

Ministry of Foreign Affairs of Denmark

Research collaboration projects in growth and transition countries (“Window 2”), 2018

Call for Phase 1 applications

Deadline: 2 February 2018, 12:00 hrs. (Danish Time)

Danida Fellowship Centre
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Alterations in relation to first edition

Appendix 1 “Vietnam – Green industrial production” has been removed as theme.

Table of Contents

1. Introduction.....	2
2. Objectives.....	2
3. Main Applicant.....	3
4. Other participating researchers, institutions, and private sector partners.....	3
5. Research Themes.....	4
6. Assessment Criteria.....	4
7. Project Description.....	5
8. Required Format of the Application and Appendices.....	6
9. Finances.....	7
10. Application Process.....	7
11. Obligations.....	8
12. E-application Information.....	10
APPENDIX 1.....	11

1. Introduction

The Ministry of Foreign Affairs of Denmark (MFA) provides grants for development research activities as part of Denmark's international development cooperation. Two windows are available in 2018, providing grants for research with partners in Danida priority countries and for research with partners in growth and transition countries.

Within this framework, the MFA invites phase 1 applications for grants related to development research in the following growth and transition countries involved in the programme "Partnering with Denmark": Bangladesh, Brazil, China, Colombia, Ghana, India, Indonesia, Iran, Kenya, Mexico, Myanmar, South Africa, Turkey, and Vietnam.

Phase 1 is the first step of a process in which applicants submit research proposals leading to prequalification. Phase 2 is the submission of a full application by those selected ("prequalified").

Only research-based institutions in Denmark are eligible for these research grants and only in partnership with research institutions in the partner countries mentioned above. The total budget available for this research window is approximately DKK 60 million. The funding is conditional of the Danish Parliament's approval of the 2018 Finance Bill.

The duration of projects is 18 to 36 months within a maximum grant of DKK 5 million for each project. These initial research projects are considered pilot projects and will subsequently be eligible to apply for an additional grant based on a new application as a continuation of the partnership (assuming approval of a funding envelope for subsequent years). It is envisaged that the extension project could be up to 5 years' duration with an additional grant of up to DKK 10 million.

The Danida Fellowship Centre (DFC) administers the MFA's support to development research. Questions or queries regarding application procedures should be directed to DFC¹ at research@dfcentre.dk.

A Consultative Research Committee for Development Research (FFU) is tasked with assisting the MFA by providing professional and scientific advice in relation to research applications and projects.

The deadline for submission of Phase 1 applications is **2 February 2018 at 12:00 hrs. (Danish Time)**. Applications must be submitted in English and electronically via DFC e-application system.²

More information and guidelines for applicants is available at link <http://dfcentre.com/research/calls-for-applications/>, including advice on how to make a good application by the Consultative Research Committee (FFU). Information meetings concerning the 2018 Calls will not be held.

2. Objectives

In accordance with the overall objectives of Danida's support for research, grants will be awarded to strategic research cooperation which generates new knowledge relevant to the needs and strategies of the growth and transition countries and contributes to strengthening research capacity in these countries.

¹ For the General Conditions regarding on-going projects, calls, e-application forms, etc. see: <http://dfcentre.com/wp-content/uploads/2017/01/General-Conditions-2017.pdf> and <http://dfcentre.com/research/calls-for-applications/>

² See Section 12 for information on how to access and use the e-application system.

The research collaboration projects in growth and transition countries are considered an important element in the Danish response to demand from these countries for cooperation within areas where Denmark has internationally recognised knowledge and experience. The research partnerships should therefore focus within areas where this strategic interest for Denmark and the partner country have been identified and thereby strengthen the bilateral collaboration within this area (see below section 5).

The research capacity strengthening element of the projects will depend on the needs and demands of the national partners. In some countries, the capacity strengthening element could be important involving specific activities with this purpose, whereas for other countries research capacity strengthening could be achieved indirectly with the experience gained under this international research collaboration.

It is important to note that the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 constitute an overall thematic framework for development cooperation and research.³

3. Main Applicant

Applications can only be submitted by universities or by a research-based institution (public and private) in Denmark, which will be responsible for the grant. The project coordinator must be attached to that institution.

At the time of submitting the application, the project coordinator must hold a PhD or equivalent qualification, documented clearly in the CV. Documented evidence that he/she is a Professor, Assistant Professor, or Associate Professor is regarded as equivalent to a PhD.

Experience shows that the project coordinator plays a key role in ensuring that a research collaboration project is successful. An effective engagement/ involvement of the project coordinator will entail a substantial workload, noticeably at the beginning of the project.

It is important that the project coordinator and the research team are able to document relevant scientific merits and qualifications as well as a research background within the topic applied for. A project coordinator may apply for more than one project, but only one project per project coordinator may be approved for this funding window.

4. Other participating researchers, institutions, and private sector partners

The application must list all partner institutions, including partners in growth and transition countries and possible private sector partners. At least one researcher from each partner institution (project participant if private sector partner) must be named in the Phase 1 application.

In order for research partners to benefit from the collaboration, partnerships should be equal, and partners should be able to contribute actively in preparing both Phase 1 and Phase 2 applications. Research applications which have been prepared without the active involvement of partners in growth and transition countries will not be approved. Other important aspects of equal partnerships include joint fieldwork, joint publishing, knowledge sharing, access to databases and libraries, etc.

³ See: <https://sustainabledevelopment.un.org/sdgs>

It is strongly encouraged to involve partners from the private sector and national authorities in the partner country or in Denmark in the research project, and grant funding can be used for direct costs in relation to the project activities but not overhead expenses. Such partners are encouraged to contribute with additional resources (funding or in-kind) for the projects. International research institutions and research institutions in countries outside Denmark and outside the partner countries can be included as sub-contractors and can be supported by the grant for their direct services to the project activities with no overhead.

As the project duration is only up to three years it is not envisaged that PhD studies can be included. Direct input of ongoing PhD studies may be included.

5. Research Themes

As noted above, the global 2030 agenda and the seventeen United Nations Sustainable Development Goals (SDGs) constitute an important framework for development cooperation and research.⁴ Therefore, it is envisaged that research projects and collaboration with respect to the selected research themes will be undertaken within the context of the relevant SDGs and that these will be reflected in the justification for the research proposals.

The thematic focus areas of the call are country-specific and they have been determined on the basis of the focus of Danish strategic cooperation in the countries, including the thematic focus areas of the programme “Partnering with Denmark”⁵. A complete list of call themes for each country is included as Appendix 1.

6. Assessment Criteria

The FFU assesses Phase 1 applications on the basis of three criteria as described below: i) relevance; ii) scientific quality; and iii) the potential effect of the research. The Ministry of Foreign Affairs will as a first step assess the relevance of the applications based on the criteria indicated below. This assessment will be included in the overall FFU evaluation of the proposals.

The relevance of the proposal is evaluated on the basis of the following criteria:

- *The focus of the project is well-defined with respect to the announced research theme in the chosen partner country;*
- *The project contributes to the overall objectives of the Danish strategic sector cooperation in the country (where relevant) or is otherwise relevant for strengthening commercial or political cooperation with Denmark;*
- *Preferably, the project includes private sector partners or has potential for such a partnership in a possible subsequent funding phase.*

The scientific quality of the proposal is evaluated on the basis of the following criteria:

- *The research experience and qualifications of the project coordinator and the team;*
- *The originality and innovative nature of the project, in terms of generating new knowledge;*

⁴ <https://sustainabledevelopment.un.org/?menu=1300>

⁵ <http://um.dk/en/danida-en/partners/other-ministries/partnering-with-denmark/>

The effect of the research is evaluated on the basis of the following criteria:

- *The potential direct effects with respect to the selected sustainable development goal (s);*
- *The effects of the project in terms of the partnerships with public and private sector which could take the research to the next step;*
- *Strengthened research capacity of the project, which should add value for both the Danish and the partner institution.*

On the basis of the FFU assessment, MFA makes a decision on which applicants should be invited to apply in Phase 2 of the selection process. If the total number of qualified applications exceed the available funding allocation, the MFA will select the best projects based on the FFU assessment of the above criteria and consider an even distribution between the countries. In that case, no more than three applications from one country will be invited to apply in Phase 2. If and when required, the MFA will conduct a hearing process in accordance with § 19 of the Danish Public Administration Act.

As stated in the “General Conditions for Grants to Development Research Supported through Denmark’s International Development Cooperation”, <http://dfcentre.com/research>, MFA may make the processing of new applications by the project coordinator conditional on compliance with the terms and conditions of previous grants, including if the total time allocation for a researcher on several projects exceeds what is considered feasible.

7. Project Description

The project description must outline the project idea and be structured according to the indicated headings and in the stated order. All headings must be used and none added. It is important to ensure that the application is clear and focused, and although there are no requirements regarding the length of each section in the project description, the project description as a whole must not exceed 4 pages (10,000 characters, including spacing) plus references.

The pilot projects should have a research-oriented objective and could include a range of research and capacity strengthening activities as well as networking activities in collaboration between the involved partners. The pilot projects must contain actual research activities addressing a research question within the announced research theme in the chosen country. Preparation of a possible application for a subsequent funding phase could constitute part of the pilot phase.

Heading	Content
1. State of the art, rationale, and relevance	Background to project objectives: <ul style="list-style-type: none"> • Based on a state of the art literature review and a broader development rationale, explain how the research project will provide new knowledge in the scientific field concerned; • Highlight how the proposed project relates to prior and on-going research in the specific field about which the applicant is aware; • If more than one partner country is chosen, the rationale for this and added-value and importance for the project should be clearly argued. Describe the project’s importance in relation to:

Heading	Content
	<ul style="list-style-type: none"> • The chosen research theme • National development priorities related to specific Sustainable Development Goal(s); • The strategic sector cooperation (Partnering with Denmark) or other aspects of the Danish strategic objectives in the country; • The private sector, where relevant.
2. Objectives and results expected	<p>Describe project objectives, including clearly identified research questions and possibly research hypotheses.</p> <p>List the main expected scientific results and an indication of the research capacity strengthening.</p>
3. Indicative project methodology	<p>Outline the methodology, research design, and approach to research capacity strengthening in general terms.</p> <p>Include an indication of the strategic relevance for the proposed partner institution(s), notably their envisaged involvement in terms of time and resources in the project.</p>

8. Required Format of the Application and Appendices

The e-application system is accessible from DFC’s website via the following link: <http://dfcentre.com/research/calls-for-applications/>. The e-application form may contain information which is important in relation to the application albeit not covered in this Call.

The Phase 1 application must comprise the following:

- The e-application form
- Appendix A: CVs of all researchers and other project participants named in Step 1A of the Application Form
- Appendix B: Signatures

All steps (including Step 1A) in the e-application form must be completed, and the application and appendices must be completed in English. Only the required appendices will be considered. The total volume of the appendices must not exceed 25 MB. The appendices must be named: “*Appendix (letter) - name of project coordinator*”.

Appendix A - CVs: A front page of the appendix must be inserted, listing the CVs of the project coordinator and all other researchers and project participants named in the application Step 1A, listed in the order in which they appear.

The CVs must specify the scientific qualifications, managerial skills, and experience from developing countries, and must include a list of key publications and patents relevant for the application. The length of the CVs must be no more than 2 pages per person. Signature on CVs is not required.

The table of contents and all CVs must be compiled in a single PDF file in which each CV starts on a new page.

Appendix B – Signatures: This appendix must include scanned signatures of the project coordinator and the Head of the Responsible Institution/Department as per template.

9. Finances

For the purposes of a Phase 1 application, an estimate of the grant applied for is expected for an amount not exceeding 5 million DKK for an 18-36 months' project. Other funding sources and an estimated total project cost should be indicated.

Approximately the same level of researcher work time (in man months) on the project is expected between Danish researchers and researchers in the partner country. It is expected that research institutions partner countries will provide a monetary or in-kind contribution to the project (salaries, equipment or materials). The actual level of co-funding expected will be agreed during preparations for phase 2 applications. In a possible subsequent project after the pilot project, it would be expected that a substantial co-funding is provided from public or private partners. Co-funding from the Main Applicant is encouraged.

Overhead/administration fees are only covered for research institutions in Denmark and the partner country, and not for private sector partners, international organisations, or other sub-contractors.

Eligible Costs

It will be possible to apply for funding for the following budget items:

- Salaries and emoluments;
- Expenses for trips abroad and fieldwork;
- Project and research materials and equipment;
- Publication, dissemination and communication;
- Administration fees (overhead);
- Research stays in Denmark for researchers from partner institutions of up to six months' duration;
- Annual external audit and a final project audit.

Guiding principles for budgeting is available at link <http://dfcentre.com/research/calls-for-applications/>.

10. Application Process

Submission of the Phase 1 applications: Submission of a Phase 1 application must be done via DFC's e-application system and must be completed by the deadline specified on the front page of the Call. Shortly after submitting the application, the applicant will receive an e-mail acknowledging receipt. If the acknowledgement is not received within 24 hours, the applicant should send an e-mail to research@dfcentre.dk to ensure that the application has indeed been received before the deadline.

Reviews of the applications: All applications received within deadline will be reviewed by DFC for formal requirements (refer to section 11), and applicants rejected for not fulfilling the formal requirements will be informed.

Applications received are assessed by the FFU after being reviewed by the Danish embassies concerned with respect to the thematic focus area and relevance.

Prequalification: Based on the assessment and recommendations by the FFU and the embassy reviews, the MFA decides which applicants will be invited to submit a final application in the subsequent Phase 2 of the application process.

If and when required, the MFA will conduct a hearing process in accordance with § 19 of the Danish Public Administration Act.

Responses to Phase 1 applications: Applicants will be informed of the MFA decision by April/May 2018, and the instructions for Phase 2 will be announced shortly thereafter at DFC's website. Applicants who are invited to submit a Phase 2 application may receive specific recommendations or requirements regarding its content.

Submission of Phase 2 applications: The deadline for submission of final applications will be 24 August 2018.

Peer review: All Phase 2 applications will be submitted for external peer review to - as far as possible - at least two internationally recognised researchers. DFC appoints the external reviewers, and applicants will have the opportunity to comment on these external opinions in a hearing process.

Hearing process: The hearing process concerning the external peer reviews is expected to take place in early November 2018.

Final Selection: The Phase 2 applications are assessed by the FFU in early December 2018, on the basis of the application, the external assessments, and any hearing responses. In the final prioritization by MFA, only a limited number of the Phase 2 applications will be recommended for approval.

Innovation Fund Denmark has endorsed this call text and will also endorse the final grant selection.

Responses to Phase 2 applications: Notice on the outcome of the prioritization of the Phase 2 applications will be sent to the applicants in December 2018. The approved projects can expect to start in early 2019 after receiving and endorsing a final Letter of Commitment.

11. Obligations

Applicants should familiarize themselves with the following before using the e-application system and submitting an application.

The responsibility of the applying institution

The applying institution is responsible for ensuring that all information in the e-application is correct, that the required appendices are uploaded with the e-application, that the contents of the appendices are correct and that the e-application has been submitted before the deadline of the Call.

In the event of any subsequent material changes affecting the information submitted, the applying institution must immediately notify the Research Unit at DFC at research@dfcentre.dk.

The application must reflect ethical considerations and adhere to requirements in Denmark and in the relevant partner countries regarding research permissions, provision of information to relevant authorities, etc.

Storage of information

When the e-application system is used, the system will automatically register the applicant's identity, IP address, and the time at which the application was created or edited will be registered.

Technical disclaimer

The Danida Fellowship Centre is obliged to inform prospectively applicants of any system errors that make the e-application system unavailable, affecting the applicant's possibility of submitting e-applications within any deadlines. Information regarding such unavailability, and other unforeseen events, will be posted on the DFC website <http://dfcentre.com/research/>.

The Danida Fellowship Centre accepts no liability for incorrect information due to software errors, calculation errors, transmission errors and similar errors, or for any claims for damages due to incorrect use of the e-application system.

Data Protection Act

Danish privacy law (Danish Act on Processing of Personal Data, *Lov om persondata*, no. 429 of 31 May 2000 with subsequent amendments) accords the applicant certain rights when information concerning the researchers involved in the application is processed electronically. Please note that at his or her request, they have the right to inspect and verify personal data if such data are processed electronically.

It is not possible to make corrections to an e-application after it has been submitted, except for corrections related to the personal information.

Rejection of applications without substantive consideration

According to Section 6 of the Executive order on the granting function etc. under Innovation Fund Denmark (Executive Order no 1150 of 25 October 2017), an application may be rejected without substantive consideration if the formal requirements or deadlines, as set out in this Call for applications, are not met.

Other data which may be obtained by official bodies

The MFA and the FFU reserve the right to obtain information about any previous and current applications which an applicant may have submitted to the FFU, and this information may be included in processing of the e-application.

In the event that project funding has been or will be applied for from elsewhere, the MFA and FFU reserve the right to obtain information as to whether the amount has been granted.

Use of funding for other purposes

The MFA may, at its discretion, decide that a proportion of the funding available is to be used for other research cooperation.

Announcement

Once the submitted Phase 1 applications have been processed, an announcement will be made at the DFC website, <http://dfcentre.com/research/> as to who have been invited to submit a Phase 2 application. In support of that announcement, the following information may be published on the internet: applicant's name, title, workplace, title of application and expected application amount. The purpose of this is to enable applicants to apprise themselves of other prospective programme applicants and research activities and possibly form their own networks with a view to submitting joint applications.

Information about applicants who are not invited to submit a Phase 2 application may be disclosed in the event that access is applied for according to the Danish Public Records Act (Offentlighedsloven). Access to such information may be granted in the form of lists of who has applied and for what purpose (applicant names and application titles). Applicants should, therefore, take care that their application title does not reveal information about the activity which they wish to keep out of the public domain.

12. E-application Information

The Call and e-application system is accessible from DFC's website via the following link:
<http://dfcentre.com/research/calls-for-applications/>.

- Before the electronic application system is accessible, you will need to register yourself with your e-mail address and password – log on the link “If you have not previously used Danida Fellowship Centre’s electronic application system click here”. If you have several e-mail addresses, please note that acknowledgement of receipt of the application will be sent to the e-mail address used as your user name in the system.
- To create an application, select the application form “W2 Research in growth and transition countries phase 1.
- Once you have created an application form, you can save and break off from it and resume work at any time by accessing the “Edit” box at the log-in page to the right.
- If you have forgotten your password, please type any password in the box, and by doing this, an e-mail with your correct password will be sent to your e-mail address.
- Your partners can access the application by using the same e-mail address and password.

Contact

For questions concerning the application procedures and in general relating to this Call for applications, please contact the Research Unit at Danida Fellowship Centre at research@dfcentre.dk.

APPENDIX 1

Research collaboration projects in growth and transition countries (Window 2) – country-specific themes

Bangladesh – Occupational health and safety

The economy of Bangladesh is growing fast and the ready-made garments sector is increasingly important. After major accidents in 2012 and 2013 that left hundreds of workers dead, the international community as well as international companies reacted strongly to ensure strengthened regulations for building construction and fire hazards. However, other aspects of occupational health and safety such as chemical hazards, accidents and manual load handling have not been paid similar attention. The objective of Strategic Sector Cooperation is to improve the occupational health and safety for workers in Bangladesh through strengthening the Ministry of Labour and Employment (BMoLE) and the Department for Inspection of Factories and Establishments (DIFE). This will be done by capacity development, improved inspection and through better information and awareness. Further research to address the improvement of occupational health and safety in broad terms would be appropriate.

Brazil – Digitalisation and Innovation

Brazil faces major challenges in terms of developing innovative, user-friendly digital solutions to meet future demands from both citizens and businesses. The focus of Strategic Sector Cooperation is on digitalisation and innovation in the Brazilian public administration and entails developing a sustainable digital infrastructure that enables innovative solutions and creates better business-oriented digitalisation. The main aim is to assist the National School of Public Administration in developing a laboratory for digitalisation and innovation, inspired by and with direct capacity building from the Danish government laboratory called MindLab.

Brazil – Efficient healthcare management

Brazil faces challenges in guaranteeing timely and good quality healthcare for all. Through two “pillars”, Strategic Sector Cooperation aims to ensure better, faster and universal access to quality healthcare services and products by supporting the development of more efficient healthcare management. Pillar 1 focuses on improving healthcare with better systematic use of data, which is considered the key for improving access to timely and quality healthcare as it contributes to optimised treatment, cost efficiency, patient security, coherent patient pathways, etc. Pillar II focuses on improving healthcare by introducing efficient and transparent approval processes for pharmaceuticals, taking into account the overall licensing principles of quality, safety and security.

China – Food safety and agriculture

Strategic Sector Cooperation on this theme is divided into two projects:

- A project dealing with food safety, entailing the establishment of a China-Denmark food safety control cooperation platform to provide basic technical support for food safety supervision and to assist the authorities in achieving safer production, improving the food safety levels and ensuring public health. Two themes dealing with food safety regulation and standards have been identified where the experience and lessons of one country can be used in the other: i) legislation and regulations on food safety supervision; and, ii) food safety testing and evaluation technology.
- A project dealing with animal manure as fertiliser, in which the aim is to develop regulatory guidelines together with the Chinese authorities. Inspiration on how to set-up a regulatory system that aims to create more efficient and more environmentally friendly arable production will be the main deliverable. Two themes dealing with the practical aspects of manure handling and the regulatory aspects at administrative level have been identified, in which Danish experience and lessons learned

can be modified to the Chinese context: i) handling, storage and application of manure; and, ii) regulatory guidelines for promoting the use of manure.

China – Sustainable Urban Development

The city of Beijing is struggling with a wide range of urban challenges such as traffic congestion, air pollution, water scarcity, cloudbursts/heavy rains, flooding and life-style diseases such as diabetes. Encouraged by the immense public demand for a healthier environment, Beijing has reached out to the city of Copenhagen to help tackle sustainability issues. Strategic Sector Cooperation focuses on three main themes: i) sustainable urban development (including infrastructure development, waste management and green energy); ii) climate change adaptation and water management; and, iii) diabetes. Through this cooperation it is intended to support specific urban development projects in Beijing, e.g. the development of the Qinglong Hutong or new Eco-city areas, as well as the improvement of the regulatory framework, plans and strategies for sustainable urban development.

China – Water and environment

There are many serious water resource and environmental problems in China. Key challenges are the lack of enforcement of legislation and weak implementation of government strategies and policies at decentral level. Highest priorities are: i) water resource scarcity, groundwater and surface water management, including flood management; ii) law enforcement on air pollution from traffic and industry; and, iii) law enforcement and investment strategies regarding wastewater. The aim of Strategic Sector Cooperation is to enhance the capacity to address some of the large societal water challenges in a holistic and integrated way with input from Danish experiences and technological solutions. In this context there is a focus on knowledge building in the Chinese institutions responsible for development of guidelines and monitoring as well as enforcement of environmental standards as expressed in two national action plans: Water Ten and Air Ten.

China – Maritime and shipping

Strategic Sector Cooperation between China and Denmark is being developed concerning green and more energy efficient shipping and shipbuilding. A Sino-Danish MoU on green maritime technology, shipbuilding and offshore equipment has been signed. Several areas of investigation within energy-efficient shipping and shipbuilding are relevant. These include:

- fuel consumption and fuel content (Sox, NOx, methane, etc.);
- alternative fuels (LNG, DME, electrification etc.);
- more efficient engine and propeller design;
- marine coating such as antifouling paint;
- improved ballast water systems;
- ship design to reduce greenhouse gas emissions.

Colombia – Veterinary and food safety

The aim of initial Strategic Sector Cooperation is to assist the Colombian authorities in improving the veterinary and food safety systems within the pig meat sector. This will contribute to the objectives of ensuring safer production, safer products, a positive impact on public health, increasing national pig production and accessing the global market for pig meat. Cooperation involves both the regulatory and the technical levels and the main outcome will be to support the Colombian authorities in four areas with regard to veterinary and food safety services. These are: chemical residues; pathogens (salmonella); risk analysis; and food safety at slaughterhouses and meat inspection units.

Ghana – Maritime environment

The Gulf of Guinea is the key trade route and an important livelihood resource for both Ghana and West Africa. A major challenge is to ensure that the economic potential of the Gulf is realised in a sustainable and safe manner. The overall objective of Strategic Sector Cooperation is to build capacity and strengthen

the framework conditions for the maritime sector in Ghana through government-to-government cooperation between the maritime authorities. The specific purposes are to enhance the capabilities in key maritime institutions in Ghana and to promote a maritime regulatory and enforcement environment, which is in compliance with international standards.

India – Smart city water management

India is facing a rapid urbanisation with an expected increase in the urban population of 400 million by 2040. The Government is tackling this challenge by upgrading 100 cities through a Smart Cities initiative, which includes water management. Strategic Sector Cooperation entails working with the City of Udaipur (located in the state of Rajasthan) and the state of Gujarat in their efforts to improve urban water management by identifying efficient strategies and plans for coping with shortages and improving management in an integrated and sustainable manner. The focus is on several sub-sectors including efficient and safe water supply, non-revenue water remediation, sustainable waste water management including sewage treatment and the remediation of lakes and rivers (in Udaipur). It is also intended to use the experiences and lessons from Udaipur and Gujarat to reach the national policy level.

Indonesia – Circular economy through waste management

Indonesia is facing serious waste challenges especially in large and rapidly growing cities, which have to deal with increasing amounts of waste as well as inadequate solid waste management systems. Challenges include the lack of capacity among the many different responsible authorities to implement and enforce the waste regulations, lack of public awareness about waste sorting and recycling and the lack of financing mechanisms. Strategic Sector Cooperation aims to tackle the challenge of improving municipal solid waste management and resource efficiency to address environmental, economic and health issues as well as looking into linkages with industrial waste management. The focus is on addressing environmental challenges in Indonesia within the waste sector as well as the shared challenges in building solutions that may keep more materials “in the loop” – as valuable resources for a sustainable environmental development trajectory.

Indonesia – Energy sector modelling

There are plans to increase power generation capacity in Indonesia by over 60 percent in the next five years, with a significant share from coal-fired facilities. An increased focus on renewables and on energy savings can contribute to the objective of reducing greenhouse gas emissions by 29 percent by 2030. Intensifying the use of expertise pertaining to renewable energy and energy efficiency is a key component of strategic sector cooperation. Within this framework, activities have been developed around energy modelling, planning and integration. Further research on wind resource assessment modelling could complement these efforts. In addition, research into building construction, building codes and energy savings in buildings could be useful in order to deepen understanding of the critical issues and facilitate knowledge-based decision making.

Iran – Protection and enforcement of Intellectual Property Rights (IPRs)

With the lifting of the economic sanctions in January 2016, Iran – with its 80 million inhabitants – is an interesting market for international investment. Enhancing the capacity of the Iranian intellectual property rights (IPRs) infrastructure and making it easier for companies to protect and enforce their rights in Iran will be important as “knowledge intensive” companies consider this a relevant parameter when deciding where they put their investments. Strategic Sector Cooperation between Denmark and Iran addresses constraints in relation to the protection and enforcement of IPRs, focusing on institution building, legal alignment, capacity building and awareness raising. The overall objective is to enhance the capacity of the Iranian institutions in relation to the protection and enforcement of IPRs.

Kenya – Green growth in the manufacturing sector

Strategic Sector Cooperation aims to support and strengthen opportunities for Kenya to pursue green growth in its manufacturing sector, while the Kenyan Industrial Transformation Programme (KITP) under Vision 2030 is promoting the development of the country as an industrial hub in Africa. The thematic focus is sustainable production and circular economy in manufacturing in existing and new industries, including product design, cleaner production processes, solid waste management, wastewater management and industrial symbiosis. Cooperation entails supporting the implementation of the KITP, the Green Economy Strategy Implementation Plan (GESIP) and the National Solid Waste Management Strategy (NSWMS) that all underpin the demand for action and implementation of contemporary measures in the manufacturing sector, where reduced environmental impact, efficiency and higher productivity go hand in hand.

Kenya – Food safety

The objective of Strategic Sector Cooperation is to improve the food safety, food quality and ability to further process healthy food originating from the horticulture and dairy sectors with emphasis on the control of residues and certain contaminants for the benefit of the Kenyan population and for increased export. This entails introducing a more risk-based and preventive approach to food safety aligned with a value chain focus. Food safety issues are addressed in three ways: i) regulatory and operational capacity building in food and feed safety authorities; ii) the development of the food and feed safety control system with an emphasis on value added in the dairy sector; and, iii) development of the food safety control system with an emphasis on value added in the fresh fruit and vegetable produce sectors.

Mexico – Energy planning and wind modelling

There are opportunities for research in connection with energy system planning, regulation and modelling in Mexico. An important issue is how to integrate intermittent sustainable energy sources such as wind and solar power within the energy supply system. There is also a need for research in connection with multi-scale, model-chain evaluation for wind atlases in large regions. This would entail investigation of measurements and uncertainty estimations as well as modelling and control of wind power plants in the Mexican system, e.g. in terms of weak grids and dynamic modelling.

Mexico – Strengthening primary healthcare

Several major development challenges are currently threatening Mexico's healthcare system, including: i) a shift in disease burden from infectious diseases to non-communicable diseases (NCDs) and mental illnesses; ii) inequality in access to quality health services deriving from a fragmented healthcare system characterised by several providers of healthcare; and, iii) incoherence in primary healthcare. Strategic Sector Cooperation aims at strengthening the primary healthcare system in Mexico in the light of the shared challenges in Denmark and Mexico resulting from a growing burden of NCDs and mental illnesses. Three complementary result areas are included: communication and referral mechanisms; IT-systems and digital communication; and efficient use of data equipment and telemedicine.

Myanmar – Labour market reform

In 2011 the government of Myanmar initiated a comprehensive reform process aimed at achieving a more democratic, market-based and socially equal society with prosperity for all. Since 2014, labour market reform has been given priority with the explicit aim of promoting sustainable growth and development. At this point in the reform process, however, there is a need to better understand how the strengthening of labour market institutions can contribute to promoting sustained and inclusive economic growth, full and productive employment and decent work for all, including what are currently the barriers and potential drivers for realizing this potential. Particular focus in research should be given to small and medium-sized enterprises.

South Africa – Water management

South Africa is a water scarce country and is currently facing a looming crisis due to a massive back log in water infrastructure maintenance and investment, as well as recurrent droughts driven by climatic variation and deteriorating water quality. A water research development and innovation roadmap has been developed that identifies research and innovation needs and gaps. The roadmap indicates the following focus areas: i) Unlocking alternative sources of water with reuse, improved groundwater utilization, desalination and harnessing of storm water, where research needs include assessment, monitoring and social dimensions; ii) Exploring ecological (natural water bodies) and built water infrastructure, including landscape level assessment of ecological infrastructure as an alternative to building, the management of ecological infrastructure and “green” water balances (ecological flow assessments; river basin scale hydro-economics; reservoir, river and lake restoration); and, iii) Ensuring greater water efficiency and reduced losses, with associated technical, institutional, operational and social behavioural challenges as well as next generation technology for water efficiency with industries, agriculture and households. Additionally there is need for research into applicable water governance and costing approaches that can unlock the urgently needed water infrastructure investments, thereby making water a bankable business while ensuring the constitutional right to water and sanitation.

South Africa – Renewable energy

The South African Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has been hailed as one of the most successful renewable energy procurement programmes globally. The programme has brought more renewable energy online in 4 years than the rest of sub-Saharan Africa has achieved in more than 20. Despite this achievement there remain various design and operational features of sector policies, planning processes and operations that require further improvement. These include issues with short to long term energy planning, grid integration of renewable sources, system adequacy for variable energy sources, opportunities for providing baseload through decentralized energy production from variable renewable sources such as wind, biomass and solar power, as well as opportunities for potential inclusion of time-based energy blocks, etc. In addition, there are many countries in sub-Saharan Africa that are planning to embark on renewable energy auctions in the next few years, presenting an important opportunity for South Africa’s experience to be translated into valuable lessons for the rest of the continent through applied research.

South Africa – Sustainable smart city development

The City of Tshwane (Pretoria) is experiencing rapid population growth. In addition, the peculiar urban planning during the apartheid era has resulted in “disintegrated” cities. This puts an immense pressure on the administration to deliver services, housing, infrastructure, safety and employment opportunities. Strategic Sector Cooperation aims to address these challenges and is expected to strengthen the partner’s capacity to develop sustainable solutions for urban planning. Cooperation draws on the experience of the City of Aarhus with sustainable and smart urban development as well as on collaboration with private sector developers and knowledge institutions. The focus will be on: i) the quality of life including safety, diversity, liveability, convenience, leisure and inclusion; ii) growth including knowledge, innovation, employment, value added and investment; and, iii) sustainability including carbon neutrality, clean air and water, recycling, waste to resources, water and energy efficiency.

Turkey – Low-carbon heating and cooling

Strategic Sector Cooperation with Turkey includes a focus on the efficient and low-carbon supply of heating and cooling. Within this context, efficient energy production is also important. Roughly one third of the energy consumed in Turkey is today used for heating and cooling purposes. The authorities are aiming to promote the use of energy efficient and low carbon heating and cooling systems. Currently heat is mostly provided in building-level heating systems and most systems use fossil fuels. Relatively few district energy systems are found while combined heat and power is almost only applied in industry.

Research is needed to explore opportunities for developing energy efficient and low carbon solutions in these sub-sectors.

Turkey – Waste and resource management

Current waste generation and waste management in Turkey represent a significant environmental challenge. Due to economic and population growth, the increase in purchasing power as well as rapid urbanisation, both the amounts of waste and the demand for proper waste, resources and waste water management services will increase substantially in the future. The focus of Strategic Sector Cooperation is on the waste and resource management system with special emphasis on municipal solid waste. There is also initial collaboration on wastewater and sewage sludge management. The main objective is to assist Turkish government agencies and other relevant stakeholders in developing a well-functioning waste and resource management system supporting better enforcement and implementation of legislation to achieve the government's long-term goals.

Vietnam – Food safety in the pork value chain

Strategic sector cooperation includes a focus on food safety in the pig value chain. A key concern is the routine use of antibiotics and other compounds to manage diseases in order to achieve productivity and biosecurity outcomes. Solutions to better manage this and reduce the amount of antibiotics used could include hygiene, biosecurity and disease surveillance measures as well as the prevention of diseases through vaccination. Research is needed to help establish how such measures - along with prudent use practices consistent with a "one health" approach - may be implemented. This would include determining the actual disease risk and status, current livestock farming and antibiotics usage practices, as well as the prevalence and risk of antimicrobial resistance with a view to making recommendations on pathways to improved disease prevention and control practices. It is recommended that the research be interdisciplinary, include an analysis of the role of relevant stakeholders in achieving behavioural change and focus on developing innovative solutions that will work in the Vietnamese context.

Vietnam – Health care

The prevention and treatment of non-communicable diseases (NCDs) in primary healthcare is in focus through Strategic Sector Cooperation. In Vietnam, as in many low and middle-income countries, the existing healthcare system is oriented towards infectious diseases. As a result, the system is poorly equipped to handle the growing prevalence of NCDs. There are direct consequences for especially for the poor, who are affected by the diseases and by lack of access to prevention and long-term care. A reorientation of the healthcare system with investment in the prevention and treatment of NCDs at the primary level and with new attention to patient self-care and involvement is underway. An essential prerequisite for success in this field is knowledge on how NCDs are experienced and handled by patients, relatives and healthcare professionals.

Vietnam – Technical and Vocational Education and Training (TVET)

Literacy among Vietnam's adult workforce is widespread and more so than in other countries, including wealthier ones. However, inadequate skills of job applicants (a "skills gap") and scarcity of workers in other occupations (a "skills shortage") are both identified as major challenges in the next step of industrialisation. The focus of Strategic Sector Cooperation has been on vocational education and training, supporting an enhanced coherence between the Vietnamese TVET system and the labour market addressing skill-gaps and future skills needs. Relevant line ministries and their regional branches are supported to develop tools and mechanisms to implement the parts of the strategy focusing on enhanced cooperation between schools, companies and authorities. Research is needed to assess strategic as well as concrete interests and opportunities for companies and educational institutions to engage in and influence these gaps and shortages in view of the rapid socio-economic and structural development, ongoing privatization and significant international integration of the economy.