**附件1 申请说明**

**资助领域说明**

Many societal challenges are complex and interrelated. To address them requires sustainable collaboration, and flexibility and creativity to achieve sustainable results for effective and impactful solutions. The collaborative research financed by NSFC and NWO in this call is intended to work towards scientific knowledge and sustainable, innovative solutions for high scientific and societal impact. At the same time, NSFC and NWO aim to stimulate strong, sustainable research collaboration between their two countries. They do this by inviting consortia in which researchers from knowledge institutions from both countries will work with societal partners from public, semi-public and private organisations, in order to increase the societal relevance and impact of their research.

The current call focuses on ‘More Sustainable and Social Local Energy Systems’, a topic of great interest and importance to both China and The Netherlands.

Both The Netherlands and China are strongly committed to a sustainable energy transition, aiming to develop low carbon energy systems that are reliable, secure and affordable, and which are able to handle society’s changing energy supplies and demands. A substantial part of the sustainable energy transition takes place at the local level (i.e., neighbourhood or block level). It demands transformations in local energy systems, and strongly depends on the preferences and actions of the local actors involved, such as households, local businesses, and local industries. Three key transformations in local energy systems could critically advance the sustainable energy transition:

1. **Reducing energy consumption in buildings**. It is critical that new and existing buildings are made more energy efficient and that actors within the energy system reduce their energy consumption. In this, it is important to reduce direct energy use in buildings, as well as to reduce the energy consumption associated with for instance the development, renovation and demolition of buildings.
2. **Increasing local energy generation from renewables**. Increasing local, renewables-based generation capacity improves the sustainability of energy systems. Moreover, investing in local energy generation can critically contribute to energy systems’ efficiency (e.g., reducing transmission losses), security (e.g., more distributed energy generation), while often being financially attractive as well.
3. **Increasing energy flexibility**. Flexibility is needed to achieve a balanced and resilient energy system, and to optimally profit from renewable energy sources (as mentioned under 2.). Flexibility can be achieved through for instance demand-side management, sector coupling and storage. This often requires collaboration between sectors, buildings, producers and consumers, and between local, regional and national levels.

Together, these transformations could result in net zero local energy systems, which produce the same amount of energy – or even more – than they consume, and which have a positive impact on regional and national energy systems (e.g., on their flexibility, reliability and security)[[1]](#footnote-1). Critically, to optimally benefit from such energy systems, a truly integrative approach is needed in terms of the domains, sectors and actors engaged, and technical, physical and social aspects involved. Hence, inter- and transdisciplinary research is needed that, amongst others, accounts for the integrative nature of local energy systems, and that actively studies the interactions between different actors and aspects of such energy systems. Within this larger integrative framework, this call specifically focuses on two related key themes that are central to the Dutch and Chinese research agendas, **green buildings** and **actor integration**. Projects should **address both key themes**.

1. **Green buildings**. To achieve sustainable local energy systems, it is key to make buildings “greener”. This can be achieved by, for instance, minimizing the energy buildings use throughout their life cycle, maximizing their generation and storage capacity, and thereby enabling them to positively contribute to local and regional low carbon and sustainability goals. This brings clear design, planning and technical challenges[[2]](#footnote-2). In addressing these challenges, it is critical to take an integrative and systems-level approach, where dependencies and interactions within the local energy systems, as well as with larger systems, need to be considered. The development of green buildings is also strongly associated with social challenges. Buildings for instance need be functional, acceptable and attractive to its users and other actors, and to be developed while considering equality and economic aspects to be truly sustainable. Moreover, the development and implementation of green buildings may require policy and system changes, and improvements in standards and certification systems. Accordingly, proposals are invited that focus on addressing these challenges.
2. **Actor integration**. Many different actors from different levels of society can be involved and work together in local energy systems, including national and local governments, industry, private organisations and consumers / prosumers, requiring collaboration between public and private sectors. For instance, the integration of local and regional energy systems requires interactions between local citizens and businesses, governments and various energy companies and operators (for another example, see green buildings above). Accordingly, research is needed to understand how these actors can most optimally interact and work together, both from a social and technical perspective. What are the (perceived) roles and responsibilities of different actors, which actors want to participate in the decision making, and what factors may facilitate or obstruct effective interactions between different actors (e.g., strategic use of knowledge in policy making)? Key focus areas include public participation, decision making, and strategies and technologies that enable or facilitate interactions between actors (e.g., energy dashboards, energy sharing platforms, interactive spatial planning support tools). Moreover, a better understanding is needed on different actors’ motives and interests, and how these could be aligned and achieved within local energy systems.

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## Specific project requirements

### Integrated research approach and co-creation

The challenges addressed in this call are interrelated and multi-scalar, and to reach impact require a holistic approach that spans the entire research and innovation chain. The consortia should crosscut scientific disciplinary boundaries (interdisciplinarity) and integrate scientific and practitioners’ knowledge in joint research (transdisciplinarity). Research should focus on the entire knowledge chain, from fundamental to applied and practical research. The proposed research itself should be characterised by integrated perspectives. It should evolve in a process of co-creation with different partners: researchers from both countries and societal partners should be actively involved throughout the entire project, in (advising on) defining and conducting the research as well as in communicating the progress and results, in order to jointly produce a mutually valued outcome. Added value may be achieved by integrating and synthesising various sources of knowledge to create new knowledge and by creating sustainability through the development of long-term knowledge relations.

Applications should be based on a thorough review of existing knowledge and should preferably be complementary to existing research initiatives and reinforce these were possible. Project teams are encouraged to use a combination of quantitative and qualitative and quasi-experimental research methods, including operational research, and should include research-into-use approaches.

Projects are also expected to collaborate with the other project awarded in this call, so as to enhance the impact of the call as a whole. As a part of this, projects will be expected to attend joint kick-off and mid-term workshops, as well as a final conference. Projects should budget for this accordingly, using the NWO budget module “Knowledge Utilisation”.

### International collaboration

Applications should furthermore be characterised by equal partnership and sustainable collaboration between the Chinese and Dutch partners. This includes inter-institutional cooperation, a balanced contribution to the proposed research, and frequent exchange between the partners, including exchange visits by both senior and junior researchers. Projects must organise a maximum of four research visits (in total) of a minimum of three months for PhD students and/or post docs. Senior researchers should spend at least three weeks in total, over the duration of the project, on research visits. Projects should budget for this accordingly, using the NWO budget module “Internationalisation”.

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**关于开放获取的说明：**

As signatories to the [Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003)](https://openaccess.mpg.de/Berlin-Declaration), NWO and NSFC are committed to making the results of scientific research funded by NWO and NSFC freely available in open access on the internet. In doing so, NWO and NSFC are implementing the ambitions to make all publicly funded research openly available. All scientific publications of research funded on the basis of this call for proposals should therefore be available in open access immediately (at the time of publication). NWO and NSFC accept various routes:

* publication in an full open access journal,
* deposit a version of the article in a repository or
* publication in a hybrid journal covered by one of the agreements between the VSNU and publishers. See www.openaccess.nl.

Any costs for publication in full open access journals can be incurred in the project budget. NWO and NSFC do not reimburse costs for publications in hybrid journals[[3]](#footnote-3). These conditions apply to all forms of scholarly publications arising from grants awarded on the basis of this call for proposals. Also academic monographs, edited volumes, proceedings and book chapters. For more information on the NWO's open access policy, see: [www.nwo.nl/openscience](http://www.nwo.nl/openscience).

**关于数据管理的说明：**

The results of scientific research must be replicable, verifiable and falsifiable. In the digital age this means that, in addition to publications, research data must also be freely accessible. As much as possible, NWO and NSFC expect that research data resulting from projects funded in this programme will be made publicly available for reuse by other researchers. “As open as possible, as closed as necessary” is the guiding principle in this respect. As a minimum, NWO and NSFC require that the data underpinning research papers should be made available at the time of the article’s publication. The costs for doing so are eligible for funding and can be included in the project budget. In the data management section, and in the data management template if the project is awarded funding, researchers explain how they plan to manage the data expected to be generated by the project.

1. Data management section

The data management section is part of the research proposal. Researchers are asked to prospectively consider how they will manage the data the project will generate and plan for which data will be preserved and be made publicly available. Measures will often need to be taken during the production and analysis of the data to make their later storage and dissemination possible. If not all data from the project can be made publicly available, the reasons for not doing so must be explained in the data management section. Due consideration is given to aspects such as privacy, public security, ethical limitations, property rights and commercial interests.

2. Data management plan

After a proposal has been awarded funding, the researcher should elaborate the data management section into a data management plan. In this plan, the researcher describes whether use will be made of existing data, whether new data will collected or generated, and how the data will be made FAIR: Findable, Accessible, Interoperable, Reusable. The data management plan must be completed in consultation with a data steward or equivalent research data management support staff at the home institution of the project leader. The plan should be submitted to NWO via ISAAC as part of the starting documents. NWO will approve the plan as quickly as possible. Approval of the data management plan by NWO is a condition for disbursement of the funding. The plan can be adjusted during the research.

Further information on the NWO data management protocol can be found at www.nwo.nl/datamanagement-en.

1. JPI Urb urope / SET Plan Action 3.2 (2020). White Paper on PED Reference Framework for Positive Energy Districts and Neighbourhoods, <https://jpi-urbaneurope.eu/ped/> [↑](#footnote-ref-1)
2. <https://www.urbaneuchina.eu/wp-content/uploads/2019/12/20191309_Approved-Strategic-Research-Innovation-Agenda01-for-EU-China-Cooperation-on-Sustainable-Urbanisation.pdf> [↑](#footnote-ref-2)
3. A hybrid journal is a scientific journal that is based on subscription income but which offers researchers the possibility to make individual articles Open Access by paying an extra article processing charge. In one issue of a journal you may therefore find both articles that can only be read with a subscription and articles that are freely accessible. [↑](#footnote-ref-3)