

# Management Summary

## Topsector Approach

The Dutch Ministry of Economic Affairs (EZ) chose a specific path for its 2011 enterprise policy by launching the so-called topsector approach. In the nine top sectors,<sup>1</sup> enterprises and knowledge institutes work together with the government to strengthen their innovation systems and competitiveness. The Dutch companies and research centres in these top sectors play a leading role in the world and promote their interests through joint planning in areas such as knowledge and innovation, internationalization, human capital, regional involvement and reducing regulatory barriers.

The topsector approach is a national policy strategy that differs in many ways from its predecessors. Instead of a policy mix based merely on financial instruments, such as subsidies from FES (Economic Structure Enhancing) funds, the approach adheres to the principles of 'modern industrial policy'. A characteristic element is the scope created within the golden triangle of companies, research institutes and governments to develop a shared vision on which direction they want to take and what is required. Better alignment between companies' needs and institutional expertise is achieving that joint direction, for example through Topconsortia for Knowledge and Innovation (TKIs) and related allowances for public-private partnerships (PPP). The policy approach also provides customised solutions for bottlenecks that stand in the way of achieving collective innovation plans. Thus, this approach is a way of giving players in the field more responsibility to develop the innovation systems they are part of.

The financial aspect of the topsector approach is modest. In 2016, the funding allotted to enterprise policy totalled EUR 7.4 billion, of which 0.8 billion was for non-fiscal incentives. The topsector approach only benefitted from a very limited portion: in 2016, this was EUR 8 million for implementation costs, including a 2.8 million operating budget for organisation and 2.7 million for internationalisation. In that same year, EZ spent EUR 109 million on general measures within the top sectors. This includes the TKI allowance for R&D in public private partnerships (PPP), as well as the MIT scheme for supporting SMEs with knowledge vouchers, innovation consults, feasibility studies and collaborative research. An additional EUR 967 million was invested from complementary policies: contributions from various departments, a part of the research funding from the Netherlands Organisation for Scientific Research (NWO) and Royal Netherlands Academy of Arts and Sciences (KNAW), and topsector funding from the applied research institutes (TO2).

## The aim and scope of evaluating the topsector approach

The purpose of this evaluation is to gain insight in the effectiveness of the topsector approach. Four questions form the basis of the evaluation: (1) What bottlenecks do the top sectors face when attempting to strengthen and transform their innovation systems? What efforts (combination of incentives) have been made to address these bottlenecks, what are the outcomes and how do these contribute to the development of the top sectors? (2) How does the revenue from the top sectors relate to the associated costs? (3) To what extent is the topsector approach suitably designed to achieve policy objectives? (4) How could the effectiveness and efficiency of the topsector approach be improved?

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<sup>1</sup> The nine top sectors are: Horticulture and propagation materials, Agri-food, Water, Life sciences and health, Chemicals, High tech, Energy, Logistics, Creative industries.

As the subject of the evaluation is not a single instrument but an entire approach; and there is no clear basis for comparison – what would have happened without a topsector approach – a new evaluation method has been devised for this study. Based on theoretical insights in modern (transformative) industrial policy, this method consists of two frameworks: one for evaluating the policy impact and one for studying the policy design. As of yet, no alternative evaluation framework can be found, not even in the international literature.

This mainly qualitative evaluation was carried out between December 2016 and March 2017. Sources such as partial assessments, annual reports, vision documents, implementation agendas, policy documents, progress reports and advisory reports were used to analyse the impact of the topsector approach in the nine individual sectors and in three cross-sectoral domains, as well as for the overarching analysis (including limited analyses of comparable approaches in Japan, Denmark and Sweden). In addition, nearly 100 semi-structured in-depth interviews were conducted with the parties involved as well as outsiders.

### **Conclusions regarding policy impact**

The topsector approach was originally set up to strengthen innovation systems, primarily for stimulating cooperation. In practice, this has led to different priorities, agendas and increasingly more cross-sector initiatives in each top sector. The approach has been undeniably effective in the more demand-oriented programming of PPP research at Dutch knowledge institutes, aligning human capital activities and promoting export. These results are underpinned by the following findings (A to E).

In its application, the topsector approach has been valuable especially in engaging various stakeholders for the *implementation* of innovation directions the market aims to develop, but less so in *redefining* these directions (**not** an explicit objective). Despite being part of the enterprise policy, this approach also revolves so much around knowledge development that there is only a limited amount of impetus on promoting innovative entrepreneurship and especially creating a market for innovation. The findings F to H show how the topsector approach could have (had) a greater impact.

- A. The topsector approach has contributed to the more demand-oriented research programming at Dutch knowledge institutes, maintaining particularly applied research infrastructures and setting up some long-term PPP programmes for basic research. Thereby it has supported the transition from a subsidy-based innovation landscape to an environment in which knowledge institutes and companies meet one another through PPP. Out of the more than €800 million that is being invested in PPP-projects receiving TKI allowance, 47% is financed by private parties. Obtaining >40% private funding was a key objective of the topsector approach in the relevant period.
- B. The topsector approach has resulted in collectivity and an overview, especially in heavily fragmented top sectors. This approach has proven useful in creating mass and jointly generating the momentum to tackle issues in innovation systems.
- C. The topsector approach offers a platform on which parties can jointly organize their development and application of knowledge. The coordination between companies, knowledge institutes (and governments) has provided insight in the various top sectors' activities, their objectives and who is all involved. Although the approach is strongly sectoral, the current TKIs and Knowledge and Innovation Agendas (KIAs) also offer plenty of opportunities to work on cross-overs.
- D. The transition from innovation programmes to topsector approach has indeed paved the way for a broader specific enterprise policy, focussing on a wide spectrum of bottlenecks potentially linked to strengthening innovation systems. This focus has

also initiated the 'societalisation' of innovation policy. As control is mainly based on the demand from financially strong businesses, the topsector approach is still not a panacea for affirming the core importance of (innovative solutions for) societal challenges.

- E. Some top sectors typically achieve a relatively large impact from their efforts in the areas of trade facilitation and human capital, despite limited resources. The topsector approach has latched onto internationalisation, in particular involving businesses more intensively with trade missions. The topsector label is applied successfully to enhance the image of the Netherlands for specific themes. Also the positive impact of human capital is related to connecting and fulfilling existing initiatives.
- F. The extent of the focus on developing ground-breaking (innovation) visions is still limited. Initially, obtaining support and commitment certainly featured more on the topsector approach agenda than making clear-cut decisions. The added value of the approach, in terms of developing innovative visions from the private market, is most apparent in the less established top sectors, where joint participation and alignment were previously less developed.
- G. Market formation based on innovative procurement policy is still a too limited part of the topsector approach: neither EZ nor the top sectors themselves vigorously pursue the government's role as launching customer and 'pioneer' in achieving innovation agendas. By taking ownership of a number of typical societal issues, the government could help to create (market) conditions for testing and marketing innovations.
- H. Although the topsector approach is focussing more and more on connecting with the regions and colleges, there are still plenty of opportunities for improvement. Meanwhile, actions have been taken to ensure that promising companies and innovations in the region can grow quicker to (inter)national level. Part of this development is involving colleges and vocational education (MBOs), however interaction in the region could probably be improved by taking into account the development, exchange and application of knowledge other than from the TO2 institutes and the four technical universities.

### **Conclusions regarding efficiency**

Given the modest resources exclusively earmarked for the topsector approach, acquiring and linking with public and private investment seems to be an efficient policy strategy. Due to the specific design of the approach (and lacking a basis for comparison as well as uncertainty about incentives and who gets them), we can make only limited comments on effectiveness. By targeting private and public funding – including budgets not earmarked for the top sectors – the benefits are likely to outweigh the investment in organization. Whether this remains cost-effective, depends on the topsector approach's goals for the future. Now that the top sectors already have their own close-knit relationships, more can be achieved by aiming at additional alignment in overarching themes (e.g. social, or cross-sector technologies).

### **Conclusions regarding policy design**

The topsector approach is widely recognised as a policy or administrative innovation. The policy design is suitable for information exchange and cooperation between industry, research institutes and government. Providing the field with a platform strengthens the golden triangle's ability to mobilize third parties in order to achieve shared goals. The emphasis is on creating mass, which can sometimes consequently jeopardise openness and especially ground-breaking innovation. This relates to the fact that steering processes are based on alignment (rather than harsh collective incentives), and that it is often not clear where the responsibility lies. The main findings regarding policy design are:

- A. Intensive interaction with companies and knowledge institutes has strengthened the flow of information both in the government as well in the field. Being able to find each other quicker has facilitated parties' cooperation. Officials at various levels have gained more insight in specific problem areas and requirements and they are better at conducting a dialogue with the relevant top sectors.
- B. EZ's current policy – except TKI allowances and MIT – controls especially through non-financial incentives. Providing collective *inputs* prevents companies from appropriating public funds without contributing anything to innovation. One downside is that relatively few collective facilities are provided to translate R&D into applications, which could thus strengthen earning power. Secondly, EZ's relatively reluctant stance instead of also investing, is possibly hampering interdepartmental cooperation.
- C. When it comes to openness, the topsector approach is not designed exclusively for the 'usual suspects'. In practice, however, competitors must understandably make the necessary efforts to participate - especially in the sectors that have many established players. Varying amounts of activities take place to bring new (small) players on board. This still mostly concerns companies operating in the same ecosystem as the parties well represented in the top sector. The population of companies that contribute privately to PPP research (in the TKIs) are already often seeking new connections.
- D. Initially the topsector approach certainly did not place much emphasis on groundbreaking innovation. Because of the focus on self-organization, plans were aimed at the overlap between the stakeholders' interests. Radical innovation above all had to come from pushing the boundaries in domains where the Netherlands already operates at the 'knowledge frontier'. In the more recent KIAs, there is a stronger focus on specifically concrete pathways, including more emphasis on expanding and connecting (instead of just enriching) knowledge domains.
- E. The topsector approach falls short when it comes to transparency and accountability. It is often unclear for outsiders as well as those involved, who is responsible for what. The objectives for the topsector approach have been formulated on such an abstract level that they are insufficiently applicable for tracking and attributing progress.
- F. The topsector approach is perceived as an EZ approach to increase the Netherlands' earning power, and less as an interdepartmental policy approach to representing public interests in an innovative way. This hampers the effective shaping and especially the development of innovation pathways (including bringing innovations to the market), as well as potential further development of the policy approach.
- G. It is unclear what role governments have assigned themselves for delivering the topsector approach. Especially EZ has "put the ball in the other court": it has made knowledge institutes and businesses in the top sectors primarily responsible for KIAs and the financing and demand-side management of public research. EZ previously acted as controller and gradually more as a partner, and for the time being less as director and guardian of development pathways towards (innovative) solutions for societal issues.
- H. The experiences with cross-over areas (ICT, Nanotech and especially Biobased Economy) are valuable for a topsector approach that is more explicitly focussing on solving social challenges.

## Considerations and recommendations

The introduction of the topsector approach has been a dynamic learning process. Parties in the golden triangle were not always aware beforehand how the approach would progress. EZ as initiator has developed it partially in a trial and error fashion with other departments, rather than rolling it out as blueprint. Giving companies and knowledge institutes time to get used to the new way of working, has achieved a great deal in terms of collaboration in innovation systems. It is important to realize that a network approach cannot be implemented from one day to the next, and that recent developments (e.g. more ambitious KIAs and more intensive cross-overs on the agenda) have increased the approach's impact and potential of this type of policy. In that regard, caution is advised when it comes to implementing large-scale changes. That said, several aspects emerging from this evaluation require additional consideration, primarily by EZ. Most of the suggestions for reflection and policy adjustments concern the need to adopt a clearer role for the government in further shaping the topsector approach. The considerations and recommendations ensuing from the conclusions are as follows:

1. Define the precise objectives of the topsector approach and how its policy is structured.
2. Match the topsector approach (more) clearly with societal challenges. This also requires strengthening of the interdepartmental component.
3. Make efforts to ensure the top sectors' knowledge and development agendas are not too freely and broadly defined, but are selective.
4. Challenge parties to create cross-sectoral top projects on concrete societal issues, thereby specifically involving 'challengers'.
5. Create a modest budget for flexible spending of EZ's share in collective facilities for experiments in top sectors and top projects.
6. Consider to what extent other EZ instruments could be more explicitly included in the topsector approach (e.g. SBIR).
7. On the internationalization agendas, widen the scope from trade to include knowledge, acquisition and human capital, and if possible an experimentation agenda.
8. Strengthen the involvement of regions, colleges and other research institutes outside the 4TUs and TO2 in the topsector approach.
9. Make sure the openness of the topsector approach is guaranteed.
10. Simplify the governance and clarify the transparency, accountability and communication concerning the topsector approach's functioning and results.