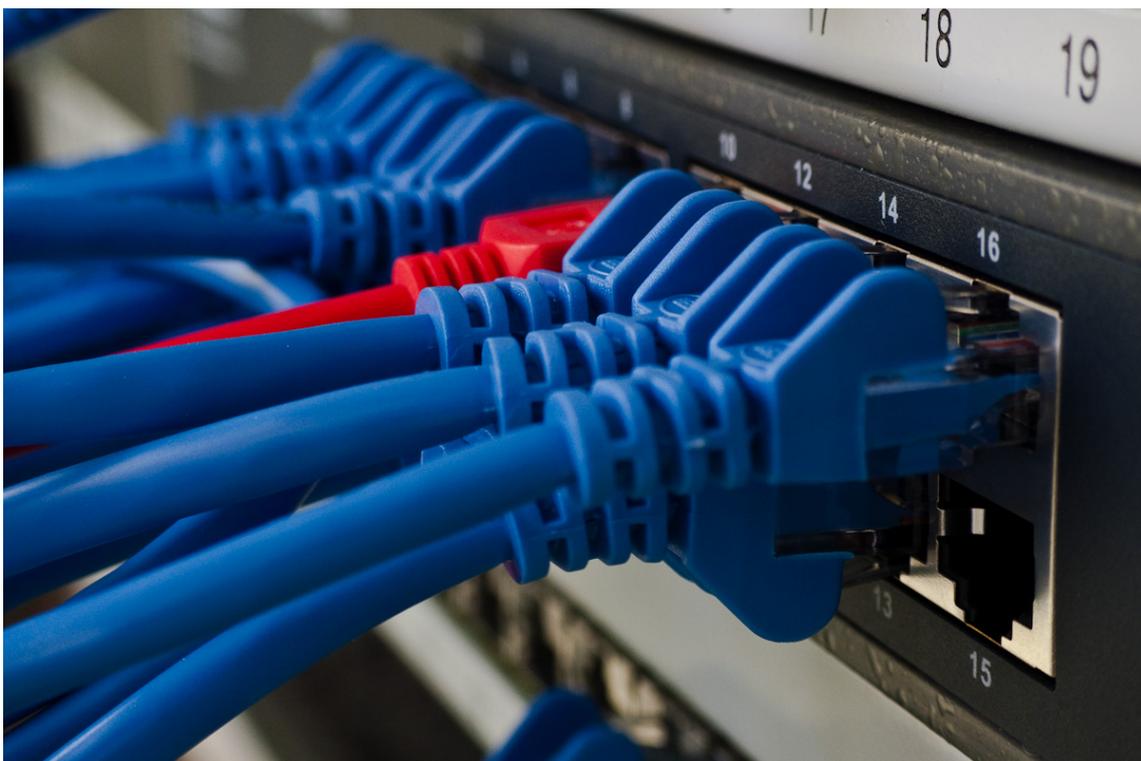


April 2016

R&D Attraction Networks

A report on stakeholder co-operation and STI diplomacy to attract investments in R&D



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technopolis _{|group|} April 2016

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Table of Contents

- 1 Report takeaways 1**
 - 1.1 Purpose and context of the report 2
 - 1.2 Goals of the report 3
- 2 R&D Attraction & the Dutch Context 5**
 - 2.1 Location factors for R&D 5
 - 2.1.1 General location factors 5
 - 2.1.2 Less important factors 6
 - 2.2 FDI R&D flows 6
- 3 Inventory of means to attract foreign R&D 11**
 - 3.1 Instruments and services 11
 - 3.1.1 Market research / information 11
 - 3.1.2 Matchmaking and network building 11
 - 3.1.3 Funding and other financial incentives 12
 - 3.1.4 Proactive lead generation 13
 - 3.1.5 Value propositioning (general and bespoke) 13
 - 3.2 Policies 14
 - 3.2.1 Intellectual property—rights and taxation 14
 - 3.2.2 Internationalisation strategies 15
 - 3.2.3 Immigration and labour policy 15
- 4 Map of Innovation Ecosystem in the Netherlands 17**
 - 4.1 The FDI landscape in the Netherlands 17
 - 4.2 Policy (goals) for attracting R&D 18
 - 4.3 Importance of attracting foreign R&D 19
 - 4.4 A new approach 19
 - 4.5 KPIs for R&D projects 20
 - 4.6 Instruments and services 20
- 5 Case Studies 23**
 - 5.1 Switzerland 23
 - 5.1.1 Stakeholders and governance 23
 - 5.1.2 Strategic policies to improve the R&D environment 24
 - 5.1.3 Investment promotion activities related to R&D 24
 - 5.2 Ireland 26
 - 5.2.1 Stakeholders and governance 26
 - 5.2.2 Strategic policies to improve the R&D environment 26
 - 5.2.3 Investment promotion activities related to R&D 27
 - 5.3 Germany 28

- 5.3.1 Stakeholders and governance..... 28
- 5.3.2 Strategic policies to improve the R&D environment 28
- 5.3.3 Investment promotion activities related to R&D..... 29
- 5.4 Denmark..... 30
 - 5.4.1 Stakeholders and governance..... 30
 - 5.4.2 Strategic policies to improve the R&D environment 30
 - 5.4.3 Investment promotion activities related to R&D..... 31
- 5.5 Canada..... 31
 - 5.5.1 Stakeholders and governance..... 31
 - 5.5.2 Strategic policies to improve the R&D environment 32
 - 5.5.3 Investment promotion activities related to R&D..... 33

Figures

- Figure 1 Gross domestic expenditure on R&D (GERD)..... 3
- Figure 2 New foreign investment activity in the Netherlands and neighbouring countries in 2005-2014, by average job value 7
- Figure 3 New foreign investment activity by estimated jobs for key origin..... 8
- Figure 4 Top ranking business functions by estimated jobs – 2014 versus 2005-2013..... 9
- Figure 5 Priority scorings (weightings) per sector and activity..... 9
- Figure 6 Region of origin of investments into the Netherlands in R&D, 2011-2015 10
- Figure 6 Pier 17 on the Embarcadero waterfront 12
- Figure 7 Segments of the Irish Innovation Ecosystem 26
- Figure 8 Multinational ICT companies (and their origins) operating in Ireland 27
- Figure 9 Denmark’s innovation ecosystem in brief..... 30
- Figure 10 Major stakeholders in Danish investment promotion activities..... 31
- Figure 11 Logos of members of Consider Canada 31
- Figure 12 Three pillars of Canada’s technology and innovation strategy..... 33

1 Report takeaways

This report addresses some of the location factors behind R&D and describes some of the instruments and policies that can be used to attract further investment in the area. It focuses on the situation in the Netherlands, and then examines the R&D attraction framework for five countries, namely:

- Canada;
- Denmark;
- Germany;
- Ireland; and
- Switzerland.

The following summarises some of the takeaways from the report.

- While all jurisdictions examined had explicit support for innovation activities, the framework varied markedly. In Ireland and Canada, for example, the primary driver for support lay in supporting global competitiveness, with a focus on collaboration and commercialisation. Germany and Denmark, by contrast, both specifically mention global challenges, with funding directed towards activities around specific questions. In these cases, the government is more than a facilitator, but a direct participant in the innovation ecosystem, both as a provider and even a client of innovative activities. These differences lead to a different configuration of stakeholders and different points of emphasis in the innovation ecosystem. It would be difficult to assess which configuration is “better”—certainly in cases where the government sees innovation as an important instrument to solve societal issues, government spending on R&D appears to be higher. However, in jurisdictions like Ireland, the government appears more responsive to the market needs of companies given the drive for competitiveness.
- Even in jurisdictions like Ireland that have a strong reputation for taking industry interests into account when determining research policy, there remains a tension between basic and applied research. Some believe that applied research serves short-term purposes, and while it has its place, breakthroughs and discovery of truly innovative ideas comes out of more basic research principles. Government policies that bring together industry and university tend to emphasise the applied side of the equation, but excellence in basic research can also be an attraction for investors, particularly in new fields of research.
- While government policy aims to bring industry and university closer together, the network building activities of stakeholders responsible for each side seem to be separated. In cases like Ireland, where ties are very close between IDA Ireland and Science Foundation Ireland, their activities are still relatively separated. Despite this division, most of the jurisdictions analysed for this report seemed to recognise the branding element to internationalisation activities and also the importance of co-ordinating business and research-related activities, an area where the Netherlands could improve. Given the importance of both basic and applied research in attracting potential investors—and how investors can make the research community more dynamic—some co-ordination between organisations such as the NFIA and the NWO could be helpful. Swissnex seems a particularly powerful example of how the research community can help to support investment promotion activities.
- The focus of the case studies has largely been on the national framework for innovation and investment attraction, but of course, regions and cities play a profoundly important role in attracting investment. Given the continued importance of agglomerations and clusters, regions can be more important brands than national ones. Copenhagen as a destination for companies in CleanTech is a powerful example of this, with government policies at a national and regional level feeding into a vibrant community of research, industry, and government in the area. Co-ordination between

national and regional bodies seems relatively good from an investment promotion perspective with Amsterdam, Rotterdam, and Eindhoven as strong brands in their own right.

- All countries have a physical, international presence globally via their networks of embassies, though it seems that the stronger performers in investment promotion and network building use independent facilities and staff. The German, Swiss, and Danish have innovation centres located in city centres, which seems to be a good approach, allowing regions to bring together in one location all elements of the innovation ecosystem, from research to investment support (one that Scotland recently announced that it would be following, with Innovation and Investment Hubs in London, Dublin, and Brussels). FDI can play an important role in building the skills base for R&D, especially once regions reach a critical mass of companies in a particular field of interest. FDI can bring companies with new ideas, making a region more dynamic. And once a sufficient number of companies have opened and moved to a region, it can work as an important magnet for talent from other regions.¹

1.1 Purpose and context of the report

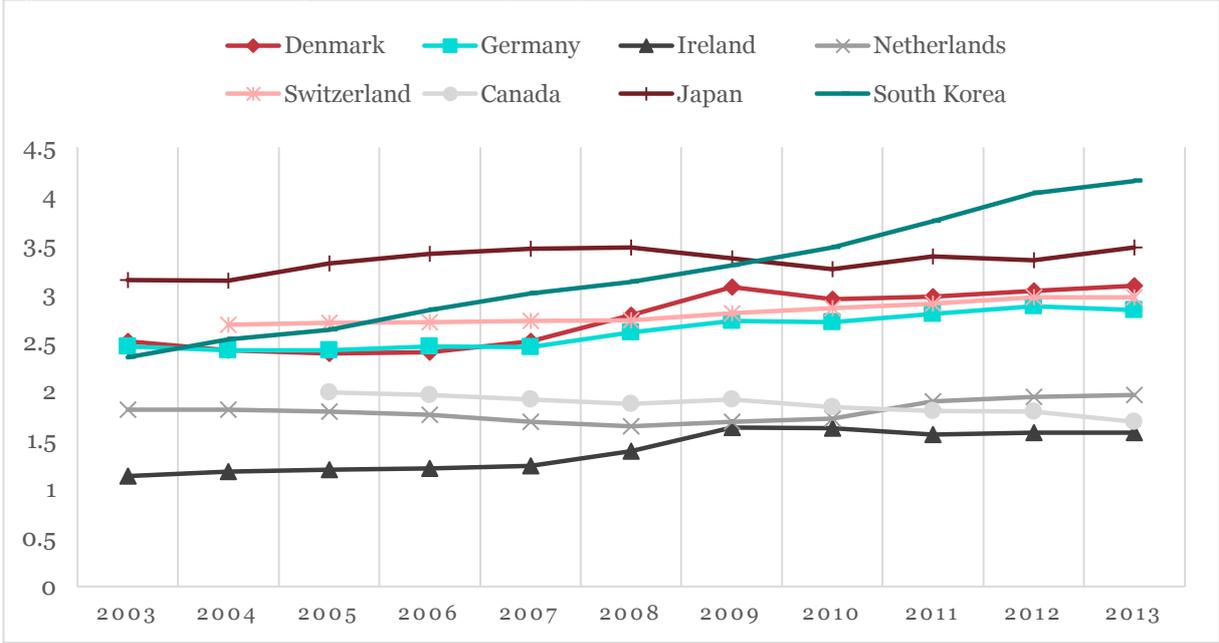
Science, Technology, and Innovation (STI) diplomacy is traditionally associated with using science and scientists as an instrument of soft power. Climate change, food security, energy security—the large challenges facing national governments all have a global component and rely on the scientific community for resolution. In this sense, global co-operation in science, innovation, and technology helps to achieve overlapping goals. As the Royal Society illustrates, there are three elements to science diplomacy, namely informing foreign policy objectives, using science co-operation to improve international relations, and facilitating international science co-operation.

It is this final facet—facilitating international co-operation—that has direct consequences for economic development, helping to improve regional or local innovation ecosystems that can create jobs and attract investment. Given that developed economies' competitiveness increasingly relies on high value-add jobs, such as those provided by research & development and high value manufacturing, maintaining a competitive innovative edge in a global economy remains crucial. Recognition of the competitive advantage that developed economies still appear to have is one reason why the EU's 2020 strategy has recognised the importance of spending—both publicly and privately—on research & development.

The Netherlands currently lags slightly behind the EU-28 average in gross domestic expenditure on R&D as a percentage of GDP. While the Netherlands has as its target 2.5 percent spending in GERD, the country is currently averaging a spend of just under 2 percent of GDP on R&D. This compares with countries such as Denmark, who have achieved just over 3 percent, and developed Asian economies such as Japan and South Korea, who have achieved 3.47 percent and 4.15 percent, respectively.

¹ Higher-education policy plays an important role in developing talent, but not necessarily with the education of undergraduate students, but rather with the research capacity that the university develops. It is this research capacity that helps to retain the talent that a university produces, and top centres in any field can expect an influx of skilled individuals from both inside and outside of the country. This is not to downplay the importance of national education policies, but rather to point out that it is not enough to simply train young people with particular skills, but that providing an innovative environment that makes them want to stay is equally important.

Figure 1 Gross domestic expenditure on R&D (GERD)



Source. Eurostat, Statistics Canada

Investment promotion and regional development agencies have recognised the importance of science and technology in achieving economic growth and for the value propositions that they present to investors, both local and foreign. Despite claims from some quarters that the internet revolution would decouple talent and geography, it only seems to have reinforced the importance of place. What the internet has done is open up the possibility for organisations to seek out centres of excellence, allowing for a more decentralised model of research & development—in the innovation landscape, regions and cities are no longer important in their ability to draw a headquarters, but rather for their ability to become a magnet for specific talent. This talent draws companies to open a hub of innovation operations—they are smaller victories by number of jobs, but hugely important in drawing additional employees and companies.

Attracting and retaining these high-value companies, however, requires a more co-ordinated approach between what might best be called the economic side and research side of investment promotion. Yes, the Triple Helix model to which many countries now adhere develops policies that attempt to bring together industry, university, and government to increase the innovative capacity of a region. And yes, agencies responsible for attracting investment are better at “understanding their patch”, which includes a better mapping of talent. Nonetheless, organisations responsible for developing business leads and those responsible for research leads are still separated, even in best practice countries such as Ireland. In cases such as the Irish one, there is co-operation (which is largely effective), nonetheless, each does their own network building and matchmaking activities.

1.2 Goals of the report

Given the need to increase R&D spending in the Netherlands and to understand how new modes of investment promotion feed into this goal, this report will explore how the Netherlands is currently performing in attracting FDI, the Netherlands value proposition on the innovation side of the equation, and how stakeholders in the Netherlands co-operate to attract investment in R&D. In addition to examining the performance of the Netherlands, the report will provide five case studies to examine how other jurisdictions are performing in this arena, including:

- Ireland;
- Germany;

- Switzerland;
- Denmark; and
- Canada.

2 R&D Attraction & the Dutch Context

2.1 Location factors for R&D

The factors that a company will find attractive will vary depending on the sector and activity in which a company wants to engage. Sales & marketing teams should be located in strategically central places, back-office teams are more likely to take costs into account, and R&D teams will need people with the requisite knowledge and skills. Companies operating in transport & logistics are obviously going to be more concerned with transportation hubs than those in other areas. While location factors can differ quite markedly according to the situation, some commonalities do exist.

2.1.1 *General location factors*

2.1.1.1 Skills

If the local population lacks the skill set that a company requires, it means either bringing staff from other locations, moving to another location, or engaging in expensive training, the latter of which is often unrealistic in highly technical fields. A few weeks or months of training cannot compensate for the lack of an educational base in a particular science. This is why the skills base—not such the type of skills available, but the number of people with those skills actively looking for work—is a critical location factor.

2.1.1.2 Agglomeration

Agglomerations are often equated with industrial clusters. They are a sufficiently sized group of like-minded companies that achieve sufficient mass to attract other companies. These groups signal to others that the elements for success exist within a particular geography. Agglomerations and clusters are not the same, however, as a cluster forms a network of companies that exchange and combine resources, whereas agglomerations only refer to close geographical proximity.

Given the prominence of global value chains and the prevalence of virtual workplaces, the idea that geography matters may seem counter-intuitive. In some sectors, however, certain segments of the value chain need to be located close to each other. Automotive manufacturing is a classic example, where just-in-time delivery times mean that suppliers locate themselves relatively close to final production facilities.

But perhaps more importantly from a research & development perspective is that an agglomeration signals that a region possesses the right people and infrastructure to support the company. A company can feel more confident that the appropriate skills base exists, and a large agglomeration of companies can also work as a magnet for new workers.

2.1.1.3 Intellectual property right protection (IPR)

IPR plays a major role in whether and how innovations spread, though significant debate remains on whether a strict IPR regime enhances or inhibits work in R&D (and by extension, adds to the value proposition of a region). Those arguing in favour claim that protecting intellectual property helps drive development, as companies receive adequate return on investment without worrying about cheaper (or free) copies of products or services entering the market. This applies to both patent protection for product development and content protection. Companies such as General Electric and Ford, for example, have repatriated some activities, partially over the IPR issue.

On the other hand, particularly in the software industry, IPR can be used as a weapon to protect a company against competition and can stifle innovation. Software patents tend to be sufficiently vague that they can be used to garner revenues, particularly from smaller players for which legal action would be prohibitively expensive. So-called “fair use” provisions in some jurisdictions also prevent consumers and other businesses from taking intellectual property and re-forming it an innovative way.

2.1.1.4 Market size

Market size has also been flagged as an issue that attracts companies, though this tends to be more for downstream activities rather than upstream ones. Hence, downstream MNFs are likely to choose their location with relatively larger market size, as investors would benefit from larger sales in recovering the fixed set-up cost.

It is quite obvious that the market size is a relevant FDI determinant, but growing integration between countries reduces the importance of market size and enhances the importance of supply side determinants.

2.1.2 *Less important factors*

2.1.2.1 Incentives

While much has been made of the use of incentives to attract investment, they rarely factor into a location decision in research & development, at least in Europe (in North America, where differences across regions are relatively low, incentives play a more important role). However, even though incentives are not necessarily important, some MNFs might respond favourably to particular tax rules.

2.1.2.2 Capital markets

While capital markets have been flagged as an important element of a well-functioning industrial cluster, they have not been shown to have much importance for companies looking to invest in new R&D facilities for a region.

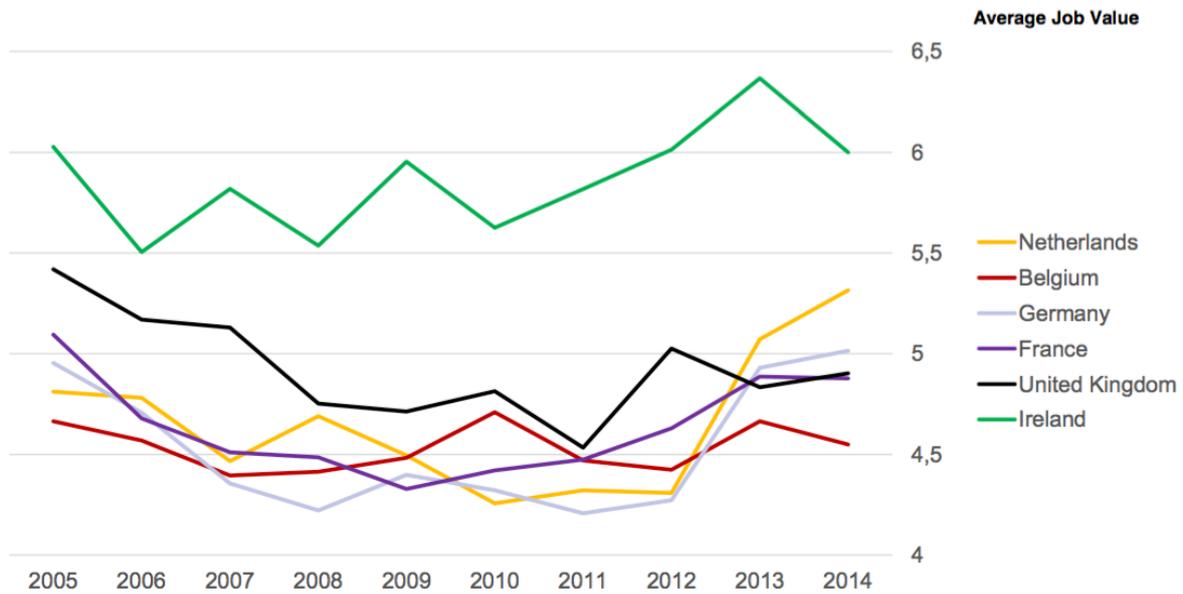
2.1.2.3 Cost

While always a factor, cost tends to rank relatively low as a location factor for companies in R&D. However, as the skills gap between developed and developing world shrinks, cost will likely factor more and more, particularly in downstream activities that require some level of innovative capacity, but perhaps not the highest level.

2.2 FDI R&D flows

The Netherlands, relative to its size, ranks well when it comes to attracting investment, particularly when looking through the lens of high-value-add jobs. An IBM-PLI report commissioned by the NFIA shows that the Netherlands ranked number six in the world by average job value, though below countries such as Ireland (1), Switzerland (2), and Denmark (4). Average job value has been increasing substantially since 2012, making gains over many of competing countries (though this is far-from a long-term trend, so it remains difficult to draw many conclusions).

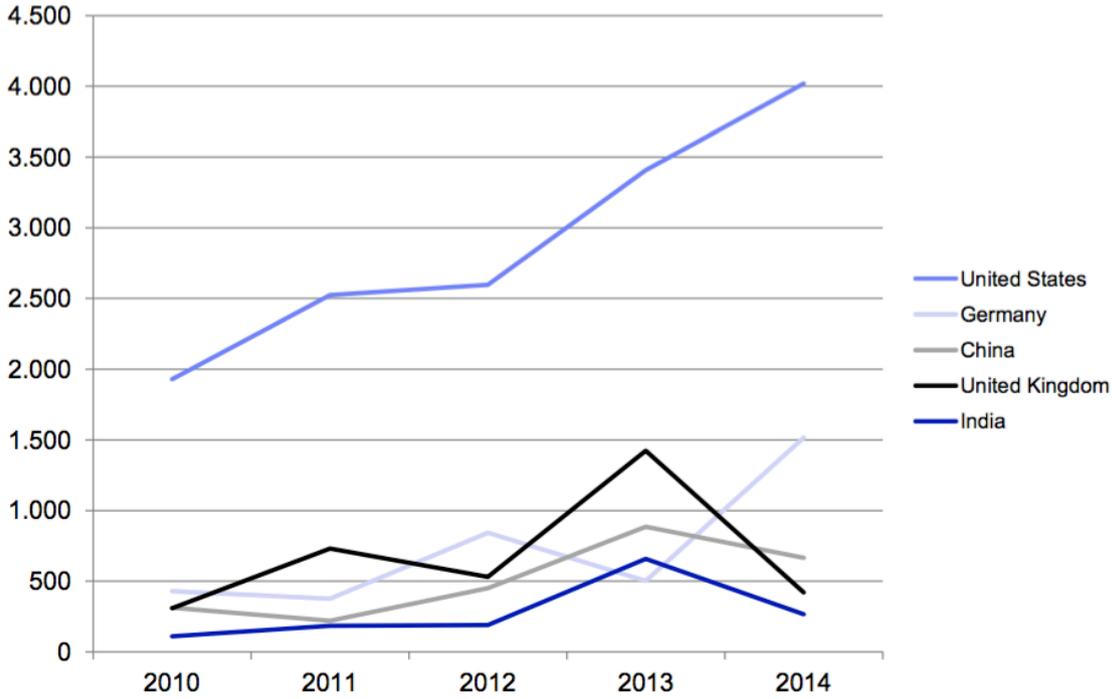
Figure 2 New foreign investment activity in the Netherlands and neighbouring countries in 2005-2014, by average job value



Source. IBM-PLI

While the BRIC countries have been an area of interest for investment promotion agencies, FDI projects still largely come out of the developed economies, with the United States, Germany, and UK as the top three sources of FDI flows. Inflows into the Netherlands also largely come from the United States (1) and Germany (2), with Taiwan and China also important sources. Looking at inward FDI flows, however, investment figures vary quite markedly from all countries except for the United States, which remains by far the most important investor in the Netherlands in terms of jobs created.

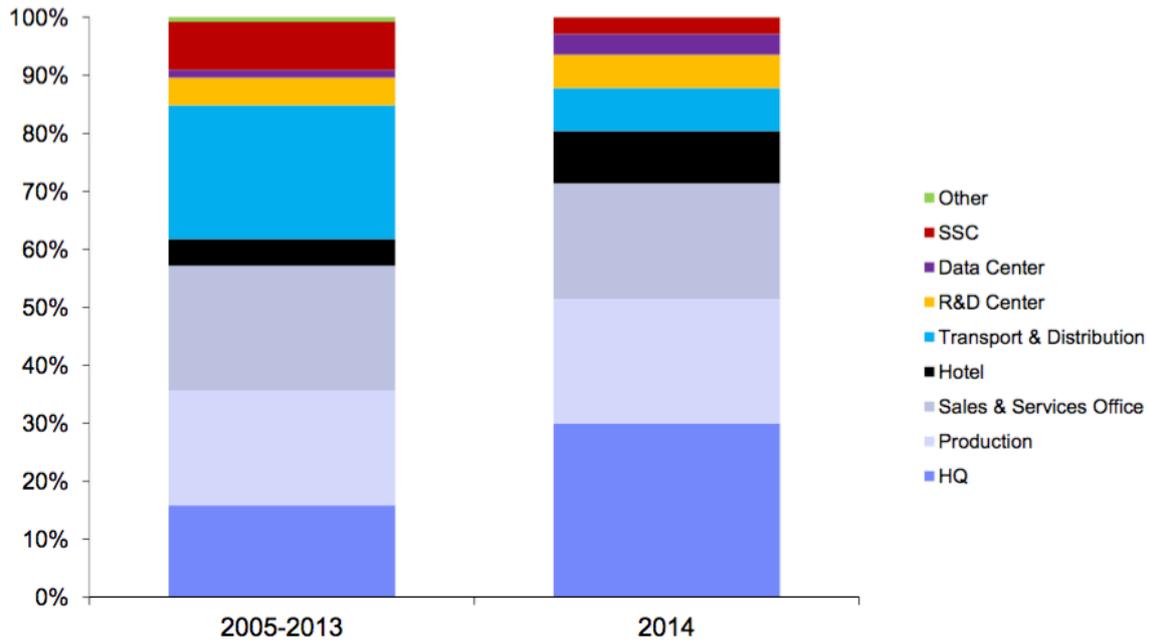
Figure 3 New foreign investment activity by estimated jobs for key origin



Source. IBM-PLI

In terms of the activities that the Netherlands tends to attract, headquarters, production, as well as sales and support remain the top three. According to data supplied by IBM-PLI, R&D centres represent less than 10 percent of all incoming projects from the years from 2005 to 2014.

Figure 4 Top ranking business functions by estimated jobs – 2014 versus 2005-2013



Source. IBM-PLI

In terms of key sectors, the Netherlands seems to perform particularly well in high-skill areas (which would be in line with the high-value jobs it tends to create from FDI). ICT, pharmaceuticals and health, electronics, and chemicals all figure highly in terms of the sectors that are investing in the Netherlands.

Figure 5 Priority scorings (weightings) per sector and activity

Sectors	NFIA Key Sectors	Weighting	Activity	Weighting
ICT	Information Technology	15	Sales & Services	10
Pharma & Health	Life Sciences & Health	15	Distribution	10
Electrical Equipment	HTSM	15	Production	15
Electronics	HTSM	15	R&D	20
Industrial Machinery	HTSM	15	Headquarters	20
Metals	HTSM	15	SSC	15
Transport Equipment	HTSM	15	Data Center	9
Food & Beverages	Agrifood	15	Other (including Hotel)	1
Agriculture and Fishing	Agrifood	15	Total	100
Chemicals	Chemicals	15		
Business Services	Creative	8		
Energy	Energy	8		
Logistics	Logistics	8		
All other (11)		1		
Total		185 (normalised to 100 scale)		

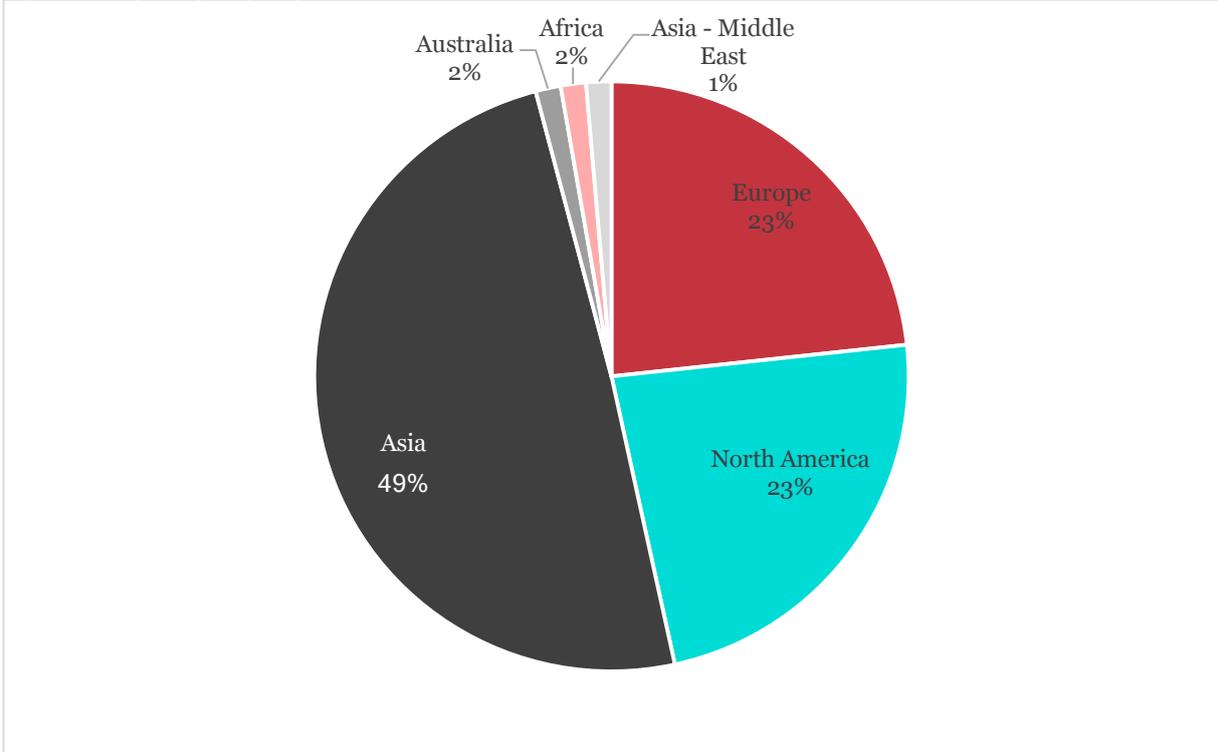
© 2015 IBM Corporation

Source. IBM-PLI

When compared with more specific figures collected by the Netherlands Foreign Investment Agency, however, figures show that the Netherlands is particularly strong in research & development within life sciences and health (23 projects) and agri-food (13 projects). While ICT is a key sector for the Netherlands according to IBM-PLI statistics, its importance in R&D is lower than one might expect, with only nine projects attracted.

As well, while the United States appears to be a key driver of investment in the Netherlands when looking at all activities for investors, when drilling down into research & development, North America becomes a relatively less important driver of investment, with Asia providing the largest number of projects

Figure 6 Region of origin of investments into the Netherlands in R&D, 2011-2015



Source. NFIA

While these figures paint a picture of the kinds of investments and the origin of those investments in general, what they fail to capture is the overall “quality” of those investments in terms of their growth potential. Currently, the way that FDI statistics measure the overall influence on the business/research environment is—at best—on the income level of those employed by an investment.

3 Inventory of means to attract foreign R&D

Attracting foreign investment to a country is, in many ways, like selling any other product on the market. Success comes both out of a good product and out of getting people to hear about that product through marketing on various levels (perhaps most importantly through content marketing). The marketing element of attracting R&D investors relies on a number of instruments available to investment promotion agencies, while the “product” is improved via government policies that look to improve the innovation ecosystem.

The following chapter outlines some of the more important instruments and policies that are used by countries to improve their performance in attracting foreign R&D.

3.1 Instruments and services

3.1.1 *Market research / information*

Given that many agencies engage in both export promotion and investment promotion, market research can work in both directions, helping local firms to better understand foreign markets and vice versa. The market research that investment promotion agencies conduct for foreign investors include information on the structure of the local market, which may include information on the innovation ecosystem. Just some of the areas where agencies will supply information include:

- Tax law, especially around R&D credits;
- Skills availability;
- Education and research programmes;
- Labour law;
- Operating costs; and
- General business intelligence.

3.1.2 *Matchmaking and network building*

More specific to market research and information—and arguably one of the most important tools available to governments to attract R&D—is the role that stakeholders play in helping connect businesses and researchers. As mentioned in the introduction to this report, policy-makers generally acknowledge the importance of connecting their research community to global networks to improve their performance. At the same time, however, building these networks also builds awareness of a region. This serves an important marketing role, signalling to outside talent of a region’s desirability in generating innovative research and ideas.

Switzerland—discussed further in the case study on page xx—is one jurisdiction that acknowledges the role that networks play in image and “brand” building for the country. Swissnex is a network of science and technology councillors that have been set up in embassies around the world, with 20 councillors and five physical locations, including Bangalore, Boston, Rio de Janeiro, Shanghai, and San Francisco (with the last location joining together with the Consulate General, the Swiss Business Hub, Switzerland Tourism as well as a number of Swiss companies and a university at Pier 17 on the Embarcadero waterfront).

Figure 7 Pier 17 on the Embarcadero waterfront



Source. Swissnex web site (<http://www.swissnexsanfrancisco.org/initiatives/pier17/>)

Switzerland is not the only region that has begun opening locations designed to bring together actors in a physical location. Both Germany and Denmark have physical locations for connecting researchers, with Germany running its Houses of Research and Innovation (New York, Sao Paulo, Moscow, New Delhi, and Tokyo) and Denmark with its Innovation Centres (Munich, New Delhi, Sao Paulo, Seoul, Shanghai, Silicon Valley, and Tokyo). Each of these locations serves a pure marketing function, but also provides a space for members of the local research community to work and meet with potential and current partners.

One of the biggest distinctions between locations on matchmaking is the role of the investment promotion agency versus those organisations responsible for science and innovation. In cases such as Ireland, IDA Ireland will make requests of Science Foundation Ireland to make connections on their behalf—the science community is seen as a network somewhat independent of the business community (despite efforts to bring them together). The move toward physical locations can be seen as an attempt to bring these activities a bit closer together, acknowledging the overlap between the networks of each organisations. Nonetheless, generally speaking, networks from the business side of the equation tend to be maintained independently of the research community.

3.1.3 Funding and other financial incentives

Many locations promote tax or funding advantages that are offered (generally at a national level) that provide some advantage to doing business in a region. While financial incentives are not necessarily a driver for location decisions in research & development, it still provides a signal to investors for how seriously a location treats activities in this area.

These incentives can be broken down into a number of categories, including:

- Tax credit;
- Cash grants;
- Loans;
- Reduced tax rates / preferable tax rates;
- Reduced social security contributions;

- Accelerated depreciation on R&D assets;
- Tax allowances;
- Infrastructure / land preferential price;
- Tax deductions (including super deductions);
- Tax exemptions;
- Income tax withholding incentives;
- Patent-related incentives;
- Financial support;
- Tax holidays;
- Expedited government approval processes;
- Value-added tax reimbursements.²

Funding also includes the plethora of research funds that are made available to both local and foreign entities. These programmes serve two purposes: first, they help to improve the local innovation ecosystem, providing much needed funds for both basic and applied research. Second, given the desire to connect local researchers to global research networks, more and more programmes are available in some way or another to foreign firms.

3.1.4 Proactive lead generation

In the early days of investment promotion, agencies were largely designed to react to requests from potential investors and to engage in general marketing activities for a region (generally at a national level). As agencies became more sophisticated, they began to target individual organisations to build relationships before an expansion would take place, trying to ensure that a region would remain top-of-mind once that investment decision would take place.

A small cottage industry has developed around lead generation, with several specialised consultancies collecting intelligence on future expansion plans of organisations and arranging face-to-face meetings with companies that have an interest in a region. Agencies themselves, of course, also develop relationships with companies through their network-building activities. Generally speaking, more sophisticated agencies and organisations look to the profiles of companies to see if their value chains and business models provide an adequate fit for a region, and focus their activities in developing relationships with those companies. Some of the indicators that those seeking to conduct lead generation include:

- Level of revenue growth;
- Profitability and capitalisation;
- Exports;
- Other investments and ventures;
- Funding rounds;
- Debt position;
- Location profile (ie. other locations of the company); and
- Competitor presence.

3.1.5 Value propositioning (general and bespoke)

Value propositions come in several forms and are really a subset instrument of the activities listed above, as they can be used to support network building and lead generation. In an investment promotion

² EY, *Worldwide R&D incentives reference guide, 2014-15*.

context, a value proposition lays out the reasoning as to why an investor should want to locate a facility within a particular region.

There are two types of value propositions—the general and bespoke proposition. The general value proposition is a generic list of points that regions provide investors at an early stage of engagement. This can include everything from a list of companies active in the region, the general activities in which organisations are engaged, the types of research that are being done, some general costs, available incentives, and even about the quality of living.

Arguably the more important type of value proposition that agencies provide to targeted investors are bespoke propositions, which may be generated for a very specific subset of company or even a single company. A bespoke value proposition lays out a tailored pitch that attempts to identify the specific elements of the business environment that will fit the needs of a specific company. Rather than a list of all incentives, the specific incentives that could apply to a company would be provided—the same for a list of costs and other elements of the business environment that would be specific to the type of activity that a region would be pitching to an investor. In essence, a bespoke value proposition attempts to lay out a general business plan for an investor to demonstrate why a region represents good value for money.

3.2 Policies

Government policies that support the innovation ecosystem, by definition, help attract investors. Greater levels of knowledge, better connected researchers, labour flexibility—these factors and others bring confidence to companies to make an investment in a region. The following section outlines some of the policies *in the short-term* that can help to make the R&D environment more attractive for foreign investors.

3.2.1 Intellectual property—rights and taxation

As mentioned earlier, from an innovation perspective, intellectual property rights is one area that courts debate. On the one hand, some analysts promote the importance of intellectual property rights as a supporter of innovation—companies that spend the resource necessary to invent new products and processes need to be given the space to profit from those activities before others copy those innovations, selling them without having taken on the overhead of the original R&D. Patents, copyrights, trademarks—these are all protections afforded by governments to knowledge creators so that they can commercialise and profit from their ideas for a set period of time.

On the other side of the equation, however, other analysts argue that intellectual property rights hinder innovation—most notably sequential innovation, where one idea adds to another. On this side of the debate, IPR prevents researchers from taking an idea and making further improvements, and it grants monopoly rights to a single holder, who can then engage in rent seeking activities. The negative elements of IPR can best be seen in software development, where patents have been granted for relatively general activities, giving right-holders the ability to sue competitors and reduce competition.

From an investment promotion perspective, stronger IPR is generally seen as a net benefit for attracting investors who want to engage in R&D activities, though only in sectors that have a slow return-on-investment or innovations are easily replicable and transferrable, such as pharmaceuticals and biotechnology.³ Companies like ASML in the Netherlands, for example, worry less about intellectual property theft given the speed at which their product is changing and the short shelf-life of their products, meaning return-on-investment comes relatively quickly.

Perhaps more important for the general attraction of investments in R&D are policies around taxation of intellectual property. As a form of capital where valuation can be tricky, tax law provides companies with quite a bit of leeway on how to value assets. This becomes particularly important because many tax regimes allow intangible assets to be depreciated or amortised over time, which has an influence on

³ A 2004 study by Beata Javorcik showed that a strong IPR regime, while having a positive effect on R&D-related investments (particularly in health care products; chemicals; machinery and equipment; and electrical equipment), negatively influenced those wanting to set up distribution facilities.

taxation for a company. In addition to the output of R&D's status as an asset, many governments also provide direct incentives—whether through funding or tax credits—for R&D activities, as discussed in the previous section.

3.2.2 *Internationalisation strategies*

A wealth of material has been written on the importance of internationalising both business and university to improve performance. Connecting researchers and businesses globally provides a means to both upgrade skills and competences at home, but also presents new opportunities to connect to global value chains. There are a wealth of policies and support mechanisms for both sides of the equation followed by governments around the world.

From an investment promotion perspective, internationalisation means building networks that can be exploited and to spread the brand of a particular region. Given the continued importance of geography when locating facilities, the more that a region's R&D community can engage with the rest of the world, the greater a region's exposure and the greater the likelihood that investments can follow.

3.2.3 *Immigration and labour policy*

Immigration policy has influences both the innovation ecosystem as well as the ability of a region to attract investment. Given how important skills are as a location factor for companies looking to form a new R&D centre, the ability of a region to bring more talent—or even for a company to bring some of its top people, even if for short- to medium-term stays—is crucially important.

The importance of acquiring talent from other places of the world can both be seen in official policy both inside and outside of Europe. Canadian immigration policy is often seen as a model for other countries in its ability to prioritise and fast-track immigrants that fit the skills profile that the country needs. Canada rates potential economic migrants according to its Comprehensive Ranking System that scores applicants according to factors such as age, level of education, official language proficiency, and Canadian work experience. The people pillar of Canada's innovation strategy—as discussed further in the case studies—specifically calls for a brain drain and an easier path to permanent residency status for international graduates. In a way, immigration policy takes internationalisation strategies one step further—it's more than connecting businesses and researchers to the international community, but about bringing top people into the national ecosystem and encouraging them to stay.

While immigration policies of various Member States tend to be somewhat tighter, governments do recognise the importance of attracting talent. The Netherlands has had its programme for knowledge works (*kennismigrants*), which provides a relatively easy path for highly skilled workers sponsored by organisations to enter the country. The government of Latvia has been looking to loosen immigration rules for highly skilled works from Ukraine in order to relieve the critical shortage of ICT professionals in the country.

On a broader level, the ease at which workers can settle in a region is also important. And in a European context, this can be particularly important, when the main barriers to movement for workers is not a border control, but rather cultural barriers, such as language or ill-comfort with social services. Internationally oriented cities with a degree of cultural diversity will have an easier time attracting and retaining talent that can be so critical for R&D.

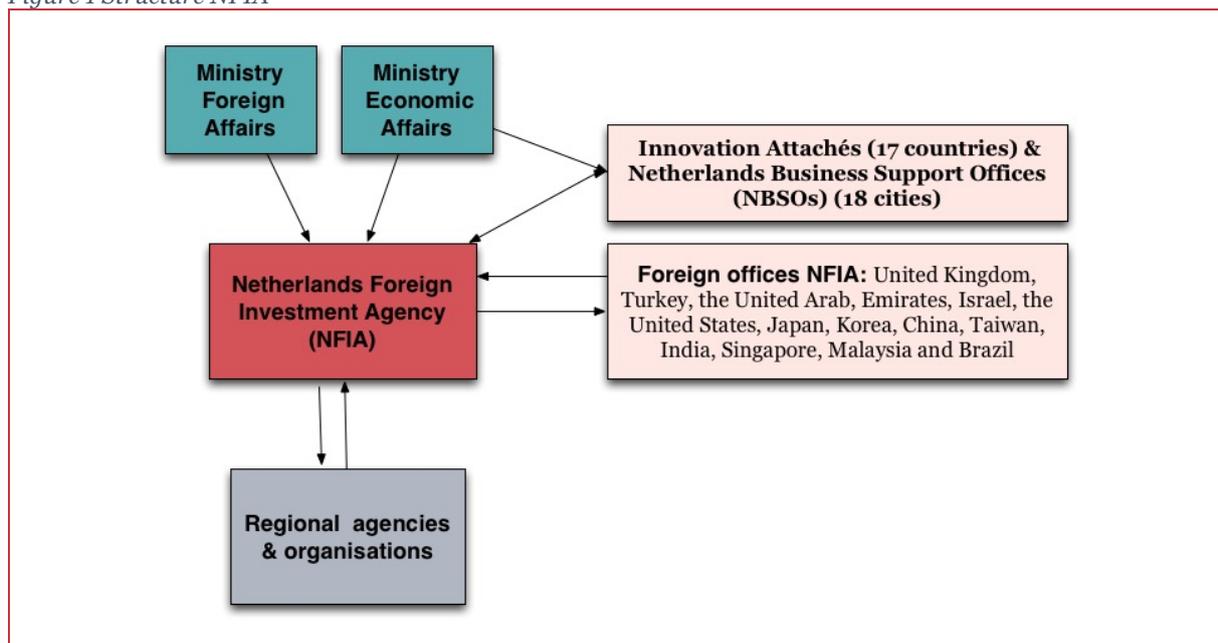
4 Map of Innovation Ecosystem in the Netherlands

4.1 The FDI landscape in the Netherlands

The FDI network in the Netherlands (or national acquisition platform) encompasses several organisations. At a national level there is the Netherlands Foreign Investment Agency (NFIA). The NFIA is an operational unit of the Ministry of Economic Affairs and the Ministry of Foreign Affairs. The NFIA helps and advises foreign companies on the establishment, rolling out and/or expanding their international activities in the Netherlands. Furthermore, the NFIA focuses on the promotion of the Netherlands abroad as a country with an attractive investment and business climate, and it plays an active role in maintaining that. Finally, it is the NFIA's mission to place the Dutch business climate systematically on the country's political agenda by serving as an advocate and liaison between business and government.

The NFIA has local offices in the United Kingdom, Turkey, the United Arab Emirates, Israel, the United States, Japan, Korea, China, Taiwan, India, Singapore, Malaysia and Brazil. In addition, the NFIA works together with Dutch embassies, consulates-general, and other organizations that represent the Dutch government abroad, such as Netherlands Business Support Offices (NBSOs) and Innovation Attachés (IAs), as well as with a broad network of domestic partners.⁴

Figure 1 Structure NFIA



Besides the NFIA, the national acquisition platform (Nationaal Acquisitie Platform) consists also of several regional partners. These partners are either part of regional development agencies (e.g. the BOM, the NOM, Oost NV, etc.) or part of city branding (e.g. Amsterdam Inbusiness or Rotterdam Partners). An overview of all the partners is provided in the figure below.

⁴ See website NFIA: <http://investinholland.com/>

Figure 2 Overview partners Dutch FDI network



Regional organisations and the NFIA are generally well-aligned and work closely together. This collaboration has grown over the past years and has resulted in a joint strategy, annual work plans, and one national brand: ‘Invest in Holland’. The NFIA and its regional partners meet four times a year to exchange information and to discuss strategic and more operational matters. In addition, the national platform has several working groups focussing on specific themes and some national acquisition teams. The members of the platform also share a project database (Achilles), networks, contacts and intelligence. According to our interviewees the collaboration within the platform works very well.

Although there is a national acquisition platform, the regional members are also competitors for foreign investments. Therefore, some regions and cities use their own branding (such as Amsterdam, which arguably has an equally power brand in iAmsterdam). The partners also made agreements for sharing information about leads. (All organisations upload their projects and related information in the database, but only the NFIA has access to all the projects. This in order to secure the ‘regional exclusivity’ of the leads).

From the perspective of attracting foreign R&D, the national acquisition platform only encompasses FDI-organisations and there is no alignment or collaboration with national (intermediary) science organisations like the Netherlands organisation for Scientific Research (NWO), the Royal Academy for Sciences and Arts (KNAW) and/or the Association of Universities in the Netherlands (VSNU).

4.2 Policy (goals) for attracting R&D

The NFIA is commissioned by two Ministries (Economic Affairs and Foreign Affairs). At the level of the Ministries (government) there is no explicit, elaborated vision and strategy on STI diplomacy. Attracting foreign R&D is considered an integral part of the aims and objectives of the NFIA and the national acquisition platform. The ministries didn’t define specific aims or goals for attracting foreign R&D. Also on a regional level (provinces, economic boards of cities, etc.) there is no specific policy for attracting foreign R&D in place. Or to put in other words, attracting foreign R&D is not seen as a distinct route for strengthening the national or regional economy. According to one of the interviewees there is an “implicit awareness of the importance of attracting foreign R&D at the policy level”.

The only framework at a national level is the Top sector policy. The NFIA and their network partners jointly agreed to increase their focus on acquisition of foreign investment in several Top sectors: Chemicals, Agrifood, High Tech Systems, Life Sciences & Health, and IT. Also the NFIA reports to the

Ministry of Economic Affairs about the number of projects in the Top sectors. The alignment of the projects is done afterwards and the Top sector domains are not a decisive factor for lead generation. Moreover, the Top sector organisations do not play a very active role in building propositions for attracting foreign R&D. So in sum, the Top sector policy is not a powerful driving force for steering the FDI operations.

While a national policy for STI diplomacy is absent, the NFIA and the other members of the national platform have the autonomy to develop their own strategy and tactics. The NFIA and its regional partners developed a new strategy for the year 2015 – 2020. This new strategy is built on four pillars.

- Acquisition in areas where the Netherlands already has a strong competitive position for FDI:
 - Stepping up efforts on sector-strengthening acquisition for a select number of sectors, i.e. Agrifood, Chemicals, High Tech Systems & Materials, Life Sciences & Health, and IT
 - Attraction of pan-European business activities
- Strategic account management: looking after current investors in the Netherlands (continued attention for large investors from the US and Japan, and capitalise on contacts in China and India).
- Investment climate monitor: develop a barometer and knowledge centre for the Dutch investment climate
- Reinforcement of Dutch public acquisition network under the umbrella label ‘Invest in Holland’⁵

4.3 Importance of attracting foreign R&D

Attracting foreign R&D is one of the means of strengthening the national (and regional) economy. It could generate high quality jobs and stimulate upward mobility of companies in value chains. More in general it can contribute to a sustainable and competitive domestic industry. The NFIA and the network partners recognise the importance and added value of attracting foreign R&D and it is one of their specific aims. The number of R&D related projects is however a rather small proportion of the total number of projects: around 20%. Also the number of FTE which focuses on R&D projects within the NFIA and the regional organisations is rather limited: at the NFIA 6 out of 25 and at regional organisation there is only 1 to 3 FTE dedicated to this kind of projects.

4.4 A new approach

According to our interviewees the standard approach of FDI organisations is not suitable for attracting foreign R&D investments. This requires a different approach. The standard proposition contains a general story about the attractiveness of the Netherlands. It emphasises general competitiveness elements like taxation, accessibility, infrastructure, cultural climate, etc. The ‘old’ approach is also more reactive: responsive to requests from foreign companies. The ‘new’ R&D approach is much more proactive: building a specific proposition and ‘sell’ it to foreign investors. The proposition has also to be much more detailed; highlight specific technologies and/or specific research expertise. R&D propositions are not building on general conditions but on specific strengths, areas where the Netherlands has a competitive advantage from an international perspective.

The ‘new’ R&D approach requires:

- More in-depth knowledge of project managers and agencies about technologies (knowledge of specific content in stead of more general conditions)
- Specific intelligence about clusters and hot spots and the key technologies / key strengths
- Embedding in regional networks around hot spots or key technologies
- Personal relations with representatives of research institutes, hot spots, etc.

Projects targeting attracting R&D are much more time consuming than standard projects. It takes a lot of effort and time to build the tailor made, specific propositions. The project managers have to invest a

⁵ NFIA, *Results 2014*.

substantial part of their time to really understand the content, build personal relationships, engage in specific networks, etc.

4.5 KPIs for R&D projects

The NFIA and the regional organisations monitor their FDI activities. A set of Key Performance Indicators (KPIs) is used for the accountability of the work of the project managers. This set of KPIs contains both input (e.g. the number of projects run) and output indicators (e.g. the amount of inward investments, the numbers of jobs created, total amount of FTE). There are no specific KPIs for R&D projects. According to our interviewees there should be a specific set, as the standard KPIs are not favourable for R&D projects. There are a number of reasons why R&D projects can't 'compete' with regular FDI projects:

- R&D projects are more time consuming. They require a tailor made, specific proposition, which takes more time than regular projects that use more generic selling points.
- Job creation as a result from R&D projects is on average rather limited. Regular projects are much bigger in terms of job creation: e.g. investment in a plant or headquarters (could be hundreds of jobs) versus a small R&D division with maximum 10 – 15 jobs.
- The kinds of investments in R&D projects differ from regular projects. R&D projects in many cases concern temporary research contracts, partnerships, etc. instead of investments in physical infrastructure. Also the amount of investment is on average much lower than the amount of investment in regular projects.

There is a need for a specific set of KPIs for R&D projects which acknowledge the different route and character of these kinds of projects.

4.6 Instruments and services

The partners of the acquisition network offer several instruments to support foreign companies. The services and support they offer include:

- The provision of information on the Netherlands, Dutch legislation and regulations, possible incentives from the Dutch government, the research infrastructure, etc.
- Personal guidance, advice and support (e.g. searching and visiting potential investment locations, assisting with visas, organising custom made fact finding trips, etc.)
- Bringing foreign companies in contact with relevant business partners and government bodies, introducing them in relevant networks at the national, regional and local levels (e.g. cluster organisations, commercial service providers, access to conferences, seminars, etc.)
- Support business development and offer concrete solutions (e.g. tools and input for cost and location benchmarking, support in recruiting talent, promote a company's presence in the Netherlands, etc.)

Although the approach for R&D projects differs from regular ones, the instruments used in projects are more or less the same. There is no specific set of instruments for R&D projects: it is also about informing clients, support them, introducing them in network, etc.

In the interviews we asked the representatives of the FDI network about possible improvements of the services and support. Possible improvements that were mentioned are:

- A central overview of support schemes for R&D and innovation. At the moment there is only a database of RVO instruments, a more detailed overview of regional and local schemes is missing.
- Better use of website and social media (to sell the specific, more tailored propositions).
- Organising international events on R&D and innovation topics that could serve as a platform for personal contacts that supports R&D propositions.
- Small high level missions to foreign R&D companies and campuses (e.g. the mission of Mark Rutte and Nellie Kroes to Silicon Valley).

More in general, there seems a need of a more integral approach that's includes policy makers, research institutes, research councils, etc. That could not only secure a more efficient way of working, but also enable the FDI organisations to sell a more comprehensive proposition (taking on board additional support measures).

5 Case Studies

5.1 Switzerland

5.1.1 Stakeholders and governance⁶

Switzerland's has a total of 26 cantons that are in large terms in control of their own region, meaning that there can be substantial differences between the cantons. In between the level of the cantons and the national level there is a sublevel of "greater areas" which in essence are a cluster of districts that represents their common interest. The entities of these "greater areas" do therefore not govern the covered cantons but rather focus on coordination on topics like economic development and international relations. The largest greater area, Greater Geneva Berne Area (GGBA), consists of six cantons that together cover almost half of Switzerland.

National level

In terms of investment promotion, the National government takes a very central role in the general promotion of Switzerland as a whole. However, as soon as leads or potential projects are identified at the national level this lead is distributed to all the 26 cantons, meaning that the national level does not decide about the best fit between companies and cantons. The national government has given the mandate of investment promotion to Switzerland Global Enterprise (S-GE), a non-profit organization responsible for promoting Switzerland as a business location since 2008. Currently S-GE has been foremost commissioned to work closely together with the cantons, mostly the cantons' chambers of industry and commerce, to encourage foreign firms to settle in Switzerland. Beyond the cooperation with the cantons S-GE is also responsible for a number of activities to provide consistent marketing of Switzerland abroad.

Besides S-GE, the agency Swissnex is active at national level. The Swiss Government initiated Swissnex, which is overarching the activities of the cantons and the individual institutions in terms of science promotion. Swissnex is promoting Switzerland in terms of education, science and innovation in foreign countries. They work closely together with the institutions in Switzerland providing help with internationalisation providing direct opportunities through their nodes in large innovation hubs abroad.

Regional level

At the regional level the cantons, and their economic development institutes, work closely together with their locally based academic knowledge institutions and scientific centres, like for instance the Swiss Centre for Electronics and Microtechnology (CSEM) in Neuchâtel. This cooperation provides the cantons with a direct line to international networks and scientific meetings where leads can arise. In general the centres are a lot more oriented towards the market in comparison to the knowledge institutions, however they are becoming more and more active and professional in developing relationships and identifying cooperation projects.

A divide between science promotion and business promotion

In principle the divide between science promotion and business promotion in Switzerland is very clear, however especially when it comes to international interactions between the business world and knowledge institutions the boundaries are less well defined. When it comes to cooperation the cantons have a very central and strong position as all above listed actors cooperate directly with them. The supporting agencies of S-GE and Swissnex can however have some overlap in activities on the border of business and science, which of course is especially relevant for R&D activities.

⁶ With four main sections: (1) mission, (2) organisational structure (including budgets, if available), (3) instruments to support R&D, and (4) international activities

5.1.2 *Strategic policies to improve the R&D environment*⁷

In general Switzerland does not have a public innovation policy in which certain sectors are focused and subsidies with large policy measures. Switzerland is more characterised by a large commitment by the private sector towards the overall R&D expenditure.

National level

Public spending in Switzerland focuses on the general framework rather than on a specific innovation or R&D policy. The general conditions to conduct business or R&D are the priority. This includes: a stable political climate, making sure young people are well educated, have a sense of responsibility, and have high levels of mobility, having good and internationally recognised research institutions and accessible (fundamental) research funding. Furthermore Switzerland puts a lot of emphasis on a high standard of living.

A very recent development, specifically for R&D, is the development of so called innovation parks all over Switzerland. The innovation parks, initiated by the national government, are in the stage of early development but are supposed to become areas with a high density of R&D that are very attractive to companies. The core idea behind the innovation park is to set up a strong cooperation between the private sector, public sector and knowledge institutions, also known as the triple helix. Interestingly enough the idea of these innovation parks was not forced by the national government but rather picked up by regional players as it was pitched as an idea to give new purpose to an abandoned airfield.

Regional level

The canton level is very similar to the national level, the cantons focus on topics like proximity and connectivity, the general business environment and, more specifically for the highly industrialised Neuchâtel, the ability of companies to produce and industrialise their products. In order to support companies in the production and industrialisation of their product the economic development agency of Neuchâtel focus on providing networking relations as lacking competences are often available elsewhere in the canton. They, however, tend to focus on first prototyping and small production rather than mass production as their strong suit lies with knowledge intensive craftsmanship while labour costs are high.

Given the lack of public innovation incentives in the form of policy measures the more generic incentives in the form of taxes are an important tool for the cantons. Policy advocacy is therefore of particular importance for Switzerland as their tax systems has been on the edge of European and international standards. Fears are that further European standardisation creates more incentive for companies to move to other regions in for instance Asia. The cantons use policy advocacy to work towards complying with European and international standard while staying competitive, finding the right balance is crucial.

5.1.3 *Investment promotion activities related to R&D*

For Switzerland there is some hierarchy in terms of investment promotion, basically they follow the three earlier described layers national, greater areas and cantons. If in a region the national agency (S-GE) is already active, cantons will arrange investment promotion in that region through S-GE. However if neither the S-GE nor the greater area is active in a region the canton can set up its own operation.

From the national level, both the business investment promotion (S-GE) and the science promotion (Swissnex) are arranged through the use of hubs stationed abroad. However the business investment promotion uses more traditional investment promotion instruments compared to the science promotion using a more individual approach.

⁷This should be based on high-level strategic documents produced by the case country rather than a deep dive into various policies that might have an influence on the R&D environment

Business promotion

S-GE has over 21 business hubs set up a Swiss Embassies, Swiss Consulate-Generals or local Chambers of Commerce. These hubs use their local networks of contacts to promote Switzerland as a business location. Furthermore S-GE coordinates the Swiss efforts between the foreign companies and cantons and supports companies with legal and administrative requirements and other practicalities. Other traditional instruments used are trade missions and conferences. As earlier explained, S-GE works closely together with the cantons to find the most ideal location for the foreign company. After the introduction has been made the cantons take over completely including after care and increasing the R&D commitment of companies in their region.

The canton of Neuchâtel specifically believes that it is only useful to attract companies that can clearly benefit from locating its business in Neuchâtel. Thereby they feel like it is harmful to persuade companies to relocate their entire business rather than expand to Switzerland. The reason for this is that delocalisation makes companies lose their strength in innovation by the loss of regional competences and network. So in the end they want to focus on companies that have a good fit by both adding to and benefiting from the local business environment.

More recently the focus of the canton of Neuchâtel has therefore switched from the more traditional approach of investment promotion to a very customised approach. They switched from only trying to attract companies to more in general supporting local companies and scientific centres and academic institutions with their internationalisation. Furthermore they believe that it is far more productive to try to develop relations together with partnering regions rather than to focus purely on their own region. In the case of a company that fits better with another country it would therefore be unproductive to convince this company to expand their business to Switzerland.

At both the national level activities of S-GE and the local activities of the cantons no explicit focus on R&D is present in the business investment promotion. However it is the case that R&D related activities are of particular interest given the importance of adding competences to regions that are currently not present.

Science promotion

The hubs of Swissnex are of significant other nature than the hubs of S-GE. The hubs do therefore not have locally stationed people looking for leads, they rather have open works places for both Swiss and local people to meet. This provides opportunity for Swiss academic institutions (and companies) to send somebody to a knowledge hub abroad to gain experience, contacts and pick up on trends. Their way of promoting science through these hubs is therefore far more subtle than the direct approach used in business promotion. To complement the hubs Swissnex provides direct services to their academic (and some private) clients. They have general services like study tours and themed events/conferences as well as highly customised services depending directly on the needs of their clients. For instance, large well-established universities tend to have their own strong international academic network while for smaller knowledge institutions traditional partnership seeking is still what they need. For the larger institutions the services Swissnex offers are far more diverse linking them up with competences beyond their academic connections, like for instance with “*Think tanks*” or connections to artists or specific private services.

As earlier stated the cantons also work closely with the local knowledge institutions to attract more R&D to the region. In essence the scientific centres and to some extent the academic institutions indicate leads to the cantons which they have found by doing projects or general networking. In case of possibilities the cantons will support and join the knowledge institutions in meetings, promotional events or conferences.

5.2 Ireland

5.2.1 Stakeholders and governance

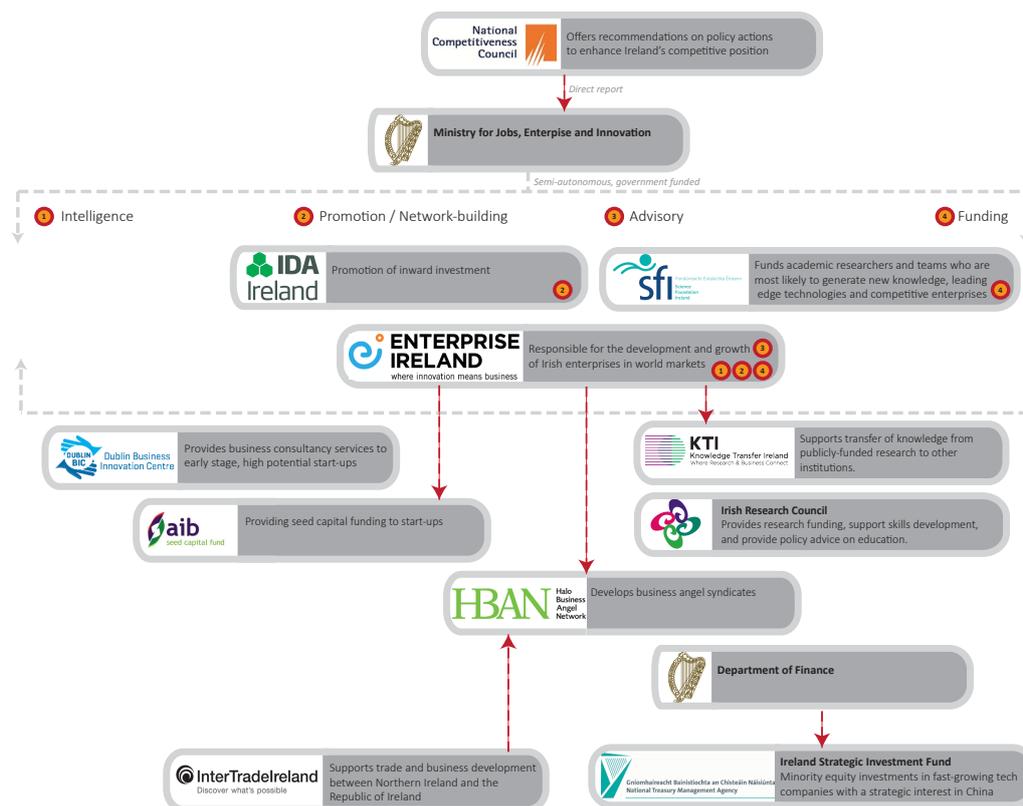
Actions by Ireland around economic development and innovation take place within the “triumvirate” of IDA Ireland, Enterprise Ireland, and the Science Foundation of Ireland. All three of these institutions are state-owned enterprises with a large degree of operational freedom, though each operate under a mandate provided by the Ministry for Jobs, Enterprise, and Innovation.

Rather than focus on a particular product or service, each member of the triumvirate holds a mandate aimed at a particular segment of the innovation ecosystem:

- **IDA Ireland.** Foreign investors
- **Enterprise Ireland.** Indigenous firms
- **Science Foundation of Ireland.** Research community

A wider picture of the support infrastructure in Ireland is presented in the diagram below. While the picture is largely national, Dublin has been selected as the focal point to see the importance of local organisations. In the Irish context, the national government and institutions seem to dominate.

Figure 8 Segments of the Irish Innovation Ecosystem



Source. Technopolis

5.2.2 Strategic policies to improve the R&D environment

While most governments acknowledge the connection between job creation and the internationalisation of its business and research environment, the fact that many of the international competitiveness programmes report into the Ministry of Jobs, Enterprise, and Innovation is telling. The prism through which policy is viewed is first and foremost job creation.

Ireland places a particularly heavy emphasis on foreign direct investment as a driver of economic growth and innovative capacity. Some of the headline figures that IDA Ireland markets is the nearly **175,000 jobs** created by firms that they support (with more than 10,000 additional jobs created annually) and that these foreign firms spend **€1.4 billion on research and development** annually.⁸

Ireland also heavily markets the presence of tech giants, such as Apple and Google, which have regional headquarters located in the country. While much of the popular focus has been on low corporate tax rates as a reason that Ireland attracts large corporates, the fact remains that Ireland has the skills base to support major activities.

Figure 9 Multinational ICT companies (and their origins) operating in Ireland



Source. IDA Ireland

While other regions have their national champions—NXP and ASML in the Netherlands; Infineon and Bosch in Germany—Ireland is not defined by its indigenous firms. Attracting foreign firms who have been conducting R&D in the country, however, has led to a number of spin-offs in highly specialised areas, such as Movidius, who recently signed an agreement with Google to use their processors and software development environment to advance deep learning on mobile devices.⁹

5.2.3 Investment promotion activities related to R&D

IDA Ireland, as the arm of Ireland meant to attract foreign investors, keeps STI capacity in-house for promotion purposes, which seems relatively unique among investment promotion agencies. The IDA has four senior technology and research advisors whose role is to work on content marketing to generate excitement about Ireland¹⁰ as well as to improve the specificity of the Irish value proposition—this includes the connectivity angle of the Internet of Things (IoT), cognitive computing, as well as semi-

⁸ *Winning Foreign Direct Investment 2015-2019*, IDA Ireland.

⁹ <http://www.movidius.com/news/google-and-movidius-to-enhance-deep-learning-capabilities-in-next-gen-devices>

¹⁰ Their main pitch is the four T's of tech, tax, track record, and talent along with the three E's of Europe, English-speaking, and the Euro.

conductor design. These advisors are generally pulled from the private sector and have a technical background.

As with the Swiss case, business and science promotion are generally considered to be separate activities. While elements of science and technology are important components of the value proposition being presented to potential investors into Ireland, network building takes place within specific domains.

5.3 Germany

5.3.1 Stakeholders and governance

Germany is built upon a structure of individual districts (*Länder*), which dictates the landscape of innovation policy and investment promotion. The position of the national government and the strong role of the *länder* creates a sense of a two layered system. However, the role of the national government, especially for innovation policy and investment promotion, is very small given the dominant position of the *länder*. The differences between the individual *länder* is however rather small, as in general Germany does not have a large portfolio of innovation policies and investment promotion. Most of the attention is directed at supporting the (local) German business environment. Thereby Germany basically expects people to know Germany for its technological expertise, which makes promotion of the country redundant.

The individual *länder* do however differ in terms of economic / industrial profile. Some *länder* are very large, like Bavaria, which covers almost one fifth of Germany, and can be considered as one of the largest economic regions in Europe hosting the headquarters of various large engineering, electronics and manufacturing enterprises. Other *länder* are basically only covering a single city, like Berlin, which have very different economic profile focusing more on service sectors and ICT.

National level

At the national level the only important player in terms of investment promotion is Germany Trade & Invest (GTAI). GTAI's general function is to provide informational and to be a central contact point for Germany as a whole. As soon as a company knows in which region of Germany they are really interested in GTAI will get them in contact with the regional economic / investment promotion agency. In case a company does not know which German region could be a good fit for them, the GTAI will recommend a region they see as the best fit.

Germany also has national research organisations for which Fraunhofer is the most relevant example. Fraunhofer consists of a group of over 65 different institutes and research units, which have are strongly position in the (regional) research landscape.

Regional level

At the regional level each of the *länder* has one or more of its own agencies that support regional economic development and investment promotion. The regional governments have a very central position in the economic development and investment promotion of the regions. The main focus of the activities of the regional governments is on the local business environment rather than on attracting foreign business or R&D. The support coming from the regional governments is however not be underestimated, as of example the regional government of Bavaria has even set up a specific agency to support stakeholders in the region with funding advice, and with applying for European funding.

5.3.2 Strategic policies to improve the R&D environment

In Germany there is no innovation policy built on large innovation support instruments. As stated before the general premise of Germany is to focus on supporting the general business environment.

The exception being Eastern Germany as it is one of the last regions in Europe with some grants. The main reason for the need for these grants is that Eastern Germany is still quite less developed in comparison to Western Germany. This means that the general attractiveness of the business environment is not as high due to for instance weaker infrastructures. The funding however often has

ties to regional development funds from the EU, like for instance the Joint Innovation Strategy of the länder Berlin and Branderburg (innoBB).

National level

The only strategic policies on the national level for shaping the R&D environment are based on policy priorities. Currently the national Germany government set out one particular vision that is strongly linked to R&D. This vision is called “Industry 4.0” and describes the importance of the digitalisation of the German industry. In order to boost the activities in this field the national government has made some funding (€200m) available at national level, which will trickle down to the individual länder that can fit it in their own agenda’s. The purpose of the funding is to incentivise both the local governments, a large amount of universities and businesses to focus on the digitalisation of the industry and by doing so maintain the lead in manufacturing.

Regional level

Given the large focus of the regional governments on the local business environment is it worth noting that these local business environments, often called clusters, are based strongly on local triple helix cooperation. Business and research institutes have a really natural fit as companies often lack expertise and infrastructure to perform R&D while research institutes need to test their findings in an industrial context. It is not the case that the regional governments set up these clusters, but their agencies act as important intermediaries when it comes to overcoming communication differences. Furthermore the regional governments are strongly networked in the regions with all parties of the triple helix, which naturally gives them a central networking role. From that central position they can use tools like brokerage events and workshops to help facilitate R&D co-operation within clusters. Regional development projects and R&D projects are often closely tied to these clusters. The local regional governments often support these projects by taking care of the organisation and coordination of the projects through one of their agencies.

5.3.3 Investment promotion activities related to R&D

Besides the explained internal focus of Germany on the regional business environment there is little to no proactive investment promotion done in Germany. Reactively however, the German regions are amongst the most successful in Europe.

As soon as large foreign companies show interest in setting up offices and/or R&D centres in Europe, Germany and the regional governments are able to convince them to choose for Germany. Large efforts are made to convince these types of companies building strongly on the strong German business environment that includes a large proportion of skilled employees, R&D infrastructure, a high number of patent applications, research institutes and a large amount of introductions to other large corporations. Other arguments used are strong logistical infrastructure and a high quality of living.

Good examples of this have been attracting a research department of GE in 2007, now providing high-skill employment to more than 500 people, and more recently attracting the global centre for Internet of Things of IBM, which now provides jobs to over 1000 people. Such investment promotion activities are far more targeted at large opportunities that fit well with Germany’s profile. Similarly it should also fit with their recent activities, for instance the global centre of Internet of Things of IBM fits very well with the German Industry 4.0 vision.

The key power of Germany’s investment promotion is the success and quality of the German industry and business. So their most primarily inwards focus is making it attractive beyond borders as well.

National level

Beyond the role of GTAI as information provider and central contact point the actual promotion activities are very limited. In term of proactive promotion, with for instance conferences and road shows, they are primarily active beyond Europe. Furthermore also the large science centres like Fraunhofer are not known for focusing strongly on promotion and marketing.

Regional level

As indicated before the länder have their own structure for setting up agencies. The regional government of Bavaria has set up a specific investment promotion agency (IPA), which has over 26 representatives that are active worldwide. Yet their activities are focused around providing information and supporting incoming companies, so similarly to the national level the amount of proactive promotion is very limited. The same argument can be made for other länder.

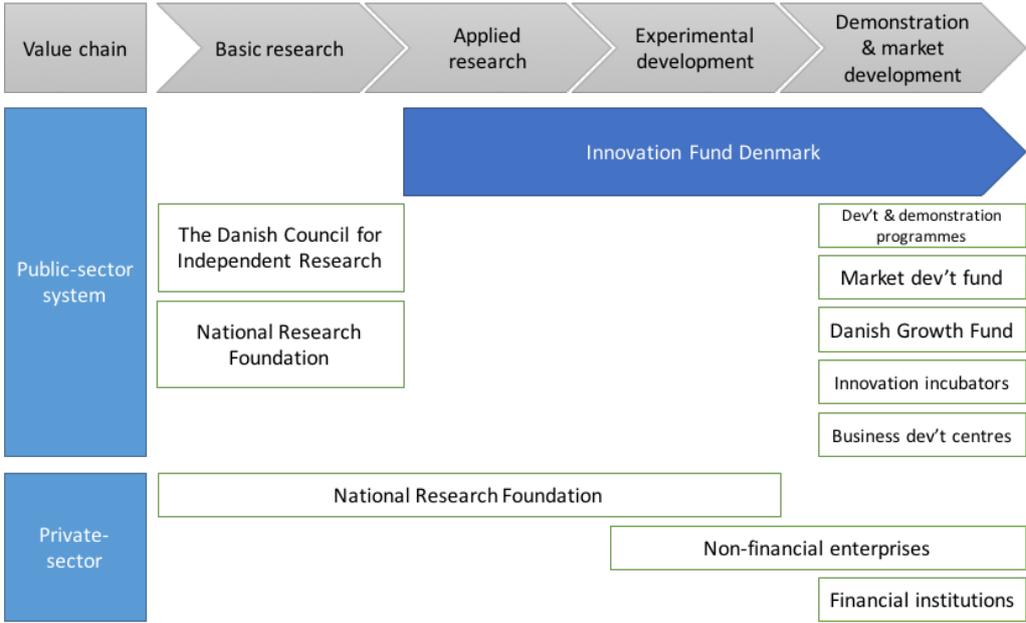
5.4 Denmark

5.4.1 Stakeholders and governance

R&D and innovation in Denmark serve a dual purpose: solving societal challenges while also promoting economic growth and employment. And it would appear the ordering of these two purposes is very much on purpose. Unlike many other jurisdictions, the innovation ecosystem does not place the ministry responsible for the economy or competitiveness at the centre of the public-sector side of the innovation ecosystem. Rather, the Ministry of Foreign Policy is responsible for attracting foreign investors, and the Ministry of Higher Education & Science holds a primary place in driving direction for research and innovation. Finally, the recently created Innovation Fund Denmark—with representation from both the private and public sector—does not directly report to any particular ministry.

A diagram of the government’s view of the innovation ecosystem is shown below.

Figure 10 Denmark’s innovation ecosystem in brief



Source. Innovation Fund Denmark 2015 Strategy

5.4.2 Strategic policies to improve the R&D environment

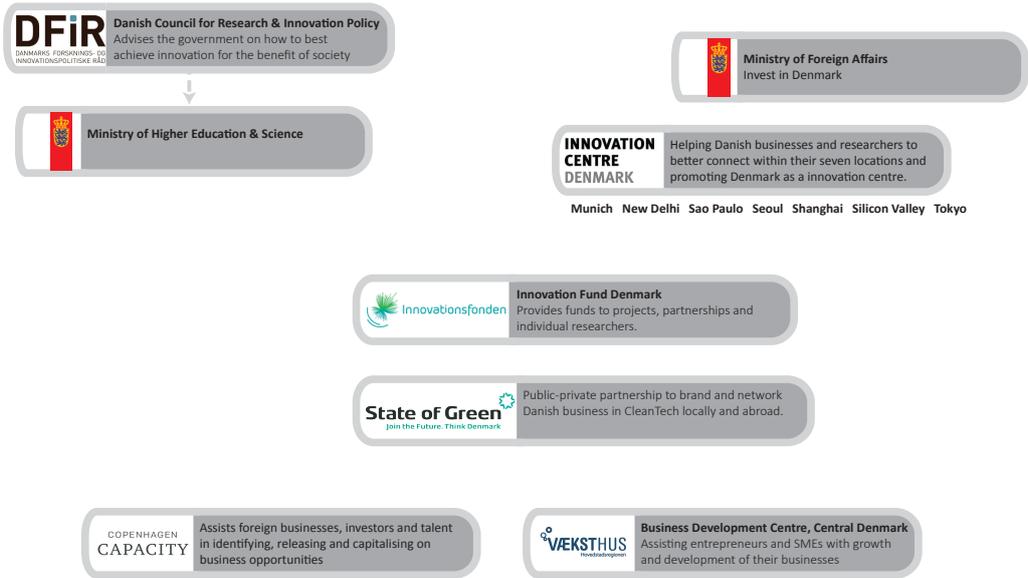
Given the focus on societal challenges, it explains the level of policy convergence that is possible across ministries, which helps to drive a vision for innovation. For example, Denmark’s government has shown a huge commitment to sustainable development, with initiatives across ministries affecting all facets of society—energy policy supports biogas and new energy infrastructure around hydrogen and electric has strong support. Encouraging co-operation between government and industry is not primarily about supporting the business environment or employment, but about leveraging knowledge.

5.4.3 Investment promotion activities related to R&D

While there are a number of players in the innovation ecosystem—including the relatively important role played by entities like Copenhagen Capacity at a local level—most of the focus on driving innovation seems to derive from a single entity: Innovation Fund Denmark. This organisation is responsible for funding projects, and using that funding as a springboard for advice to growing companies looking to internationalise.

A wider picture of the support infrastructure in Denmark is presented in the diagram below. While the picture is largely national, Copenhagen has been selected as the focal point to see the role of local organisations.

Figure 11 Major stakeholders in Danish investment promotion activities



Source. Technopolis

5.5 Canada

5.5.1 Stakeholders and governance

From an investment promotion perspective, Canada remains a hodgepodge of organisations and activities that are not necessarily very well co-ordinated. Investment promotion takes place at three different levels, matching the political make-up of the country: the national level as represented by Invest in Canada (under the Canadian Trade Commissioner Service); the ten provinces and three territories (at various levels of maturity), as well as all of the major city centres, such as Vancouver, Toronto, Ottawa, and Montreal. The cities have also formed an alliance under the umbrella “Consider Canada”, providing a single brand and point-of-contact for the cities.

Figure 12 Logos of members of Consider Canada



Source. Consider Canada web site

In addition to the organisations themselves that engage in investment promotion, the Canadian government leverages its embassies around the world to represent the trade interests of the country—like many other countries, Canadian embassies have arms of the government that represent its

business interests, engaged in not only investment promotion activities, but also export promotion and representing the country's general trade interests.

Based on interviews at the national and regional level, it would appear that the greatest level of coordination takes place between the national government and the cities.¹¹ Working through Consider Canada, the national and city levels create events to help promote particular locations along specific knowledge areas.

5.5.2 *Strategic policies to improve the R&D environment*

Unlike some European jurisdictions where governments are central drivers of innovation activities—the Canadian government sees itself as a facilitator of innovation in a much narrower interpretation of government's role in improving the R&D environment. As mentioned in Canada's own report on innovation, the country relies much more heavily on R&D tax incentives to promote activities in this area rather than direct spending and public-private activities.¹² This facilitation role means that the government wants to lower barriers to the kinds of activities that generate innovation, but does not want to shape the way that environment looks and develops.

One example of the way that the Canadian government leaves the market to decide is in its Fund of Funds programme, operated by Business Development Bank of Canada (BDC). The BDC is a crown corporation—wholly owned by the government but operated at arm's length—that offers financing for innovative activities, including venture capital as well as growth and business transition capital. While the Fund of Funds programme has a focus on IT, energy, cleantech, and healthcare, it allows the BDC to provide to any private equity and venture capital fund that in turn invests in companies with significant intellectual property and has sufficient potential for global commercialisation. One member of Invest in Ottawa reported that he could match an investor with a source of funding—generally in the private sector—in any major sector.

Given the focus on facilitating the general ecosystem, the Canadian government's strategy for improving the R&D environment focusses on enabling factors for competitiveness. This includes three relatively generic pillars of innovation, knowledge, and people.

Innovation. While the naming of this pillar may seem somewhat redundant (it might better be labelled ecosystem), it represents the policies around the infrastructure—both physical and community-related—around innovation activities. This includes the government's support for collaboration between business and university, funding for research infrastructure, and support for commercialisation activities.

Knowledge. This pillar represents the knowledge that comes out of research activities, which the government supports through funding arms such as the BDC, various national research councils, as well as federally funded granting councils (thematically based councils, such as Genome Canada).

People. This pillar represents policies that support the individuals conducting research, generally around skills upgrading and immigration policy to make it easier for talented individuals to enter the country.

¹¹ One of the embassies failed to realise, for example, that provincial representation even existed.

¹² Government of Canada, *Seizing Canada's Moment: Moving Forward with Technology and Innovation*, 2014.

Figure 13 Three pillars of Canada’s technology and innovation strategy



Source. Government of Canada

Regional development agencies at the provincial and city level also play their role in supporting the R&D environment. The city of Ottawa, for example—with particular strengths around embedded systems and other hardware-related endeavours—supports the local ecosystem through various matchmaking and training activities, focussing as much on the start-up scene as on attracting new investors to the city. As part of these services, for instance, the city of Ottawa runs its own incubation and start-up centre, trying to help companies to “go global”—hence helping with the internationalisation of the city and making it a more-known destination for investors abroad.

5.5.3 Investment promotion activities related to R&D

The various levels of government in Canada responsible for investment attraction rely largely on a relatively standard set of instruments to attract investment to the country, including networking activities via either the embassies or from individual representation from the provinces or cities (Investissement Quebec, for example, have representatives in 13 cities across North America, Europe, and Asia) and lead generation with either in-house staff or consultants. Given the government’s facilitation role, science and technology only figures into investment promotion activities as a part of a region’s value proposition.

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