

Ministry of Foreign Affairs of Denmark

Research collaboration projects in growth and transition countries (“Window 2”), 2017

Call for Phase 1 applications

Deadline: March 3, 2017, 12:00 hrs. (Danish Time)

Danida Fellowship Centre
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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 have been set up for 2017, 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, Indonesia, 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 2017 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.

All potential applicants are invited to attend information meetings at which the MFA, the Consultative Research Committee for Development Research (FFU), and the Danida Fellowship Centre (DFC) will provide information about the requirements and procedures for the phase 1 and phase 2 applications. The meetings will be held in Copenhagen on the 15th December 2016 and in Aarhus on the 19th December 2016.

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.

The deadline for submission of Phase 1 applications is **March 3, 2017 at 12:00 hrs. (Danish Time)**. Applications must be submitted in English and electronically via DFC e-application system.²

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 has 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 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 their direct work input and expenses in relation to the project activities. 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.

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;*
- *the project responds to national development priorities related to the SDGs;*
- *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;*
- *the originality and innovative nature of the project, in terms of generating new knowledge;*
- *with respect to state of the art, the contribution to advancing research in the given field according to international standards.*

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

⁵ <http://um.dk/da/eksporttraadet/markeder/vaekststrategier/myndighedssamarbejde/>

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 through the international research dimensions 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 amount of qualified applications exceeds 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 consultation procedure 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).

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: <ul style="list-style-type: none"> • The chosen research theme • National development priorities related to specific Sustainable Development Goal(s);

Heading	Content
	<ul style="list-style-type: none"> • 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 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 5 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 who are 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.

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 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)⁶;
- Research stays in Denmark for researchers from partner institutions of up to six months' duration;
- Annual external audit and a final project audit.

10. Application Process

Information meetings for new applicants concerning this Call Phase 1 are held in Copenhagen and Aarhus on the 15th and 19th December 2016 respectively.

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. The MFA will assess the relevance of the application with respect to the thematic focus area and provide a statement to the FFU assessment.

⁶Maximum overhead rates must follow the General Conditions for ongoing projects, see: <http://dfcentre.com/wp-content/uploads/2017/01/General-Conditions-2017.pdf>.

Prequalification: The applications are assessed by the FFU in May 2017. Based on the recommendations of the FFU, the Danish MFA decides which applicants will be invited to submit a final application in the subsequent Phase 2. If and when required the MFA will conduct a consultation procedure in accordance with § 19 of the Danish Public Administration Act.

Responses to Phase 1 applications: Applicants will be informed of the MFA decision by May-June 2017, and the Phase 2 Call 2017 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 September 8, 2017.

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 consultation procedure.

Consultation procedure: The consultation procedure concerning the external peer reviews is expected to take place in September-October 2017.

Final Selection: The Phase 2 applications are assessed by the FFU in early December 2017, 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 2017. The approved projects can expect to start in early 2018 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 Call deadline.

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 4 of the Executive order on the granting function etc. under the Danish Council for Independent Research and the Danish Council for Strategic Research (Executive Order no. 322 of 30 March 2014), 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 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 research themes:

Bangladesh – Occupational health and safety

The ready-made garment industry in Bangladesh has grown very rapidly to become a key driver of economic growth. Garment exports account for over 80 percent of export earnings and the industry employs over 4 million workers of whom 55-60 percent is women. The loss of 1136 lives when the Rana Plaza collapsed in 2013 sent shockwaves around the world, coming shortly after a fire which killed 112 people at another garment factory. In the wake of these disasters business could not continue as usual. Fundamental changes relating to safety, inspection and compliance had to be made if the lives of workers were to be safeguarded and the confidence of global buyers retained. The amendment of the Labour Act in 2013 introduced the need for safety committees to be established in any factory with over 50 workers. The formation of these committees is currently being piloted and once operational they should make a major contribution to workplace safety. However, further result oriented research is needed to convince the employers to voluntarily engage in investing in occupational health and safety (OHS). The employers' federations have often asked for concrete evidence that better OHS would lead to higher productivity. In addition, other industries are expanding, such as the leather industry which could be the next major export sector. In this context research could be undertaken in the fields of both corporate social responsibility (CSR) and responsible sourcing.

Brazil – Digital governance

Digital innovation in public institutions is a component of the strategic sector cooperation programme between Brazil and Denmark. The aim is to study tools to generate ideas and develop radically new opportunities in a complex world. Forming new relations between people, information technologies (IT) and society constitute the basis for collaboration. Possible research areas include:

- digital governance and enterprise architecture;
- process innovation and new business models;
- using big data to improve governance;
- security in e-Government.

Brazil – Health information technology (IT)

Developing information technology (IT) in the health sector is included in strategic sector cooperation between Brazil and Denmark. Despite differences in income levels and organization, there are interesting similarities between the two countries that could be explored and would serve as common ground in a research project: the aging population, the rise in chronic diseases, hospital overload, increasing IT-readiness and the focus on home monitoring of patients. The public health services cater for 75 percent of the population in Brazil. With a vast population and higher than average level of urbanization, there is considerable scope for upscaling IT in health care services. Research is needed to explore the potential for IT use in the sector.

China - Water scarcity

Water scarcity is an increasingly serious problem in large parts of China. Groundwater aquifers have been overused and in some areas literally emptied. All water sources have to be integrated in order to establish a sustainable water resource. By applying enhanced infiltration of excess surface water - especially floodwater - to the groundwater, the aquifers can be restocked and rehabilitated and at the same time floodwater that is normally wasted can be stored. This approach has the advantage that with efficient infiltration/injection, evaporation and water loss can be avoided. Suggested research could deal with:

- rehabilitation of groundwater aquifers;
- how the hydraulic and geological properties change after collapse of the aquifers, how the aquifer can be rehabilitated and if and how groundwater extraction can be re-established;
- the statistical assessment of geological and hydrogeological mapping in large areas;
- how to optimise infiltration in order to avoid evaporation and sediment clogging.

China – Animal manure as fertilizer

A strategic sector cooperation initiative on resource efficiency within the agricultural sector is focusing on the application of animal manure to the soil as fertilizer. A well-structured research project in relation to manure handling or application could complement this effort. Investigations could, for instance, be undertaken to monitor fertilizer trials and analyse soil processes after applying animal manure.

China – Maritime and shipping

Closer research-based cooperation between China and Denmark is being considered, in particular concerning green and more energy efficient shipping and shipbuilding. A Sino-Danish MoU on green maritime technology, shipbuilding and offshore equipment will be signed at the end of 2016. Several areas of research 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 – Water resources

Opportunities and constraints related to water resources are high on the agenda in Colombia. These have arisen due to:

- climate variation, for instance the phenomena of el niño (with warmer temperatures and drought) and la niña (more and heavier rain and storms);
- increased water pollution;
- the introduction of new legislation (with requirements for contingency planning, water treatment etc. in relation to both public and commercial activities).

Furthermore, the peace agreement and prospects for greater stability in the country mean that it will be possible to increase the geographical reach of improved sanitation, etc. Opportunities explored through strategic sector cooperation have focused on municipal wastewater treatment and water use in aquaculture. Clean tech possibilities could be further investigated through targeted research collaboration.

Colombia – Mental health

Developing a national strategy to tackle stigmatisation is an important issue in mental health care in Colombia. Demobilised combatants together with others such as the LGBT community, drug addicts, people with infectious diseases such as HIV/AIDS and tuberculosis are all at risk of exclusion from society due to stigmatisation. This has resulted in a high prevalence of mental health problems within the group of conflict victims. With the implementation of the peace agreements it will be crucial to address this issue in order ensure successful reintegration. In this context research could be undertaken, drawing on the experiences of combatting stigmatisation in Denmark and underpinning the development and implementation of the national strategy as a means of improving mental health.

Colombia – Health care and use of medication

In 2014 Colombia introduced a universal healthcare system, meaning that all citizens have the right to free medical attention. A strategic sector cooperation initiative has been developed to assist in making the

right choices when defining the future of specific areas of the healthcare system. The financial sustainability of the system is a particular concern, with a focus on price controls for medicines and the rational use of medication. Rationalising the use of medication is a priority within the healthcare system. Research could be highly relevant in relation to the process of implementing a universal health care system.

Ghana – Maritime environment

The Gulf of Guinea is the key trade route and a key livelihood resource for both Ghana and West Africa. Over the past decades trade has increased significantly and with several countries gaining lower-middle income status this trend is set to continue. At the same time oil exploration has begun in the Gulf. A key challenge, therefore, is to ensure that the economic potential of the Gulf of Guinea is realised in a sustainable and safe manner. Opportunities for strategic sector cooperation have focused on compliance with the regulations of the International Maritime Organisation (IMO), in which environmental issues concerning air pollution and ballast water treatment feature prominently. Research on the environmental impacts of maritime activities (such as shipping, oil exploration and fisheries) could improve the basis for policy making and legislation by local governments not only in Ghana, but across the West African region and complement the strategic sector cooperation initiatives.

Ghana – Safe navigation

Not only trade and oil exploration are carried out in the Gulf of Guinea; fishing and piracy are two key issues for the region. Access to navigation and navigational warnings are challenges for all users of the maritime domain. Ensuring that users of the sea have access to safe navigation also means sustainable, safe jobs. Through strategic sector cooperation there is a focus on improving navigation with better piloting of vessels and the introduction of simple e-navigation solutions. These would give all users of the maritime domain, from artisanal fishermen to large commercial vessels timely warnings, e.g. of incoming bad weather or navigational hazards. Targeted research focusing on initiatives to improve safe navigation, e.g. ship monitoring, satellite based navigation or e-navigation would help to prepare not only Ghana, but the whole region for the expected growth in trade, where it is important to ensure the coexistence of commercial and non-commercial sailing. This collaboration would support sustainable economic growth and create jobs in the maritime domain.

Indonesia – Energy sector

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.

Kenya – Food safety

Kenya has considerable potential as a food producing and exporting country, especially in the high-value dairy, fruit and vegetable sub-sectors. However, products often reach the market without sufficient attention to hygiene, contamination and residue levels, resulting in failure to comply with international standards and rejection by commercial operators. This is also a safety problem for Kenyan consumers. Research is needed that provides an assessment of microbiological and chemical hazards along the milk, fruit and vegetable value chains. Main hazards should be identified and characterized and innovative solutions to their control suggested. An inter-disciplinary approach is expected and should include studies

of the knowledge, attitudes and practices of farmers and other actors in the food chain towards use of agricultural chemicals and hygiene.

Kenya - Green growth in the manufacturing sector

A strategic sector cooperation initiative seeks to apply a circular economy based approach to manage production and residuals, as well as to assist in the introduction of new circular business models in the manufacturing sector. In particular, research is needed to analyze and identify opportunities, barriers and business cases for piloting the greening of industrial manufacturing and symbiotic practices between industries in existing and projected industrial parks. This research would encompass economic, organizational, institutional and technical considerations, including risks and assumptions of various models. The results are intended to provide substantial scientific knowledge that will underpin the multi-sectoral approach adopted through strategic sector cooperation and synergize with activities in general.

Mexico – Primary health care

Strengthening primary health care is the focus of a strategic sector cooperation initiative and entails improving awareness of the importance of primary care and prevention of disease. Health literacy stands for the knowledge, motivation and competencies used by people to access, understand and apply health information for promoting better health outcomes. Limited health literacy affects the population's health outcomes and is associated with higher health system costs. Research on health literacy would be part of the effort to address the challenges in dealing with chronic diseases, consistent with the strategies promoted by the World Health Organisation.

Mexico – Mental health

A small but important component of the strategic sector cooperation programme concerns mental health in Mexico. There is a need to increase awareness and understanding of the problems in this field. Opportunities exist in connection with the work undertaken at call and information centres dealing with psychiatry and mental health, where the concept of e-mental health has been developed. There is a particular focus on helping doctors to deal with patients suffering from depression. There are possibilities for investigation of a number of critical issues within the framework of research collaboration with national institutions.

Mexico – Energy planning and wind modelling

There are opportunities for research in connection with energy system planning, regulation and modelling in Mexico. How to integrate intermittent sustainable energy sources such as wind and solar power within the energy supply system is an important issue. 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.

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 – 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 years. Despite this achievement there remain various design and operational features of the programme that require further improvement. These include issues with 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, the 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. There are also important developments with regard to energy sector governance and institutional arrangements and renewable energy auction design in the rest of the world - specifically in the EU and including Denmark - that could inform successful renewable energy procurement programmes in South Africa and the rest of the continent.

South Africa – Water resources

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, due to recurrent droughts driven by climatic variation as well as due to 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:

- Unlocking alternative sources of water with reuse, improved groundwater utilization, desalination and harnessing of storm water, where research needs include the assessment, monitoring and social dimensions;
- 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);
- 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.

Turkey – Low-carbon heating and cooling

Upcoming strategic sector cooperation aims to include a focus on energy efficiency and low-carbon energy generation. 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 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 low carbon solutions in these sub-sectors.

Turkey – Waste management

Waste prevention, sorting and recycling as well as wastewater sludge management are likely to be included in an upcoming a strategic sector cooperation initiative. Currently waste generation and waste management practices in Turkey give rise to significant environmental problems. About half the population does not have access to any waste disposal or recovery systems and about 40 percent of the

municipal solid waste is dumped into open sites. Thus a first priority - in harmonisation with EU directives - will be to close old dumpsites and establish sanitary landfills to protect the soil and underground water and to reduce the environmental impacts. Due to expansion of sanitation and wastewater treatment systems, there is an urgent need to develop effective plans for the utilisation of efficient technologies and processes to deal with the increasing amounts of sludge. Targeted research could make an important contribution to tackling the problems. Finally it would make sense to take a close look at waste-to-energy capabilities around the world that are relevant for Turkey.

Turkey – Renewable energy

The authorities are looking at how to reach ambitious renewable energy targets while maintaining a high level of energy supply security. New legislation is to be drafted including a reassessment or re-design of the current financial support framework. In this context, the tendering procedures and permit requirements and procedures will be reviewed. The review will include all electricity generating technologies including wind power, solar power, biomass and biogas power and cogeneration as well as geothermal power. In addition, promotion policies for non-power renewable technologies will be reassessed. The new law should align support schemes with EU regulations. In addition, efforts are underway to examine how the electricity grid can be made ready to handle significantly more renewable energy than currently is the case. Research could complement the strategic sector cooperation in these spheres.

Vietnam – Green industrial production

An important focus of strategic sector cooperation is on industrial emissions, including compliance with environmental laws and pathways to greener industrial production. A key challenge is that the majority of industrial enterprises in Vietnam are small or even micro-scale, and there is a need for research to provide an understanding of how these enterprises may be helped to adopt more efficient, environmentally friendly and economically viable business models, including through innovation and the introduction of more efficient resource flows and circular economy concepts. It is recommended that the research be inter-disciplinary and include analysis of the role of relevant stakeholders in achieving behavioural change as well as focusing on innovative solutions that will work in the Vietnamese context.

Vietnam – Food safety

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. Research is needed to help establish prudent use practices consistent with a "one health" approach. This would include determining the actual disease risk and status, current usage patterns and 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 inter-disciplinary, 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 investments into 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. Currently, there is a very limited amount of research on NCDs in

Vietnam. This hampers the ability to improve the responses by authorities and healthcare providers in effectively improving the healthcare system.