

## Evaluation Report

Evaluation of the Sino-Danish Center  
for Education and Research

Report of the International Assessment Committee

### The members of the International Assessment Committee:

Ms Agneta Bladh (Chair),  
former Rector of the University  
of Kalmar,  
Sweden

Mr Enric Banda,  
former President of EuroScience  
and former Director of Science  
and Environment at the La Caixa  
Foundation,  
Spain

Mr Jens Oddershede,  
former Rector of the University  
of Southern Denmark and  
former President of the Danish  
Rectors' Conference,  
Denmark

Mr Jiang Weiming,  
President of DSM China,  
China

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List of Acronyms . . . . . 2

Executive Summary . . . . . 3

1. Background and Context . . . . . 6

2. Analysis and Findings . . . . . 7

    2.1 Master’s Programmes . . . . . 7

        Recommendations . . . . . 12

    2.2 PhD Programmes . . . . . 13

        Recommendations . . . . . 15

    2.3 Research . . . . . 15

        Recommendations . . . . . 17

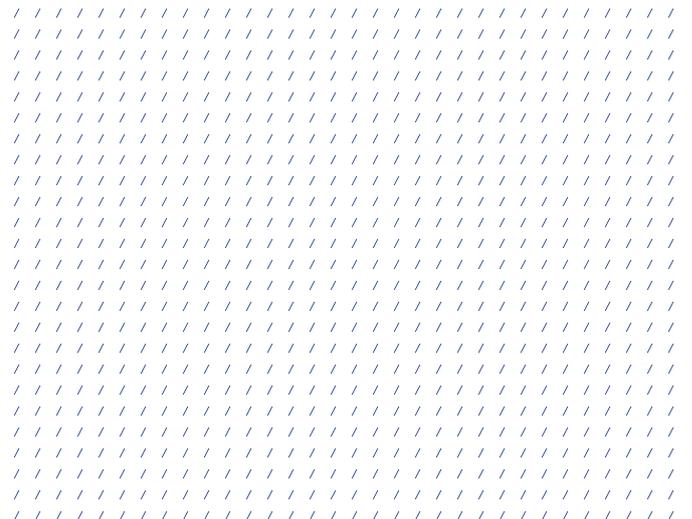
    2.4 Management . . . . . 17

        Recommendations . . . . . 20

    2.5 Training . . . . . 20

        Recommendations . . . . . 21

3. Conclusions . . . . . 21



## List of Acronyms

SDC	Sino-Danish Center for Education and Research
UCAS	University of Chinese Academy of Sciences
CAS	Chinese Academy of Sciences
HEP	Head of Educational Programme
PC	Principal Coordinator
IAC	International Assessment Committee

## Executive Summary

The SDC was formally established in 2010. Since then the SDC has expanded its activities to include Sino-Danish research collaboration within five selected focus areas, and it offers seven affiliated Master's programmes and trains a large number of PhD students.

In the six years that have passed since the SDC Partnership Agreement was signed, a long way has been covered and many lessons have been learned. The Danish Board of the SDC has therefore commissioned an evaluation of the Danish side's contribution to the SDC in order to prepare for the future. The overall aim of the evaluation is to create the optimum basis for bringing the SDC into its next stage of development. In other words, this evaluation is intended to be a tool which the Danish universities, the Danish Board of the SDC and the SDC management can use to make the necessary adjustments to the course of the SDC.

The evaluation was conducted by an international assessment committee appointed by the Danish Board of the SDC. The task of the IAC was, as defined by the terms of reference, to evaluate how the objectives of the SDC have been met and to provide recommendations on how the SDC can be further developed. An internal evaluation report authored by a group of teachers and researchers involved in the SDC served as the basis for the IAC's visit to Denmark in mid-May 2016. During this visit the IAC interviewed the SDC management, teachers, researchers, students, alumni, PhD students, members of the Danish Board of the SDC members, representatives from the Danish Ministry of Higher Education and Science, and various stakeholders. This evaluation report is the result of the visit. As the focus was on the Danish side's contribution to the SDC, the IAC did not visit the SDC in Beijing, nor did it meet with representatives from the Chinese side.

### **From Project to Institution**

The IAC finds that the agreement between all eight Danish universities and UCAS, which forms the framework of the SDC, is ambitious and unique.

The uniqueness lies in the SDC model, which in all respects rests on a principle of parity. This equal ownership of and responsibility for the joint project explains why the SDC has already been able to achieve impressive results. The IAC believes the SDC carries a tremendously positive long-term perspective in terms of creating benefits for both countries.

The fact that it has been possible to establish such an ambitious partnership can, to a large degree, be attributed to the high level of government commitment in both countries. However, a number of other preconditions have also been essential, including the united approach of the Danish universities, the donation by the Danish Industry Foundation and not least a Chinese partner that shared the same ambition.

The IAC sees the continued and long-term commitment of all the Danish universities as well as the Danish Ministry of Higher Education and Science as essential in bringing the SDC to the next level.

Although it falls outside the scope of the IAC to evaluate the Chinese side of the SDC, the IAC finds it relevant to point out that the Danish commitment seems to be matched by the Chinese counterparts, who take active ownership of and responsibility for the SDC. Great importance should be attached to the fact that UCAS has established a Sino-Danish College with the right to recruit Chinese students directly and with the possibility of affiliating faculty. Along with the construction of a new building in Beijing to house

SDC's educational activities in the future, this signals long-term commitment by the partners and forms an important background for the recommendations in this report.

The seven Master's programmes offered by the SDC in Beijing serve as a strong backbone for the partnership. The Chinese and Danish students establish strong ties during their studies, and there is good reason to believe that both Denmark and China will benefit from these networks in the future. From a Danish perspective it is also positive that all Chinese Master's students come to Denmark as part of their studies, as this strengthens their ties to Denmark. The cultural exchange that happens both in and outside the classroom creates significant added value to the activities at the SDC and could be further strengthened through a focussed effort.

The most important challenge facing the SDC in relation to the Master's programmes is the issue of recruiting a sufficient number of Danish students. It is important that all eight Danish universities are committed to the recruitment of students for all SDC Master's programmes and support activities aimed at increasing the overall visibility of the SDC. In this connection it may also be necessary to consider the composition of the Master's programmes currently offered by the SDC.

Since the establishment of the SDC PhD students have played an important role in the development of joint research activities. They serve as important links not only between research environments in Denmark and China, but also between research activities and educational activities during their stays in China. Double affiliation and joint supervision of PhD students help embed the PhD projects in both countries' research environments and ensure good access to facilities.

Joint research activities are still being developed, and new areas of common interest are being explored. It is evident that Danish universities already benefit from the partnership with CAS/UCAS in terms of access to data and research facilities in China. In addition, collaboration between Danish research environments has also increased due to their involvement in the SDC, as has collaboration with other international partners outside China.

The daily management has, in collaboration with the universities and the Danish Ministry of Higher Education and Science, adopted a pragmatic and solution-oriented approach, which has been instrumental in achieving results in a complicated organisation such as the SDC and in overcoming many of the inherent cultural differences.

The partners behind the SDC have managed to overcome a number of foreseeable obstacles and difficulties within a very short period of time and have succeeded in establishing this joint project that has already shown remarkable results. The focus of the partners in the coming years should be on consolidating the SDC and on transforming the SDC from a joint project to an actual institution. In order for this to happen, it is important that the SDC continues to enjoy high-level political backing from both sides and that all Danish universities remain united in their support of the SDC.

## Recommendations

### Master's programmes

- Launch more initiatives to improve the recruitment for the natural science programmes in particular. In this regard, the following should be considered:
- Consider whether the universities can do more to integrate all the SDC programmes in their educational portfolio, and let this be reflected in their recruitment efforts in relation to the SDC programmes. This should be part of an overall strategy reflecting the development of the SDC from the project to the institutional phase.
- Consider how it is possible to offset negative incentives of the taximeter systems, which makes it economically unattractive for the individual Danish university to recruit students to the SDC Master's programmes.
- Introduce more marketing efforts to increase the visibility of the SDC in both Danish universities and society.
- Assess the content and portfolio of the Master's programmes, both to strengthen and develop existing and new programmes, and to ensure that the SDC continues to be relevant to all its partner universities, businesses, and Chinese and Danish societies. This includes getting all Danish universities involved in the study programmes of the SDC.
- Add value to the SDC study programmes by developing and implementing a scheme to advance cultural exchange.
- Analyse how longer teacher stays in China can be facilitated. Longer stays will help provide continuity and long-term sustainability of the programmes, and enable teachers to build long-term relations with their Chinese counterparts.

### PhD programmes

- Facilitate a double degree system.
- An alumni PhD programme will be very beneficial in the medium and long term.

- Consider the prioritisation of available funds in the long term, including the rather large fraction spent on the PhD programmes.

### Research

- Facilitate longer stays in China for the Danish scientists.
- Strengthen the communication to Danish research institutions about the possibilities offered by the SDC collaboration.
- Increase research collaboration with business and industry, Danish as well as Chinese.
- Increase third-party research funding of the SDC research collaborations.
- Be aware of the challenges posed to the non-natural science collaborative projects with the current Partnership Agreement.

### Management

- It is important for the development and sustainability of the SDC that the highest level of political leadership continues to be committed to and involved in the SDC. One way to facilitate this could be to let the Danish Ministry of Higher Education and Science be represented on the Danish Board of the SDC.
- It is crucial for the development and sustainability of the SDC that all Danish universities are committed to the SDC, and that the university managements actively communicate their commitment to the organisations.
- Revisit the issue of establishing two advisory boards.
- Use the SDC's new facilities to present Danish/Nordic culture.

### Training

- Revisit the ambition of establishing training programmes within the framework of the SDC.

# 1. Background and Context

The framework of the SDC is defined by the Partnership Agreement between all eight Danish universities and UCAS signed in 2010. At the outset the parties behind the agreement defined the objectives of the partnership as follows:

- Achieve excellence in graduate education and research by combining the best competencies, teaching traditions and research environments of the two countries.
- Increase the mobility of students, teachers and scientific staff between Denmark and China for the benefit of UCAS and the Danish universities.
- Enhance Sino-Danish scientific and technological collaboration by creating a platform for joint education and research activities and for bilateral cooperation between UCAS and the Danish universities.
- Strengthen the links between research and educational institutions and private companies in Denmark and China.
- Develop and commercialise new knowledge and technology for the benefit of both countries with due respect to intellectual property rights held by UCAS, the Danish universities or generated by the parties through this collaboration.
- Increase networking and cultural understanding between China and Denmark.

Today the SDC is a platform for research collaboration within five overall areas, involving hundreds of researchers, PhD funding schemes and seven joint Master's programmes with an annual intake of approximately 160 Master's students.

We – the IAC – have been tasked with conducting an evaluation of the SDC based on an internal evaluation by the Danish faculty, a selected group of Danish HEPs and PCs at the SDC, and as such they represent the SDC faculty's contribution to the evaluation of the SDC.

In accordance with the terms of reference, we limit ourselves to conducting an evaluation of the Danish contribution to the SDC. However, in the course of the evaluation we have also made observations regarding the Chinese contribution and, insofar as they are central to answering the questions posed in the terms of reference, we will consider these findings.

The SDC is a young project – it has existed for six years, and Master's programmes have been offered since 2012. This affects our approach to the evaluation. It is indeed an early stage for such an ambitious project, and therefore this evaluation should be seen as an early stage evaluation. Thus, the objective is to provide a basis for the management of the SDC to make adjustments – rather than radical changes – to the construction in order to strengthen the SDC.

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<sup>1</sup> According to the terms of reference for the IAC, we have been tasked with conducting an evaluation of the SDC answering the following questions:

- To what extent has the SDC added value to Danish universities, Danish private companies and Danish society?
- What are the strong and weak points of the SDC, seen from the perspective of the Danish universities?
- To what extent does the organisational set-up support the core activities of the SDC?
- To what extent has the SDC succeeded in creating links between research activities and educational activities?
- What overall opportunities and challenges does the SDC face?

We base our report on findings made through interviews conducted in Denmark on 10-11 May 2016 with SDC management, teachers, researchers, students, alumni, PhD students, members of the Danish Board of the SDC members, representatives from the Danish Ministry of Higher Education and Science, and various stakeholders. Furthermore, we base the report on the findings of the internal evaluation report and its appendices, which include reports from the HEPs and PCs.

## 2. Analysis and Findings

The agreement between all eight Danish universities and UCAS is very ambitious. It is our opinion that the Danish and Chinese partners have chosen a unique approach to the university collaboration, and that they have embarked on a journey that carries huge potential for the future of the project.

The uniqueness lies in the SDC model, which in all respects rests on a principle of parity. This makes it different from all other university collaborations between China and universities in Europe and the US known to us. This equal ownership of and responsibility for the joint activities – including PhD collaboration, Master's programmes etc. – is the principal reason why we believe that the SDC carries a tremendously positive long-term perspective.

It is worth stressing that arriving at this model of collaboration is in itself an achievement, which relies on the long-term commitment of not just the partner universities, but also of the relevant ministries and the Danish Industry Foundation, whose donation has ensured that the SDC will have its own physical facilities in Beijing. The involved parties have shared the same vision for the SDC, where the exchange of knowledge, technology and talent for the benefit of Chinese and Danish societies is the main objective.

We believe that the documented involvement of the highest political leadership in both countries is a key to understanding how the SDC has succeeded in establishing the Master's programmes and research collaborations, including PhD programmes. The continued involvement of the highest level of political leadership is essential in bringing the SDC to the next level. Furthermore, it is essential that all eight Danish universities, represented by their rectors, continue to stand behind the collaboration.

In the following sections we outline the findings of the evaluation. Each section focusses on one of the core activities of the SDC, i.e. Master's programmes, PhD programmes and research. We also touch upon training, which is mentioned in the agreement, as well as management. We focus especially on the extent to which the SDC has added value to Danish universities, Danish companies and Danish society. We believe this to be central in further improving the performance of the SDC, in particular its contributions to university research and education in Denmark.

Each of the following sections emphasises a number of strengths and challenges of the SDC and thereafter identifies challenges in areas where we believe there is need for development. Finally, we provide our recommendations.

### 2.1 Master's Programmes

The SDC offers seven Master's programmes in Beijing, all of which are different in design, academic content, intake of students etc. We see it as our task to provide a bird's eye view of the strengths and challenges of

the programmes. Therefore, we will not dwell on the details of the individual programmes, but rather provide general observations.

The seven Master's programmes are the result of very different approaches and starting points when they were developed by Danish and Chinese researchers. While some Master's programmes rest on well-founded research collaboration established years before the SDC became a reality, other Master's programmes were developed without any significant prior collaboration between the Danish and Chinese sides. Additionally, some of the seven Master's programmes are inspired by Master's programmes already offered at Danish universities, while others are truly unique in the sense that they have never before been offered in Denmark or China.

Overall, we find that the SDC's seven Master's programmes are highly relevant for both Danish and Chinese societies and are based on the needs of the labour market through the strong involvement of possible future employers, i.e. through internships, students writing their thesis in close collaboration with private companies etc.

### Strengths

- **Unique programmes.** Some of the SDC Master's programmes are unique in Danish and Chinese contexts. They are tailored to the SDC and draw on the strengths of several Danish universities and of the Chinese partners.
- **Strong links to companies.** Danish and Chinese companies are actively involved in the social science programmes and some of the natural science programmes, thereby strengthening the links to Chinese and Danish companies in China.
- **Strong foundation for the programmes.** Most programmes are built on broad institutional involvement, i.e. several Danish universities contribute to each programme, thereby creating a basis for involving the best Denmark has to offer in the area.
- **Network between Danish and Chinese SDC students.** Dedicated SDC students, faculty and staff all contribute to creating a strong social study environment. Often close relations are created between Chinese and Danish fellow students, facilitating a cross-national network, which will benefit both countries in the future.
- **Research-based programmes.** The SDC Master's programmes are all research-based, and many Danish teachers combine their teaching activities in China with research collaboration with Chinese colleagues.
- **Merging of teaching methods.** The programmes are influenced by both Danish and Chinese teaching methods and traditions, benefitting both students and teachers who get the opportunity to learn from each other.
- **Chinese students connected to Denmark.** All Chinese SDC students visit Denmark during their studies, making the programmes more attractive to Chinese students and giving Danish universities the opportunity to establish connections with Chinese talents.
- **Chinese partners confirm long-term commitment to study programmes.** UCAS has granted the SDC status as college. The fact that the SDC now has the same status as all other UCAS colleges confirms UCAS' long-term commitment in the SDC.
- **SDC PhD students contribute actively to the programmes.** PhD students contribute to the SDC Master's programmes and are actively involved in the social environment surrounding the SDC, thus establishing

yet another bridge between the research and educational activities of the SDC and offsetting some of the cultural challenges that individual Danish PhD students may face while staying in China.

## Challenges

- **Some natural science programmes struggle to recruit students.** As a result, interaction between Danish and Chinese students on the programmes in question is limited. Furthermore, there is little competition for obtaining access to some study programmes.
- **Obstacles to recruitment on the Danish side.** Some challenges to recruitment remain on the Danish side, including strengthening the concerted recruitment effort involving all Danish universities as well as the recruitment efforts of individual universities; strengthening and perhaps also changing the profiles of some programmes; solving the taximeter issue; and strengthening the general visibility of the SDC.

The graduates we interviewed were all very satisfied with their studies at the SDC and the competencies gained. Our observations are in line with the survey results cited in the internal evaluation report, which show that 80 per cent of the SDC students believe the quality of their Master's programme has met their expectations. 90 per cent would choose the same Master's programme again. According to the students, the learning environment is highly appreciated and positively influences their satisfaction with studying at the SDC.

We see the international learning environment as a very important element of the SDC. Not only are Danish and international students constantly exposed to Chinese culture and everyday life, but Chinese students are likewise exposed to Nordic learning methods and teaching traditions rarely found on Chinese soil. From our interviews with the students it is evident that strong networks and cross-cultural friendships are being established between many of the Danish and Chinese students. These networks will unquestionably be of value to both countries in the future.

We attach great importance to the fact that SDC graduates receive a double degree upon completion of their studies. Not only does this distinguish the SDC from most other Sino-foreign university partnerships, it is also a strong asset for the graduates, Danish as well as Chinese, when it comes to seeking jobs after graduation. We understand the difficulties in merging two educational systems and commend the efforts by both sides to find a successful model. It is a major achievement in the implementation of the agreement.

Recruitment of a sufficient number of qualified students is of high importance, and both the Danish and Chinese sides should assign great weight to the issue. Both sides should focus on recruiting even more qualified students with good English language skills. We understand the difficulties in recruiting students for a two-year Master's programme located outside of Denmark, and acknowledge the fact that more than 50 students are recruited through Danish universities annually; however, we believe the number of Danish

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<sup>2</sup> In Denmark the calculation of the university education funding is based on the taximeter scheme. Funding is allocated on the basis of the students' academic activity measured in terms of exams passed. Different types of rates (teaching, field practice, joint expenses and building taximeter) are combined in one education rate in the taximeter scheme. (Source: Danish Ministry of Higher Education and Science)

students must be increased in the future so a classroom balance can be achieved. We acknowledge the great marketing and recruitment efforts done by the Danish SDC secretariat and some of the Danish universities, but also find room for improvements so the SDC can become more visible to all Danish university students.

Our observations show that there is not always a concerted effort to recruit students to the SDC programmes at the Danish universities. While some Danish universities have allocated many resources to this task, others could invest more. We believe that the continued unambiguous support of the management at all Danish universities to recruit students for all SDC programmes is essential in order to increase the number of SDC students. Greater visibility at the eight Danish universities is important to promote the SDC and to reach the next phase of the SDC collaboration.

Additionally, we have observed some potentially counterproductive incentives in the funding model for Danish universities. In short, Danish universities receive funding from the Danish government based on their students' activities, i.e. the funding follows the student. This means that Danish universities will lose funding every time a Danish student decides to study at the SDC in Beijing rather than at a Danish university. We recommend that this obstacle to the success of the SDC Master's programmes is addressed jointly by the Danish universities and the Danish Ministry of Higher Education and Science.

Given the need to recruit more Danish students in the future, we find it important to stress that the Chinese SDC students and graduates are attractive assets for the Danish universities and the Danish society. They have graduated from Master's programmes with a Danish diploma and have established networks with Danish students, companies and universities. In conclusion, they are attractive possible employees in Danish companies and as researchers at Danish universities.

We believe it is still too early to draw firm conclusions concerning the employment of SDC graduates. Even so, it is worth noting that 48 per cent of the Danish students who have found employment after graduating from the SDC have relations to China in their current jobs. However, from interviews we have learned that the SDC graduates consider it a challenge to find China-related occupation.

We have observed widespread uncertainty in the Danish academic environment regarding the formulation of and responsibility for quality assurance of the SDC Master's programmes, which can be ascribed to the complexity of the SDC. Even though quality assurance procedures are already implemented by the teaching committees, a comprehensive quality assurance policy has not yet been established. We believe the Danish SDC management should inform the Danish universities that the responsibility for formulating and implementing a quality assurance policy lies with the SDC.

We see the fact that UCAS has established a Sino-Danish College as part of its university organisational structure as a clear sign of strong commitment from the Chinese side. Furthermore, after establishing the Sino-Danish College UCAS is now able to recruit Chinese students directly for the SDC rather than through other UCAS colleges or CAS institutes.

94 per cent of the teachers state that their teaching matches their research activities. This ensures that the teaching conducted at the SDC is research-based in line with the principles of the Partnership Agreement. We do not know whether this is also true for the Chinese teachers in the programmes. However, we observe that the Danish teachers often see their teaching activities as a springboard for research collaboration with their Chinese colleagues in the programmes. This finds some grounding in the surveys, which show that 40 per cent of the Danish teachers are also involved in research collaboration with the Chinese partners.

A large number of Danish teachers are involved in running the Master's programmes, which we see as an advantage, but also a challenge. The fact that many Danish teachers are involved ensures a broad academic commitment among the Danish universities. However, to ensure the long-term sustainability of the Master's programmes, more long-term stays by Danish teachers and researchers in China would be desirable – a wish also expressed in several of the interviews.

Since all Master's programmes involve teachers from two or more Danish universities, many Danish teachers find that their involvement in the SDC has also strengthened their collaboration with other Danish research environments. In this regard it is worth noting that the SDC has spawned a number of new collaborations between Danish researchers at different institutions. On the other hand, we also see the large number of Danish teachers as an indication of simple necessity, since most Danish teachers' stays in China last no more than two weeks. It is difficult for us to conclude whether this is due to the individual teacher's difficulties in combining work obligations in Denmark with teaching obligations in China, or because the terms and conditions for long-term stays for university employees in Denmark are considered unattractive. Further analysis into this aspect is recommended.

From our interviews we have learned that the Chinese contribution to SDC teaching activities has increased over time. The contribution by Danish teachers clearly dominated in the years following the launch of the Master's programmes, but the contribution by Chinese teachers has gradually increased, thus creating a more balanced picture – a very positive development.

It is our impression that most SDC Master's programmes combine Danish and Chinese teaching traditions and methods, so students find themselves in a truly intercultural learning environment. From our interviews with students we have learned that in the beginning of their SDC studies the students are often challenged when faced with teachers from the other side (i.e. when Danish students face Chinese teachers and vice versa). However, the students generally perceive this as a positive and important experience.

Since 2015 UCAS has provided funding for all Chinese Master's students to visit Denmark as an integrated part of their SDC Master's programme. We see this as an important development and in the best interest of all parties involved. From a Chinese perspective, it makes the programmes even more attractive, thus resulting in better qualified students with an international profile. From a Danish perspective, it provides a good opportunity to establish closer ties between the Chinese students and Denmark, improving the chances of recruiting them to Danish companies and universities after graduation.

From our observations described above it is clear that cultural exchange takes place in the meeting between Danish and Chinese teaching traditions, when Danish and Chinese students live and study together etc. We believe the cultural exchange that takes place at the SDC is a huge asset for the teachers and students

at the SDC and not least for the Chinese and Danish societies as a whole. Therefore, we suggest that more is done to encourage cultural exchange, and we recommend that the partners conceive a plan to advance cultural exchange at the SDC.

We advise the Danish and Chinese sides to continuously assess the content and portfolio of the Master's programmes offered to make sure they are attractive to students and relevant for the partner universities and Danish and Chinese societies as a whole. We understand that the content of some Master's programmes has already been substantially modified based on teachers' feedback and student evaluations, and we see this as a positive sign that feedback mechanisms, to some extent, do work. However, we believe that the SDC should consider modifying some Master's programmes to make them more attractive. In the long run a remapping of the SDC's Master's programme portfolio could be considered, taking into consideration both Chinese and Danish interests and strengths with the aim of developing new programmes.

## Recommendations

- Launch more initiatives to improve the recruitment for the natural science programmes in particular. In this regard, the following should be considered:
- Consider whether the universities can do more to integrate all the SDC programmes in their educational portfolio, and let this be reflected in their recruitment efforts in relation to the SDC programmes. This should be part of an overall strategy reflecting the development of the SDC from the project to the institutional phase.
- Consider how it is possible to offset negative incentives of the taximeter systems, which makes it economically unattractive for the individual Danish university to recruit students to the SDC Master's programmes.
- Introduce more marketing efforts to increase the visibility of the SDC in both Danish universities and society.
- Assess the content and portfolio of the Master's programmes, both to strengthen and develop existing and new programmes, and to ensure that the SDC continues to be relevant to all its partner universities, businesses, and Chinese and Danish societies. This includes getting all Danish universities involved in the study programmes of the SDC.
- Add value to the SDC study programmes by developing and implementing a scheme to advance cultural exchange.
- Analyse how longer teacher stays in China for Danish teachers and researchers can be facilitated. Longer stays will help provide continuity and long-term sustainability of the Master's programmes, and enable teachers to build long-term relations with their Chinese counterparts.

## 2.2 PhD Programmes

The first SDC PhD students received funding in 2011 when fifty scholarships were offered by the Danish side part of the SDC. Since then funding has been allocated for PhD students annually.

SDC PhD students have double affiliation, both a Danish supervisor and a Chinese supervisor from UCAS or CAS. The Danish SDC PhD students must spend a minimum of six months at a Chinese research

institution during their studies, and they have the opportunity to obtain a double PhD degree if they meet the requirements of both Denmark and China.

Funding for and collaboration on PhD projects have been instrumental in supporting the development of the SDC collaboration, in the sense that they have been used extensively to kick start research collaboration between Danish and Chinese research groups, which again has been a prerequisite in establishing and sustaining the SDC Master's programmes. In some areas Master's programmes and research collaboration were established simultaneously and in these cases, the PhD scholarships have been important in gaining support for and interest in the SDC from Danish research environments and in establishing relations with Chinese research partners.

### Strengths

- **Double affiliation and co-supervision.** All SDC PhD students are assigned Danish and Chinese supervisors and are registered with UCAS and with one of the Danish universities.
- **SDC PhD students link research and educational activities.** Danish PhD students on research stays in China contribute to the educational activities here.
- **SDC PhD students have easier access to research facilities, equipment and data in China** than students not involved in the SDC.
- **Large degree of freedom** for PhD students and supervisors to define research projects within the SDC.

### Challenges

- **Only few SDC PhD students have obtained a double degree.** More PhD students are requesting a double degree from the partner institution, and the SDC management should do what it can to facilitate this
- **Alumni and career track.** The SDC should device a strategy for establishing an SDC PhD alumni programme.
- **A large share of the Danish SDC budget is spent on PhD scholarships.** While the PhD programme has been very successful in helping set up the initial Danish-Chinese collaborations that form the backbone of the SDC, it is worth considering if such a large investment is needed in the next institutional phase of the SDC.

Following the initial stage where focus has been on establishing contacts and research collaboration with Chinese partners, the Danish SDC management has subsequently pursued a strategy of integrating the PhD students into more of the SDC's core activities in order to exploit possible synergies. Danish SDC PhD students are now required to contribute to the educational activities in Beijing. This not only helps bridge the gap between research activities and classroom teaching, but also ensures that the PhD students are automatically integrated into the social environment surrounding the SDC. PhD students, who spend a significant period of time in China, see this as a plus, both socially and academically. In addition, PhD students and their supervisors find it easier to develop the research project in the direction they find most relevant. They report that the flexibility of 'few strings attached funding' makes it very attractive to be affiliated with the SDC.

The PhD students we met were all very satisfied with their projects and the framework provided by the SDC. They reported that they had access to research facilities, equipment or data that would otherwise have been unavailable to them had they not been involved in the SDC. In addition, their affiliation with the SDC has proven useful in approaching external partners such as research groups outside CAS/UCAS or private companies. These observations seem to be in line with the findings in the internal evaluation report, which show that approximately 70 per cent of SDC PhD students as well as their supervisors believe that a research stay in China benefits their project.

We believe that the model of double affiliation and joint supervision of PhD students has generally been a success. Assigning Chinese supervisors to Danish PhD students and vice versa helps embed the PhD projects in both countries' research environments and ensures good access to facilities. In other words, we see that the joint ownership model of the SDC pays off. We also commend the willingness of UCAS and CAS to accept the use of Chinese supervisors from outside the CAS system when it was deemed necessary from a scientific point of view.

We understand that the number of Danish and Chinese PhD students was unbalanced in the initial stage of the SDC, but also that this is no longer the case, as UCAS has now allocated annual funding for Chinese PhD students to go to Denmark. This is another indication of the high priority UCAS attaches to the SDC. The Danish research groups, which host the Chinese PhD students during their stays in Denmark, report that access to Chinese talent is very attractive to them. We see it as an important and positive development that talent – both PhD students and Master's students – is now moving both ways.

In general, we see the collaboration in PhD programmes as very promising and with a great potential to further strengthen the research ties between Denmark and China. Keeping in mind that the first batch of PhD students received funding just a few years ago, we will only point to a few issues that deserve the attention of the SDC partners. First, as stated in the Partnership Agreement PhD students should have the opportunity to obtain a double degree upon graduation, but so far only a few PhD students have received a double degree. We have noticed during our interviews that there is a willingness on both sides of the collaboration to make the double degree more easily available, and we support this effort. Second, while most PhD students have excellent opportunities in China in terms of access to data, lab facilities and equipment, a few PhD students do not benefit from their stay in China, e.g. if they have very little communication with their Chinese co-supervisor. We recommend that the SDC management and the Danish PhD supervisors jointly place more emphasis on the few PhD projects where collaboration can be improved. Third, PhD students have expressed a wish for a stronger network to share knowledge and experience before, during and after their stays in China. We support such an initiative, but also understand that the Danish SDC secretariat is already involved in this task. Fourth, we have learned that the SDC is not following up on the career track of the PhD alumni in a structured way and recommend that the SDC devises a strategy for establishing an alumni programme. Finally, we have noticed that a significant part of the budget on the Danish side is devoted to the funding of PhD projects. The Danish side of the SDC may consider whether this in the long term remains the best prioritisation of available funds.

## Recommendations

- Facilitate a double degree system.
- An alumni PhD programme will be very beneficial in the medium and long term.
- Consider the prioritisation of available funds in the long term, including the rather large part spent on the PhD programmes.

## 2.3 Research

The SDC currently focusses its research activities in five overall research areas – Life Sciences, Nanoscience, Social Science, Sustainable Energy, and Water and Environment. The selected research areas are all chosen based on complementary strengths of the Danish and Chinese partners, but have had different starting points in terms of prior collaboration and involvement of third-party Chinese collaborators.

### Strengths

- **Widening and deepening collaboration.** Since the establishment of the SDC research collaborations have emerged in new areas, often in relation to the Master's programmes, and the number and quality of publications have been steadily rising. Furthermore, third-party Chinese institutions have gradually become more involved in research collaboration.
- **The SDC provides an essential framework for collaboration.** The strong government support and the involvement of all Danish universities have been crucial in establishing such collaboration.
- **Access to research facilities, equipment and data.** Danish researchers have access to research facilities, equipment and data that would otherwise have been inaccessible.
- **More collaboration between Danish universities.** Collaboration on the Master's programmes has led to new research collaboration between researchers at the Danish universities.

### Challenges

- **The strength of UCAS and CAS lies primarily in natural sciences and, to a lesser extent, in other academic disciplines.** To address this challenge UCAS accepts and, under some circumstances, supports involvement of third-party Chinese institutions, although third-party institutions are not formally part of the partnership.
- **Danish researchers and teachers are mostly on short-term stays.** While a great number of Danish researchers and teachers travel to China for short-term visits, few travel to China on long-term stays.
- **Limited industry involvement. Industry involvement** in SDC research activities is still in embryo.
- **Limited external funding.** Few researchers obtain external funding for the joint Danish-Chinese research projects.

To a large extent the SDC research areas build on prior active research collaborations between Denmark and various CAS institutes. Such previous relationships were of pivotal importance to the establishment of the SDC and have been instrumental in creating a platform for SDC research collaboration.

We see it as a sign of the strength of the SDC that it has managed to grow beyond existing collaborations and has been able to cultivate new collaboration within areas with little or no prior collaboration. Furthermore, early on in the collaboration UCAS accepted and supported the involvement of third-party Chinese universities in areas where UCAS had difficulties matching the Danish partners – first and foremost within

Social Science. Thus, selected third-party Chinese universities have been involved in both research and education, receiving payment from UCAS. This is one of several signs that the Chinese partners are very committed to the collaboration.

Since the establishment of the SDC the number of Danish researchers visiting China within the framework of the SDC has been steadily increasing. Likewise, both the number and quality of co-publications have increased, as substantiated by the publication data provided by the SDC.

The development of the research areas has benefitted from collaboration on PhD projects. However, it is clear from our observations that extended and frequent stays in China by Danish researchers are instrumental in building both informal and professional relations with their Chinese counterparts. Danish researchers and teachers who have pursued this strategy speak of the importance of establishing informal connections to deepen and strengthen the professional ones. The move to the House of the Danish Industry Foundation will most likely facilitate longer stays, but we advise the SDC management to consider how it can encourage longer stays by Danish researchers and teachers. One of the main obstacles is the difficulties, not least financially, involved in bringing the family of researchers to China.

The dedicated researchers and teachers who believed in the vision of the SDC being at the forefront internationally in establishing a new kind of university partnership with China for the future benefit of Denmark, are the true pioneers. They have been crucial in the establishment and development of the SDC's activities. We believe that more can be done to communicate this pioneering spirit to the rest of the scientific community in Denmark, thus creating even stronger support for the SDC *raison d'être* at the Danish universities.

The SDC is a positive example of a combination of a top-down and a bottom-up approach where, in this case, authorities and universities establish a framework within which Chinese and Danish academic circles may foster and sustain long-term collaborations between individual researchers and research groups. Researchers report that it has been very beneficial to the establishment of collaborations with the Chinese partner institutions that the Danish researchers can refer to a partnership that has top-level government support in both countries and which involves all eight Danish universities. It sends a clear signal that the SDC is a long-term endeavour and has high priority in both countries.

Researchers report numerous benefits arising from their participation in the SDC. Some have gained access to research facilities, equipment and data, which would otherwise have been unavailable to them. Furthermore, due to the long-term perspective of the SDC, researchers have been able to engage in long-term data collection, which is rarely facilitated through other funding options. It is our clear conviction that such results could not have been achieved by creating a Danish university branch in China similar to many other Western universities' engagement in China.

Based on the accounts received from involved researchers and PCs, it is also evident that synergies are created by engaging in both education and research. Most researchers also teach at the SDC, and through their teaching activities they establish contact with their Chinese counterparts. The fact that both sides have ownership of and responsibility for the joint Master's programmes creates a forum which is beneficial to the

establishment of research collaboration. They are already part of the same project.

Clearly the strengths of CAS and UCAS lie mainly in the field of natural science and technology. This has made it necessary to involve third-party Chinese universities in the research and educational activities in the Social Science area in particular. It is positive that UCAS has accepted this involvement and, when it comes to third-party involvement in the Master's programmes, even provide funding for it. Given that third-party universities are not formal partners of the collaboration, it remains to be seen whether the collaboration will be as sustainable for the non-natural science collaboration as for the one that is embedded in the formal Partnership Agreement.

While one of the goals of the SDC is to establish research collaborations between Denmark and China, it is also very positive that the SDC collaboration has led to numerous new collaborations between researchers at other universities. Surprisingly 20 per cent of the SDC researchers state that their involvement in the SDC has led to other international collaborations but the direct Denmark-China collaborations.

It is a clear intention and ambition that the SDC should also be a platform for industry collaboration, as stated in the Partnership Agreement. The SDC has succeeded in involving industry in the study programmes through internship projects and guest lectures as well as through company visits, but it remains clear that industry-research collaboration is still in its infancy. However, both the SDC management and academic partners are aware of this challenge and express interest in pursuing the possibility with increased effort in the near future.

The SDC funding does not include funding for research. This funding has to come from existing funding mechanisms at the participating research institutions. In order to develop the research collaborations beyond their current level it will be necessary to find funding also from sources outside the research institutions themselves. We find it important that the involved universities, to a larger extent than now, will pursue a strategy to obtain third-party funding, including funding from the private sector.

## Recommendations

- Facilitate longer stays in China for the Danish scientists.
- Strengthen the communication to Danish universities about the possibilities offered by the SDC collaboration.
- Increase research collaboration with business and industry, Danish as well as Chinese.
- Increase third-party research funding of the SDC research collaborations.
- Be aware of the challenges posed to the non-natural science collaborative projects with the current Partnership Agreement.

## 2.4 Management

The principle of parity, which under the terms of the Partnership Agreement permeates all SDC activities, is also crucial to understanding how the management of the SDC is structured. On all levels of the organisation

– from the Joint Managerial Committee, through the daily management performed by the directors and their staff down to the teaching committees – the Danish and Chinese sides are equally represented.

As we have previously stressed in this report, this equal partnership is an important reason why we believe in the sustainability and bright future of the SDC. However, it is also a complicated set-up with some challenges. The focus of this evaluation is on the Danish side of the partnership, and in the following section we mainly concern ourselves with aspects of the Danish management. However, we have in the course of this evaluation observed examples of some of the challenges that characterise a complicated transnational organisation like the SDC and take the liberty to address them as well.

Finally, we find that a distinctive feature of the SDC is the high-level commitment by the governments of both countries, who have collaborated closely with the management of the SDC and the universities to pave the way for the collaboration.

### Strengths

- **Committed government involvement.** The close collaboration between the daily SDC management, the eight Danish universities and the Danish Ministry of Higher Education and Science has been essential to the establishment and development of the SDC.
- **The SDC unites the Danish universities.** The fact that the SDC unites all the Danish universities makes it more attractive to the Chinese partners and creates the basis for the collaboration.
- **Pragmatic and solution-oriented management.** The pragmatic and solution-oriented approach of the daily management, universities and ministries has been essential in achieving the goals of the Partnership Agreement.

### Challenges

- **Retaining the commitment of all Danish universities.** Due to limited resources and marginal involvement in the SDC, some universities may be tempted to reconsider their degree of involvement in the SDC.
- **Formalising administrative procedures and ensuring continuity of management in Beijing.** Changing Danish staff and absence of permanent Danish top management in Beijing can be a challenge to ensuring continuity and formalisation of administrative procedures.
- **The organisational structure is not fully implemented.** The two advisory boards have yet to be established.

We observe that the combined efforts of the Danish Ministry of Higher Education and Science, the Danish SDC secretariat and the universities have been essential to the establishment and development of the SDC up to this point. The Danish Ministry of Higher Education and Science has shown unwavering commitment to the project from its onset, and all ministers of higher education and science – as well as several other Danish ministers – have visited the SDC. Furthermore, the permanent secretary of the Danish Ministry of Higher Education and Science serves as the Danish Chairman of the Joint Managerial Committee. The Danish Board of the SDC, the SDC management and the Danish Ministry of Higher Education and Science have collaborated with a pragmatic and practical attitude, which has been pivotal in making the collaboration work. We see it as crucial to the success of the SDC that the commitment of the Danish Ministry of Higher Education and Science remains undiminished.

It is a major asset for the SDC that the partnership unites all eight Danish universities. The open access to the entire Danish research and educational environment is a strong incentive for participating in the collaboration, both for the Chinese partner and for the Danish partner universities. Furthermore, it means that the shoulders carrying the budget and tasks such as student recruitment, provision of human resources for teaching the Master's programmes etc. are broader; this will in the long run contribute to making the collaboration sustainable.

We observe that the Danish universities in general are strong supporters of the SDC. This is reflected by the Danish Board of the SDC, which comprises representatives from the eight Danish universities. Most members appointed to the board represent the top management of their home university. However, we have also seen indications that the support of some Danish partner universities may be wavering, partly due to economic factors and to limited involvement in the research and educational activities of the SDC. We believe it is crucial to the development and sustainability of the SDC that all Danish universities remain committed and signal this commitment to their organisations. This also implies that the Danish partnership strives to engage all participating universities in the SDC activities.

We observe that the Chinese partners are also committed. Several signs of commitment have been emphasised in this report. Furthermore, the Chinese management, like their Danish partners, has delivered pragmatic solutions to the challenges that emerge when two systems need to find compromises.

We observe that the daily management, formed by the directors and the secretariats in Aarhus and Beijing, has chosen a pragmatic and practical step-by-step attitude to the task of managing the SDC. Furthermore, we observe that the Danish SDC management has had good access to the Danish Ministry of Higher Education and Science, which again has approached its collaboration with the SDC management with a solution-oriented attitude.

Despite the commitment to the SDC on both sides, the organisational set-up of the SDC is not yet fully operational. Most noticeably, the two advisory bodies, the Industry Advisory Board and the International Scientific Advisory Board, have yet to be established. We have learned that there have been wholehearted attempts from both sides to appoint members to these boards. However, differences in the understanding of the role of the boards have been an obstacle to making them workable. As the SDC moves on to the institutional phase of its development, we advise the partners to revisit this issue with the aim of establishing the two advisory boards.

The secretariats, among others, provide services for faculty, PCs, HEPs, PhD students and Master's students, and overall the assessment of the efforts of the daily management and the secretariats is very positive. The management and secretariats are described as helpful, forthcoming and flexible and are generally seen to deliver the required services.

Furthermore, HEPs and PCs report that the management and secretariats have often been indispensable in efforts to establish contacts in the UCAS and CAS systems. Also, the secretariat in Beijing is given much credit for having played an important role in creating a good study and social environment for the students and faculties in Beijing. However, faculty and students also report some points of concern. Both students

and faculty ask for more formalisation of procedures, one point being that the secretariat in Beijing is vulnerable to staff changes as much seems to rely on the commitment of individual staff members. HEPs report that study administrative tasks take up much of their time and ask for more study administrative support. PCs and HEPs argue that the Danish management should be more present in Beijing in order to underline the Danish commitment to the SDC and facilitate the further development of the SDC. Nonetheless, we believe that expanding the administration of the SDC may not be the best way to address these concerns. Improved administrative procedures are better alternatives. Furthermore, we think the SDC for years to come will have to continue down the road of pragmatism and flexibility in order to reach its goals. That said, we do applaud any initiative to formalise routine procedures where possible, and we have learned that the daily management and its staff are working actively on this.

As for the suggestion regarding the presence of the Danish top management in Beijing, it is also relevant to consider the need for the Danish top management to cooperate with the Danish partner universities and stakeholders in Denmark. However, having permanent Danish staff stationed on a long-term basis at the office in Beijing has proved to be beneficial in ensuring the continuity of the management. We have learned that the Danish management is attempting to ensure such continuity by hiring permanent Danish staff to the secretariat in Beijing.

Finally, we want to point out that the move to the House of the Danish Industry Foundation represents a unique opportunity for the Danish side of the partnership to present Danish/Nordic culture to the Chinese students, researchers and stakeholders and ultimately to the Chinese public in general. We recommend that the Danish management makes it a priority to ensure that the new facilities represent Danish/Nordic culture through sustainable running of facilities, design and more.

## Recommendations

- It is important for the development and sustainability of the SDC that the highest level of political leadership continues to be committed to and involved in the SDC. One way to facilitate this could be to let the Danish Ministry of Higher Education and Science be represented on the Danish Board of the SDC.
- It is crucial for the development and sustainability of the SDC that all Danish universities are committed to the SDC, and that the university managements actively communicate their commitment to the organisations.
- Revisit the issue of establishing two advisory boards.
- Use the SDC's new facilities to present Danish/Nordic culture.

## 2.5 Training

Providing training for the industry and public sector is one of the tasks of the SDC, as stated in the Partnership Agreement. The fact that such training programmes have not yet been established is understandable, as priority has been given to the establishment of research collaboration and Master's programmes. However, given the coming move to the new facilities at the House of the Danish Industry

Foundation we believe it is relevant to revisit the ambition of establishing such training programmes within the framework of the SDC. Training programmes in e.g. Chinese culture and business culture could prove very attractive to Danish businesses in China and help establish an industry network around the SDC.

## Recommendations

- Revisit the ambition of establishing training programmes within the framework of the SDC.

### 3. Conclusions

During this initial stage of establishment and development the SDC has achieved significant results with regard to establishing joint Master's and PhD programmes and research collaborations. We ascribe this success mainly to the ambitious set-up of the partnership, a committed Chinese partner, the united approach of the Danish partner universities, the pragmatic and solution-oriented approach of all involved parties, including the daily management, and not least the sustained commitment of the relevant Danish ministries to the partnership.

Together these contributing factors have made it possible to implement a new form of university collaboration, which we believe will be more sustainable compared to other Sino-Western university partnerships, and which has the potential to create tremendous added value to the Danish and Chinese societies in the long run.

The joint Master's programmes have in many ways succeeded in creating added value through the equal partnership set-up. Danish and Chinese students are forming relations which we believe will be of benefit to the Danish and Chinese societies in the long run; Danish and Chinese teaching methods influence each other; and in several programmes the students have the opportunity to establish relationships with Chinese and Danish businesses in China. Not surprisingly, the relatively young joint programmes also face challenges. Most importantly, recruiting Danish students to some of the natural science programmes has proven difficult, and we recommend a concerted effort on the part of the daily management, the universities and the relevant ministries to strengthen the recruitment and clear away the obstacles. Finally, we advise that the partners continuously assess the programmes with a view to ensuring their relevance to both countries and to the students.

PhD students have been instrumental in building the partnership and making the SDC attractive to its researchers and teachers. Furthermore, Danish PhD students are becoming more and more integrated in the educational activities at the SDC. This is very positive. The next step for the partners will be to ensure that all the SDC's PhD students can obtain a double degree.

Within the framework of the SDC the research collaboration has yielded important results for the partners. The number of Danish researchers involved in collaboration with the Chinese partners is rising, and so is the number of joint publications. Being part of the SDC means that the Danish researchers have access to data and hardware in China that would otherwise have been unavailable to them. Furthermore, the involvement in Master's programmes and research activities has led to more collaboration between the Danish universities.

To further realise the potential of the partnership, however, we believe it is essential to analyse and address the obstacles to long-term stays in China by Danish researchers and teachers.

A main challenge for the Danish side of the partnership is to increase the overall visibility of the SDC both among its immediate stakeholders and in the general public. A stronger profile can help attract more students, raise the awareness in the Danish academic environment about the possibilities offered by the SDC and help catch the attention of the industry.

Establishing and running a partnership like the SDC is a challenge in itself, but as long as all the Danish universities remain committed and the relevant ministries eagerly support the collaboration we believe that the SDC can successfully make the transition from this early stage of establishment, development and consolidation, which one may refer to as the project phase, to the next phase that is characterised by more steady institutional collaboration – the institutionalisation phase – which we believe should be the focus of the partners in the years to come. We see clear signs that this is already happening, e.g. UCAS awarding the SDC the status of college and providing funding for the Chinese SDC students to go to Denmark.



**SDC**

The university partnership  
Denmark – China

Phone: +45 8715 2597  
Mail: [contact@sinodanishcenter.dk](mailto:contact@sinodanishcenter.dk)  
Web: [sinodanishcenter.com](http://sinodanishcenter.com)