Adviesraad voor het
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AWT advisory report 72

# Carefully considered Incentives

## Strategic investment in focal points

# Summary

The government has invested heavily in research and innovation programmes in recent years (roughly 2003-2007). This has provided incentives for focalisation in the research and innovation landscape. The Advisory Council for Science and Technology Policy (AWT) subscribes to the need for these extra investments in focal points.[1] A relatively small country like the Netherlands is obviously unable to play a leading role in every field of research and innovation. However, the AWT is critical of the way in which the government has deployed its programmed funding instruments to create focus and mass.

The key issue in this advisory role is therefore: *How can the government improve how it invests in research and innovation focal points?*

In this advisory report, the AWT distinguishes between three types of focal points, each with its own goals and dynamics.

- **Focal points concerned with scientific excellence** – the aim here is to enable the Netherlands to play a leading role in international science;
- **Focal points concerned with promising economic areas** – the aim here is to enhance the innovative and competitive abilities of industry in certain key areas;
- **Focal points concerned with social challenges** – the aim here is to contribute to solving major social problems.

The AWT's first step was to set out the main programmed instruments to obtain better insight into the policy objectives, selection procedures, organisations involved, total size of the investments and the use of resources.

**Overview of the main programmed instruments in the period 2003-2007**

**Innovation-oriented research programmes (IOP)**
The main aim of an IOP is *to enhance fundamental strategic research in the public infrastructure in a direction that is in line with industry's innovation requirements*. Besides knowledge accumulation, network forming and knowledge transfer and anchoring, the main supplementary objectives of IOPs are focalisation and task allocation. IOPs receive an average subsidy of 2 x EUR 8 million for a period of 2 x 4 years. The IOP steering committee plays a central role in selection, which is characterised by a bottom-up survey based on invitations presented to the field. More than 20 IOPs have been started since 1979 and three new IOPs have been initiated in the Netherlands since 2003.

**Top Technology Institutes (TTIs)**
The main objective of TTIs is *to enhance the innovative capacity and competitive position of Dutch industry by focusing excellent scientific research on areas which are relevant to industry and by increasing industry's influence on determining the research agenda*. In addition, knowledge valorisation and international appeal have also gradually become important aspects. Four TTIs were established in 1997 and funded for a period of 2 x 4 years, with a two-year extension. The TTIs received an average of around EUR 5 million per year. The Expert Committee (Commissie van Wijzen) played a key role in the bottom-up selection procedure, aided by the Royal Netherlands Academy of Arts and Sciences (KNAW) and a consultancy.

The IOP and TTI instruments have since merged into an IOP-TTI module of the Ministry of Economic Affairs' programmed package. This means that IOPs and TTIs are now only established as part of an innovation programme in a key area. The main aim of IOPs and TTIs is *to create and enhance long-term strategic R&D cooperation between companies and publicly funded knowledge institutes in strategically important fields for the Dutch economy*.

**Top Social Institutes (MTIs)**
As with the Top Technology Institutes, the Top Social Institutes instrument was established by the Ministry of Education, Culture and Science in 2005. The aim of the MTIs is *to improve alignment between excellent scientific research projects concerned with social issues and challenges*. The three MTIs have since received a start-up subsidy of EUR 5 million. One of the three, NICIS, has received

[1] See for example AWT, *Balanceren met beleid: Wetenschaps- en Innovatiebeleid op hoofdlijnen,* The Hague, 2007).

EUR 15 million from FES incentive 2006 (see below). NWO plays a key role in the instrument's implementation.

**BSIK incentive 2004 (ICES/KIS-3)**
The main aim of the scheme established pursuant to the Investments in Knowledge Infrastructure (Subsidies) Decree, known as the BSIK Scheme[2] is *to create high-quality networks in the knowledge infrastructure and to identify and encourage promising areas of research*. This is concerned with investments from the FES (Economic Structure Enhancing Fund).[3] Project proposals could be submitted in relation to five themes: ICT, Use of Land and Space, Sustainable System Innovations, Microsystem Technology and Nanotechnology and Breakthroughs in Health, Nutrition, Gentechnology and Biotechnology. EUR 800 million has been invested through BSIK in 37 projects with terms varying from 4 to 6 years. The ICES/KIS Expert Committee played a key role in the selection process, aided by the Royal Netherlands Academy of Arts and Sciences (KNAW) and various planning bureaus.[4]

**FES incentives 2005 and 2006**
FES windfalls were used in 2005 and 2006 to encourage innovation programmes and top-level research, with the aim of *enhancing the knowledge infrastructure in the Netherlands*. The incentives for knowledge and innovation amounted to EUR 500 and EUR 300 million respectively. As with BSIK, the ICES/KIS Expert Committee played an advisory role in the selection procedure, in partnership with the CPB Netherlands Bureau for Economic Policy Analysis. The main differences from BSIK are that no prior investment framework with thematic priorities has been established and no invitations to submit proposals are published.

**Smart Mix**
The Smart Mix instrument was short-lived: it was terminated after a single round in 2006-2007, in which 7 programmes were accepted. Smart Mix had two objectives: *to create social and economic value* ('valorisation') and *to enhance 'focus and mass' in excellent scientific research*. No themes or priorities were defined in advance. The subsidy budget was EUR 100 million, which was funded on a fifty -fifty basis by the Ministry of Education, Culture and Science and the Ministry of Economic Affairs. The Smart Mix Advisory Committee played a central role in the selection procedure with support from the Smart Mix secretarial department and people in the Netherlands Organisation for Scientific Research (NWO) and SenterNovem.

**Innovation programmes in key areas**
Since 2005 the Ministry of Economic Affairs has using a programmed approach which is based on the Innovation Platform's key areas approach. The key feature of the programmed approach to innovation is that *innovation programmes are initiated in fields that are strategically important to the Netherlands and in which the Netherlands already has a relatively strong position*. There are currently 6 key areas: Flowers & Food, Water, High-Tech Systems & Materials, Creative Industry, Chemicals and Pensions and Social Insurance. ICT and Energy Transition have been designated as horizontal 'innovation axes'. Innovation programmes in key areas are developed from the bottom up and the parties concerned take the lead themselves. The Strategic Advisory Committee on Innovation Programmes (SAC) played a key role in assessing programme proposals. At the moment (autumn 2007), five innovation programmes have been started with an average subsidy of around EUR 50 million.

**NWO's thematic programmes**
NWO has recently worked according to the strategy memorandum 2002-2005 'Themes with talent'. One of the strategy's main lines comprised nine research themes, designated *to encourage focalisation in excellent and leading scientific research*. NWO invested more than EUR 270 million in

[2] BSIK stands for *Besluit subsidies investeringen kennisinfrastructuur* (Investments in Knowledge Infrastructure (Subsidies) Decree).
[3] The FES (*Fonds Economische Structuurversterking*) was established in 1993 to earmark part of the profits from natural gas for funding extra investment projects of national importance that enhance the economic infrastructure. The FES is managed on the government's behalf by the Minister of Economic Affairs and the Minister of Finance ministers, who are advised by the official Committee on Science, Technology and. Information Policy, CWTI (*Commissie voor Wetenschap-, Technologie- en Informatiebeleid*). The CWTI has been succeeded by the Committee on Economy, Knowledge and Innovation, CEKI (*Commissie voor Economie, Kennis en Innovatie*).
[4] ICES stands for *Interdepartementale Commissie Economische Structuurversterking* (Interministerial Committee for Economic Structural Policy Enhancement). KIS stands for *KennisInfraStructuur* (Knowledge InfraStructure).

these themes in 2002-2006. NWO is now working according to the 'Science Valued!' strategy memorandum, in which 13 themes have been designated.

Taking all the aforementioned investment incentives together, the total in long-term investments comes to around EUR 2.5 billion. This is a substantial amount, given the total figure for government expenditure on research and innovation. Investments through BSIK (EUR 800 million) accounted for the largest incentive sum, followed by the two FES incentives in 2005 and 2006 (EUR 500 and 300 million). Collectively, these account for almost two-thirds of the total programmed investments.

Looking at how these resources are allocated in the various fields, it emerges that more than half of programmed investments have been allocated to the *key areas* and the *innovation axes*. It is striking that the *theme field* Life Sciences & Health easily accounts for the largest component (28%) of investments, although Innovation Platform has not identified it as a key area. Another striking point is that although the themes Creative Industry and Pensions & Social Insurance were designated as key areas, they only received a marginal contribution. However, contributions to the key areas Water and Chemicals were also relatively modest compared with those for High-Tech Systems & Materials and Life Sciences & Health. It should be taken into account that the key areas at the time of the BSIK incentive had not yet been identified by the Innovation Platform but had been identified at the time of the FES incentives).

**Conclusions**

Based on the overview of programmed investments, the AWT has drawn a number of conclusions about how the government has issued investment incentives. In doing so, the Council used insights from an international comparative study of the focalisation policy in European countries similar to the Netherlands.[5] These comments have also been made taking into account the findings of the ICES/KIS Expert Committee, which specifically looked at BSIK and FES incentives.[6]

The AWT's assessment considered two aspects:
1 The strategic embedding of the policy instruments
2 Relationships and consistency in the policy instruments

Moreover, the AWT has made a number of critical comments regarding the frequently imposed requirement for public-private partnership in the programmed instruments.

**1. Lack of long-term strategy**
In the past there has been no coordinating, interconnecting long-term strategy and investment agenda for focalisation. This is especially a problem in countries like the Netherlands that have an active innovation policy. It creates risks for embedding national focal points at the international level and for the balance between basic funding (for the broad base) and ad hoc incentives (for focal points). Too little attention has also been paid to interaction between *bottom-up* and *top-down* focalisation.

**2. Lack of cohesion and continuity**
The government has created too much turbulence owing to the constantly changing policy instruments and highly varying procedures. There was a lack of cohesion and continuity in the way investments were made. This turbulence has resulted in a lack of transparency and the risk that support is provided for research that is not of the highest quality. Moreover, the turmoil has led to unnecessarily high transaction costs. The policy confusion and lack of a long-term view have resulted in little cohesion both between and within focal points.

**3. Preference for public-private partnership**
The Dutch government has a strong preference for public-private partnership (PPP). It stipulates a PPP construction as a precondition for financial support more often than governments in surrounding countries. The AWT believes it is still too early to express a carefully considered opinion on all the

[5] Dialogic and Technopolis, *Quick Scan (on the use of PPPs in) focus, mass and valorisation in scientific research in eight European countries* (Background study AWT, 2007).
[6] Commissie van Wijzen ICES/KIS, *Notitie over het programmeren en prioriteren van innovatief onderzoek en procedures voor indiening, beoordeling, selectie, financiering en monitoring van activiteiten op het gebied van onderzoek en innovatie vanuit het FES* (The Hague, 2007).

effects of this. PPP offers numerous advantages (joined forces, economies of scale, demand-based management, etc.) but various criticisms are also appropriate. For example, PPP is mainly suitable for promoting existing strengths and established organisations, while it is less suitable for encouraging radical innovations. Another comment is that PPP is mainly suitable for disciplines which can create economies of scale, in the fields of (bio) medicine, physics and technology, for example. Other disciplines are less able to accommodate the required PPP.

**Recommendations**

The AWT makes the following recommendations in response to these findings on how the government has invested in focalisation:

**Recommendation 1**
Produce a long-term national research and innovation strategy in which focal points in the Netherlands are well positioned in the national and international research and innovation landscape. The Council particularly calls not simply for more top-down direction from the centre but for productive combinations to be found of top-down and bottom-up coordination. New investments in focalisation should wait until a clear long-term strategy is available.

**Recommendation 2**
Ensure there is more calm on the policy front as well as policy implementation. Do this by not introducing new instruments for the time being, by giving policy instruments and focal points sufficient time to prove themselves, designing interrelated policy instruments, ensuring greater uniformity in procedures and by approaching streamlining at the interministerial level.

**Recommendation 3**
Ensure that a careful, open and transparent approach is taken to developing strategies and strategic research agendas for the various focal points. Take sufficient time. Mobilise wider engagement. Ensure that investment incentives are properly embedded in the current strategic plans of knowledge institutes. At the same time, build up more intrinsic domain knowledge and strategic assessment capacity in the ministries to enable them to play a proper role in this. Learn systematically from experiences with strategy development and place different emphases on the government's role for each focal point.

**Recommendation 4**
Only use public-private partnership (PPP) in suitable focal fields, i.e. when there are well-organised, knowledge-intensive private parties, when economies of scale play an important role and the aim is to promote incremental innovation. Besides ad hoc investments through programmed instruments, also use non-primary financial instruments to encourage focalisation.