

Capturing, processing and valorizing knowledge

On the importance of knowledge absorptive capacity





Prologue

The amount of knowledge available to us is increasing enormously. The Internet, open access and big data are commonplace concepts today. But knowledge on its own is not enough; absorbing that knowledge is what leads to new insights and breakthroughs in science and innovation, and the ability to absorb this knowledge is therefore crucial.

How does the Netherlands score in terms of knowledge absorptive capacity? Does this capacity need to be strengthened, and if so what role can the government play in this?

The Advisory council for science, technology and innovation (AWTI) studied these questions at the request of the Dutch Ministry of Education, Culture and Science and the Ministry of Economic Affairs. The Council carried out a wide-ranging study to gauge the knowledge absorptive capacity present within Dutch research institutes and industry.

Knowledge comes from all over the world, including countries with which the Netherlands does not have a great tradition of collaboration. Knowledge also comes from other disciplines – it is precisely at the interfaces between scientific disciplines that interesting developments occur. Businesses need to know what is happening within research institutes, while conversely, researchers need to have a sense of the knowledge and experience present in the business community. All this requires a highly developed knowledge absorptive capacity, characterised by alertness, a good appraisal of new and valuable knowledge, but also very much by interaction and cooperation.

The Council concludes that it is up to research institutes and businesses to maintain their knowledge absorptive capacity. The role of government is to facilitate this and step in proactively in the event of an absorptive capacity deficit. Examples of ways that increased knowledge absorptive capacity might be facilitated include attracting foreign talent, stimulating

public-private partnership, investing in joint research facilities and promoting labour mobility. The government could monitor the development of knowledge absorptive capacity by including it as a criterion in the findings of foresight studies and research reviews.

With this report the AWTI has intended to highlight the importance of knowledge absorptive capacity. As a result, this study leads to general recommendations rather than suggesting specific steps the government should take. It is however important to continue monitoring developments and where necessary ensuring that the government facilitation is optimised. This report contains a number of suggestions for this.

The term 'absorption' could be construed as simply taking in knowledge, but sharing knowledge is also an important aspect of knowledge absorption. That is why knowledge absorptive capacity must be seen as a dynamic concept with a high energy content.

Knowledge absorptive capacity is becoming steadily more important due to international competition and the increasing importance of transdisciplinary knowledge transfer and - integration. Therefore, in formulating policy proposals and specific actions in the fields of science, technology and innovation, it is important that the government focusses explicitly on their impact on the knowledge absorptive capacity of the Netherlands.

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Summary

Knowledge absorptive capacity is the ability to identify, assimilate and utilise relevant knowledge. It enables research institutes to generate new knowledge and businesses to innovate.

A well-developed knowledge absorptive capacity is today more important than ever. The speed with which new knowledge is being generated is growing steadily. Scientists and innovators are finding that more and more relevant new knowledge is coming from other countries. It is also increasingly coming from other disciplines and organisations, at a time when research institutes and businesses are becoming more and more specialised.

Against this backdrop, AWTI was asked by the Dutch Ministry of Economic Affairs and the Ministry of Education, Culture and Science to investigate the following questions:

How can the knowledge absorptive capacity of Dutch research institutes and businesses be strengthened? What role can the government play in this?

In its report, AWTI concludes that there are several characteristics of the Dutch education system, work culture and public knowledge base which strengthen the knowledge absorptive capacity of research institutes and industry. The emphasis in education is on 'learning to learn' and applying what has been learnt. The work culture offers knowledge workers a good deal of autonomy and allows wide scope for international and public-private cooperation. The available knowledge base is broad.

On the other hand, there are a number of developments which impede the Dutch knowledge absorptive capacity. First, the ability of Dutch research institutes to attract top international talent is under increasing pressure. Second, the labour mobility between research institutes and companies is limited at mid-career level. Third, while cooperation in

research programming has increased since the introduction of the Dutch Top Sectors policy, in the day-to-day practice at the workplace, cooperation between researchers from research institutes and those working in companies has actually declined. Fourth, the intermediary function linking knowledge development and knowledge application, which was originally embedded in a group of major technological research institutes (TO2 institutes), is coming under pressure now that these institutes are shrinking and positioning themselves differently in the Dutch research system.

It is up to research institutes and businesses themselves to maintain their knowledge absorptive capacity. The role of government is to facilitate this. This can be achieved by configuring the public knowledge and innovation system in such a way that it is responsive, that a lack of knowledge absorptive capacity is identified at an early stage and that action is taken to address this. With this in mind, AWTI makes a number of recommendations for the ministries concerned, which are briefly summarised below:

- 1 ***Continually monitor the development of the knowledge absorptive capacity:*** i) invest more in foresight studies; ii) include knowledge absorptive capacity as a criterion in research reviews; iii) monitor the functioning of TO2 institutes to identify any 'structural gaps' in knowledge absorptive capacity; and iv) intensify the dialogue with the business community – not just large corporations, but also the SME segment – concerning the match between the available training and public research and the needs of these businesses.
- 2 ***Maintain the basis of the knowledge absorptive capacity:*** i) ensure that Dutch science has enough freely disposable resources; ii) encourage public-private partnership 'at the workplace' through more programmatic support (grants) and more joint (public-private) investment in research facilities; iii) ensure that the Netherlands

remains an attractive place for young talent and top talent by making targeted investments and creating a more attractive settlement climate; iv) stimulate labour mobility across national borders and between businesses and research institutes; and v) ensure that the intermediary role in the knowledge and innovation system is fulfilled adequately.

- 3 ***Take action where necessary:*** i) intensify the cooperation with other countries where there is a danger of Dutch science losing touch with global developments; ii) talk to industry about measures to maintain the knowledge absorptive capacity.