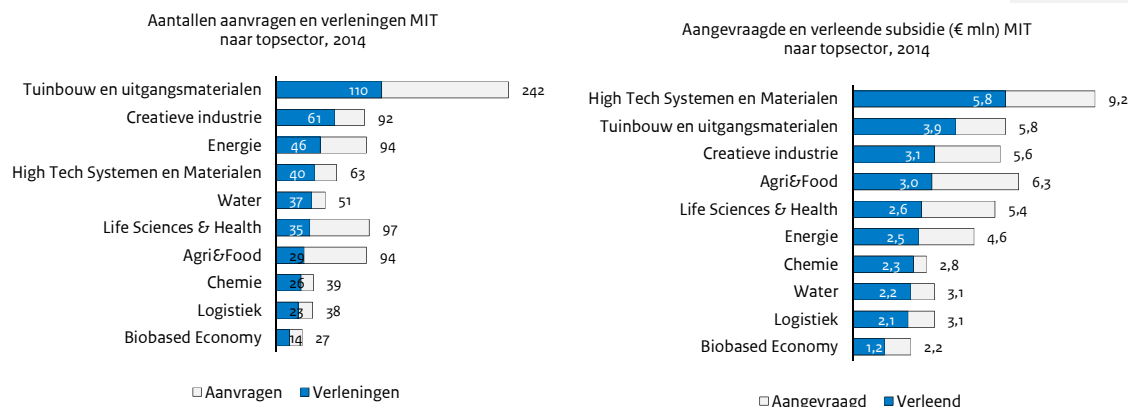
the top sectors, 2012-2014

Source: RVO.nl

#### Use of the MIT scheme

Figure 4.15 shows the total number of applications for and approvals of MIT instruments in 2014, according to top sector. It was noted in Chapter 3 that for a large number of aspects of the MIT, the applications outnumbered the approvals. The same was true for each of the top sectors, with applications exceeding the amount available in the budget. In numbers, this particularly applied to HPM and the vouchers and feasibility studies. Subsidy funds mostly concerned HTSM. In 2014, this sector applied for €9.2 million, of which almost two-thirds were granted (€ 5.8 million).

Figure 4.15 Number of MIT applications and awards, according to top sector, 2014

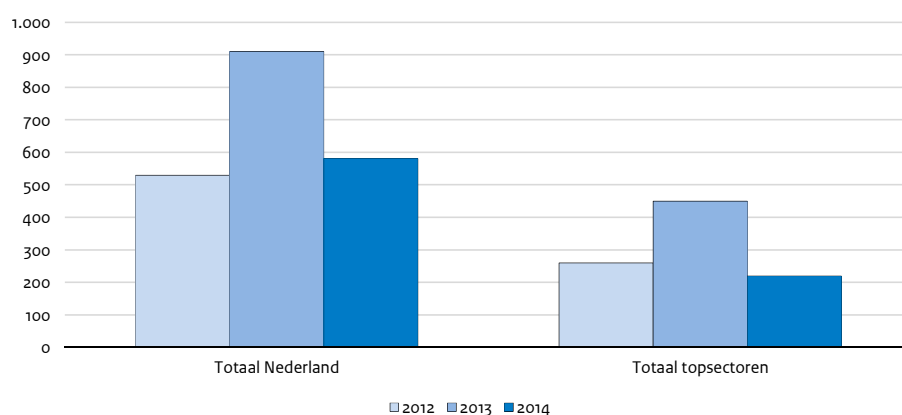


Source: RVO.nl

#### Economic missions

In 2014, there were twenty missions with ministers, in which a total of 580 companies took part. This was 330 fewer than in 2013 (see Figure 4.16). Participation also fell among the top sectors, compared to last year. This decline can be explained by the fact that 2013 was an exceptionally good year regarding the numbers taking part. Two important missions in 2013, with an unusually high number of participants, were one to Germany (with 100 participants) and one to Indonesia (125). These are two countries with which the Netherlands has important economic relationships. By disregarding these two missions, the difference between 2014 and 2013 is smaller.

Figure 4.16 Economic missions with government ministers, number of participations, totals for the Netherlands and the top sectors, 2012-2014



Source: RVO.nl

Compared to 2012, there was a slight increase in 2014 in the number of participations for the total, although the number of participations for the top sectors as a whole was just below that of 2012. This year, too, the HTSM top sector has been most prominently present during missions; of

all the participations involving top sectors, there was at least one company from this sector at nearly half.

#### 4.5 Objectives and ambitions of top sectors

The enterprise policy has three general objectives: the Netherlands to be among the world's top five knowledge economies by 2020, to increase R&D intensity to 2.5% of GDP by 2020, and public and private parties to contribute at least €500 million in TKIs in 2015, of which at least 40% is to be financed by the business sector. As the top sectors are a specific group in the enterprise policy, we will first examine how the top sectors – working in conjunction with other businesses, knowledge institutions and government – help to achieve the second and third objectives.<sup>60</sup> We will then deal with the ambitions and target values of top sectors as defined in consultation with the top teams.

Table 4.1 R&D expenditure as a percentage of added value, 2011-2020

	2011	2012	2013	2020
<i>Indicative reference value</i>				
<b>Agri &amp; Food</b>	3.6	2.8	2.5	4.7
<b>Chemicals</b>	6.1	6.5	6.8	8.1
<b>Creative Industry</b>	0.5	0.6	0.7	0.6
<b>Energy</b>	4.2	4.1	3.7	5.6
<b>High-tech systems and materials</b>	7.9	8.4	8.7	10.4
<b>Life Sciences &amp; Health</b>	16.5	14.1	14.3	22.1
<b>Transport and storage</b>	0.6	0.8	0.7	0.7
<b>HPM sectoral</b>	3.0	3.4	3.1	3.9
<b>Water</b>	9.0	10.1	12.2	11.9
<b>Businesses</b>	1.1	1.1	1.1	1.4
<b>of which are top sectors</b>	4.2	4.2	4.2	5.6
<b>Other sectors</b>	0.2	0.2	0.2	0.2
<b>Public knowledge institutes</b>	0.8	0.9	0.9	1.1
<b>Total R&amp;D expenditure</b>	1.9	2	2	2.5

Source: Statistics Netherlands for 2011-2013; these are provisional figures. NB. No figures for 2010 are included as figures from before and after 2011 are no longer comparable.

#### General objective of R&D and PPPs

To monitor the progress of the top sectors and as an indication of how they – and therefore the top-sector approach – are contributing to the R&D objective of 2.5% (of GDP), indicative reference values have been calculated for each top sector for 2020. This has also been done for remaining private and public R&D activities (see Table 4.1). It is assumed that each sector – in other words, any particular top sector – will make a pro rata contribution to the increase in the intended R&D

<sup>60</sup> This analysis is not performed for the first objective, because the top-five position on the list of knowledge economies cannot be derived back to individual top sectors.

activities of up to 2.5% of GDP by 2020.<sup>61</sup> We should point out that the top sectors get extra financial incentives to carry out more private R&D, through the TKIs (including TKI supplement), the MIT scheme, among others.

It has already been mentioned, in Chapter 3, that the upward trend in overall R&D intensity since 2009 did not continue at the macro level in 2013. Private R&D intensity did not increase in 2013 either. The same applies to the top sectors overall. According to provisional figures from Statistic Netherlands, R&D expenditure by the top sectors collectively rose by more than 2% in 2013 compared with 2012, despite the financial and economic crisis. However, this increase was the same as the added value, resulting in the R&D intensity of the top sectors remained the same. The picture in the top sectors is a varied one. In the case of the Creative Industry, HTSM, LSH, Chemicals, and Water, private R&D expenditure increased in relation to their added value. Indeed, the Creative Industry and Water actually surpassed their indicative target values in 2013. In the Water top sector especially, the R&D activities have increased considerably. Although the R&D intensity in the Energy top sector fell for the second year in succession, R&D expenditure did show an upturn. This was not the case with Agri & Food. In both 2012 and 2013, the R&D intensity and R&D expenditure declined.

#### *PPP objective*

An important objective of the top sector approach is that entrepreneurs and scientists from the nine top sectors work together in public private partnerships in TKIs.<sup>62</sup> To encourage businesses to take part in these TKIs, the government introduced a TKI supplement in 2013. In 2014, the TKI scheme was amended to make it more relevant to sector-specific wishes. The number of applications moments has been increased, long-term programmes now also come under the supplement scheme, and the basis for the TKI supplement has been expanded. For the first €20,000, it is not only the 'cash' contributions by companies that are taken into consideration, but also those made 'in kind' (hours worked by businesses).

For this edition of Monitor, we present the results from the TKIs from 2013 and 2014. In 2013, private parties had contributed €190 million in cash to PPP projects, on the basis of which the TKIs supplement was applied for. Total private contributions in 2014 rose to almost €360 million (see Table 4.2). Together with the public contribution, the total estimated PPP project volume (for which TKI supplement has been applied) is €814 million. From Figure 4.17, it appears that all the underlying subsectors and related TKIs have experienced a big increase in private contributions to PPP projects.

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<sup>61</sup> Assuming that each sector will have structurally grown to the same extent between 2010 and 2020, this means that the rate of growth of R&D intensity for the Netherlands as a whole also applies to each top sector (and non-top sector).

<sup>62</sup> Following the merging of three TKIs in the new TKI Chemicals, the number of TKIs was reduced from 19 in 2014 to 17 in 2015.

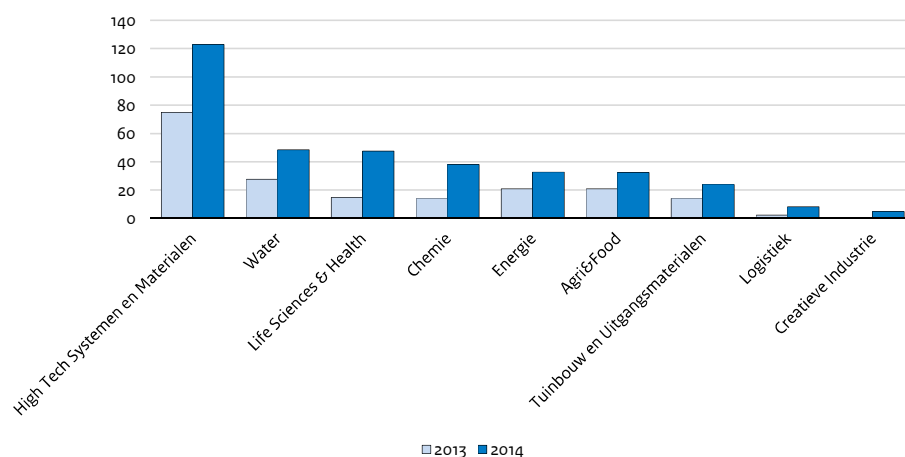


Table 4.2 PPP projects as the basis for TKI-supplement (in millions) for each top sector, 2014<sup>a</sup>

	Total private contribution	Total public contribution <sup>b)</sup>	Estimated extent of public-private collaboration
<b>Agri &amp; Food</b>	32.3	21.7	54.1
<b>Chemicals</b>	38.1	39.5	77.6
<b>Creative Industry</b>	4.8	5.5	10.3
<b>Energy</b>	32.7	40.0	72.8
<b>High-Tech Systems and Materials</b>	122.9	208.9	331.8
<b>Life Sciences &amp; Health</b>	47.6	54.3	101.9
<b>Logistics</b>	8.3	9.5	17.7
<b>HPM</b>	23.9	16.4	40.3
<b>Water</b>	48.5	58.9	107.4
<b>Total</b>	<b>359.2</b>	<b>454.7</b>	<b>814</b>

Source: RVO.nl; a) between the projects that were started with the help of a TKI-supplement and those that have been used as a basis, is a small overlap: it is possible to submit the projected private contribution for a project launched with a supplement as a basis, b) estimated on the basis of the private contribution and the proportion of the private contribution in other PPP projects.

Figure 4.17 Private contributions (in millions of euros) to PPP projects as a basis for TKI-supplement, 2013-2014

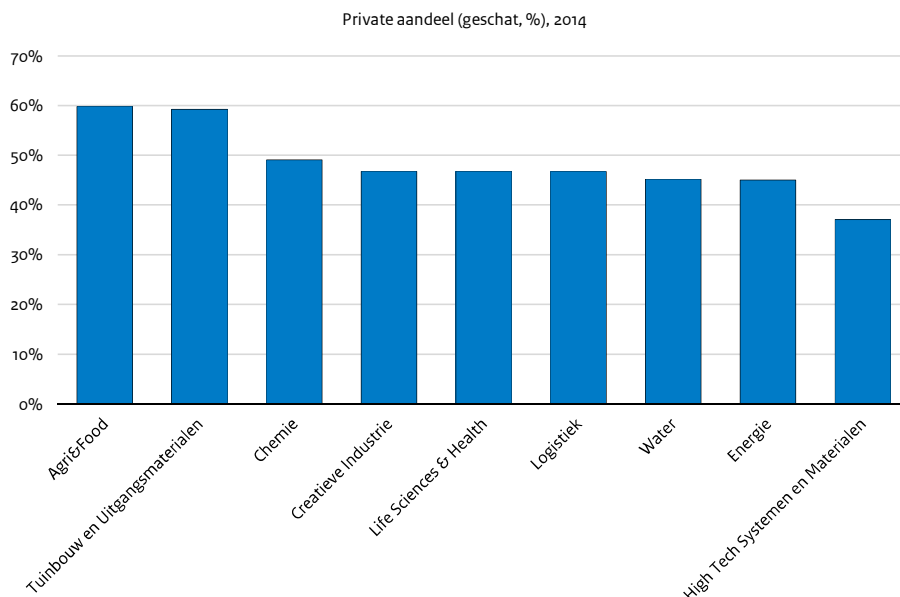


Source: RVO.nl

The private proportion of the total financing of these collaborative projects amounts to 44% for 2014. Both the PPP objective for the absolute extent and the objective for the private share were therefore realised in 2014. Figure 4.18 shows the proportion of private contributions for all top sectors. With the exception of HTSM, the private share was above 40% in every top sector in 2014. Compared with last year, measures have been taken in particular in the Creative Industry – this is due to the fact that it is now possible for businesses to take part ‘in kind’. Only in the case of HTSM has the proportion lagged behind the objective, at 37%, in spite of the strong increase in private contributions in 2014. However, the private proportion includes a number of long-term

European projects in which private contributions are lower. Excluding these projects, the private contributions amounted to 42%.

*Figure 4.18 Estimated proportion of private contributions (as a percentage) to PPP projects as a basis for TKI-supplement, 2014*



Source: Ministry of Economic Affairs' calculations based on RVO.nl data.

### Top sector ambitions and target values

Below, the progress on the ambitions and target values for the top sectors are highlighted that have been determined in consultation with the top sector leaders and their teams.<sup>63</sup> The target values refer to the shared ambitions of the entire top sector policy as well as the individual top sectors.

Table 4.3 presents the indicators and target values for each top sector for 2020 (and for 2030 in some cases).<sup>64</sup> In addition, the year 2010 is stated as the point of departure – the baseline situation – for these indicators, while the years 2012 and 2013 are mentioned for the latest situation.

If we compare what has been achieved in 2012 and 2013 with the ambitions, then it is clear that there is still much to be done in many areas. It should be pointed out, though, that 2012 and 2013

<sup>63</sup> Further to the undertaking in the business sector letter ('Naar de top') of 2011.

<sup>64</sup> It was stated last year that the target figures for the Energy top sector were omitted because it was keen to align its efforts with the figures generated in the National Energy Report (NEV) system. This year, the target figures for four indicators have been included. The NEV categories have been chosen because this is more in keeping with the sectors and subsectors that make up the Energy top sector. No quantitative target figures for the LSH top sector have been included. The top sector has included the ambitions in relation to regulatory burdens (processing times) in the 2010 action plan. This concerns the rapid obtaining of an allowance for new products. In policy terms, it has been stated that the processing times in the Netherlands should be among the fastest in Europe.

were not favourable years. Moreover, most concern 'outcome' indicators. The eventual effects of the enterprise policy – and in particular, the enterprise policy – on 'outcome' variables will only become apparent in the medium to long term.

Table 4.3 Top sector ambitions and target values, 2010-2020

	2010	2012	2013	2020
Ambition*)				
<b>Agri &amp; Food chain</b>				
Added value (billions)	39.9	42.8	43.9	51.3
<b>Chemicals</b>				
Market share, Europe (in %)	9.5	9.6	9.6	12.5
Innovation rate (in %)	72	65	n/a	80
R&D intensity	5.7	5.2	5.3	7
<b>Creative Industry</b>				
Added value (billions)	10.8	10.8	10.5	13.7
<b>Energy</b>				
Non-ETS greenhouse gas emission reduction	-3.5%	-10.8%	-18.4%	-16%
Renewable energy	3.7%	4.5%	4.8%	14%
Energy-saving rate	1.1%	1.2%	1.2%	1.5%
R&D intensity	not known	4.1	3.9	5.60%
<b>HTSM</b>				
Added value (billions)	41.6	42.2	42.2	68.3
Employment (FTE x 1000)	446	448	452	460
Export of goods (billions)	41.3	45.0	44.6	74.6
<b>Logistics</b>				
Position on Logistics Performance index	4	5	2 (2014)	1
<b>HPM</b>				
Position, market share				
of which Horticulture	1	1	1	1
Propagation Materials	2	2	2	2
Position, global botanical research	1	1	1	1
<b>Water</b>				
Added value (billions)	5.8	5.1	5.1	11.6

Source: Figures for 2010, 2012 and 2013 partly from Statistics Netherlands (Top Sector Monitor 2014); figures for 2013 are provisional.\*) *Chemicals*: market share applies to SBI 20, Innovation Rate and R&D intensity concern SBI 20 and 22; *Logistics*: No. 1 position in Europe in 2020.



## 5. Highlighted topic

This chapter contains two highlighted topics that are examined in depth. The first is top sectors and cross-overs (see Section 5.1). Cross-overs between sectors, including top sectors, are an important part of the top sector approach, where TKIs form the heart of the innovation policy in the top sectors. The initial results are presented, based on new research. The second special topic looks at the importance of the regions as network partners in the enterprise policy (see Section 5.2). The regions are network partners in this policy and are important for the success of the enterprise policy, not least because of the existence of *economies of agglomeration*.

### 5.1 Top sectors and cross-overs<sup>65</sup>

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*Each of the top sectors has its own unique and specialised knowledge base; these are often deployed beyond the scope of the sector in question and combined with the knowledge specialisations of other sectors – referred to as 'cross-overs'. The Chemicals, Energy, HTSM, and Logistics top sectors in particular make up important links in this context. The nature of the cross-overs between the top sectors depends on the role they fulfil in the industrial fabric of the Netherlands. Specialised branches of industry in the field of telecom and ICT services and that of waste processing have a 'bridging function' with the cross-sectoral themes of ICT and 'bio-based'. The analysis of the TKI research programmes suggests that a large part of the research is aimed at uniting and combining the complementary knowledge specialisations of the various top sectors.*

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#### Innovation through new knowledge combinations

In the enterprise policy, and in particular the innovation policy aimed at the top sectors, the interfaces between sectors are an important aspect. From research, and in innovation practice, it appears that many innovations result from new combinations of competences, knowledge, and technologies that previously were not associated with each other. In many cases, new combinations arise on the interface between sectors. There are numerous examples of this. New materials and ingredients are created on the interface of Agri & Food and Chemicals, and linking these to Energy, for example, leads to more sustainable sources of energy. On the interface of ICT and Logistics, new logistical concepts and services are born that are frequently developed for applications in a wide range of industries. Often, new plastics and materials from Chemicals form an important basis for innovations in the HTSM cluster.

Successful innovations that contribute to societal issues frequently require new combinations of knowledge and competences from a variety of industries and scientific fields. An example of this can be found in the field of renewable energy, or when connecting and recycling material flows (the circular economy), or during the development of new treatment methods in the healthcare sector.

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<sup>65</sup> Blocks 1 and 2 of Section 5.1 rely heavily on the empirical findings from the research report of the study by Mathijs Janssen, Jaap Veldkamp (both Dialogic) and Anet Weterings (PBL), 'Cross Overs en Industriebeleid', published at the same time as this edition of Monitor. The research report contains the initial results, the justification for the research methods used, and data.

These new combinations of knowledge do not simply 'occur' – instead, connections have to be made with fields of knowledge that lie outside the area of expertise and competences of the people concerned. Research suggests that the exchange of knowledge and interaction takes place on a wide scale in industries and knowledge fields with a reasonably homogenous knowledge base, while the likelihood of radical innovation is actually greatest in the interfaces between these areas.<sup>66</sup> This is also where the biggest coordination problems lie, because the various 'worlds' in the different branches of industry and knowledge fields are not familiar with each other's work and concentrate on their own knowledge-related questions and commercial challenges. This is regrettable, as the benefits for society from the knowledge spill-overs on these interfaces of competences and knowledge fields are considerable. The 'collision' and combination of knowledge fields that have not previously encountered each other are often the sources of more radical innovation.

Economic research has more recently focused on the 'relatedness' of economic activities and R&D fields, both in theoretical and the more empirical literature.<sup>67</sup> This type of research concentrates on the question of how much economic activities – with regard to necessary knowledge, technology and competences – resemble each other ('homogenous knowledge base') or indeed need each other on account of the complementary knowledge and skills that they possess ('complementary knowledge base'). Research of this kind into the economic structure of a country examines various dimensions, including:

- The structure of the trade flows of products between branches of industry (*production-relatedness*; knowledge 'embodied' in trade flows)<sup>68</sup>;
- The structure of technology flows via patents<sup>69</sup> (*technological relatedness*; knowledge 'embodied' in codified knowledge flows); and
- The structure of labour mobility between different sectors (*skill-relatedness*; knowledge 'embodied' in human capital).<sup>70</sup>

The Dialogic research company has conducted a study on behalf of the Ministry of Economic Affairs, in collaboration with the Netherlands Environmental Assessment Agency, into cross-overs between the top sectors based on skill-relatedness of the underlying branches of industry. The next section includes the initial results, in broad terms. We will then discuss in the section thereafter the results of the Statistics Netherlands investigation into the importance of cross-overs in the TKIs, which with PPP projects form the heart of the innovation policy in the top sectors.

<sup>66</sup> See the research report for references.

<sup>67</sup> Frenken, K., Van Oort, F., & Verburg, T. (2007). Related variety, unrelated variety and regional economic growth. *Regional Studies*, 41(5), 685-697.

<sup>68</sup> Panteia, De effecten van de topsectoren op de bredere economie: kwantificering met behulp van inputoutputanalyse. Zoetermeer 2014.

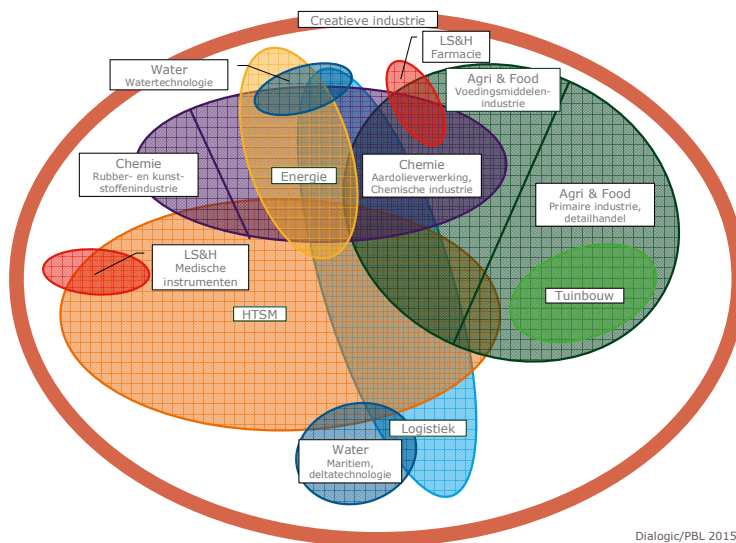
<sup>69</sup> Olaf Koops and Thijmen van Bree, De economische verwevenheid van topsectoren in Nederland, TNO, Delft 2011.

<sup>70</sup> Matthijs J. Janssen, Service Innovation in an evolutionary perspective, Eindhoven, 2015.

### Cross-overs and top sectors measured empirically

The analysis by Dialogic and the Netherlands Environmental Assessment Agency reveals a robust picture of the relationship between the knowledge base of Dutch top sectors.<sup>71</sup> Figure 5.1 gives a simplified picture of the composition of the industrial fabric of the top sectors.

Figure 5.1 The cohesion in the industrial fabric of the top sectors



Dialogic/PBL 2015

Several outline points from the results of the empirical analysis:

- ✓ The results show that the designation of the top sectors (as used in the policy) consists of clusters of economic activities, in which the combined business sectors are strongly related as far as the knowledge base that is used is concerned. In this sense, the top sectors each have a unique specialised knowledge base.<sup>72</sup>
- ✓ Thanks to their knowledge specialisations, the top sectors have mutual areas in common and are therefore closely interrelated with each other in a number of specific areas. The HPM top sector, for example, is primarily a subset of the Agri & Food top sector, and in terms of knowledge has little relationship with the rest of the industrial structure. HPM is very much a top sector in which intermediate products are made (as well as end-products) which, after being processed in the Agri & Food top sector, serve as a base for subsequent phases higher up in the industrial value chain.
- ✓ The Chemicals (plastics, oil refining), Energy (energy services), HTSM (machines and high-quality materials), and Logistics (logistic services) top sectors, which are strongly interrelated, occupy a key position: this is understandable when we consider that they supply (from their specialised knowledge base) input and knowledge that is needed for innovation throughout

<sup>71</sup> The analysis here focuses on determining the distribution of labour and specialisations in the intermediate deliveries between businesses. Top sectors also supply end-products to consumers, of course. The results in this study relate solely to the interfaces between the knowledge bases of top sectors, and therefore not to those based on trade in raw materials and products.

<sup>72</sup> Figure 5.1 shows that both the Water and LSH top sectors do not have one, but two separate knowledge bases.

the economy. The industrial branches of the Chemicals top sector in particular form an important cross-over between the economic activities in various sectors (including top sectors).

- ✓ The link between sectors often comes about through branches of industry that operate on the interfaces of the top sectors. For example, the medical instruments branch of industry combines and connects the LSH top sector knowledge base with that of HTSM, while pharmaceuticals (also in the LSH top sector) form the connection between the specialised knowledge of the Chemicals and Agri & Food top sectors. Similarly abundant links often form the basis of innovative processes.
- ✓ Figure 5.1 is therefore more than just an impression of a cohesive network. In some ways, it is also a reflection of the various knowledge specialisations of top sectors in the Dutch industrial fabric (see also Figure 5.2).
  - The HPM top sector supplies primarily to the Agri & Food complex, after which both processed and unprocessed products go mostly (as well as to consumers) to the Chemicals top sector, including oil refining. There, some of the raw materials are enriched (especially plastics), and are then used in the HTSM top sector from where, as a result of the production of machines and materials, other top sectors are provided with the machines and instruments that they need, such as in the case of the manufacture of medical instruments in the LSH.
  - The Energy and Logistics top sectors form 'generic' knowledge cross-overs. Energy and Logistics are important for all top sectors. The development of knowledge in these two top sectors is therefore strongly related to that in the other top sectors.
  - The LSH top sector has a somewhat more independent specialised knowledge position in the Dutch value structure; strong cross-overs are created from its specialised knowledge basis (this top sector is closely related to healthcare) with the HTSM top sector (medical instruments and materials) and with the combined knowledge of the Chemicals and Agri & Food (pharmaceuticals) top sectors.
  - The Water top sector also fulfils a specialised role. Its underlying branches of industry have cross-overs with Logistics (maritime, delta technology, water transport) and the Energy and Chemicals (water technology) top sectors.
  - The Creative Industry top sector has a notable and rather outlying position in the economic structure. In the value chain, the Creative Industry top sector primarily contributes creative services to the other top sectors, such as developing new concepts, new products and services, like marketing.<sup>73</sup>
  - In addition to these connections between the top sectors, the empirical analysis also shows that other cross-overs exist across the range of top sectors. For example, branches of industry in the field of telecom and ICT services perform a bridging function, as do those that are active in the area of waste disposal (the 'circular economy' in the 'bio-based economy' theme). Although this research concerns an initial indication, it appears

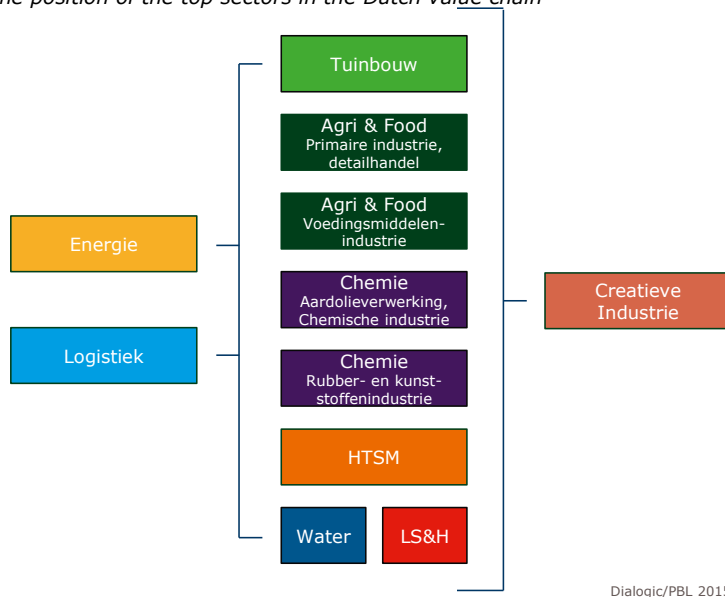
<sup>73</sup> See Nieuwenhuis, O., & Koops, O. (2013). Creatieve kruisbestuivingen. Boekman 97 De Staat van Cultuur. And TNO, Monitor Cross-overs Creatieve Industrie, Delft, 2015.



that the policy choice of the cross-sectoral themes of ICT and bio-based economy are justified.

- It is also apparent from the analysis that the traditional distinction between industry and services is no longer relevant to the complex economic reality, as 'hard' and 'soft' knowledge are often combined in the top sectors. Service industries often form the bridge between the top sectors, such as in the field of logistics (transshipment and storage), agri (wholesale), energy (extraction of materials), HTSM (inspection and monitoring), and R&D activities (R&D companies)

Figure 5.2 The position of the top sectors in the Dutch value chain



Dialogic/PBL 2015

### Cross-overs and TKIs

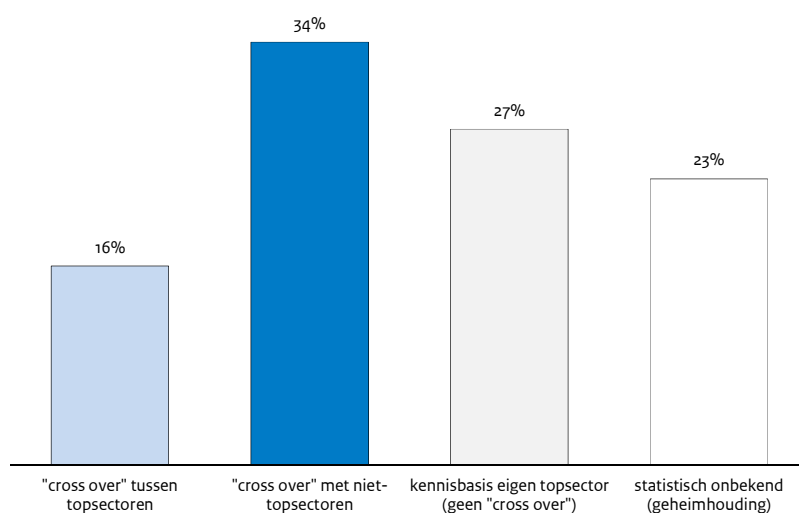
In the TKIs, the top sector R&D programmes are organised jointly (see Chapter 3 of this edition of Monitor). Statistics Netherlands has carried out research into the research focus of the TKIs, based on the RvO project administrations. Using the background of the industrial branches of the companies taking part in the TKI projects, an investigation has been conducted into whether the research projects:<sup>74</sup>

- are focusing on the development of the knowledge base of the top sector itself (no cross-over);
- are focusing on the development of the joint knowledge base of at least two top sectors (cross-over between top sectors); or
- are focusing on the development of the joint knowledge base of a top sector with businesses that are not considered to be part of the top sectors (cross-over with branches of industry that are not considered part of the top sectors, according to the Statistics Netherlands classification).

<sup>74</sup> See Statistics Netherlands (2015) Monitor Topsectoren 2015.

The Statistics Netherlands study shows that at least half of TKI research projects relate to a cross-over, and around a quarter are aimed at the development of the knowledge base of the top sector itself (Figure 5.3). For statistical reasons, it was not possible to determine whether a cross-over was involved or not in around a quarter of the cases.

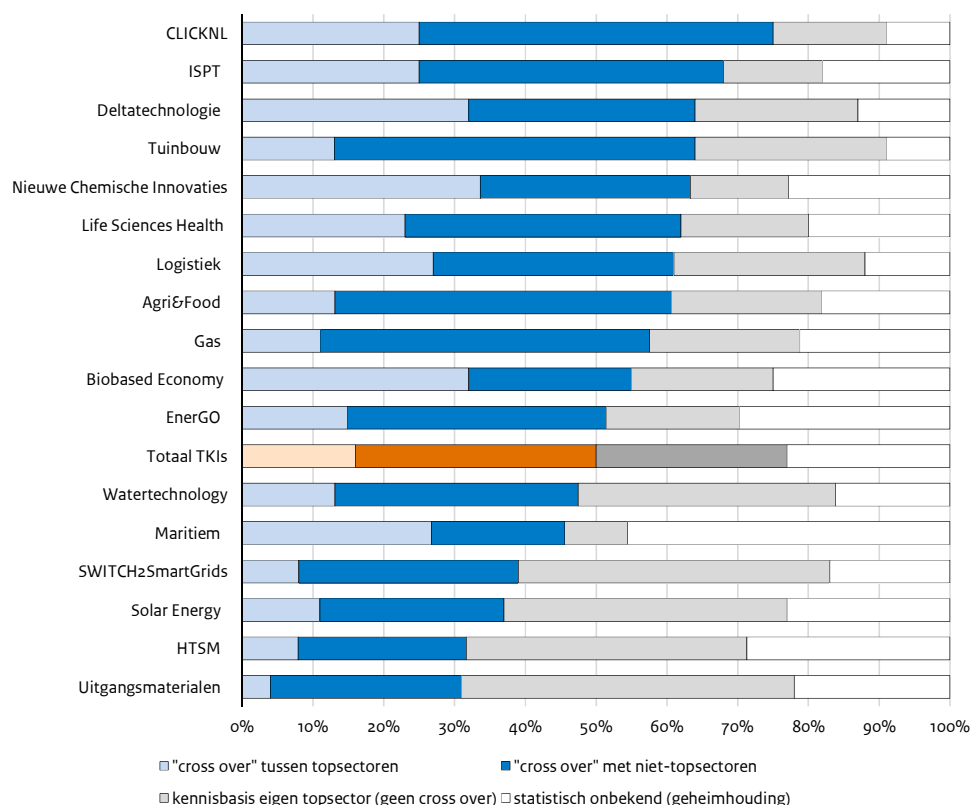
Figure 5.3 Research focus of the TKIs



Source: Statistics Netherlands/RVO.nl

Figure 5.4 shows the research focus for the individual TKIs. Of all the TKIs, 'Propagation Materials', 'Solar Energy', 'SWITCH2SmartGrids', and 'HTSM' focus relatively strongly on strengthening the own knowledge of their own top sector. 'CLICKNL', related to the Creative Industry top sector, is the TKI with the most cross-overs. Three-quarters of the research that is carried out there seeks to link up with industrial fields from outside their own top sector. This is because of the role that this top sector fulfils at the end of the value chain, as described earlier (see Figure 5.2).

Figure 5.4 Research focus per TKI<sup>75</sup>



Source: Statistics Netherlands/RVO.nl

The large number of cross-overs between top sectors and branches of industry outside the top sectors is also striking. Although further research is needed to determine exactly where this aspect is most prominent, it can be assumed that this concerns cross-overs with ICT or ICT-related industries. Table 5.1 shows where the most prominent cross-overs exist between the top sectors. The key role played by the TKI of the HTSM top sector is particularly noteworthy. Whereas research in the HTSM top sector's own TKI is targeted relatively frequently at the development of its own knowledge base, all other TKIs outside HTSM place the emphasis on collaborative research with branches of industry in the HTSM top sector. After HTSM, most cross-overs between the top sectors emphasise R&D research that allows the knowledge base of the top sector in question to be linked with that of Energy. In the TKI for bio-based economy, the emphasis on the cross-overs between top sectors is on the link with Agri & Food, Energy, and HTSM. With the cross-overs between the top sectors in the new chemical innovations TKI, the focus is on the connection between Chemicals, and LSH and HTSM.

<sup>75</sup> The 'Smart Polymeric Materials' and 'Wind op Zee' TKIs are not included in Figure 4 for statistical reasons; the number of companies in one of the categories is too small to be able to guarantee the confidentiality of individual business data (see Statistics Netherlands Monitor Topsectoren for the technical details).

Table 5.1 For each top sector, the most prominent cross-over between the top sectors

Top sectors	TKI	Most prominent 'cross-over' between top sectors <sup>a</sup>
<b>Agri &amp; Food</b>	Agri & Food	Energy and HTSM
<b>Chemicals</b>	Bio-based Economy	Agri & Food, Energy and HTSM
	New chemical innovations	HTSM and LSH
<b>CI</b>	CLICKNL	HTSM and Energy
<b>Energy</b>	EnerGo	HTSM
	Gas	HTSM
<b>HTSM</b>	HTSM	Energy and Agri & Food
<b>LSH</b>	Life Sciences & Health	HTSM and Energy
<b>Logistics</b>	Logistics	HTSM
<b>HPM</b>	Propagation Materials	Horticulture
	Horticulture	Agri & Food, Chemicals, Energy, HTSM
<b>Water</b>	Maritime	HTSM, Energy, Logistics
	Delta technology	HTSM
	Water technology	Energy, HTSM

\* The Smart Polymeric Materials, ISPT, 'Wind op Zee', Switch244martGrids, and Solar Energy TKIs are not included for statistical reasons; the number of companies in one of the categories is too small to be able to guarantee the confidentiality of individual business data (see Statistics Netherlands Monitor Topsectoren for the technical details).

In 2013, the Advisory Council for Science, Technology, and Innovation (AWTI) in 'Balans van de topsectoren' advised that top-sector policy should place greater attention on cross-overs and cross-sector issues.<sup>76</sup> The data presented in this chapter illustrate that the TKI and top sector research programmes largely currently focus on linking knowledge specialisations between the top (and non-top) sectors.

## 5.2 Regions as network partners of the enterprise policy

*The regions are important partners in the enterprise policy for creating an outstanding business climate, for making connections between regional knowledge centres, and between economic hotspots in top sectors, and by investing jointly in promoting innovation and entrepreneurship.*

### The important of the regions in the enterprise policy

The enterprise policy, on which this edition of Monitor is reporting, stimulates entrepreneurship and innovation among every business that is based in the Netherlands. The regions are an important partner to the Ministry of Economic Affairs in achieving the aims of the enterprise policy. Regions are important because of the existence of the so-called *economies of agglomeration*.<sup>77</sup> This concerns benefits from which businesses and knowledge institutes can gain as a result of their

<sup>76</sup> AWTI (2013). Initial observation from 'Balans van de topsectoren'.

<sup>77</sup> Raspe, O., A. Weterings, M. Geurden-Slis and G. van Gessel (2012), De ratio van ruimtelijk-economisch topsectorenbeleid, The Hague: PBL (in collaboration with Statistics Netherlands).

working in close proximity to each other, and because they are also able to use the specialist facilities, institutes, and organisations located in their particular region. Examples include benefits that are created through the proximity of specialised knowledge (and knowledge employees) and technology (universities of applied science, universities, specialist suppliers), or because specialised services or infrastructures (such as ports or other logistical services, knowledge institutes) are available locally.

The regions therefore play an important role as far as the quality of the regional business climate is concerned, including the amenities that affect quality of life, such as the presence of natural features and local cultural amenities, or indeed the dynamics that come with a large town or city (quality of life and work). They also often have a specific labour and education market, as a result of which the supply of and demand for human capital are more easily balanced. Specialised and knowledge-intensive organisations in particular are frequently located in each other's proximity and in that of knowledge institutes, in what are known as innovative 'hot spots'.<sup>78</sup>

The quality of the regional business climate is also determined by the quality of the structural connections (including the infrastructure) in the region, as well as with other agglomerations. Good connections between agglomerations, whether by water, land, the sea, or air, can strengthen the specialisations of one particular region with that of another, sometimes even across national borders.

Regions, and their administrations, are therefore crucial parties and significant network partners in the national enterprise policy:

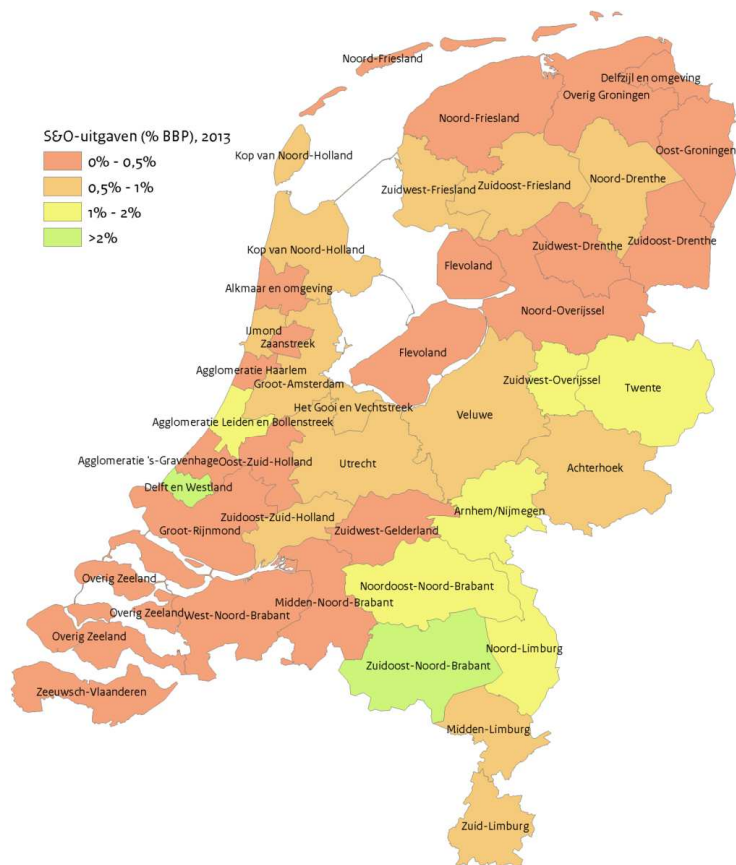
- ✓ when creating a high-quality regional business climate (making the most of the economies of agglomeration);
- ✓ when creating high-quality connections between regional knowledge centre and specialised agglomerations of business and other economic activity (governance, coordination issue of knowledge spill-overs);
- ✓ when connecting and creating synergy of regional stimulation of innovation and enterprise with national activities in this area.

### The spatial dimension of the enterprise policy

In this section, we describe the spatial distribution of the enterprise policy, according to two core themes: R&D intensity and top sectors.

*Figure 5.5 R&D intensity according to province and COROP, 2013*

<sup>78</sup> OECD (2014) Territorial Reviews: Netherlands 2014; CPB and PBL (2015) De economie van de stad; AWTI (2014) Regionale hotspots, broedplaatsen voor innovatie.



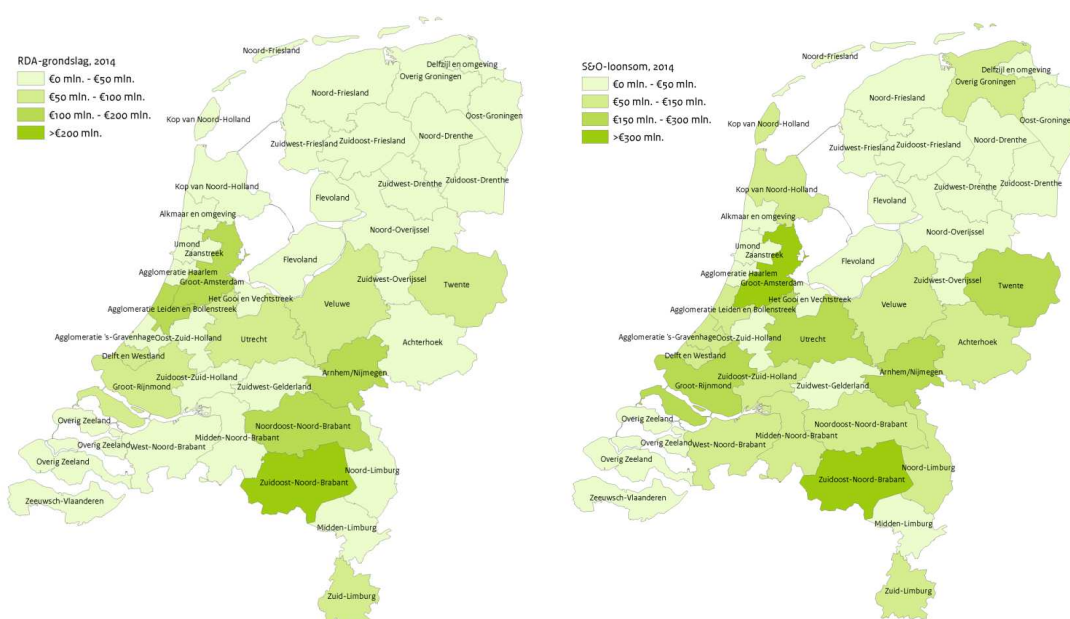
Source: Statistics Netherlands/RVO.nl

Figure 5.5 shows the spatial distribution of R&D intensity, according to province and COROP area. Zuidoost-Noord-Brabant and Delft & Westland form the most R&D intensive regions in the Netherlands. R&D intensity is greater than 2% in these regions. They are followed by the other R&D-intensive regions of Twente, Zuidwest-Overijssel, the agglomeration of Leiden and the Bollenstreek, the area around Arnhem and Nijmegen, Noordwest-Noord-Brabant, and Noord-Limburg. Figure 5.6 (left) shows the regional distribution of the definitive RDA basis according to province and COROP. As can be expected, the distribution of the benefits from the R&D basis follows that of the R&D intensity in the various regions. The same applies to the distribution of the definitive R&D salary costs in the WBSO, according to province and COROP (Figure 5.6 (right)). It

**Opmerking [TCVU1]:** Deze aanduiding is in de figuur niet terug te vinden.

therefore appears that R&D-intensive regions in particular benefit from this innovation stimulation scheme.

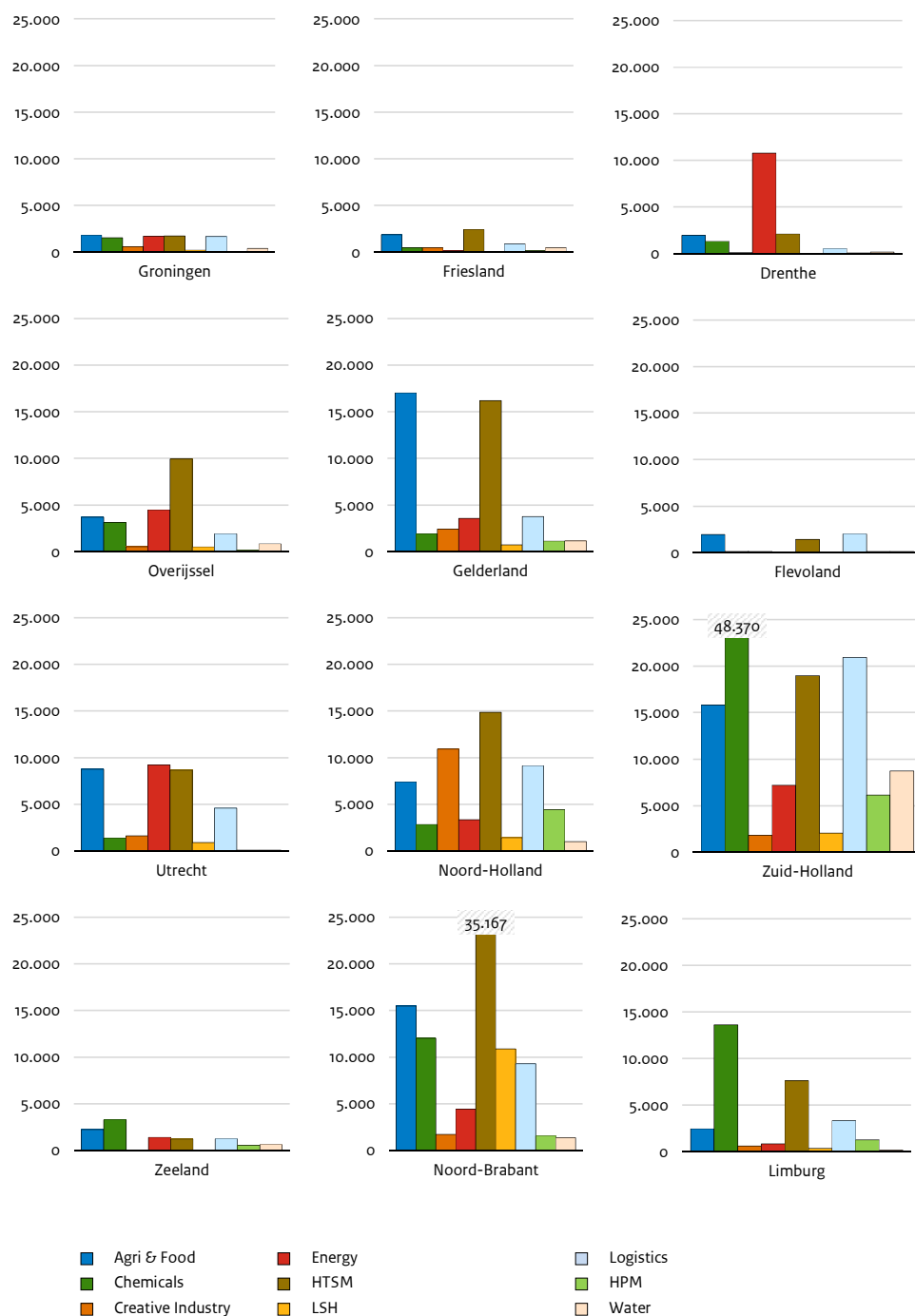
Figure 5.6 Definitive RDA base (left) and R&D salary costs, according to province and COROP, 2012-2014



Source: Statistics Netherlands/RVO.nl

Figure 5.7 shows the spatial distribution of the top sectors. The production activities of all top sectors are distributed throughout the Netherlands, in particular in either Noord-Brabant (HTSM, LS&H), Zuid-Holland (Chemicals, Water, Horticulture, Logistics), or Noord-Holland (Creative Industry). The Agri & Food top sector has the greatest spatial distribution in the Netherlands, and most especially in Zuid-Holland, Noord-Brabant, and Overijssel. The Energy top sector has a relatively strong presence in the northern Netherlands. This distribution of the economic activities of top sectors across the various regions once again underlines the importance of strong connections between the regions.

Figure 5.7 Production (in basic prices), proportion per province per top sector, 2013



Source: Statistics Netherlands (2015), Monitor Topsectoren 2015.



The pattern of distribution of the top sectors is largely in keeping with that of the specialisations that exists among the regions in which the top sectors are strongly represented. For example, the HTSM top sector has a very prominent R&D-intensive presence in the Eindhoven agglomeration (semi-conductors, and optic, information, and telecommunication technology) with connections with specialised regions like the high-tech manufacturing industry in Zuid-Holland, concentrations in south Limburg (fine chemicals) and with knowledge centres near Delft and Twente. HTSM is also part of a cross-border knowledge network with Leuven and Aachen.

There is also a strong concentration of high-tech related services in the greater Amsterdam region. The power of the links between these agglomerations gives the top sector its international strength.

Another example of the importance of connections between specialised agglomerations is that of the Agri & Food top sector. The production of knowledge (R&D and innovation) by the sector is concentrated in the highly specialised international knowledge centre around Wageningen, while those who use the knowledge (the food and drink industry) are distributed across the Netherlands. Horticulture and Propagation Materials is strongly concentrated in Zuid-Holland, around the Westland area.

### The regional function – what benefits does it produce?

The central government and the regions work very closely together in the context of the enterprise policy. Provincial governments and local authorities often have their own economic agendas that the Ministry of Economic Affairs uses to establish a basis for collaboration. This is the case, for example, in the '*Rijk-regio agenda MKB stimuleren*' ('government-region agenda for stimulating SMEs'), in the Technology Pact, when linking top sectors with regional economic clusters, when co-funding regional EU funds (ERDF), in the 'Agenda Stad', and when deploying regional development organisations.<sup>79</sup>

To that end, the Ministry has set up a 'regional function', in which the 'regional ambassadors' have a key role. The ambassadors are familiar with the regional and national networks of administrators, knowledge institutes, businesses, and societal organisations. They form a link with regard to both the provision of information (two-way intelligence) and to setting out joint policy initiatives in concrete terms (matchmaking). The regional function – which is aimed at the full spectrum of the activities of the Ministry of Economic Affairs – enables the ministry to link and harmonise the national and regional economic agendas more effectively. The Chambers of Commerce (which are grouped by region) and the regional development organisations ('*Regionale Ontwikkelingsmaatschappijen*') make up part of the function.

'Economic boards' are active in an increasing number of regions, in which regional governments collaborate with public and private partners on strengthening economic structures. The Ministry of

<sup>79</sup> See the letter to the House of Representatives, '*Economische structuurversterking: een gezamenlijke opdracht van Rijk en regio's*', of 20 October 2014.

Economic Affairs regional ambassadors are involved in these activities. Since the launch of the enterprise policy, this has led to intensive collaboration between national and regional policy in the following areas:

- ✓ On 11 December 2014, Minister Henk Kamp, provisional government representatives, MKB-Nederland and the SME members of the top teams concluded an agreement aimed at collaborating and harmonising activities in the joint stimulation of innovation among and service provision for SMEs. The collaboration links the national agendas of the top sectors with the Regional Innovation Strategies of the provinces.<sup>80</sup> In concrete terms, this has led to joint efforts in the deployment of the MIT scheme. In total, the MIT package amounts to €50 million and consists of a regional and a national part. The regional part is worth €30 million, and is aimed at applications that are in keeping with the Regional Innovation Strategies and the agendas of the top sectors. The Ministry of Economic Affairs and the provinces have each contributed €15 million to this.
- ✓ Regional teams are now being deployed during the 'early phase financing', providing support for businesses in the region (including collaborative partnerships that cover more than one region), and the regions are also represented on the national advisory committee.
- ✓ Agreements have been made with regional parties about structural co-financing when attracting foreign investments (Investor Relations Programme). This concerns Innovation Quarter, West-Holland Foreign Investment Agency, Rotterdam Partners, Invest Zeeland, Invest Utrecht, and Amsterdam in Business.
- ✓ Between 2014 and 2020, €507 million will be available from the European Regional Development Fund (ERDF) for four decentralised regional programmes (north, east, south, and west). A similar amount for co-financing projects must be raised by private and public parties. The central government has €91 million available for this purpose (see Table 5.2). The programmes were approved by the European Commission in the final quarter of 2014. Subsidy schemes were made available in the first half of 2015 in all four of the regions.

*Table 5.2 Budget ERDF, regional programmes (EU and central government), 2014-2020*

	EU budget	EZ central government co-financing budget	Cumulative
	(millions of €)		(millions of €)
<b>North</b>	€103	€19	€122
<b>East</b>	€100	€18	€118
<b>South</b>	€114	€20	€134
<b>West</b>	€190	€34	€224
<b>Total</b>	€507	€91	€598

- ✓ SME innovation projects and renewable energy projects are among those receiving support in the form of four cross-border programmes. A sum of €309 million is available from the ERDF for this, between 2014 and 2020. With additional resources from Dutch and foreign public and private partners, it is hoped that the overall investment volume will exceed one billion euros. The central government has €49 million available for this purpose.

<sup>80</sup> See the report that was sent to the House of Representatives in June 2015; Parliamentary Document 29 697, no. 18.

- ✓ The Technology Pact is implemented region-by-region, because regional education and labour markets differ from one to the next. The national Technology Pact contains agreements between regions and top sectors, thereby creating the preconditions for regional cooperation.
- ✓ The Cabinet launched 'Agenda Stad' in 2014, in order to make the most of the underused potential of economies of agglomeration. The Ministries of Economic Affairs; of Internal Affairs and Kingdom Relations; of Infrastructure and the Environment; of Education, Culture and Science; of Social Affairs and Employment; and of Health, Welfare and Sport are working in partnership with Dutch cities and the business sector on ideas, initiatives, and knowledge development that can enhance the growth, innovation and liveability of the cities. In the short term, it is intended to lead to a number of 'city deals' between the central government and networks of cities and businesses. In concrete terms, the Ministry of Economic Affairs is working with cities and other regional partners on shaping seven such city deals. The first deals will be concluded before the end of the year.
- ✓ Because the spatial-economic issues involve multiple regions and because of their importance for the national economic interest, the ministry is involved with the regional agendas of MIRT (the long-term infrastructure, spatial planning and transport programme). The national tasks for each region have been formulated in MIRT. The ministry is in the process of developing the regional MIRT agendas with the provinces and other central government partners. This concerns dossiers with an international dimension, such as Mainport Rotterdam, Mainport Schiphol, Brainport Eindhoven, and the Greenports.