

CHINA'S EXTENDED HAND

HOW CHINESE AND DUTCH KNOWLEDGE CAN STRENGTHEN EACH OTHER



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ABSTRACT

China's rise as a country of knowledge and innovation is impressive. The Netherlands can benefit from the rapid development of Chinese knowledge, science, talent, innovative power and research infrastructure. However, next to opportunities there are potential disadvantages. The Dutch Advisory Council for Science and Technology Policy (AWT) advises the Dutch government to intensify the cooperation with China in the field of research and innovation while paying attention to a number of challenges.

The Netherlands have a lot to offer China, but currently this comes in small initiatives and projects. The AWT therefore advises to join forces on the Dutch side, by ensuring that a China-platform is established in the Netherlands. Companies, universities and local authorities are –each on their own – increasingly active in China. A China-platform can facilitate sharing of experiences and make knowledge about China available for all Dutch companies, local authorities and other organisations. This will make the cooperation with Chinese counterparts more effective. In addition, a clear and joint strategy is needed to promote the Netherlands as a nation of science and innovation.

In the second place, it is the opinion of the AWT that custom work is required. It is a task of the government to stimulate cooperation with China and it should thereby distinguish between different groups. The AWT identifies BUILDERS, LEADERS and CLIMBERS. BUILDERS are knowledge workers, universities, researchers who visit China to exchange knowledge. They should be valued and cherished by the government because they build networks that are valuable for Dutch companies. LEADERS are top companies with a good position in China. They do not require direct support from the government, but the government should be stand-by to act as counterpart – if needed – for Chinese government officials. CLIMBERS are companies with many opportunities in China, who do not yet have established a good position. They are vulnerable because they are not yet adjusted to the Chinese culture and way of working. CLIMBERS can benefit from direct support which can increase their success in China.

Everywhere in the world China is searching for knowledge and it has the means to acquire this knowledge. For some, this is reason for concert. The AWT advises the Dutch government to continue investing in its knowledge base. Important here is that Dutch knowledge is imbedded in an environment where universities, knowledge institutes and companies are jointly engaged in innovation. This is the best way to guarantee that the Netherlands will remain an attractive science partner and that R&D activities will not be transferred to China. The Netherlands should consider which knowledge is crucial for the Dutch economy and how this knowledge can be preserved and strengthened. In other words, China's extended hand is challenging us – and the AWT hopes that the Netherlands will expeditiously accept the hand extended and embrace the opportunities and challenges of doing so!

CHAPTER 1: INTRODUCTION AND REQUEST FOR ADVICE

China's rise in the last decades is without parallel in history. In 2010, it overtook Japan to become the world's second largest economy and it is expected to overtake the United States to become the world's largest economy within five to ten years. At the same time, however, China remains a relatively poor country in comparison with the United States and Europe. In 2010, GNP per capita in the Netherlands was over six times higher than in China. It is mainly China's coastal provinces that are rapidly progressing towards the West's level of prosperity. Whereas the United States and Europe were hit hard by the credit crisis in 2008, China seems to have weathered the storm with comparative ease. This success considerably increased China's confidence as an international player and it is therefore possible that this century will prove to be 'Asia's century', with China being the most important country within that context. A development of this kind would affect the rest of the world, including the Netherlands.

The relationship with China is certainly a dynamic one. Dutch businessmen and women, representatives of SMEs and large multinationals, students, researchers, professors, designers, artists, writers and lawyers travel to China for inspiration, to acquire new knowledge, to share or commercialise knowledge, or to do business. Conversely, Chinese companies have become more active in Europe in recent years. There are now several Chinese head offices in the Netherlands and Chinese companies acquire Dutch ones. In addition, Chinese students come to the Netherlands to study at its universities and the Dutch government is also active. Local authorities maintain contacts with Chinese sister cities. Almost all ministries in The Hague have members of staff who focus specifically on China. An interministerial coordination group was therefore set up to exchange information. Policy always tended to focus heavily on trade and international relations and less on knowledge and innovation, even though the Ministry of Education, Culture and Science (OCW) has had a relationship with China for over 30 years aimed at promoting scientific cooperation.

China's rise is having a tremendous impact on economic structure. The European manufacturing industry has to a large extent been relocated to China and other countries. China is the 'workshop of the world'. Production, assembly and packaging takes place in gargantuan industrial buildings. Millions of Chinese have left their villages and have found jobs in the 'workshop' that is China. To an increasing extent, however, China also wishes to be a designer and an inventor and is therefore investing in science and research. China's increasing prosperity is also making it a market in which multinationals can test and improve new products and invest in R&D. In the United States, this is causing concern about the jobs of knowledge workers: are their workplaces, drawing tables and labs about to go too? Is there also a reason to be worried in the Netherlands? Or is there indeed a reason to be optimistic? Can the Netherlands benefit from the rise of China as a nation of knowledge and innovation and, if so, how? In the words of EU Commissioner Karel de Gucht, 'How can we best approach the Chinese dragon, a creature that in China itself is a symbol of happiness but in the West is all too often seen as a threat?'

REQUEST FOR ADVICE

Dutch policy faces tremendous challenges. What does China's possible rise as a knowledge and innovation great power mean for the Netherlands? What policy should the government pursue to make optimal use of the opportunities provided by China and minimise potentially negative effects?

Although there is a lot of government policy with respect to China, it seems to be fragmented. The Royal Netherlands Academy of Arts and Sciences (KNAW) and Netherlands Organisation for Scientific Research (NWO) are conducting programmes on the instructions of the Ministry of Education, Culture and Science, and the Netherlands Organisation for Scientific Research also on the basis of its own policy, that support scientific cooperation with China. Through its NL Agency, the Ministry of Economic Affairs, Agriculture and Innovation (EL&I) is likewise supporting and encouraging innovative cooperation. Efforts are also directed towards

promoting exports through the provision of information and trade missions and to actively attracting Chinese investment. In addition, various regions, provinces and cities maintain relations with China in economic terms and, increasingly, also in terms of innovation.

The State Secretary for Education, Culture and Science and the Minister of Economic Affairs, Agriculture and Innovation submitted the following request for advice to the Advisory Council for Science and Technology Policy:

What role should the Dutch central government and government authorities play in optimising cooperation with Chinese partners in the field of research, knowledge development and innovation?

A number of subquestions were formulated in this regard, namely:

- *What are the positive and negative effects of cooperation with China?*
- *What can the Dutch government do to encourage and benefit from possible opportunities? What options are available to capitalise more on our existing relations with China? What options are available to organise our cooperation with China more intelligently? Is improving coordination between different levels of government (European, national, regional) desirable in this regard?*
- *What can the Dutch government do to counter potentially negative effects?*
- *What are other countries doing to optimise their cooperation with China in the field of research, knowledge and innovation and are there lessons to be learned for the Netherlands in this regard?*

The question as to *whether* we wish to cooperate with China does not form part of this request for advice, since a lot of cooperation is already taking place between companies, knowledge institutes and government authorities on different levels. With the aim of optimising cooperation in the interests of the Netherlands, the question now is what the central government's role should be in this context.

STRUCTURE OF THE ADVICE

This 'China's Extended Hand' advice is structured as follows. Chapter 2 describes the council's considerations. It starts by focusing on developments in China in terms of science and innovation and subsequently discusses, in terms of opportunities and potential risks, the relationship with the Netherlands and possible consequences for the Dutch knowledge and innovation system. In Chapter 3, the council sets out three recommendations.

WORKING PROCEDURE

This advice is based on:

- Two working visits to China (August 2010 and October 2011). Both working visits were supervised by the Technical and Scientific Attachés and Science Attaché in Beijing and Shanghai. A total of approximately 30 interviews were conducted, two round-table discussions (one with an alumni network and one at the Dutch consulate in Shanghai with Dutch and Chinese experts) were held and the R&D centres of four companies (Unilever, Philips, Huawei, ENN) were visited;
- A working visit to Germany (Bonn and Berlin) in November 2011, supervised by the Technical and Scientific Attaché in Berlin, where five interviews were conducted at ministries and knowledge institutes;
- Approximately 40 interviews in the Netherlands conducted at companies (large enterprises and SMEs), knowledge institutes and government authorities, regional and otherwise;
- Research based on subject literature and policy documents;
- A workshop with 12 representatives of universities and knowledge institutes;
- Two background studies:

- A study carried out by EIM (referred to in the text as the 'EIM study') in 2011 in which 500 innovative and internationally operating Dutch-based companies were asked about their activities and experiences in China and about their expectations for the future. The study can be consulted at www.awt.nl (in Dutch);
- A study carried out in China by International Top Talent (referred to in the text as the 'ITT study') in 2011 in which 41 individuals were surveyed and 16 of whom were interviewed about their experiences with respect to cooperation with the Netherlands. This study can also be consulted at www.awt.nl;
- Eight responses following publication of the draft advisory document on the Advisory Council for Science and Technology Policy's website (November-December 2011).

The council hereby thanks all individuals interviewed or involved in discussions during the preparation of this advice for their respective contributions.

CHAPTER 2: CONSIDERATIONS**THE EXTENDED HAND: CHINA AS A NATION OF KNOWLEDGE AND INNOVATION**

1. China is not only the workshop of the world, it is also increasingly becoming a nation of knowledge and innovation. Its economic growth has been impressive for over twenty years. In addition, China's investments in research and development (R&D) have increased by 20% a year since 1999. R&D investments as a percentage of GNP are at 1.5%, which means that China is already close to achieving the level of investment that applies in the Netherlands. In absolute terms, the figure is EUR 80 billion a year. The Chinese government is aiming to achieve a percentage of 2.5% by 2020. China would then equal the United States and Europe in percentage terms and be the world's largest R&D player in absolute terms. In addition, there is a good foundation to achieve this aim in terms of knowledge workers. In 2007, China had as many scientific researchers as the EU or the United States, whereas now it probably has a lead. China is becoming an increasingly important centre of knowledge and innovation, and this has consequences for the rest of the world.
2. The rise of China is already important to the Dutch and European economies and the nation may become far more important in the future. CPB Netherlands Bureau for Economic Policy Analysis estimates that exports to China account for 0.5% of Dutch GNP. Exports have doubled since 2005 and many Dutch companies view China as one of the most important markets where they expect growth. China is also of indirect importance in this regard, however, for example through Dutch exports to German producers that subsequently sell their products in China. If these indirect exports are also taken into account, the value of exports to China increases to 0.7%. In addition to direct exports, cooperation with China has added economic value in other ways, for example in the form of more efficient production processes as a result of cooperation with Chinese companies, trade flows from China that pass through the port of Rotterdam and Chinese investments in the Netherlands. China's rapid rise is comparable to that of Japan in the 1980s and 1990s and that of South Korea at around the turn of the century. The Chinese economy is larger and its impact will therefore be greater. At present, however, the European market is considerably more important to the Netherlands than China.
3. The Chinese government has ambitious plans in the field of knowledge and innovation and aims to make China one of the top five most innovative economies by 2020. Chinese aims in this regard are not 'soft' targets. They are significant hard targets that are almost always achieved and for which the government puts clear plans in place. The twelfth Five-Year Plan presented in March 2011 focuses strongly on economic restructuring, environmental and energy efficiency and science. Scientific development and 'a move up the value chain' are at the heart of this Five-Year Plan. This is shown by, among other things, the Chinese government's considerable efforts to increase the number of patent applications. Each year, the Chinese government specifies the countries that it has overtaken in the world rankings of patent applications. China is currently third, behind the United States and Japan.
4. Although China wants to cooperate, its long-term aim is to become self-sufficient. In the Chinese government's own words, the success of the twelfth Five-Year Plan depends on science and technology and indigenous innovation capacity. The Chinese government aimed to make China a nation of knowledge and promote indigenous innovation already in the previous Five-Year Plan. China wants to be less dependent on foreign knowledge, scientists and companies. In other words, it wants to move from a situation of only 'Made in China' to one of also 'Invented in China' or 'Designed in China'. To promote indigenous innovation, the Chinese government is encouraging students and researchers to complete periods of study or work at American and European universities. In addition, Western researchers are invited to teach and carry out research in China. Chinese companies are

increasingly making targeted investments abroad, a key aim of which is to gain access to essential knowledge and technologies. The question is how long China will still require cooperation with the United States and Europe, since its long-term aim is to become independent of foreign countries.

5. There is already a lot of cooperation between the Netherlands and China. Dutch companies, knowledge institutes and government authorities have been following developments in China for a number of years. In most cases, cooperation between knowledge institutes takes the form of personal relationships between researchers and professors. However, the number of institutionalised cooperative arrangements (Memoranda of Understanding, or MOUs, auxiliary branches in China of Dutch universities or knowledge institutes) aimed at the long term are increasing. Joint education and research programmes are being launched, professors give guest lectures in each country and companies are establishing research and innovation centres in China. Virtually all provinces and approximately 20 cities maintain relations with Chinese sister provinces and cities that, through missions and projects, are becoming more active. Members of the Dutch business community take part in trade missions.
6. Dutch businessmen and women see opportunities for increasing imports, exports, outsourcing or other activities in the rise of China as a nation of innovation. The majority of companies active in China intend to further expand their operations in the coming years. Dutch multinationals have established a large number of branches in China, in the first instance on the basis of market-related considerations and because they are increasingly coming to view China as a reservoir of research talent. Conversely, China is also investing in Europe. Seventy-seven acquisition deals, worth USD 17 billion, were concluded in 2011, more than in previous years. In the Netherlands, Inalfa Roof Systems, a manufacturer of vehicle roof systems, was acquired by Chinese state-run enterprise Beijing Hainachuan Automotive Parts (BHAP), while Groningen-based Amca was acquired by XCMG FT Hydraulics. There are other examples, though the situation is as yet not one of a wave of acquisitions. Observers nevertheless conclude that access to knowledge and technology is the primary motive of Chinese investors. The Dutch government is making explicit efforts to attract top Chinese companies. In 2011, almost 300 Chinese companies established branches in the Netherlands, thereby creating approximately 5,500 jobs.
7. Although cooperation serves many economic and social goals, it is also a goal in itself. Cooperation strengthens Sino-Dutch relations and fosters mutual understanding and the willingness of both countries to learn from each other. 'Knowledge diplomacy', improving relations through the exchange of knowledge, is of key importance. Scientific cooperation was and is one of the bases on which the relationship with China was built. The Ministry of Education, Culture and Science has been investing in this relationship since the 1980s, which has led to many jointly funded research and exchange programmes, new knowledge and long-term professional relationships.
8. The government has a role to play in ensuring that cooperation with China is optimal. While cooperation can be valuable to a range of individual companies and knowledge institutes, it does not automatically follow that cooperation is always good for the Netherlands as a whole. An opportunity for one can mean a threat to another and vice versa. While a company may see potential in China and seize opportunities, doing so may at the same time be detrimental to employment in the Netherlands or cancel out our lead in knowledge. One of the duties of the government is to safeguard the balance to the greatest extent possible. A clear view of the interests of the Netherlands as a whole is required for this purpose. A certain degree of control may also be necessary to coordinate the respective activities of Dutch companies, local authorities and knowledge institutes. However, the central government should not be at the helm, or at any rate should not be exclusively at the helm: the initiative should be taken by companies, knowledge institutes and others in an autonomous way.

9. In spite of the economic crisis, increasing globalisation remains the most likely scenario for the future. The continuation of globalisation is not a certainty, however. It is possible that China will focus less on cooperation with the United States and Europe and become more inward-looking. It is likewise possible that a new protectionism will emerge in the West as a result of the economic crisis. The council wishes to take this possibility into account in the advice set out in the present document. In situations in which the global economy stagnates or becomes more regionally oriented, scientific cooperation can in principle always be a valuable foundation for good relations. This foundation requires continuous maintenance, however.

SCIENCE: HIGH PEAKS, GROWING FOUNDATION

10. China has high scientific ambitions. It wants to be in the global top five in terms of scientific citations in international journals. The scientific foundation must be strengthened for this purpose. The Chinese government has designated a group of 39 universities that must become among the world's best (Project 985) and thereby strengthen the development and reputation of Chinese science. These universities receive large amounts of national and local funding for research centres, facilities, international conferences, attracting international top researchers and awarding scholarships to Chinese students. Universities like Tsinghua University, Peking University, Fudan University, Zhejiang University Hangzhou, Shanghai Jiao Tong University and Wuhan University are already internationally recognised as being very good ones.
11. The preconditions for successful science are present in China and its scientific potential is enormous. There are over 2,000 higher education institutions and the number of Chinese students has increased fivefold in the last ten years. The latest reliable figures indicate that approximately 350,000 engineers graduate in China each year. Together with government investments in higher education and science, important conditions are present for the development of a solid scientific foundation. At present, 1.27 million Chinese students are studying abroad. Of the 1.9 million students who studied abroad between 1978 and 2010, 'only' one-third returned. The government is therefore making it increasingly attractive for Chinese researchers working abroad to return to China. Among other things, these highly skilled workers are being 'tempted' by the latest research infrastructure. The return of Chinese researchers is increasing the quality of science. Using their own networks, they also draw other researchers from the West to China. With this goal in mind, the Chinese government launched a new programme, the 'Thousand Talents Plan', already in 2008. The aim of this programme is to attract 2,000 highly talented foreign individuals who will then be given specific assignments within Chinese knowledge institutes and companies for terms of five to ten years. China is welcoming all top researchers who are losing their jobs in the West because of the current budget cuts with open arms. In addition, there are already over 1,200 foreign R&D centres in China. The return of Chinese researchers may prove to be one of the pillars of China's future economic success.
12. In China, applied research is encouraged more than fundamental, curiosity-driven research. The research carried out in China is usually aimed at solving technical problems rather than exploring new issues. The 'Science & Technology Roadmap 2050' identified six themes that are essential to international competitiveness. Most of these concern technological and application-oriented areas of research. The new Five-Year Plan focuses on a large number of knowledge and technology domains, principally the fields of life sciences, ICT, high tech and means of transport. Applied research is not being emphasised at the expense of fundamental research, however. The budget for the latter kind of research was recently doubled.
13. Science in China has high peaks and a growing foundation. Most Dutch experts see both high peaks and progress across the board. China is playing an increasingly larger role in the international scientific

community. According to the journal *Nature*, the quality of Chinese research is increasing, a development evidenced by the increasing number of publications in leading journals like *Science* and *The Lancet*. Bibliometric analysis reveals that China excels in material sciences and life sciences. Works in the fields of agriculture and life sciences like immunology, microbiology, molecular biology and genetics account for the largest increase in scientific publications. The best students and researchers in China are often better than the best students and researchers in the Netherlands. This is not altogether surprising, since the reservoir of knowledge and talent in China is many times larger than that of the Netherlands.

'CHINNOVATION'

14. China aims to become an international leader in a number of industries. Just like the Netherlands, China is focusing on specific sectors to achieve sustainable growth. The twelfth Five-Year Plan specifies seven focus industries that include a total of 37 subindustries. The seven industries are 'Alternative Energy', 'Clean Energy Technology', 'Clean Energy Vehicles', 'Next Generation IT', 'Biotechnology', 'High-End Equipment Manufacturing' and 'New Materials'. The first three have clear environmental and energy-related aims. The other four support China's aim of becoming a knowledge economy. The seven focus industries exhibit overlap with the Dutch top sectors, particularly with High-Tech Systems and Materials, Life Sciences and Energy. There are a number of subindustries within the Chinese focus industries that overlap with the Water, Life Sciences and Health, Chemical Industry, High-Tech Systems and Materials and Agro and Food top sectors.
15. A number of important conditions for successful innovation are present in China. There is motivation, ambition, talent and a lot of capital to finance innovation. The Chinese government has taken measures to encourage the commercialisation of research. For example, researchers are encouraged to set up their own companies, venture capital is made available, technology is systematically transferred to state-run enterprises, there are tax instruments for new companies in the strategic sectors and researchers are entitled to part of the patent and licensing proceeds to promote commercialisation. The increased prosperity on China's east coast means growing demand for innovative domestic brands that are cheaper than the products of Western competitors, which focus mainly on the high-end market segment. Better protection of intellectual property was one of the measures that innovation had to promote. Since Chinese innovative capacity is now increasing, Chinese researchers and companies also have an interest in proper intellectual property protection. The number of Chinese patents is increasing spectacularly. This increase can in part be explained by the incentives provided by the Chinese government to apply for a patent. Nevertheless, the sharp increase in the number of patents indicates growing innovative capacity and the need for intellectual property protection. Enforcement of intellectual property law is becoming increasingly consistent, though major differences remain between Chinese regions.
16. Innovation in China occurs differently than it does in the Netherlands. The Chinese innovation process is sometimes referred to as 'Chinnovation'. In China, innovation often concerns cost efficiency more than new concepts or products. China is good at the cheap production and rapid marketing of products and concepts that have been invented elsewhere. Through 'reverse innovation', cheaper alternatives with almost the same level of quality are produced and, although sold first in rapidly growing markets (South America, Africa and China itself), may also be offered in the Dutch market at a later stage. The Chinese innovation process itself differs as well. Experiments are set up on the basis of a concrete objective (water purification or eco-cities, for instance). Researchers then introduce improvements through trial and error. Chinese attach great importance to showcases (proof of principle). China can therefore be an attractive area of research for Dutch researchers.

17. There may also be barriers to China's growth to the top. A number of analysts believe that China will never be able to achieve a truly top position. They assert that a culture of copycat behaviour is too deeply rooted in society. Moreover, the education system is geared towards the reproduction of knowledge rather than towards creativity or the solving of complex problems. The innovative capacity of the Chinese population will therefore not come to full fruition for now. Some identify the less developed ability to cooperate in Chinese culture as the cause of this situation. The Chinese way of working is very hierarchical, whereas it is precisely through cooperation and the bringing together of concepts in a new way that innovation is achieved. Although these views and experiences must be taken into account, the council is of the opinion that China's innovative capacity should not be underestimated as a result.
18. 'Chinnovation' must be viewed as a permanent phenomenon. China's spectacular growth alone and all the social changes that this growth entails indicate tremendous innovative capacity. In this context, one can consider Japan, which was a country with a culture of imitation in the 1970s but went on to become a global leader in technological development in the 1980s and 1990s. It is important for the Netherlands to look closely at thematic overlap with the top sectors. Although China will become a formidable competitor in a number of areas, others will provide opportunities. Where Dutch knowledge and innovation complement Chinese aims, cooperation can be beneficial to both sides.

COOPERATION PROVIDES OPPORTUNITIES...

19. China will focus strongly on international cooperation in the coming years. In the twelfth Five-Year Plan, the Chinese government sets out the aim of increasing the level of education programmes and science and, in this context, wishes to intensify international cooperation in the field of science and innovation. The 2011 budget of the Ministry of Science and Technology (MOST) for international cooperation was EUR 175 million and will increase in the coming years. Chinese students and researchers study and work at American and European universities and Western researchers are invited to teach and carry out research in China. In addition, an increasing number of targeted investments are being made abroad, a key aim of which is to gain access to essential knowledge, technology and know-how. The Chinese government also realises that it requires domestic and foreign knowledge and innovation for a number of challenges that Chinese society will have to deal with in the coming years. Examples in this regard include food supply and security, population ageing, urbanisation and energy supply. There is considerable interest in Western knowledge that can help in overcoming these challenges. China is therefore reaching out to the international community and it is up to countries like the Netherlands to accept the hand thus extended and embrace the opportunities and challenges of doing so.
20. Cooperation in the field of science and innovation serves many purposes. First, cooperation can accelerate progress in the development of knowledge and technology that is useful to society, such as new medicines or sustainable energy. Second, cooperation and the exchange of knowledge provides access to Chinese research talent, Chinese knowledge and Chinese research infrastructure. Third, cooperation in the field of innovation can shorten the time to market of new products and make production processes more cost-efficient. Fourth, important spin-offs may be created, cooperation may give access to Chinese capital and the rapidly growing Chinese market, and cooperation may lead to new export opportunities and orders in the transport and logistics sector. Last but not least, cooperation in the field of science or social challenges can contribute to the building and strengthening of the foundation on which Sino-Dutch relations rest. Chinese students and researchers who have lived in the Netherlands and return to China can be good ambassadors for the Netherlands. Foreign students, and Chinese students in particular, contribute to what is referred to as the

'International Classroom' in the Netherlands and therefore to the international orientation of Dutch students. Dutch researchers, professors or students who go to China also contribute to mutual understanding between the two countries. In addition to the economic interest, the council wishes to underline the importance of human relations.

21. The Netherlands is relevant to China. The quality of Dutch education and research is held in high regard in China. The ITT study shows that Chinese researchers particularly appreciate the open culture in the Netherlands and the ability of Dutch institutions to rapidly convert knowledge into applications or products. China can participate in projects within the context of the European Seventh Framework Programme (FP7) for research as a 'third country'. The Netherlands cooperates extensively with China through FP7 and is among the top five EU countries with which China cooperates, the others being the United Kingdom, Italy, France and Germany. Regarding the number of scientific publications in the period 2004-2008, the Netherlands was the ninth country in relation to China in terms of the number of joint publications (fifth in Europe, after Germany, the United Kingdom, France and Sweden). China recognises and acknowledges that the Netherlands excels in a number of fields. The Netherlands has a good reputation particularly in the field of Agro and Food. It is no coincidence that the Dutch Agricultural Research Service (DLO) is China's number one partner in FP7 (2007-2010). The Netherlands also enjoys a good reputation in Water and High-Tech Systems and Materials, though appears to be less distinctive relative to other European countries in these fields than it is in Agro and Food. The Netherlands is also relatively attractive to Chinese students. Encouraged by the Chinese government to do so and in order to improve their own career prospects, many Chinese students study abroad. In 2010, 1.27 million Chinese students were doing so, of which approximately 5,500 in the Netherlands. Nine of the ten Chinese students who study abroad do so in the United States, Australia, Japan, the United Kingdom, South Korea, Canada, Singapore, France, Germany or Russia. The Netherlands is the fourth country of destination in Europe. Although Delft University of Technology and Wageningen University are the favourites, other universities also welcome many Chinese students each year, a process supported by the Netherlands Education Support Office (NESO). According to NESO, other universities that successfully recruit Chinese students are those of Groningen, Maastricht and Tilburg.

...BUT IT IS NOT ALWAYS EASY...

22. Although there are virtually no examples of failed cooperation with China, a large majority of Dutch innovative companies certainly experience problems and hindrances in this cooperation. Lack of familiarity with the language and culture is the most important problem. Legislation and regulations and finding suitable partners are also problematic. Moreover, large enterprises regularly experience problems with respect to intellectual property protection. Administrative and bureaucratic red tape is a frequently cited complaint. SMEs regularly experience problems in terms of the disappointing quality of products and the failure of Chinese partners to perform agreements. Operating together with Dutch and European partners can help in this regard. However, although Dutch companies recognise the added value of doing so, the EIM study shows that joint operations of this kind are as yet uncommon. Nevertheless, these problems do not make cooperation impossible and solutions have of course been found in practice. For example, knowledge can be protected by not bringing the latest generation technology to China or by having different parts of a product manufactured by different companies – and possibly adding a final, key part in the Netherlands – so that no one in China has a complete overview. At the same time, however, it is important to keep matters in perspective. Being copied can also be a good sign, since it suggests that the product is actually good. In addition, knowledge does not always have to be protected. If Dutch companies or institutions are not using it, knowledge can be commercialised and sold in China without any risks.

23. The cooperation between the Netherlands and China is not bilateral and balanced in all respects. Until now, it remains the case that Dutch knowledge institutes primarily take research capacity from China (people and the use of research infrastructure) and bring knowledge and technology to China (through Chinese students or researchers who return to China or through visiting professors). Although obtaining knowledge applies to a lesser extent, there are of course prominent exceptions, such as knowledge pertaining to Traditional Chinese Medicine (TCM). Many Dutch universities, often in competition with each other, actively profile themselves in China in order to recruit students. In the Netherlands, China, which accounts for 5,500 students, is already the second country in terms of foreign students, after Germany. Conversely, not many Dutch students as yet go to China. According to the latest figures, there are only 300 Dutch students studying in the whole of Asia. This situation will probably change in the near future, however. An initiative of Utrecht University and Delft University of Technology is encouraging Dutch students to attend summer schools in China in an early phase of their studies. There are a lot of Chinese researchers in the Netherlands, many of them doctoral candidates. Dutch researchers are also active in China, though in a different way. Usually they remain there for a few days or weeks for lectures or field research. Exchanges for longer periods of time are less common, mainly because Chinese research, in spite of clear achievements, is not as yet generally held in high regard and, in terms of their careers, it is therefore more logical for researchers to go to the United States or the United Kingdom. Unequal cooperation may become a real issue, all the more so because it is reasonable to expect that an increasing number of scientific breakthroughs will be achieved in China in the near future and beyond.
24. Although Chinese companies can participate in Dutch and European R&D programmes, in practice, Dutch and European knowledge institutes or companies have virtually no access to Chinese R&D programmes. This applies even to their R&D laboratories located in China. Several Dutch knowledge institutes and companies have made efforts to participate in Chinese programmes. Reciprocal access to each other's research programmes is also a high priority to the European Commission. A considerable amount of information on access to Chinese research programmes is available.
25. The Chinese language and culture – or, more precisely, Chinese languages and cultures – are not very accessible to Dutch businessmen and women and knowledge workers. The EIM study referred to earlier specifies language and culture as the most important barriers, far more important than the intellectual property rights issue, for example. In the United States, interest in studying Chinese and learning about Chinese culture is increasing at schools. This is not so much the case in the Netherlands, even though there is a pilot programme that will run until 2013 in which Chinese is being taught at ten secondary schools. Dutch people generally do not know much about China and, conversely, Chinese people do not know much about the Netherlands. However, there is an awareness of and interest in the performance of Dutch universities. In addition, the Chinese are becoming increasingly knowledgeable about Western culture and a growing number of them are mastering English.
26. In terms of scale and size, China cannot be compared with any individual country in Europe. The more accurate comparison would be with Europe as a whole or with the United States. Cooperation from the Netherlands therefore does not by any means always have to focus on the central level. Sometimes regional or provincial level is better. China consists of different regions that are all larger than the Netherlands. There are also major differences between these regions. Each region has its own set of opportunities and challenges. The greatest opportunities can be found in the Yangtze River Delta (around Shanghai and the provinces of Jiangsu and Zhejiang) and the Greater Pearl River Delta (around Hong Kong, Macao and the province of Guangdong), as well as in the 'second-tier cities' like Dalian, Tianjin, Jinan, Qingdao, Nanjing, Wuhan and Kunming. Development in Central and West China are also proceeding rapidly, as a result of which opportunities are increasing in cities like Chengdu,

Chongqing and Xi'an. Dutch companies operate throughout China: of the 500 companies surveyed by EIM, almost 60% are based in five cities (Beijing, Shanghai, Hong Kong, Shenzhen and Guangzhou). Outside this top five, there is considerable distribution in terms of the locations at which companies operate. There are also differences between the top sectors: a relatively high number of companies in the Energy and Logistics sectors are based in Shanghai, while companies in the Life Sciences and Health, Creative Industry and Horticulture and Starting Materials sectors are relatively more often based in Beijing.

27. In terms of scientific knowledge, China currently needs the Netherlands more than the other way round. However, if the quality of Chinese science continues to increase, the Netherlands will be relatively less necessary to China in the future. China will also increasingly cooperate with other Asian countries in the field of science. Increasing cooperation with, for example, Japan, South Korea, Singapore and Australia is already visible. The Netherlands will continue to need China in economic terms. The council expects that cooperation will not always be balanced in the future and that the Netherlands will at times need China more than the other way round. Although this situation makes cooperation difficult at times, it does not by any means make it impossible. It is precisely the differences between countries that can make cooperation productive and mutually beneficial.

...AND THEREFORE ALSO ENTAILS RISKS

28. Cooperation is useful, difficult at times and also entails risks. For companies, cooperation with China differs from cooperation with other countries. The Chinese play the game according to different rules; rules that can also change rather suddenly. Although progress has been made, legitimate concerns remain about the protection of intellectual property. In addition, Chinese investment policy is restrictive, based as it is on a limited 'investment catalogue' that determines what is possible for foreign investors. Companies that wish to compete for government contracts are obliged to register their intellectual property rights in China, a requirement that constitutes a major barrier. China has export restrictions and taxes that are sometimes contrary to existing international agreements in this area. In some cases, the export sector is also heavily subsidised by state-owned banks with a view to creating what are referred to as 'national champions'. There is therefore no level playing field.
29. For the Netherlands as a whole, there is the risk that the rise of China as a nation of knowledge and innovation will lead to a shift of the R&D 'centre of gravity' towards China. Cooperation with China may even accelerate this process. Many Dutch multinationals establish R&D centres in China and investments in China are usually higher than investments in the Netherlands. Chinese acquisition of Dutch knowledge-intensive companies is also a risk, though there is likewise no need to immediately fear the worst in this regard. An acquisition does not automatically mean that the knowledge concerned also leaves the Netherlands. In the case of companies that are solidly embedded in a knowledge and innovation ecosystem, the new owner is less likely to remove the knowledge and facilities from the Netherlands. If such removal does take place, however, it can have very negative consequences for the Dutch or regional knowledge and innovation system. The question is how the Netherlands can protect itself against negative consequences of this kind. Is it enough to ensure as much dynamism and diversity as possible in the ecosystem so that is always attractive for a foreign investor to leave R&D in the Netherlands? Or is it necessary, by analogy with the financial system, to consider crucial knowledge as being system knowledge? The council is of the opinion that although dynamism and diversity provide protection, it is uncertain whether this kind of kind of protection is enough. Other countries, like Germany, for example, seem to be more active in the protection of their knowledge-intensive companies.

30. Knowledge institutes do not see many risks in cooperation with China, since they are focused on the exchange of knowledge and assume *bona fide* counterparties. There are examples of cases in which the exchange of knowledge appeared to be less innocent but these are rare. The careful selection of students, PhD candidates and researchers is necessary but does not provide any guarantee. More generally, questions can also be asked about the influx of Chinese students. Is attention being given to recruiting Chinese students at the cost of ensuring a programme's attractiveness to Dutch youth? This can sometimes be the case if the numbers are large or excessively large. On the other hand, a programme can also become more attractive and better because of the presence of ambitious Chinese students. The council considers careful evaluation necessary. As stated in consideration 20, universities benefit from cooperation with their Chinese counterparts. It is important to continue investing in the relationship, since it could end if the Netherlands fails to ensure continuity or if other countries cooperate more effectively in the same areas as the Netherlands. There would then be little or no return on investment in the cooperation. This would also be the case if China ends the cooperative relationship once knowledge has been tapped and the knowledge reservoir of the Netherlands is empty.
31. The council sees potential disadvantages and risks in cooperating with China. At the same time, however, the council observes that not cooperating with China or a closing off from China would also entail disadvantages. If Dutch companies and knowledge institutes do not cooperate with China, others will. China is being flooded by European companies and representatives of European universities. In the words of a German official, 'China is an unavoidable opportunity', and this was certainly true for the German car manufacturing industry, which opted to cooperate with China at a time when countries like the United States and Japan did not dare to do so and feared that knowledge and technology would be copied. The result is that German cars are now commonly seen on Chinese roads, Volkswagen and other German car manufacturers have enormous production facilities in China and Sino-German cooperation in the development of electric cars is very promising. In spite of the major risks that it continues to face (China would like to develop its own car manufacturing industry), the German car manufacturing industry believes that there is no option other than to cooperate and jointly develop electric cars.

OPTIMAL COOPERATION

32. Cooperation with China can be optimised by introducing greater continuity and focus. A good example in this regard is the approach being taken in the Strategic Alliances Programme, which will run for approximately 15 years and is thematically focused. China appreciates this theme-based approach, particularly the long-term commitment. Greater continuity and focus requires greater coordination within the Netherlands. The Dutch innovative business community, universities, all provinces, all ministries and many cities cooperate with China. Unfortunately, these activities do not always reinforce each other and sometimes even obstruct each other. For Chinese consultation partners, it is difficult to understand why municipalities, universities and companies approach them separately and in turn. It is no longer clear who or which institution is the most important point of contact. For Dutch supervision in China, it is not optimal to introduce a different mayor or dean on each separate occasion. Visits to China could be made more effective for all involved if the Dutch parties concerned made use of each other's insights, contacts, knowledge and so on. Although the council recognises that a degree of competition between, for example, universities seeking to recruit Chinese students can be productive, such competition does not necessarily preclude cooperation. In the EIM study, Dutch innovative companies state that they wish to cooperate more with other Dutch and European companies in response to the rise of China as a nation of innovation, in order to maintain their own knowledge and innovation positions and their leads in this regard. The Chemical Industry top sector

states the same in its plans of June 2011. The council observes that steps are already being taken towards greater coordination. A good example of a joint, theme-based approach is the 'Point-One Goes China' programme, part of the former 'Point-One' innovation programme. In the context of this programme, a group of companies and knowledge institutes developed a joint approach towards China based on the themes of nano-electronics, embedded systems and mechatronics. Another example of a joint approach can be found in the Chemical Industry, where cooperation in recruiting Chinese talent is taking place through the Dutch Polymer Institute.

33. Based on, among other things, the ITT study, the council observes that there is a wish in China to scale up cooperation with Dutch knowledge institutes. Research cooperation with China is supported by the Dutch government through a range of programmes conducted by the Netherlands Organisation for Scientific Research and the Royal Netherlands Academy of Arts and Sciences. Research cooperation with China also takes place through European Framework Programmes. The Ministry of Economic Affairs, Agriculture and Innovation supports companies in their innovative cooperation with China through the 'International Innovation' scheme. From a Chinese perspective, the budgets for these programmes and schemes are extremely limited. Partly because of the fact that the Chinese budget for international cooperation will increase very substantially in the coming years, there is a need in China for a scaling up of international cooperation projects. The ITT study shows that Chinese partners experience the cooperation with Dutch researchers as low-profile and focused on the short term, with limited involvement of the Dutch government and limited financial commitment on the part of the Netherlands. It is often the Chinese partners who wish to intensify and expand cooperation. According to these partners, Dutch parties are not always interested in doing so. This could have to do with the fact that budgets for cooperation are distributed across different universities and, within these universities, across different faculties and research groups. Cooperation with China is funded from different sources also within the Netherlands Organisation for Scientific Research. In Chinese terms, each source is limited and their respective impacts therefore remain limited. The Netherlands will have to take steps in order to be able to meet the need for a scaling up of cooperation.
34. Optimising cooperation also requires greater awareness of the Netherlands in general and of its knowledge and qualities in particular, in China. To the extent that the Chinese are aware of the Netherlands, this awareness is usually based on football, windmills, tulips and cheese. Relevant players in China are not really aware of the Netherlands as a nation of knowledge and innovation. The Chinese business community is aware of the Netherlands as an access point to Europe and because of the country's good trade and logistics systems. Members of the business community are also aware of Philips but do not perceive it as a Dutch multinational. Students and researchers are in particular aware of Delft University of Technology and Wageningen University. In China, the European country best known as a nation of knowledge and innovation is Germany. There is a great deal of respect for Germany's technological capacities. Switzerland also enjoys a good reputation, mainly because of a number of good universities and strong companies. In terms of their 'branding' with respect to China, the Scandinavian countries have united and present themselves as the 'Nordic Countries'. They seem to be achieving great success through this approach. As a group, the small and medium-sized countries of Northwest Europe are becoming increasingly known in and important to China, though the Netherlands is as yet not a unique player within this group. In this context, the Netherlands suffers from a relative lack of original equipment manufacturers (OEMs), a limited number of global brands like Philips and Heineken and the fact that Dutch universities are not in the world's top 30. The Netherlands will therefore have to do more to increase its profile in China. Reference is often made in this regard to the importance of being physically present in China.
35. Europe can contribute to the optimisation of cooperation with China. A more joint approach in Europe to cooperation with China would open up opportunities. Europe provides a framework for scientific

cooperation between European countries and China (through FP7 and the Strategic Forum for International S&T Cooperation, SFIC). In practice, however, a joint approach towards China in the field of knowledge and innovation is still the exception rather than the rule. In a number of cases, Member States prefer to keep their cards close to the chest rather than share contacts, networks and access to China. This certainly applies to the EU's larger Member States. Nevertheless, Europe is important to the Netherlands for a number of reasons. First, there are opportunities to make information in fields that are still at a great distance from the market and commercialisation accessible. An example in this regard is identifying the qualities of Chinese universities and faculties. A second reason for stronger cooperation within Europe is the EU's negotiating power in terms of securing access for European companies and knowledge institutes to Chinese R&D programmes. A third reason is the weight of the EU. Trade disagreements or disagreements about intellectual property rights would not have to affect the Netherlands' relationship with China because the EU is competent. A joint European approach, also with respect to human rights and diplomatic relations, would be more effective. Fourth, the Netherlands could profile itself as the 'Gateway to Europe'. Although Dutch knowledge, facilities and infrastructure are attractive to China in themselves, any opportunity to increase the profile of the Netherlands as an access point to a much larger European reservoir of knowledge would only be favourable.

THE ROLE OF THE GOVERNMENT

36. The government can contribute to better cooperation with China. In the council's opinion, a government has three good reasons for doing so. First, the Chinese government plays an important role in concluding contracts, certainly as regards current and former state-run enterprises, in respect of which Dutch government representation is also desirable. Second, the situation is one of information asymmetry, particularly for SMEs. The government can play a role in providing information to Dutch companies. Third, good relationships with China mean spillover effects. Companies must make tremendous efforts to build up a good relationship with China. Others may later profit from these efforts for free. This is an argument in favour of supporting companies in building up relationships with China. However, good branding is required to ensure spillover effects.
37. Economic presence is an important instrument of the Dutch government. The Chinese government plays an essential role in the cooperation between Dutch and Chinese companies and/or knowledge institutes. The presence and involvement of Dutch government authorities (central, provincial or municipal) is often useful and necessary to increase the chance of successful cooperation. The government can open doors that would otherwise remain closed. Nevertheless, if the Dutch government wishes to play an effective role, it must be capable of making decisions quickly in order to keep up with the Chinese pace. In China, the role of provinces in particular is promising because the most important investment decisions are often made by provincial authorities. However, the EIM study shows that two-thirds of companies do not consider the role of Dutch regional authorities to be important. In addition to bilateral economic diplomacy, the government can also use multilateral economic diplomacy to bind China to the multilateral system, for example by concluding free-trade agreements to secure further market access for the Dutch business community.
38. Information is crucial. For companies, however, collecting the information required to be successful in China is very expensive and sometimes impossible. The provision of information and a possible degree of guidance are then important. Priorities are required also in this regard. Although large companies know what they are doing, this is not always the case with respect to smaller companies. For the latter group, the main challenges are finding good partners and dealing with the Chinese culture of cooperation. The provision of information about the way of working in China and support in finding

good partners would therefore be useful to prevent unnecessary failures. This information does not always have to be provided by the government. Half of the 500 innovative companies surveyed by EIM use their own network to obtain information. Nevertheless, in practice, extensive use is made of the information provided by Chambers of Commerce, NL Agency, Dutch embassies and Netherlands Business Support Offices (NBSOs). Commercial services in the area of identifying and selecting suitable cooperation partners for companies and knowledge institutes are already available in the Netherlands, though these services are currently provided only on a small scale and are probably too expensive for small companies in particular.

39. Holland branding helps. Every Dutch organisation that cooperates with China in the field of knowledge and innovation benefits from the awareness and image of the Netherlands as a nation of knowledge and innovation and also contributes to this awareness and image. The national government is particularly suited to play a role in this regard. Aspects of Holland branding are already being handled well to very well. NL Agency and the NBSOs in China engage in Holland branding for innovative businesses, while the Netherlands Education Support Office (NESO) does so for universities and higher education institutions. NESO's approach is viewed by other countries as a best practice. Nevertheless, the council observes that Holland branding can still be improved by better coordination of these different initiatives.
40. If the government opts for a policy of intensifying and optimising cooperation with China, it will have to safeguard the interests of the Netherlands as a whole. Cooperation provides opportunities and entails risks that are not always equally divided. Investments flow back in the form of economic value and contribute to the solution of global social challenges. In addition, in spite of the loss of jobs in a few industries, cooperation with China may ultimately have a positive net effect on employment. Nevertheless, it is important to properly consider the disadvantages and risks, especially if they threaten to affect employees and researchers whose experience and knowledge makes them more vulnerable in terms of securing employment.
41. The most important contribution that the government can make to optimising cooperation with China is probably in the Netherlands, since good cooperation requires sufficient investments in the knowledge base in the Netherlands. Only then will the Netherlands remain interesting to China and only then will the Netherlands be able to handle the increasing competition with China. In addition to investments in the knowledge base, the knowledge and innovation systems must also function properly; companies, knowledge institutes and government authorities must be able to find each other, jointly develop visions and strategies for the future and jointly approach foreign countries. A properly functioning knowledge and innovation system with mutual dependence is also a protection against potentially negative consequences of foreign acquisitions of innovative companies that fulfil a 'system function'.

THE NETHERLANDS CAN LEARN FROM OTHER COUNTRIES

42. Other European countries appear to make greater efforts with respect to cooperating with China than the Netherlands. Cooperation between Germany and China in particular is intensifying, as evidenced by, among other things, the visit paid by Chinese Premier Wen Jiabao to Germany in the summer of 2011 together with 13 of his ministers. In October 2011, the first Sino-German Innovation Conference took place and the Sino-German Innovation Platform was set up. The purpose of this platform is to function as a long-term mechanism for innovation dialogue between the two countries and provide a framework for bilateral cooperation in the field of knowledge and innovation. The Sino-German Center for Research Promotion was established in 2000 to strengthen scientific cooperation between both countries. The Nordic countries also take a strategic approach to cooperation with China.

Between 2006 and 2010, more funding was provided by the National Natural Science Foundation of China (NSFC) to cooperation projects with Sweden, Denmark and Finland than to such projects with the Netherlands. Although it was not possible to ascertain the budgets of these countries for cooperation with China, the impression is that the Netherlands does not equal their efforts.

43. Most countries in Europe are increasingly opting for a theme-based approach to their cooperation with China. A few examples in this regard are:

- Germany: E-mobility, Clean Water, Life Sciences and Health. Additional theme-based cooperation takes place through institutes (Max-Planck, Fraunhofer, Helmholtz and so on) in the fields of, for example, environmental technology, micro-electronics, production systems and energy technology;
- Denmark: water and sustainability, renewable energy, nanotechnology, life sciences, social sciences;
- Sweden: green growth, life sciences, materials, transport and communication, ICT;
- Switzerland: the environment, materials, nanotechnology, life sciences, medical sciences.

These themes overlap to a considerable degree with Dutch strengths and the themes selected in the Netherlands Organisation for Scientific Research and the Royal Netherlands Academy of Arts and Sciences programmes of recent years (such as biotechnology, the environment, materials, water management, biomass, medical technology, nano-electronics, embedded systems and green genetics).

44. The Netherlands can learn from a number of countries. A few examples in this regard are:

- Sweden devotes considerable attention to monitoring (intelligence) the science and innovation policy in China. In addition, extensive attention is devoted to human rights in the Swedish 'Strategy for selective cooperation with China, 2009-2013', the central instrument of which is a Sino-Swedish institute for scientific cooperation in the field of human rights. There are also other Swedish 'signboards' in China, such as a knowledge centre for environmental technology;
- Denmark has had a national strategy since 2008 in which its government clearly states its commitment. Merely having such a strategy makes a difference. In this context, Denmark has a physical presence in Shanghai with the Danish Innovation Center. A point to note is that this centre offers the opportunity to provide services to Danish SMEs at cost price. Finally, Denmark also shows that it is possible to combine capabilities with respect to China;
- The Scandinavian countries have joined forces as 'Nordic Countries', with a visible presence in China on the campus of Fudan University in Shanghai. They therefore provide a platform for students, researchers and companies that want to come to China for scientific and/or innovative cooperation;
- The German approach is characterised by strategic, long-term commitment on the part of companies, universities, institutes and states. Germany devotes considerable attention to education and scientific and industrial cooperation with China. The German government has a strategy to help companies to seize opportunities in China. In exchange, it asks German R&D-intensive companies to continue investing in Germany. The federal government ensures contacts with China at top level, among other things through yearly or two-yearly meetings of government committees that coordinate cooperation in education and science in different thematic areas. Germany also devotes considerable attention to its branding in China;
- The Research Councils in the United Kingdom have successfully used summer schools to promote the exchange of students;
- Switzerland shows that a country's profile can be raised in China by having global brands like Swatch. Switzerland also shows that the global ranking of universities matters;

- The United States relies on the market and shows that if the right preconditions are in place, government intervention is not always required.

It is striking that all of the European countries referred to do not have much faith in fruitful cooperation in a European context in the short term but are nevertheless open to European and multilateral cooperation.

A STRATEGY IS REQUIRED

45. The exchange of knowledge is of great importance to dealing with global social challenges. The Netherlands can also learn a great deal from China. Knowledge is the lubricating oil and foundation of the relationship between China and the Netherlands. It is of essential importance in this regard that the Netherlands and China jointly set priorities for cooperation and that knowledge and forces are combined. The government must bear potentially negative effects for Dutch society in mind and develop a strategy that optimises cooperation. Cooperation works best when it is based on complementarity. There is clear complementarity between China and the Netherlands in the field of science and innovation, for example:

- The Netherlands has knowledge in areas that are strategic to China (like Agro and Food and Water);
- The Netherlands has the ability to cooperate in complex, multiple innovation processes (for example in top sectors like Water and Horticulture and Starting Materials);
- The Netherlands offers China access to Europe (Gateway to Europe), also in terms of knowledge;
- China offers the Netherlands a growing market, production opportunities and capital;
- To an increasing extent, China also offers the Netherlands scientific knowledge (for example in life sciences and materials) as well as research facilities and space for experiments;
- China has a rapidly growing reservoir of research talent that is very capable of solving complex problems;
- China has a considerable amount of money and makes extensive use of pilot projects; the Netherlands has experience in working efficiently and is good at achieving a lot with limited resources.

This means that cooperation between China and the Netherlands can provide major scientific, economic and social added value to both countries.

CHAPTER 3: RECOMMENDATIONS

The council identifies a number of dilemmas with respect to the cooperation between the Netherlands and China. In the council's opinion, for example, it is clear that Dutch companies and knowledge institutes have knowledge that is relevant for China. The Netherlands can bring that knowledge to China to commercialise it in economic and social terms. At the same time, however, there is a risk that Chinese companies will rapidly master this knowledge themselves and become formidable competitors of the Netherlands. Short-term gain may therefore mean long-term loss. A second dilemma concerns the free market. The Netherlands in particular benefits from an open economy: the more open the economy, the greater the opportunities for Dutch companies. At the same time, however, the council realises that openness also means vulnerability. Crucial information can easily be purchased by Chinese companies or investors also in the Netherlands. The protection of knowledge in companies with an important 'system function' for the Netherlands is also important. A third dilemma concerns investments in R&D. It may be important for the government to support innovative Dutch companies in terms of their R&D investments in China. At the same time, however, doing so could adversely affect R&D capacity in the Netherlands.

The council realises that these dilemmas may lead to different choices. Regarding the justifiable policy options available, the council sees two extremes. The first assumes openness and cooperation while the second is more restrictive and assumes less cooperation. Both options recognise that the rise of China in the field of knowledge and innovation is undeniable and that China's economic power will further increase as a result. Both options seek peaceful relations with China and both aim to maintain trade relations with China. The first option is defined by optimism about the results of cooperation in the field of knowledge and innovation while the second assumes risks and threats and therefore sets out a restrictive course.

The first option would presuppose a confidence that economic relations with China would increase through intensifying cooperation in the field of knowledge and innovation. Although cooperation in the field of knowledge and innovation entails risks in certain constituent areas, companies and knowledge institutes would gain access to Chinese talent and the Chinese market. Dutch knowledge workers would gain opportunities in Chinese labour markets and Chinese knowledge would make it possible for social and environmental issues to be solved more quickly. Moreover, the Netherlands as a whole would profit because the economy, trade, exports and the transport sector could benefit from an intensification of cooperation.

The second option would be justified if it is believed that cooperation in the field of knowledge and innovation would lead to unnecessary conflicts. Such conflicts could damage economic relations, trade and exports. The perception in this case would be that the differences between the Netherlands and China are pronounced and difficult to bridge and therefore that more intensive cooperation in the field of knowledge and innovation would primarily lead to disappointment, for example because of the conduct of Chinese partners or government authorities or because of conflicts about intellectual property or other issues. From this perspective, cooperation with China will also lead to uncertainty in terms of job security and retaining Dutch knowledge workers for Dutch companies. This option does not deny that cooperation can sometimes lead to short-term gain. In the long term, however, Dutch knowledge and inventiveness would lose out against Chinese ascendancy, which would lead to conflicts. Cooperation with China can only be fruitful if there is an equal relationship. Such a relationship does not exist between the Netherlands and China and there is therefore no reason for the government to pay for or facilitate the intensification of cooperation with China. Individual companies would of course remain free to cooperate with China if they wish to do so.

The council observes that both options, both attitudes, play a role in discussions about the rise of China as a nation of knowledge and innovation.

RECOMMENDATION 1: INTENSIFY COOPERATION WITH CHINA

The council selects the first option and recommends that cooperation with China be intensified. The council is optimistic about cooperation with China and is convinced that knowledge increases for those who are prepared to share it. Dutch companies became strong and innovative precisely because of their international orientation. In the twenty-first century, open innovation has even more of a future than it did in the past: knowledge and the capacity to innovate are no longer bound to a single company, location, region or country. A company, region or country can only reach the top by learning from others and looking beyond its own borders. Policy must adapt to reality. Borders, and in the case of China walls, were once meant to stop others. Walls and borders have lost their meaning both in China and in Europe. They proved mainly to be an obstruction to growth and development. Although the breaking down of walls between societies is difficult and requires mutual effort, cooperation between the Netherlands and China may generate a flow of economic growth and socially relevant knowledge. Such a flow will not occur by itself and there are no guarantees for success. The council is nevertheless convinced that opting for cooperation will not mean a loss. At the same time, however, the council believes that three preconditions must be borne in mind.

First, the council is of the opinion that cooperation can only be successful if the Netherlands truly commits itself to it. A measure of cooperation here and a couple of projects there are actually a waste of money. This means that cooperation requires both intensification and greater focus and, to that end, Dutch capabilities must be combined. Although the council acknowledges that a degree of competition between knowledge institutes, companies, regions and countries seeking to cooperate with China is a good thing, it also observes that cooperation and coordination within the Netherlands and Europe between companies and knowledge institutes that are active in China can be mutually beneficial. Competition in terms of the substance and cooperation in terms of form could serve as the guideline in this regard. The council also emphasises the importance of basing Sino-Dutch cooperation on a solid and broad foundation; a foundation of human relations and scientific and cultural cooperation that makes mutual understanding and the exchange of knowledge possible. This foundation must be able to resist financial crises, contractions in the world economy, decreasing globalisation and increasing regionalisation.

Second, the council is of the opinion that the Netherlands must remain aware of potential risks to Dutch companies, knowledge institutes and knowledge workers. Cooperation must not lead to a one-sided relocation of R&D to China or to the acquisition of knowledge-intensive companies, since this would result in a hollowing out of the Dutch knowledge base. Continuous investment in the Dutch knowledge base and, where necessary, a focus on reciprocity in cooperation are therefore essential preconditions.

Third, cooperation must satisfy the Chinese preference for continuity and long-term relations. Satisfying this preference will provide opportunities for a number of the Netherlands' current top sectors and strengths. At the same time, the council advises dynamism. The Netherlands must remain sensitive to future possibilities, new opportunities that are as yet little known and future strengths.

The council discusses these preconditions in greater detail in Recommendations 2 and 3.

RECOMMENDATION 2: ENCOURAGE A JOINT APPROACH AND SHOW COMMITMENT

The council advises the government to initiate a joint effort in respect of which it is important to ensure that companies, knowledge institutes and government authorities cooperate. Within the government, different ministries (particularly the Ministry of Education, Culture and Science, the Ministry of Economic Affairs, Agriculture and Innovation, the Ministry of Infrastructure and the Environment and the Ministry of Foreign Affairs) and different tiers of government (national, provincial and municipal) must at least be aware of what each of them is doing in China. This awareness will make it possible to benefit from each other's knowledge

and contacts, integrate strategies and carry out activities in a coherent way. Above all, such awareness will make joint commitment possible in order to make the strategy for cooperation with China in the field of science and innovation a success. This must be the medium- to long-term goal. Although the top sector approach largely provides a good starting point in this regard, the council expressly states that a vision and a strategy for cooperation with China are also required outside the top sectors. Action must be taken in the Netherlands, in China, with Europe and with China to achieve the aims set out above.

IN THE NETHERLANDS

- a. Ensure that a small-scale, practically oriented and decisive China platform is set up in the Netherlands in which the strategies, activities and networks of different actors (companies, knowledge institutes, local authorities and the central government) in relation to China are brought together. The purpose of the platform would be, very practically, to combine Dutch capabilities by promoting the further development of networks within the Netherlands and keeping members informed about activities relating to China. In addition, the platform could be used to develop a joint vision and strategy for China on the basis of experiences and identify new opportunities. The platform must serve as a point of contact for innovative businessmen and women, researchers, students and government authorities, and could also serve as a point of contact for Chinese policymakers and companies that wish to know more about the Netherlands. The council suggests the following in this regard:
 - Combine different functions of organisations like the Royal Netherlands Academy of Arts and Sciences, the Netherlands Organisation for Scientific Research, NL Agency (NL Innovation, NL EVD International) and the Chamber of Commerce/Syntens innovation campaign in this China platform;
 - Involve different existing trade platforms for Sino-Dutch trade, such as the Netherlands Council for Trade Promotion (NCH) and the VNC Friendship Association Netherlands China;
 - Involve academic networks like the Dutch Academic China Meeting (ACO) and the Science-Industry Platform recently initiated by the Netherlands Organisation for Scientific Research;
 - Invite trade associations and provincial and local authorities to actively participate in the China platform. Make this platform the central point at which all information and details on strategies and missions concerning China can be found.
- b. Continue working on making the Netherlands interesting and attractive to Chinese companies, policymakers and politicians, head offices, researchers, students and business and non-business tourists. Ensure that more Chinese come to the Netherlands and that they feel welcome and understood. It is important that the first impression of the Netherlands is good. Avoid unnecessary tensions or conflicts and work together on the basis of mutual respect but be clear about Dutch viewpoints. The council suggests the following in this regard:
 - Ensure that there is capacity in the Netherlands, preferably linked to the China platform, to offer a warm welcome to Chinese delegations visiting the Netherlands and assist such delegations in their visits to government authorities, companies, universities and Dutch locations that provide examples of innovation or that are of interest to visitors, such as the Delta Works, the Port of Rotterdam's Second Maasvlakte and Keukenhof flower garden;
 - Universities that recruit students in China also have a duty to give Chinese students a good introduction to the Netherlands so that they settle quickly, integrate with other Western and non-Western students and retain a positive image of the Netherlands after their studies. Universities can also be expected to make an effort to ensure that talented Chinese graduates temporarily remain in the Netherlands so that the Dutch economy can benefit from their skills;

- Improve the procedures for the application of a visa in China. The first impression of the Netherlands could be considerably improved by a small investment in capacity at the Dutch embassy and a friendly smile. Procedures pertaining to residence permits and the highly skilled migrant scheme must also be modified where necessary in order to be more attuned to the Chinese government's way of working.

IN CHINA

- c. Ensure a coherent and consistent branding of the Netherlands as a nation of science and innovation. Although this Holland branding must already start in the Netherlands based on the joint strategy, it must be especially apparent in China. Examples of effective branding are provided by Germany, Switzerland and Sweden. The council suggests the following in this regard:
 - Showcase outstanding examples of Dutch knowledge and innovation by setting up a Dutch Science and Innovation Portal in China. This portal should be both virtual and physical but not tied to a single building in a single city. It will enable current and potential Chinese cooperation partners to obtain thematic insight into the how and what of Dutch companies, knowledge institutes and government authorities. Use the portal to work together with the Netherlands Education Support Office (NESO) to attract students to Dutch universities. The portal must build on the Dutch network of diplomatic missions in China, since it would serve no purpose to simply set up a new portal or platform that is separate from existing initiatives. In addition, the best possible use must be made of the alumni networks of Dutch universities, since alumni could be very good ambassadors for the Netherlands;
 - Promote the Netherlands also as a gateway to knowledge and knowledge institutes elsewhere in Europe. Use the good position that the Netherlands has in the European Framework Programme for research and the contacts built up in this context with Chinese knowledge institutes to do so. In addition, use the appreciation that China has for the pragmatic way in which the Netherlands can play a pulling role in multinational consortiums;
 - Set up a selection process based on the German model to attract top talent to the Netherlands but bear in mind when doing so that German success is based on years of investment. Since good relations between China and the Netherlands are based on human relations, receiving Chinese students and researchers is desirable. More than has so far been the case, the focus must be on the most capable students and researchers. Given the high quality of Dutch research, it must be possible to attract top talent to the Netherlands through good branding and a sound selection process;
 - In addition, explore possibilities of raising the Netherlands' profile in a number of key cities like Beijing, Shanghai, Nanjing, Shenzhen, Hangzhou and Guangzhou, for example by building on good relations between Dutch and Chinese universities and setting up an incubator. Relatively new, innovative Dutch companies could base themselves in this incubator if they wish to start in China and, in addition, meetings concerning Dutch knowledge and innovation could be organised in order to raise the Netherlands' profile;
 - Based on the example of the Danish Innovation Center, consider linking an SME network to this incubator and involve provincial and municipal authorities that have good relations with the Chinese region concerned. Again based on the Danish example, consider providing, at cost price, targeted government services to the business community that go further than the general provision of information. Dutch SMEs must be the main consideration in this regard.

WITH EUROPE

- d. Make use of European or multilateral cooperation. Encourage multilateral cooperation with respect to identifying developments and policy-related developments in China and identifying and monitoring good universities and research groups. These activities are necessary to identify good cooperation partners and opportunities but require efforts on a scale that would make it sensible to undertake them together with other countries, preferably with several countries in an EU or OECD context. Use the Strategic Forum for International S&T Cooperation (SFIC) as a platform for this purpose. In an EU context, focus primarily on scientific cooperation within FP7 and, from 2013, on Horizon 2020. Form a common front with the EU and with other EU Member States with respect to diplomatic relations.

WITH CHINA

- e. Organise a joint programme with China. Based on the German example, consider organising two-yearly top-level meetings between Dutch government representatives and their Chinese counterparts that will alternately take place in China and the Netherlands. Possibly develop these meetings into Benelux summits or summits with one or two Chinese regions. Ensure proper preparation and a high level of awareness and showcase Dutch strengths.

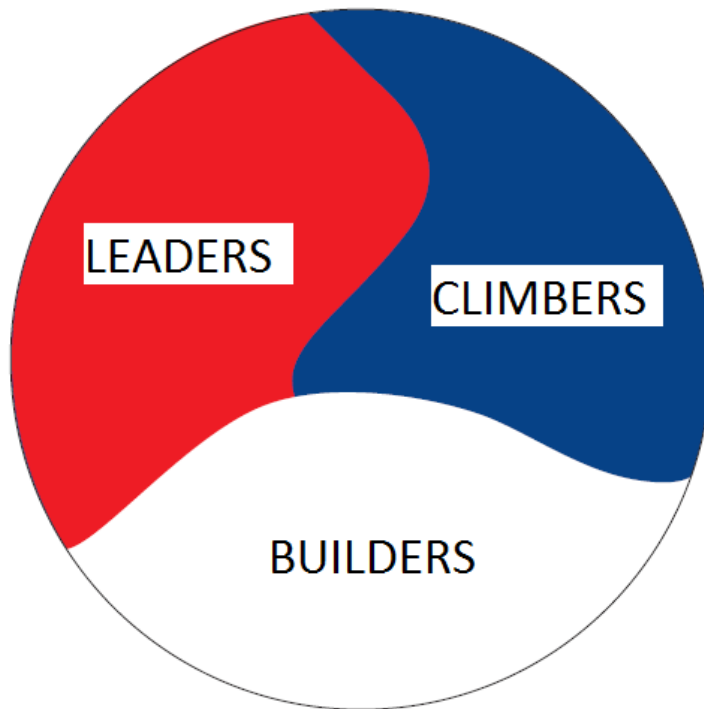
RECOMMENDATION 3: MAKE A DISTINCTION BETWEEN BUILDERS, LEADERS AND CLIMBERS

Although China and the Netherlands have a lot to offer each other, opportunities and risks manifest themselves differently in different sectors. Custom work is required. To that end, the council makes a distinction between three groups among Dutch companies, knowledge institutes, students, local and regional authorities and other organisations and knowledge workers that are active in China. The first group can be referred to as BUILDERS. These are knowledge workers, primarily in academia but sometimes also at companies or other organisations, who are enthusiastic about building up a knowledge relationship with Chinese colleagues or counterparts. This relationship could be in different fields, such as the environment, sustainable energy, architecture, astronomy or international law. The BUILDERS bring Dutch knowledge, gain experience in China, develop themselves in their areas of specialisation and become increasingly familiar with the Chinese language and culture. They are often appreciated and sometimes also supported by their municipality or province. Dutch BUILDERS have been active in China for years and the council observes that they are growing in number, which is a good thing: together with their Chinese counterparts, BUILDERS constitute the foundation of the knowledge relationship with China and therefore the foundation on which the business community can build.

Within the Dutch business community that is active in China, the council makes a distinction between two groups: LEADERS and CLIMBERS. LEADERS have leading positions in China and invest in R&D there. Such R&D may concern an application study to adjust European products to Chinese tastes and circumstances or genuinely new and innovative research, for example. The LEADERS benefit from the BUILDERS and vice versa, since BUILDERS can benefit from the success and image of LEADERS. The second group within the business community can be referred to as CLIMBERS: rising innovative companies that are active in a field that is economically and/or socially relevant to China. CLIMBERS and LEADERS are relevant to each other. CLIMBERS bring dynamism and new opportunities that also affect LEADERS and, in their turn, CLIMBERS can benefit from the success, image and contacts of LEADERS. Both CLIMBERS and LEADERS benefit from a knowledge infrastructure that is conducive to the development of new products and new production methods and that eases access to China. In other words, they benefit from BUILDERS.

BUILDERS, LEADERS and CLIMBERS therefore affect each other in significant ways. BUILDERS constitute the foundation of knowledge while LEADERS and CLIMBERS are rooted in the Dutch business community. In the council's opinion, BUILDERS, LEADERS and CLIMBERS are equal and must complement each other like the forces of Taoist philosophy's Yin and Yang (see Figure 1).

Figure 1 BUILDERS, LEADERS and CLIMBERS affect and complement each other



Formulate a strategy and vision for BUILDERS, LEADERS and CLIMBERS for cooperation in the field of science and innovation along different lines. A number of lines for the three groups are set out in greater detail below.

CHERISH BUILDERS

BUILDERS are knowledge workers of knowledge institutes and other organisations like companies or educational institutions who maintain good relations with China and who are active in fields that are socially and/or scientifically relevant to China and can therefore offer China meaningful knowledge. They bring Chinese knowledge or knowledge developed in China to the Netherlands and, together with their Chinese partners, constitute the foundation of the knowledge relationship with China. In the council's opinion, this foundation must continuously be strengthened. Countering fragmentation is one of the ways of doing so. BUILDERS are active in a wide variety of scientific fields, such as agriculture, environmental technology, astronomy, international relations and social organisation. In addition, BUILDERS themselves are diverse: students, researchers, directors, professors and deans of universities and universities of applied sciences. Although the relationship with China as a whole must be in balance for BUILDERS, this does not mean that reciprocity must be required in every individual cooperation project.

The council advises the government to cherish BUILDERS and facilitate the continuous strengthening of the foundation that the BUILDERS provide in the following ways:

- a. Encourage Dutch students more than is currently the case to spend part of their study time at a Chinese university. The council suggests the following in this regard:

- Based on the Research Councils UK example, consider making resources available for the organisation of summer schools. These summer schools can to an extent be linked to themes that are relevant to LEADERS and CLIMBERS. Another example worth considering is the initiative of Utrecht University and Delft University of Technology to start a pilot programme in which 30 ambitious students are given the opportunity to attend a summer school in China in an early phase of their studies;
 - Invest in information about the Chinese science system. The council believes that China will be the source of a considerable amount of knowledge in the future but that this is currently insufficiently recognised in the Netherlands. Publications and presentations about Chinese science could be very useful in this regard;
 - Use the possibilities provided by the EU to promote the exchange of students and researchers. Encourage the expansion of these possibilities in an EU context subject to the condition that the matter primarily concerns the exchange of students and scientists.
- b. Encourage the formation of clusters among BUILDERS. The China platform (see Recommendation 2) can play a role in this regard. Where possible and useful, link BUILDERS to LEADERS and CLIMBERS so that the latter two can benefit from the good relations of the BUILDERS.
 - c. Continue encouraging the exchange of scientists. In addition to maintaining relations, the most important goal in this regard must be the joint development of knowledge and the sharing of this knowledge in a range of fields that are socially and economically relevant. Bringing knowledge strengthens relations and contributes to an environment that is favourable to other initiatives, for example those of LEADERS and CLIMBERS.
 - d. China will benefit from a scaling up of cooperation. As a consultation partner of the Chinese authorities, the Dutch government has an important role in this regard. Based on the Danish example, discuss cooperation on behalf of Dutch universities. Focus on both exact sciences and social sciences. In addition, consider institutionalising cooperation in a number of fields, for example in those of social organisation, social harmony, urban development, international law and arbitration, international relations and social innovation, by agreeing a formal Sino-Dutch cooperative arrangement. An example in this regard is the Sino-Dutch Centre for Preventive and Personalized Medicine, a cooperative arrangement between the Netherlands Organisation for Applied Scientific Research (TNO), Leiden University, the Netherlands Genomics Initiative, the Netherlands Metabolomics Center and the Chinese Dalian Institute of Chemical Physics (part of the Chinese Academy of Sciences). In addition, involve NGOs and other stakeholders.

SUPPORT LEADERS

LEADERS are companies that are international leaders in both economic and innovative terms and that already have a good position in China. They are active in fields in which China wishes to be an international leader in economic terms or in fields that are socially relevant to China. LEADERS are both likely to succeed and strong in their cooperation with China. They are part of the prestige of the Netherlands. In addition, they are well organised in the Netherlands and already successful in China. Nevertheless, they still have much to gain through cooperating with China and can provide important assistance to or function as a springboard for other Dutch companies. If LEADERS are doing well in China, this success can be beneficial to the Netherlands as a whole, though there is no guarantee that this will indeed be the case. Dutch policy must therefore focus on strengthening mutual commitment. LEADERS will in principle be found within a few of the nine top sectors referred to. It must be noted in this connection that LEADERS usually have a more specific focus and therefore have a more limited scope than the top sectors themselves. LEADERS can be found in, for example, clusters involved in green genetics, LED technology, polymers, delta technology and medical technology. These LEADERS are quite robust and deserve a long-term strategy (at least five to ten years). Being a LEADER requires a long-term commitment in the Netherlands on the part of the companies and knowledge institutes concerned.

The council advises the government to support LEADERS subject to conditions and in the following ways:

- a. Show long-term commitment with respect to investments in the Netherlands in the knowledge base for these LEADERS and, as the German government does in Germany, ask LEADERS to commit themselves to investing in the Netherlands. Ensure that the cluster of companies and knowledge institutes from which the LEADER comes in the Netherlands continues to have something to offer Chinese partners. This is a long-term commitment that must also be shown by Dutch companies and knowledge institutes.
- b. Encourage the cooperation of public knowledge institutes (universities, the Netherlands Organisation for Applied Scientific Research and large technological institutes) to be embedded in a joint strategy of the entire cluster of companies and knowledge institutes to which the LEADER belongs.
- c. Together with the LEADERS, ask for reciprocity in knowledge-related cooperation with China, particularly in terms of access to each other's research programmes, also for the local R&D laboratories of Dutch companies in China. In the first instance, do this entirely through the EU but also raise the matter with the Chinese government in bilateral contacts.
- d. Be on standby for the LEADERS in China. Economic diplomacy is very relevant to these clusters. Being present is useful even if it is only to serve as a point of contact/counterpart for Chinese authorities. Remain ready to respond to developments in legislation and standards. When asked by companies to do so, participate in targeted missions, knowledge marketing and events to showcase high-quality Dutch knowledge. Use every high-level visit (ministers, Queen's Commissioners, mayors) and, where possible, ensure that visits are linked and attuned to the strategy of the LEADERS.
- e. Work proactively on intelligence; monitor Chinese policy, identify opportunities, monitor developments, closely monitor Dutch companies and knowledge institutes and their interests, and remain aware of what other countries are doing with China in fields that are relevant to LEADERS. Invest in contacts and relations with Chinese authorities, knowledge institutes and companies. Build in this regard on the work of Dutch diplomatic missions to China.
- f. Consider identifying companies with a 'system function' in the knowledge and innovation system of a LEADER. In addition to investing in knowledge for that ecosystem (see a), determine, if necessary, whether knowledge essential to the Netherlands needs to be protected in the case of foreign acquisitions and how this protection can be achieved. Remain in line in this regard with possible developments in the European Commission.

INVEST IN CLIMBERS

CLIMBERS are innovative Dutch companies that have a good starting position to be successful in China. In addition, they are active in fields that are economically and socially important to China and are therefore likely to succeed. There is a lot to be gained by CLIMBERS through cooperating with China. There is also much to lose, however, such as a good idea, a lead, a market position, the uniqueness of a product or the unique knowledge of a production process. Moreover, opportunities can also be lost, since opportunities that Dutch companies fail to use will be used by others. CLIMBERS may go on to become LEADERS. The essence of policy with respect to CLIMBERS is that cooperation with China can be used to build the LEADERS of the future and thereby create the dynamism required.

CLIMBERS likewise tend to be found in the top sectors where there are links to Chinese social and/or economic priorities. Examples are clusters involved in water purification technology, electric vehicles and aircraft manufacturing. CLIMBERS can also be found among providers of innovative services. Examples are chain control, design and architecture and integrated concepts in the fields of agriculture, water and energy. These CLIMBERS deserve a long-term strategy (three to five years). However, the selection of CLIMBERS must regularly be updated (every two to three years) to enable proper responses to new opportunities and so that

CLIMBERS who have not succeeded can be excluded from the strategy. Relevance to the Chinese agenda for science and innovation must be an important consideration when selecting CLIMBERS.

The council advises the government to actively invest in a number of these CLIMBERS in the following ways:

- a. Ensure that CLIMBERS organise themselves in a better way in the Netherlands in relation to China. In the Netherlands, facilitate further networking between companies, knowledge institutes and government authorities, and facilitate the development of a joint China strategy. Support the activities of Dutch companies and universities in China by organising theme-based missions and events. Take the initiative as the government, though only do so if the CLIMBERS themselves show sufficient initiative and commitment.
- b. Be active and alert where possible and provide assistance where required. Through the China platform, provide targeted information to CLIMBERS about business and networking opportunities in China. For example, prepare overviews of the policy initiatives of Chinese authorities and of potential cooperation partners at universities.
- c. Support and take initiatives aimed at putting cooperative arrangements in place in the field of knowledge and innovation. The council suggests the following in this regard:
 - Consider setting up a joint knowledge institute in China for one or several CLIMBERS. In the council's opinion, the theme of Water, or more specifically water purification and desalination technology, lends itself very well to an initiative of this kind. In addition to knowledge institutes, involve the Dutch business community in order to offer it access to China. Make the knowledge institute in principle open to other countries as well so that cooperation can be scaled up to a level that is effective for China and so that talented individuals from other countries who would increase the scientific quality of the knowledge institute can be attracted.

CONCLUSION

The council believes that the government can use the three recommendations set out above to optimise cooperation between the Netherlands and China. Although cooperation with and in China provides tremendous opportunities, there are also disappointments, legitimate concerns and dilemmas. By making a distinction between BUILDERS, LEADERS and CLIMBERS, the council provides a frame of reference for making strategic choices. The table below provides an overview of the different recommendations for each group.

Table 1 Recommendations for policy concerning BUILDERS, LEADERS and CLIMBERS

| | BUILDERS | LEADERS | CLIMBERS |
|--|---|--|--|
| Importance to the Netherlands | BUILDERS constitute the foundation of Sino-Dutch relations and are the lubricating oil of the knowledge relationship with China. | LEADERS give prestige to the Netherlands in China and also continuity of R&D and employment in the Netherlands. LEADERS have much to gain in China and are strong enough to limit losses. | CLIMBERS ensure dynamism in the relationship with China and can go on to become LEADERS for the Netherlands. CLIMBERS have much to gain but are vulnerable and can suffer losses. |
| Challenge for the government | The challenge is to nurture, facilitate and capitalise on the BUILDERS' good relations with China. | The challenge is to safeguard the continuity of the Dutch knowledge base for LEADERS by investing in the knowledge base and supporting them in their cooperation with China. | The challenge is to invest in the more intelligent organisation of CLIMBERS to make greater use of the opportunities provided by China without losing knowledge. |
| The role of the government | Encourage links between BUILDERS themselves and with clusters of LEADERS and CLIMBERS. | Maintain the knowledge base in the Netherlands for the long term and advocate reciprocity in the cooperation with China. | Encourage further networking and the development of a joint China vision and strategy. |
| Central government action: Mobility | Encourage mainly outgoing mobility. If possible, link to themes of LEADERS and CLIMBERS. | Encourage mainly incoming mobility of students and researchers but base selection in this regard primarily on top quality. | Encourage mainly incoming mobility of students and researchers but base selection in this regard primarily on top quality. |

| | | | |
|---------------------------------|---|--|--|
| <i>Organisation</i> | Encourage the formation of networks between BUILDERS and the clusters of LEADERS and CLIMBERS. | | Encourage further networking and the development of a joint China vision and strategy. |
| <i>Cooperative arrangements</i> | Institutionalise cooperation by agreeing a formal Sino-Dutch cooperative arrangement for a few non-economic fields like international law and arbitration, for example. | Networks and alliances of companies and knowledge institutes, for example to jointly advocate standards. | Support and take initiatives aimed at putting cooperative arrangements in place in the field of knowledge and innovation, for example by setting up a knowledge institute for the field of water technology. |
| <i>Missions</i> | | When asked to do so, participate in missions and events in China organised by LEADERS. | Encourage the organisation of missions and events in China by CLIMBERS and participate in such missions and events. |
| <i>Diplomacy</i> | BUILDERS contribute to economic diplomacy for LEADERS and CLIMBERS. | Economic diplomacy in China for LEADERS. | Economic diplomacy in China for CLIMBERS. |
| <i>Information</i> | Provide good information about the Chinese science and innovation policy, culture of cooperation and so on. | Work proactively on intelligence in China to identify opportunities and potential risks. | Provide targeted information to CLIMBERS about opportunities in China. |
| <i>Protection of knowledge</i> | | Consider identifying companies with a 'system function' and determining whether the protection of knowledge in the case of undesirable foreign acquisitions is possible. | |

Irrespective of how the world economy develops and regardless of the difficulties that arise, cooperation with China will always remain a useful source of inspiration. At the same time, China's extended hand is challenging us to keep investing in our knowledge society, to keep striving for excellence, to be ambitious and enterprising and to set priorities. The council hopes that the Netherlands will expeditiously accept the hand extended and embrace the opportunities and challenges of doing so.