Strategic Sector Cooperation on Clean Heating Between Denmark and The People's Republic of China

Key results:

- 1) Support and guide development of relevant administrative guidelines to improve the integration of renewable energy and efficient planning in the Chinese heating sector;
- 2) Agreed model for knowledge sharing between district heating authorities;
- 3) Contribute to the achievement of the Chinese Government's long-term heating sector objectives.

Justification for support:

China has the world biggest national district heating system, and a large expansion is projected in the coming years. However, the district heating system faces challenges with regard to:

- Lack of national district heating regulation to develop and implement the district heating system
- Unclear responsibilities and lack of coordination between authorities severely limits the modernization of the Chinese district heating sector.
- Energy efficiency and use of surplus heat

During the last 3 years of Danish-Chinese cooperation under the Danish Energy Partner Programme II, the Chinese side has asked if Denmark would be willing to deepen the Danish-Chinese partnership by expanding the cooperation to include a component on district heating. The Danish Energy Agency will draw on a broad knowledge base in Denmark to present real cases of administrative set-ups, district energy projects, conclusions from previous pilot projects and set up in-depth discussions with local decision makers and experts to tailor project deliverables.

The background analysis clearly shows the significant value in the joint development of a list of district heating policy measures relevant to the Chinese context. The Danish Energy Agency will build on the results of the last three years of collaboration under the Danish Energy Partner Programme II and supply best practices on policy developments and heat planning knowledge.

Major risks and challenges:

Political interest and relevant capacity development are essential features. A high-level steering committee will be used to address these risks.

Strategic objectives:

The Strategic Sector Cooperation on Clean Heating aims at assisting the development of relevant policies, strategies and solutions to improve the integration of renewable energy and efficient planning in the Chinese heating sector.

Justification for choice of partner:

China Renewable Energy Engineering Institute (CREEI) are new partners to Denmark. They have expressed their strong interest in collaborating on "Clean Heating Plans in Northern China" and "Promotion of clean energy applied in DH" which are the exact policy areas. Following the inception phase, the National Energy Agency (NEA) has appointed CREEI as the appropriate agency to implement the SSC. In addition, the project scope will add a new dimension to the "Danish Energy Partnership Programme (DEPP) headed by the Danish Energy Agency and affiliated Chinese partners.

Summary:

This project addresses challenges faced by the Chinese Government regarding development of relevant policies, strategies and solutions to improve integration of renewable energy and efficient planning in the heating sector. Denmark can provide assistance and inspiration to develop a model ensuring a uniform approach to district heating legislation and knowledge sharing. This knowledge can help outlining measures that consistently guide district heating planners and municipal authorities. The project will contribute in achieving the Government's long-term objectives in the heating sector and support China in reaching and future upscaling their National Determined Contributions (NDC).

Budget:

Dudget.	
Personnel – Danish Authority	5,052,561
Reimbursable Costs for Danish Authority Staff	1,716,516
Activities, Including Capacity Development	830,000
Consultancies* (max. 30% of grand total)	1,400,000
Unallocated funds (max 20% of grand total	1,000,000
Total DKK	9,999,077

File No.	2018-46	817			
Country	The People's Republic of China				
Responsible Unit	GDI				
Sector	23110 – Energy policy and administrative management				
Partner	Ministry of Energy and Natural Resources				
DKK mill.	2020	2021	2022	2023	Total
Commitment	10				
Projected ann. disb.	2.3	3.0	3.1	1.6	10
Duration	36 mont	hs from	date of ap	proval by	MFA
Previous grants	DKK 1,	235,000 (Inception	n Phase)	
Finance Act code	§06.38.	.02.14			
Head of unit	Rasmus	Abildgaa	rd Kriste	nsen	
Desk officer	Tilde He	ellsten/Ja	kob Hauş	gaard	
Reviewed by CFO	Christina	a Hyttel I	Hedegård		
Relevant SDGs [Max	imum 1 – i	highlight n	rith grey]		

2 100



































MFA File No: [insert]

Project Document for Strategic Sector Cooperation on Clean Heating

between

Denmark and The People's Republic of China

General information		MFA File no.	
Project Title	Sino-Danish Clean Heating Cooperation		
Partner Country	People's Republic of China (PRC)		
Project duration	3-year duration, from July 2020 to June 2023		
Total budget (DKK)	10.000.000 DKK		
Thematic focus	District heating in P.R. China		
Partner Public Authority Contact person and contact details	search and advise ministration (NE	e Energy Engineering Institute (CREEI), re- ory organisation under the National Energy Ad- A): irector of New Energy Department (zha-	
Responsible Danish Public Authority Contact person and contact data	Danish Energy A Niels Frederik M	Agency (DEA), Salskær, Advisor (nfm@ens.dk)	
Danish Embassy	Royal Danish Er	nbassy to the People's Republic of China,	
Head of Representation	Anders Carsten 1	Damsgaard, Ambassador/HOM	
Sector Counsellor	Emrah Öztunc,	Sector Counsellor Energy (emrozt@um.dk)	
Summary of background analysis and key strategic choices (max 2 pages)	Firstly, the experimulti-year Danis provide an invalugramme to address The SSC program 2 and expand the new partner. At vided important juridical and cult the same way the on to the DEPP sights on district the document at	dge base informing this application is twofold. iences gained through the second phase of the h Energy Partnership Programme (DEPP 2) hable foundation for designing this SSC prosess our partners' needs in an effective manner. In will build upon a knowledge base from DEPP is knowledge by initiating collaboration with a the same time the DEPP 2 program has prounderstanding and insights into both technical, ural framework conditions for DH in China. In a SSC program is expected to function as an add-3 program, ensuring updated knowledge and inheating for national energy modelling. Secondly, tached as Annex 1 provides an overview of the istrict heating in China while indicating areas	

where Danish expertise and policy recommendations could make significant impacts.

The lack of a national district heating regulator to develop and implement regulation is one of the defining challenges in the Chinese sector, and presently limits the modernization of the Chinese district heating sector. In China, district heating is being regulated from a number of authorities both on a national and local level, and Denmark can provide assistance and inspiration to develop a model which ensures a uniform approach to district heating legislation and knowledge sharing. As things currently stand, cases of overlapping functions and responsibilities between institutions make for a murky landscape of rights and responsibilities, preventing a common understanding being reached. If the legal framework for DH does not reflect a common understanding that can solve disputes between different stakeholders, an overabundance of caution will limit those who are willing and able to move the systems in a more socioeconomic and environmentally friendly direction.

In order to implement regulations, energy policies and national targets within DH, it is necessary to outline measures that consistently guide district heating planners and municipal authorities to achieve the established objectives. These measures should not only focus on district energy, but also consider the interdependencies of energy mapping and planning with urban planning and development to optimize resources and efforts between different sectors. A coherent national regulation would enable a stronger collaboration between institutions at a national/local level, agencies and DH suppliers, especially in case of overlapping functions and responsibilities. In order to define rights and responsibilities, it is necessary to avoid the ambiguities from the current complex forms of assets ownership and possession. Ownership is currently separated from management rights and responsibilities.

The background analysis has clearly shown that there would be significant value in the joint development of a list of DH policy measures that would be relevant for China. These measure should draw on Danish experiences and would, for example, set targets for DH expansion, assess how implementation of pricing by consumption might work, suggest improvements to financial mechanisms etc. with the central purpose of improving DH efficiency.

It would be essential to take local conditions that promote specific efficient technologies, urban development ambitions, emission levels and clean fuels into account. Furthermore measures and suggestions should align with national strategies or promotion of renewable energy sources through energy mapping of local resources.

The guidelines can also serve as a baseline for comparison and revision by setting a standardized system for requirements, conditions, key performance indicators and assumptions for investment. An improved review of future projects under a common baseline ensures a better control and planning of the DH sector development, while generating information and benchmarking at a national and local level.

The Chinese and Danish bilateral collaboration under DEPP 2 – and the background analysis, attached as annex 1 – clearly outlines that clean heating policies in China has focused on 5 areas in the last decade. These areas are:

- 1. Fuel conversion from coal to gas
- 2. Electricity for heating
- 3. Clean Heating Plans in Northern China
- 4. Promotion of clean energy applied in DH
- 5. Funding Models to support clean heating

When combining this list with the interests of the key national stakeholders, as identified in chapter 4 of the background report, there is considerable overlap with the stated goals of the project. From shaping a more conducive framework in support of clean heating to ensuring dispersal of central funds to local decision makers executing district energy projects, there are many actors pulling in the same direction.

Furthermore, several SDGs can be pursued simultaneously through this project, which will be mapped out in the next section of this application.

Danish expertise clearly lends itself to several of these areas, especially 'Clean Heating Plans in Northern China' and 'Promotion of clean energy applied in DH' which are the exact policy areas that our newly established partners at CREEI, have expressed they would like to collaborate on. The organization have clear interests in the priorities of the project and have been appointed by NEA as the appropriate agency to handle the international collaboration.

The Danish Energy Agency will build on the results of the last three years of collaboration under the DEPP II programme, and supply best practices on policy developments and heat planning knowledge. This experience will be matched with Danish knowledge and technological solutions on DH that would suit the Chinese market. Danish energy solution providers are already present in the Chinese market and are eager to engage on a deeper level. This combination will ensure that the full palette of

	Danish competencies – knowledge, technologies and policy – is brought to bear in this cooperation.
Linkages to UN Sustainable Development Goals	
	SDG 17: Global Partnership - 17.14 Enhance policy coherence for sustainable development – the project pursues this goal by highlighting the benefits of more holistic energy planning, and of harmonising national and local goals.
Project Logic (Theory of Change) 1/2-1 page	Currently, there are no national policy guidelines aimed at increasing energy efficiency in Chinese district heating systems. Local level district heat planning and investment decisions are not guided by systematic assessment of economic and environmental

costs associated with different supply alternatives. Essentially, socioeconomic factors, such as the cost of pollution, are not accounted for. The intended outcome of this project is to develop strategies and policies that highlight the socioeconomic benefits of district heating including the use of industrial excess heat.

The theory of change is that, by informing central policy decisions through evidence of socioeconomic and environmental benefits of more sustainable district energy, NEA can make decisions and recommendations with greater certainty about key concerns. These concerns would include the economic costs of reducing the role of coal in district heating and industries, and the environmental costs associated with coal consumption.

Furthermore, by strengthening NEAs capacity to generate convincing policies and planning inputs for sustainable energy planning, NEA can successfully influence local level planning frameworks to consider sustainable alternatives for investment decisions. Sustainable district energy solutions can be expected to become the preferred solution by local level decision makers when making investment decisions once externalities, for example the social cost of pollution, are quantified and accounted for.

The targeted output in this regard is that DEA empowers CREEI and local decision makers with proven tools and knowledge to make holistic heat planning that include assessment of long-term socioeconomic and environmental impacts of potential supply options. In order to ensure local relevance of the planning methodologies, knowledge and tools; DEA will draw on a broad knowledge base in Denmark to present real cases of district energy projects, conclusions from previous pilot projects and set up in-depth discussions with local decision makers and experts to tailor our deliverables to the Chinese context. This will ensure that the results of our work has immediate utility to our partners when they are asked to recommend policies that shapes the thermal energy-planning sector.

To maximize the impact of the new tools and guidelines on local level implementation and investment decisions for district energy, the second output is that CREEI expands its local level engagement regarding sustainable district energy. If the Danish support is successful, local authorities and district heating companies will recognize the value of the assessment tool and guidelines before the end of the program, and a plan for further dissemination of the methodologies is initiated.

Finally, the DEA will work towards affecting central level policy-making. CREEI's capacity to evaluate energy policies will be ex-

	tended to cover sustainable district energy by working with Danish experts to produce input for policy notes, guidance documents and analyze key issues concerning stated policies.
Main objective of SSC project	The objective of the SSC project is to assist Chinese government agencies and other relevant stakeholders in developing relevant strategies, policies and solutions to improve the integration of renewable energy and efficient planning in the heating sector and to achieve the government's long-term objectives for the sector. While addressing the stated objective, the project will indirectly support China in the implementation of their NDC targets and enable China to upscale their future NDC mitigation targets.
Outcome 1	Strengthened Sino-Danish district heating and energy efficiency knowledge transfer between relevant institutions and organizations in order to understand and overcome market and policy barriers to promote clean energy supply.
Output 1.1	GAP Analysis developed to deepen mutual understanding of challenges for clean and efficient heating, including economic incentives for renewable energy and energy efficiency.
Output 1.2	Professional knowledge network facilitated, creating a foundation for cross-sectional exchange between research, trade and regulatory institutions.
Output 1.3	Relevant experts in Denmark and China engaged in the project to provide input and ensure dissemination of relevant results.
Outcome 2	Enhanced heat sector policy exchange with CREEI and other relevant parties to increase energy efficiency and the share of renewable energy in the 14th Five Year Plan and beyond.
Output 2.1	Chinese policy recommendations developed using best practices from the Danish heating sector.
Outcome 3	Established enabling and conducive environment for the development of district heating using renewable energy and local resources, emphasising and directly valuing the socioeconomic benefits of reduced emissions and air pollution.
Output 3.1	In-depth analysis of Chinese district heating systems performed in selected areas with local partners and relevant institutions to highlight benefits of efficient district heating based on local resources and renewable energy areas.

Output 3.2	Training programme on Danish methodologies for district heating planning and the District Heating Assessment Tool (DHAT) implemented for staff in relevant authorities and institutions.
Assumptions and risks	Main assumptions comprise:
½-1 page	That the commitment from CREEI to carry out the 3 tracks of the project is genuine and realistic under prevailing conditions.
	That the Chinese interest in learning from overseas regulatory, technological and planning experience is genuine.
•	 That key experts in Denmark and China can see the potential in a strong knowledge exchange and are able to provide inputs to the program.
	Main risks comprise:
	District heating projects have historically been long-term, capital-intensive investments. One risk is that the technical assistance provided is not included in new regulation and guidelines due to the urge to fast-track ambitious targets. This could compromise sufficient quality in projects, thereby reducing the impact on the green transition.
	Access to low cost financing is an obstacle to ensure the desired impact of the project. Both foreign and domestic institutional investors are facing significant barriers to investment in renewable energy. This can hinder otherwise valid improvements to projects highlighted by Danish methodologies.
	Lack of capacity for ownership to the cooperation from partner organisations would comprise a risk for the project. However, both partner institutions have found the Danish support to be of great interest and demonstrate a genuine ownership to the cooperation as it has been confirmed by participation and engagement in meetings during the program preparation.
	Capacity building carries the build-in risk that the knowledge is lost from the organisation over time. This can happen either due to changes in the staff or lack of opportunities to follow-up on the knowledge. This will be mitigated by ensuring that all information is collected in a compendium and made available for the participating organisations.
Management set-up	The SSC program will be managed through a working group. The working group consists of Chinese and Danish representation, having the overall strategic dialogue between Denmark and China in relation to the district heating cooperation. The working group will formulate and approve the yearly work plans and continuously monitor the progress of the partnership. The activity

	schedule will define the areas and methodologies for implementation of the program.
	The working group will be small and operational and anchored at a high level in order to ensure allocation of personnel and political utility of the outcomes. A Deputy Director General or Head of Division will represent each organisation at meetings whenever feasible.
	Written minutes are agreed upon in a written procedure following each meeting.
	DEA will in close cooperation with the Royal Danish Embassy in Beijing manage the day-to-day implementation of the programme, including preparing material for the Steering Committee.
Contributions from Dan-	DEA will contribute with:
ish Public Authority	Overall project management and administration.
	Danish experts.
	Costs of Danish experts, including local transport and accommodation.
	Costs of study tours (airfare, hotel, visa, per diem, local transport, on a case by case basis).
	Contracting consultancy services.
	Costs of special arrangements, such as seminars, workshops etc.
	Drafting project documents.
	The Royal Danish Embassy to China (RDE) will contribute with:
	Hosting a Sector Counsellor dedicated to the Clean Heating project.
	The Sector Counsellor will coordinate closely with DEA's project manager for the Clean Heating programme.
	The Sector Counsellor will be the day-to-day contact to CREEI and other Chinese stakeholders, supported by the local adviser and will drive progress on project activities.
Contributions from part- ner authority	The partner institution CREEI will contribute with:

 Support for coordination and logistics Support for organisation of meetings, seminars Infrastructure and facilities where reletions and capacity building 	workshops and
seminars • Infrastructure and facilities where reletions and capacity building	•
tions and capacity building	evant for presenta-
Budget The overall budget is 9,999,195 DKK, allocat 2023.	ed for use in 2020-
Personnel – Danish Energy Agency	5,052,679
Reimbursable costs for Danish Energy Agency Staff	1,716,516
Activities, including Capacity development	830,000
Consultancies	1,400,000
Unallocated funds	1,000,000
Grand total	9,999,195

Authorised Signatures:

Anton Beck

Danish Energy Agency

Date: 02/06/2020

China Renewable Energy Engineering Institute

25/5/2020

Date:

Annex 9 - Quality Assurance checklist for appraisal of programmes and projects¹

File number/F2 reference: 2018-46817

Programme/Project name: Strategic Sector Cooperation on District Heating

Energy Between Denmark and China

Programme/Project period: June 2020 – June 2023 (3 years)

Budget: 10 mio. DKK

Presentation of quality assurance process:

The preparation of this project under the Strategic Sector Cooperation Facility follows the SSC guidelines. The preparation and decision making process consists of three steps:

- 1) This project is a continuation of an already existing project which has undergone an inception phase and also a new joint program with the Danish Energy Authority. Under the project formulation there has been thorough discussions between all relevant stakeholders. This includes guidance and comments from the Secretariat for Strategic Sector Cooperation;
- 2) Preparation of the required project document, annual work plans, budget and an updated background study, which includes a context analysis and a basic base line assessment. Prior to the official submission of the signed project document, a quality assessment dialogue takes place between the Secretariat for Strategic Sector Cooperation and the Danish authority;
- 3) Approval of the project document, which is signed by the local Indonesian and Danish partners. The Secretariat for Strategic Sector Cooperation validates that the required information and analysis is included as per the SSC guidelines. Projects with a total value of 10 million DKK or above are approved by the Minister for Development Cooperation.
- □ The design of the programme/project has been appraised by someone independent who has not been involved in the development of the programme/project.

¹ This Quality Assurance Checklist should be used by the responsible MFA unit to document the quality assurance process of appropriations where TQS is not involved. The checklist does not replace an appraisal, but aims to help the responsible MFA unit ensure that key questions regarding the quality of the programme/project are asked and that the answers to these questions are properly documented and communicated to the approving authority.

The SSC Guidelines do not include an independent appraisal. However, the overall Strategic Sector Cooperation Initiative was reviewed in 2017 and an evaluation currently taking place (late 2019/early 2020).

Two persons in the Secretariat assess the project document using the SSC Guidelines, the OECD/DAC quality criteria and the guide for external appraisal of Projects and Programmes up to 39 mill. DKK as a point of departure. Subsequently, the project manager in the Danish authority makes the necessary adjustments.

□ The recommendations of the appraisal has been reflected upon in the final design of the programme/project.

N/a (see above).

□ The programme/project complies with Danida policies and Aid Management Guidelines.

The SSC project complies with the SSC guidelines and Danida policies. The SSC guidelines draw on the overall principles and concepts of the Aid Management Guidelines.

□ The programme/project addresses relevant challenges and provides adequate responses.

Yes.

□ Issues related to HRBA/Gender, Green Growth and Environment have been addressed sufficiently.

The SSC guidelines do not include issues related to HRBA and gender directly. Sustainable development and environment issues are covered by the SSC projects.

□ Comments from the Danida Programme Committee have been addressed (if applicable).

N/a.

□ The programme/project outcome(s) are found to be sustainable and is in line with the partner's development policies and strategies. Implementation modalities are well described and justified.

The focus areas are defined and the project document is elaborated in collaboration between the Danish authority and its key partner, and finally agreed at management level before submitting to the SSC Secretariat. Basic project outcomes are described in the project document. □ The results framework, indicators and monitoring framework of the programme/project provide an adequate basis for monitoring results and outcome.

Considering the nature of the partnership between Danish and local authorities the results framework in the project document is considered adequate.

□ The programme/project is found sound budget-wise.

Yes. The SSC project budget follows the SSC guidelines and budget templates complying with the budget guidelines issued by the Ministry of Finance (budgetvejledningen) and the principles for the calculation of overhead for state agencies (vejledning om prisfastsættelse) from the Agency for Modernisation.

□ The programme/project is found realistic in its time-schedule.

Flexibility in the design and implementation modalities are important features of the SSC projects, and is one of the prerequisites of the SSC approach for relevance and results. Hence, changes in the actual implementation is frequent.

□ Other donors involved in the same programme/project have been consulted, and possible harmonised common procedures for funding and monitoring have been explored.

As part of the inception phase other donors have been consulted.

□ Key programme/project stakeholders have been identified, the choice of partner has been justified and criteria for selection have been documented.

China Renewable Energy Engineering Institute (CREEI) are new partners to Denmark. They have expressed their strong interest in collaborating on "Clean Heating Plans in Northern China" and "Promotion of clean energy applied in DH" which are the exact policy areas. Following the inception phase National Energy Agency (NEA) has appointed CREEI as the appropriate agency to implement the SSC. Also the project scope will add on to the energy programme DEPP headed by the Danish Energy Agency and affiliated Chinese partners. The proposal has been developed by the Danish Energy Agency in collaboration with the Chinese partners.

□ The executing partner(s) is/are found to have the capacity to properly manage, implement and report on the funds for the programme/project and lines of management responsibility are clear.

The SSC projects are implemented directly by the Danish partners.

□ Risks involved have been considered and risk management integrated in the programme/project document.
Yes
☐ In conclusion, the programme/project can be recommended for approval: yes/no

& Jakob Haugaard

Date and signature of management: 2020 Rasmus Abildsgaard

2020

Tilde Hellsten

Date and signature of desk officer: