

Summary of advisory report 38

OUTLINES OF INNOVATION POLICY

The Council will group the conclusions and recommendations from this report around the points for attention specified in the request for advice on innovation policy in a system approach.

Question 1

Does the Council think that the said broadening of a system approach instead of an approach based on market imperfections should result in fundamental changes in innovation policy and, if it does, how should these changes be given concrete shape?

Innovation, the economically successful marketing of new, improved or more competitive products, processes or services depends on many factors. The entire body of factors and their combined action, referred to here for short as the innovation system, determines the opportunities for innovating. Policy needs to consider all these factors, including the changes over time.

Over the years innovation policy acquired its present form mainly by continually adding new measures. This incremental approach of adding another new measure for each 'problem' does not necessarily produce an optimum situation. The Council takes the view that a reorientation is desirable. It becomes increasingly clear that the motives and opportunities for innovating are highly dependent on a culture of innovation, which is determined in part by factors that are traditionally beyond the scope of technology policy. Added to this, it is the opinion of the Council that the government's just wish to have the research it funds benefit society has resulted in a situation in which the government itself is focusing excessively on encouraging research applications that are of interest to others at the expense of focusing on tasks for which the government itself bears pre-eminent responsibility: education and fundamental research. To exaggerate, the government has a tendency to do the work of others at the expense of its own duties. The Council does not view this mingling of responsibilities as effective. Against this background, the Council arrives at its recommendation to concentrate innovation policy on the following three main themes:

- encouraging a culture and climate of innovation;
- public knowledge institutes: clear missions and requirement to take responsibility;
- targeting subsidies more at fundamental research which can give rise to new business activity.

Encouraging a culture and climate of innovation

A country's innovative strength is partly a question of culture; bringing about changes in this takes time. Also, the innovative climate, the 'environment' in which people and businesses operate, has a decisive impact on the motives and opportunities for innovating. This climate is determined in part by political and economic factors on which the government has direct influence. The Council is not referring primarily to policy on subsidies, but on the removal of unnecessary obstacles and encouraging an environment that rewards success.

The Council does not pretend to be able to map out all the dimensions of an innovative culture and an innovative climate. It confines itself to a number of major points.

- As a 'supplier' of well-trained people, education plays a crucial role in encouraging a

culture of innovation. The Council thinks our ambition should be for the Netherlands to have the best education in the world. This requires adequate government attention, including money. Setting priorities with a given government budget, the Council opts for investment in education in preference to the current subsidising of all manner of application-based research. It has in mind in this respect the entire education system, from top to bottom, with special attention for vocational training.

Within the educational sector special attention needs to be paid to encouraging talent, creativity and entrepreneurial skills. In view of its area of focus, the Council confines its observations to higher education. It sees this education as a major breeding ground for new, top quality employment. This potential is not yet being fully utilised. The climate within the institutions is not yet sufficiently stimulating and challenging for starters and potential starters. The Council is in favour of the institutions developing an explicit and active starter's policy. Part of this should be education in aspects of entrepreneurial activities and assisting starters in the initial phase.

- In the initial phase many potential starters experience financing difficulties, in particular starters in the technical sphere where an idea first has to be tested for feasibility. In this phase it is difficult to assess the risks, and funding requirements are often too small to be of interest to venture capitalists. The Council advocates that institutions should reserve a budget from their own resources in order to provide financial and other support for their 'own' people. To increase the institutions financial facilities the Council advocates a national fund that will act as a matching fund: following a general review, this fund will contribute the same amount as the institution itself provides. After a period of 1 - 2 years it should be clear whether an idea is viable, in which case private financiers will want to jump in.
- The Council finds that much legislation and government regulations have an impact, intended or otherwise, on the innovative capacity of the business community. Care should as a minimum be taken to ensure that the consequences of legislation and regulations put in place for reasons other than promoting innovation do not have a negative impact on this innovative capacity. From this point of view the Council advocates an innovation impact report for current and new legislation and regulations. As the coordinating Ministry for technology policy, the Ministry of Economic Affairs has an initiating role here.
- A major precondition for an innovative climate is an increase in the competition between companies. The government has given a major boost to this in the last few years in its competition policy. However, this policy should not result in unnecessary restrictions on collaboration between companies in the field of research and development (the formation of consortia). The Council advocates appropriate guidelines, so that companies know where they stand.
- Government itself is a major purchaser of goods and services. Economic Affairs recently placed the government's innovative procurement policy on the agenda once again. The Council takes the view that a policy of this kind can have a stimulating effect on the innovative climate.

Public knowledge institutes: clear missions and requirement to take responsibility

The government bears a substantial amount of the cost of the public knowledge institutes such as the universities, the large technical institutes or LTIs, the Netherlands Organisation for Applied Scientific Research (TNO), etc. In addition to the basic funding it provides to these institutions, the government also has a large number of instruments for encouraging or correcting their activities. The instruments Economic Affairs has include IOPs, the TNO SME initiative, the Innovation Fund for Technology & Vocational Training, the broker's role (public consultant). In the long-term this is not the right way. Making adjustments creates a culture in the institutions of looking to 'The Hague' instead of to their own target group. The Council advocates a more structural approach, in which the institutes themselves should be held responsible for their efficiency and their effectiveness, and should be assessed and financed on this basis. The Council advocates a programme of strategic plans within clear missions and parameters plus assessments with result-based financial consequences.

Focus subsidies more on fundamental research which can give rise to new activity

It goes without saying that both the public and the private sector of our economy benefit from a vibrant knowledge infrastructure. For this reason, government subsidising of this knowledge

infrastructure can be easily justified. In practice, this has resulted in a comprehensive range of subsidies for or for the benefit of companies, with heavy emphasis on applied research, knowledge diffusion and consultancy.

The Council advocates targeting subsidies to or for the benefit of businesses more at fundamental research in those areas from which new activity can arise. This research is becoming increasingly hard pressed. Companies are less and less inclined to invest in fundamental research. The public knowledge institutes are focusing more and more on the market, with the risk of being 'sucked in', away from fundamental research towards more application-based research. Instead of filling the gap that has arisen, the institutes are enlarging it. Fundamental research is of great importance to our society, both in relation to education and to laying the foundation for new understanding, technologies and business activity. It is impossible to say in advance who in society is entitled to the revenues from this research, which is one of the reasons why it is the responsibility of the government to subsidise it. The government has an important task to perform here.

Within the government the Education Ministry bears primary responsibility for financing fundamental research. In its advisory report 'Outlines of Science Policy', the AWT advocated reserving enough room within that programme for really high-risk research. It sees a role for Economic Affairs especially to strengthen strategic collaboration in fundamental research between universities and the business sector. It is in favour of Economic Affairs targeting its incentives more at this.

Question 2

Will this expansion bring about changes in the legitimacy of government interventions in the framework of science and technology policy?

The focusing advocated by the Council for innovation policy is based on an analysis of the functioning of the 'innovation system' and the developments that have been taking place in this system recently. On these grounds the Council comes to the conclusion that the government should target its incentives policy more on those matters in which the government plays an important part which the private sector cannot; it touched on these points above.

In its view, this line can result in a considerable clearing-up of its existing arsenal of innovation incentives. In the first place, the Council essentially sees no part for the government in encouraging applied research other than for areas for which the government itself is responsible, the objects of state concern as they are known. The private market is on the whole sufficiently developed to accept its own responsibility here. For this reason, a number of incentives can be dropped. Secondly, the Council finds that the government frequently steps into the shoes of the public knowledge institutes. As stated above, this is wrong in the long term. The programme should be: clear missions and parameters with assessment and result-based funding. Much of this 'corrective' action can then be dropped.

Question 3

In an international perspective, does the Council see underdeveloped areas within current Dutch innovation policy against the background of the aforesaid expansion?

The Council sees increasing interaction between the public and private knowledge infrastructure. It warmly welcomes this interaction, which has a positive impact on the social relevance of their activities. It can also have a conservative impact, however: confirming and increasing the breadth and depth of the existing situation. A relevant question is whether the knowledge infrastructure in the Netherlands is adequately equipped to contribute towards tomorrow's new activity.

Economic activity is continually changing: some companies grow, others shrink or disappear, new companies come into being. That's the way things always have been and the way they always will be. There have been periods in which changes occurred which only later could be said to have been of a more than normally structural and sweeping nature. The Council believes we are going through one of these periods at present. A number of new basic technologies are being developed which, the Council thinks, will give a large-scale impetus to totally new types of activity. Structurally decisive basic technologies, technologies that for years provide the basis for new types of activity and growth in employment, are not a new phenomenon. Looking back, it is easy to name these technologies: hydropower, the steam engine, electricity, electronics, etc. At present, digital technologies and biotechnology are

providing the basic technologies for the coming years, expressing themselves in new activity in digital networks, in digital control systems and in multimedia, in the food and pharmaceuticals industry, etc. Not that existing companies will disappear; there are today still companies that started out using the basic technology of a century ago, but the growth in employment will come mainly from new activity, grafted onto the new basic technologies.

The question is whether the knowledge infrastructure is properly equipped to continually take advantage of new developments and opportunities. The Council is concerned about this. There are strong conservative tendencies in the system, which constrain the desired dynamism.

Dynamism is necessary: 'old' activities (lines of research, research institutes) need to be wound up in order to create space for new activities. The Council looked at this issue for the non-university institutes in earlier advisory reports, e.g. its report on the large technological institutes and its report on aerospace. Dynamism is naturally also essential for the university system. The universities are the perfect places for exploring new developments and technologies. Allocative justice and fragmentation restrict the power of the system, however. The Council will shortly publish a report that looks more specifically at these issues in the sphere of the natural and technical sciences.

