

**Energy Efficiency  
National Energy Conservation Centre**

**Development Engagement Document  
Annex E to  
Energy Partnership Programme between China and Denmark  
Development Engagement 2**

**Draft April 17<sup>th</sup> 2017**

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## **1 INTRODUCTION**

The present development engagement (DE) document details the objectives and management arrangements for the development cooperation concerning “Energy Efficiency with the National Energy Conservation Centre” for the period from July 2017 to June 2020 as agreed between the parties specified below. This DE with NECC is part of the support provided through the Energy Partnership Program between China and Denmark. The Partnership Programme with China is embedded in the Danish Energy Agency (DEA) Energy Partnership Programme (DEPP) supported by the Danish Climate Envelope focusing on four countries including also South Africa, Mexico and Vietnam.

## **2 PARTIES**

Danish Energy Agency  
Amaliegade 44  
1256 København K

and

China National Energy Conservation Centre (NECC)  
Sanlihe North Street No. 12  
Xicheng District, Beijing

## **3 DOCUMENTATION**

The documents that support this intervention are:

1. China’s INDC
2. China’s 13th Five-Year-Plan
3. MoU between the Chinese Development and Reform Commission and the Danish Ministry for Energy; Utilities and Climate
4. MoU between China’s National Energy Conservation Centre and the Danish Energy Agency

## **4 BACKGROUND**

China submitted its Intended National Determined Contribution (INDC) on 15 June 2015 and ratified the Paris Agreement on September 3, 2016. There are four components in the NDC: 1) a peak in CO<sub>2</sub> emissions around 2030; 2) a reduction of carbon intensity by 60-65 % in 2030 compared to 2005 3) an increase in the share of non-fossil fuels in primary energy consumption to 20%<sup>1</sup> and 4) an increase in the forest stock volume by 4.5 billion m<sup>3</sup> compared to 2005.

As part of the implementation of these targets China has in their 13<sup>th</sup> Five-Year-Plan (FYP) put a cap of 3500 Mtoe on their energy consumption in 2020 and a target of reducing their energy intensity by 44% below 2005 levels by 2020. China expects 65% of the savings to come from structural changes; 17% from increased efficiency in buildings; 13% from efficiency in industries and 5 % from increased efficiency in the transport sector.

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<sup>1</sup> The current share of non-fossil fuels in the primary energy consumption was 12% in 2015 and the goal in the 13<sup>th</sup> FYP is 15% in 2020.

In China, industrial waste heat equals 30% of the total industrial energy consumption, and in the current situation, about 60% of the industrial waste heat could theoretically be utilized for energy purposes including for low temperature heating (50-200 degree Celsius) in district heating. However the opportunities are hardly pursued, due to institutional barriers, current incentives, and a strong focus on cost of initial short term investments in the development of district heating and procuring of new technologies as opposed to long term economically and environmentally sustainable solutions as basis for investment decisions. District heating systems require large initial investments but have relatively low operational costs. Therefore, the full costs and benefits should be determined through long-term investment models. Experience from public heat planning in Denmark suggests that such models can furthermore benefit from public approval procedures where proposed new district heating projects are evaluated against criteria that assess long-term viability.

By way of bilateral cooperation, China intends to introduce these methodologies and technologies for industrial enterprises and district heating companies through a combination of on-site training and implementation of pilot projects.

The National Development and Reform Commission (NDRC - the ministry responsible for strategic economic restructuring including the development of China's five year plans) has instructed NECC to work with DEA on this topic and NECC is to provide feedback to NDRC on results from these outputs. NECC, established in 2009, is a public service institution directly affiliated to the NDRC. NECC has been tasked with encouraging the entire economy to achieve the targeted cap for energy consumption and the energy intensity reduction target stipulated in the 13<sup>th</sup> FYP. They provide policy advice on the issue directly to the NDRC. NECC also regulates the most energy intensive industries in China, sets targets for energy intensity and monitors progress towards those targets.

NECC has broad influence on energy conservation in China because it is directly affiliated to NDRC's Department of Resources Conservation & Environmental Protection. This means that NECC has access to national information and data, and also has the power to reflect their research results in their policy suggestions to NDRC. They have a large presence at decentralised levels including 45 provincial level EC centres, 300 municipal level EC centres and more than 1700 county level EC centres. This network provides NECC with a comprehensive understanding of the development in all regions of China and the individual, region challenges. Together with the local centres NECC already today organizes topic-specific trainings and workshops, addressing the particular technical challenges of individual regions.

The previous cooperation between NECC and DEA has centred around awareness-raising on opportunities in energy efficiency (EE), capabilities and technologies of Danish companies in this regard and on information exchange on EE policies and tools. From this cooperation it is clear that guidelines and tools for assessing the benefits of long-term planning in district heating would potentially be useful means to address some of the barriers for a more sustainable district heating sector in China. The previous support also included initial work to identify TA pilot projects suitable to demonstrate the merits of utilising excess heat from industry for district heating. The continued cooperation between DEA and NECC has point of departure in the previous support while also responding to

requests from NECC to expand the cooperation to include additional topics. Accordingly, the new programme is agreed by the parties to have a particular focus on district heating (including potential for co-generation and excess heat from industries) and EE in industries. These areas are a good match for Denmark's core competencies, including commercial partners, and are also not covered by NECC's other partners (GiZ, WB and Japan). There are potential synergies with GiZ's work on sustainable cities and EE in buildings.

The cooperation between NECC and DEA will continue to be anchored with the international division of NECC.

## **5 DEVELOPMENT ENGAGEMENT OBJECTIVE**

The objective of the wider Energy Partnership Programme between China and Denmark is: "To assist China in moving to a less carbon-intensive energy sector including through increased share of RE and sustainable district heating". This is in alignment with China's stated ambition in their NDC. The particular objective for this DE is to help facilitate the development of a less carbon intensive district heating- and industrial sector by working with NECC to develop a more efficient planning- and implementation framework.

The DEA will base the actual support on progress attained in the implementation of the engagement as described in the documentation. Progress will be measured through NECCs monitoring framework as relevant, the indicators for the Danish Climate Envelope, and specific indicators developed for this DE.

## **6 THEORY OF CHANGE**

Currently, there are no national central policy guidelines in China specifically targeting increase of EE in industries through district heating. Local level district heating planning and investment decisions are not guided by systematic assessment of economic and environmental costs associated with different supply alternatives. The intended outcome of this DE is that an enabling environment is established that is more conducive for development of sustainable district heating systems including through utilization of industrial excess heat.

The theory of change is that by informing central policy decisions through evidence of economic and environmental benefits of more sustainable district heating, NDRC can make decisions with greater certainty about key concerns such as the economic costs of phasing out of coal in district heating and industries, and the environmental costs associated with the sector's coal consumption.

Furthermore, by strengthening NECCs capacity in generating convincing policy and planning input for sustainable district heating, NECC can successfully influence local level planning frameworks to consider sustainable alternatives for investment decisions. Sustainable district heating solutions will expectedly more often become the preferred solution chosen by local level decision makers for implementation.

The targeted output in this regard is that NECC and associated local ECs are capacitated in sustainable district heating analysis through the development of new assessment tools and best practice guidelines for district heating planning procedures that are extended to

include assessment of long term economic and environmental impact of technology solutions of all relevant supply options. For this to happen, planning tool and best practice planning procedures developed as part of this DE will be tailored to the local context and informed by real cases of district heating projects under development where actual data from pilot projects is analysed using Danish project planning tools. From these pilots, specific tools suitable for local authorities will be developed and if the Danish support is successful they will further be used by NECC to inform their guidelines and policy recommendations.

To maximise the impact of the new tools and guidelines on local level implementation and investment decisions for district heating, the second output is that NECC expands its local level engagement in sustainable district heating. If the Danish support is successful at least two local authorities and/or district heating companies adapts the assessment tool and guidelines before end of programme and NECC is capacitated to disseminate them more widely throughout its local level network.

Finally, the DE will work towards central level policy making. As the third output, NECC's capacity to evaluate stated EE policies is extended to cover sustainable district heating by working with Danish experts to produce input for policy notes, guidance documents and analyse key issues with regards to stated policies.

The support to NECC to make above changes happen will be the provision of long- and short-term advisory support provided by DEA and external consultants who will work closely in a peer-to-peer relationship with China's government officials. Furthermore, exchange visits to Denmark of key people involved in planning and policy development and targeted workshops will be organized to strengthen the capacity of relevant project partners and to disseminate information to civil society and private stakeholders, thereby also validating assessment tool inputs and outputs. In regards to the third output targeting NECCs capacity to analyse stated policies DEA is able to provide support in a demand-responsive manner to be able to respond to NECC request for support as they arises from the ongoing policy debate.

Successful achievement of the outcomes rests on the assumption that the government of China retains its commitment to a less carbon-intensive economy including through increased efficiency in district heating and industry, and that this commitment is reflected in key planning documents. For the capacity building to be successful, a key assumption is also that NECC makes available adequate staff resources and that staff remains in posts long enough to take up results from the cooperation and to carry through change.

## 7 RESULTS FRAMEWORK

<b>8 Outcome</b>		Enabling environment that is more conducive for development of sustainable district heating systems including through utilisation of industrial excess heat, is established.	
Outcome indicator		NDRC has adopted recommendations provided by NECC for district heating planning including utilisation of excess heat from industries.	
Baseline	Year	2017	The potential for utilization of low temperature heating from industries is not being realised.
Target	Year	2020	NDRC has issued guidelines for district heating planning that includes utilization of industrial waste heat.

Output 1		<b>NECC has strengthened capacity in district heating planning</b> NECC has additional capacity to advise on sustainable district heating solutions including by means of an assessment tool, and has developed district heating guidelines/policy recommendations.	
Output indicator		Guidelines and planning tools for district heating planning produced and presented to NDRC.	
Baseline	Year	2017	District heating technical requirements exist only, and district heating guidelines and planning tools are absence.
Target	Year 1.5	2018	District heating planning project identified, data and local barriers are analysed serving as input for development of an assessment tool <sup>2</sup>
Target	Year 3	2020	Guidelines and planning tools produced and disseminated to local and national stakeholders

Output 2		<b>NECC has expanded its local level district heating engagement</b> NECC cooperates with local level authorities and district heating companies on utilization of excess heat for district heating and the guidelines and tools developed are widely disseminated to NECC local level facilities.	
Output indicator		Local authorities are trained and new district heating assessment model and the guidelines are adopted by relevant stakeholders	
Baseline	Year	2017	No local authorities and/or district heating companies working with NECC on district heating solutions
Target	Year 1.5	2018	Recurrent dissemination of results and sensitizing local authorities to options for excess heat for district heating Local authorities
Target	Year 3	2020	At least 2 of local authorities and/or district heating companies has received training in the guidelines and planning, and is using the capacity obtained.

Output 3		<b>Analysis of stated policies</b> NECC has extended capacity to evaluate stated EE policies related to EE in district heating and this is reflected in guidelines and policy notes that are disseminated to the NDRC and local the ECC's.	
Output indicator		NECC publishes and disseminates guidelines and policy notes	
Baseline	Year	2017	Guidelines and policy notes in need of revision
Target	Year 1.5	2018	Consultation by NECC of draft inputs is ongoing.
Target	Year 3	2020	In priority areas, NECC has a comprehensive suite of policy

<sup>2</sup> The Danish support is TA on planning methodologies and not financing of components

			and guidance documents reflecting best practice.
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## 9 RISK MANAGEMENT

Risk analysis using the Risk Matrix of the AMG identified no significant residual risks to the DE.

Risks identified included the following:

### *Staff turnovers and resource constraints with partner institutions*

Demand is high and the risk is minor and is mitigated through a flexible approach to provision of technical input. The DEA will in the programme period in cooperation with NECC prioritize specific subcomponents of the outputs towards tasks where the Chinese counterpart has highest demand and capacity to absorb the DEA's technical assistance.

### *Local authority preference for coal*

In provinces where the coal industry is an important part of the local economy there is a risk that coal will be favoured over all other alternatives regardless of NECC and DEA's assistance. The risk is mitigated through the selection process for pilot projects, where one of the main criteria is that the local DRC (Development and Reform Commission) has expressed a strong interest in the cooperation and high ambitions on reductions of the environmental impact from industries and the district heating sector. The risk is partly mitigated at the national level where NEA has restricted construction of coal fired production units and there is a cap on future coal consumption in China.

There are no other major risks identified that have not been mitigated as part of the design, but risks will be monitored closely throughout implementation and measures will be carried out accordingly.



## 10 INPUTS/BUDGET

Outputs	Contribution with Danish funds	Partner Contribution in-kind
<b>1. NECC has strengthened capacity in district heating planning</b>	<b>5,965</b>	
TA travel costs etc. in DKK '000	450	
Delegations to Denmark in DKK '000	180	Delegation members will cover travel cost, accommodation and per diem.
Other costs in DKK '000	150	
TA from DEA in hours	2,400	
TA from other international experts in hours	1,200	
TA from local consultants in hours		When necessary
TA from LTA <sup>*)</sup> in hours	2,100	
<b>2. NECC has expanded its local level district heating engagement</b>	<b>468</b>	
TA travel costs etc. in DKK '000		
Delegations to Denmark in DKK '000		
Other costs in DKK '000	90	
TA from DEA in hours	900	
TA from local consultants in hours		When necessary
<b>3. Analysis of stated policies</b>	<b>468</b>	
Other costs DKK '000	90	
TA from DEA in hours	900	
<b>GRAND TOTAL</b>	<b>6,901</b>	

\*) The support will include an international Long Term Advisor (LTA) posted with CNREC and equally sharing its TA between the two development engagements.

## 11 MANAGEMENT ARRANGEMENT

The parties have agreed to the following management arrangement with the aim to ensure adequate dialogue and timely decisions in regard to this development engagement.

DEA is responsible for coordination of inputs from Denmark including facilitation of study tours to Denmark, and will support NECC in approving TA-deliverances from external consultants and advise on implementation and monitoring of progress against targets

The management arrangement for this DE is as follows:

A Steering Committee that include the following high level members: NDRC, NECC, DEA and Denmark's embassy in Beijing (EDK). The Steering Committee should provide strategic guidance and will meet once or twice per year to approve annual work plans,

progress reports, and discuss and resolve issues related to program. Decisions are made by consensus.

A Management Group will be established and consist of the Director of International Cooperation and other relevant coordinators from NECC, the DEA country coordinator and the LTA. The group will be managing daily implementation of the development engagement. The management Group will meet on a needs basis, and will: i) develop annual and detailed half-yearly work plans for the DE, matching priorities in the partners work plans, ii) associated with the detailed half-yearly work plan, the Management Group will determine the need for technical assistance (TA) from DEA experts and from national and international experts through development of a TA provision plan; iii) endorse inputs based on TOR prepared at output level; iv) monitor day-to-day progress of DE implementation. v) monitor programme progress at output level, using the “traffic light” system; vi) ensure cross fertilisation between engagements.

The Management Group reports on programme development to the Steering Committee and acts as Secretary to the Steering Committee. Decisions are made by consensus.

A halftime long-term adviser (LTA) will support NECC on a daily basis and assist in facilitating the partnership between DEA and NECC, but for practical and coordination reasons, the LTA will be stationed in CNREC. The will provide high level advice and technical assistance for analysis and policy development including through sharing merits from Denmark with regards to planning, regulation, technical measures and technology solutions.

## **12 PROCUREMENT AND FINANCIAL MANAGEMENT**

This development engagement will have no cash transferred or disbursed directly to the development engagement partner. Hence, there are no requirements for accounting of funds and financial reporting at development engagement level. However, based on the agreed annual work plan the international and national adviser inputs will be budgeted and agreed in terms of days delivered in country. The bi-annual progress reports will include the actual time spent for each TA input to monitor the use against agreed TA budget.

Procurement of agreed international TA (in any form) will be carried out by DEA and follow European procurement rules or drawn from a pool of experts. Final selection of procured TA will be done in close cooperation with partners based on no objection from the management group.

Recruitment of the Long Term Adviser (LTA) follows procedures of the Danish Ministry of Foreign Affairs. Representatives from NECC will be part of the recruitment panel together with representatives from DEA and MFA.

Workshops and seminars in China will be paid for by the partnership programme and NECC.

## **13 MONITORING AND EVALUATION**

Daily progress will be followed by the Management Group who will report progress towards outputs and outcomes of this engagement through bi-annual progress reporting to

this to the Steering Committee at annual or bi-annual Steering Committee meetings. The Management Group will also provide an Annual Progress Report to be approved by the Steering Committee. All reporting should, to the extent possible and when relevant, be disaggregated by gender, area, sector, etc. forwarded to the DEPP Advisory Group in Copenhagen.

Detailed indicators for each specific development engagement output will be revisited and potentially refined as part of the inception, where annual targets, in line with already defined targets will be adjusted with reference to the Danish Climate Envelope guidelines for monitoring. Monitoring towards these targets will be reported through the bi-annual progress reporting using a “traffic-light” system, where:

- “green” is on-track – implementation continues as scheduled;
- “yellow” is partly on-track which needs an explanation by the Implementation Group to the Management Group, including actions taken to get back on-track and closer monitoring of progress by the Management Group;
- “red” is off-track, which needs a detailed explanation by Management Group to the Steering Committee with recommendations of changes to the implementation to get the engagement back on-track. If “red” in two consecutive reporting periods, the Steering Committee may consider reallocation between outputs within or between the development engagements as deemed relevant.

Monitoring of actual time spent by international and national advisers will be reported in the bi-annual progress reports with updated work plan and projection of TA input for the following quarter will be stipulated. Similar reporting will be done for workshops and study-tours.

The Danish MFA shall have the right to carry out any technical mission that is considered necessary to monitor the implementation of the programme, which may include a mid-term review. After the termination of the programme support the Danish MFA reserves the right to carry out evaluation in accordance with this article.

### **Anti-corruption**

No offer, payment, consideration or benefit of any kind, which could be regarded as an illegal or corrupt practice, shall be made, promised, sought or accepted - neither directly nor indirectly - as an inducement or reward in relation to activities funded under this agreement, incl. tendering, award, or execution of contracts. Any such practice will be grounds for the immediate cancellation of this agreement or parts of it, and for such additional action, civil and/or criminal, as may be appropriate. At the discretion of the Danish Government, a further consequence of any such practice can be the definite exclusion from any projects funded by the Government of Denmark.

### **Prerequisites**

The DE is covered by the current MoU between NDRC and MEUC and by the MoU between NECC and DEA.

### **Signatures**

Partner/Danish Energy Agency