

Joint Call for project proposals 2022

Indo-Danish research and innovation cooperation in the area of “Green fuels including green hydrogen”

Announcement of Call for Proposals: February 09, 2022

Deadline for Submitting Proposals: June 02, 2022 (12.00 Danish Time, 17.30 Indian Time)

Innovation Fund Denmark (IFD), and Department of Science and Technology (DST), Ministry of Science & Technology, Government of India, announces this joint call for submission of project proposal in “**Green fuels including green hydrogen**”. This is in pursuance to the agreement of May 22, 2018, between the Government of the Republic of India and the Government of Denmark on cooperation in the fields of Science, Technology and Innovation, the Green Strategic Partnership between India and Denmark and the detailed 5-year Action Plan (2021-2026).

1. PRIORITISED RESEARCH AND INNOVATION AREAS

The target of this India - Denmark call is to enhance value creation through research and innovation for the development of new technologies, solutions, services and business models related to the following topics:

Green fuels including green hydrogen

Green fuels for transport and industry (Power-to-X, etc.). Solutions to convert electricity from renewable energy into products that can be used to reduce emissions from parts of the transport and industrial sectors where there are no cost-effective alternatives to fossil energy.

Projects can contribute to e.g.: -

1. Renewables based green hydrogen production, storage and utilization
2. Electrolysers and fuel cells
3. Innovations on improving efficiency, boosting production capacity and finding robust, cheaper alternatives to the rare materials used in current electrolysers/fuel cells
4. Support for the establishment of Gigawatt- scale electrolyser test centre.
5. Manufacturing of electrolyser /fuel cell components such as membranes, stack integrators, suppliers of supporting technology and system integrators
6. Standardising and automating production processes
7. Distribution network for H₂ transport using polymers/
8. Underground H₂ storage facility
9. Decarbonisation of hard-to-abate industries like refineries, steel, Ammonia etc.,
10. Photoelectrochemical systems for hydrogen production
11. The integration of Power-to-X-systems to the energy system (e.g. sector coupling)”

Note: Please note that the call is not exclusive to these topics and is open to any other research addressing problems related to green fuels including green hydrogen.

2. APPLICATION PROCEDURE

The Danish and Indian applicants will develop one joint Project plan and the plan will be sent to both IFD (Denmark) and DST (India) using the forms of each organization, respectively. It should be ensured that application with identical title has been submitted from both counterparts.

Project proposal must include the name of one Principal Investigator (PI) each in India and Denmark. On the Indian side it is advised to include one Co-PI in the proposal. The applications must include a statement on how the proposed collaboration brings added value for both countries.

3. EVALUATION CRITERIA AND PROCESS

The evaluation consists of the following phases:

Phase 1: National procedures and evaluation criteria

DST and IFD will in phase 1 assess and rank the proposals according to their respective institutional procedures and evaluation criteria – see procedure and criteria on the call-webpages of IFD and section 8 below for the national criteria from DST. The relevance of proposal to call objectives need to be conclusively established.

Phase 2: Bilateral consensus decision

Bilateral consensus decision between DST and IFD on proposals selected for funding based on the two party's evaluation (ranking) in phase 1 and the following bilateral evaluation criteria for phase 2:

- The project should have industrial perspective and participation from both Indian and Danish industry is strongly encouraged.
- The proposed research and innovation projects should be well integrated on the Indian and Danish side
- Research and innovation activities of importance to the expected outcome should be evenly distributed among Indian and Danish counterparts.
- Synergy effects and added-value to ongoing research within the field including Indo-Danish research and innovation projects is considered important.

4. KIND OF SUPPORT AVAILABLE

The successful projects will be jointly funded by India and Denmark. For Danish counterpart, funding will be disbursed by IFD and similarly for Indian counterpart by DST.

The Danish side (Innovation Fund Denmark - IFD) will allocate a total of 20 million DKK and the Indian side (DST) will allocate a total of 200 million INR to support 3-5 joint research and innovation projects. The duration of the projects is expected to be up to 3 years for both sides.

Significant co-financing as well as the participation of relevant public partners and/or private enterprises other than the main applicants is encouraged.

The project budget must clearly delineate justified Indian and Danish costs. The costs of the Indian partner must be eligible as per the guidelines of the DST. Accordingly, the costs of the Danish partner must be eligible as per the guidelines of the IFD. As the joint projects are funded in bilateral mode the mobility between the two countries should be balanced. Applicants are reminded to include sufficient budget for travel between India and Denmark to ensure successful collaboration. The sending side will provide round-trip economy-class airfare to the relevant entry city of the host country as well as medical insurance. The receiving side will provide accommodation and living expenses, i.e., transportation for pick-up service to and from the airport, food or per diem etc.

Kind of support available on the Indian side:

Financial support will be provided only for temporary staff salaries, equipment, consumables, international travel and other miscellaneous items. The support will **NOT** be provided towards basic infrastructure, buildings. The investigators/ R&D Group should have adequate experience and expertise in the relevant area of proposal. It is envisaged that the end product of development shall be transferred to industries for commercial production. Hence, it is desirable that industry/industries may be associated with the project right from the beginning with defined participation in technical terms. As far as possible the proposed prototype/device/process should have sufficient users in the country and there should be adequate demand for the product.

5. PROPOSAL REQUIREMENTS

Proposals must attempt to fully disclose the research ideas and approaches. It is important that proposals are well crafted and provide substantive description of the research plan for a fair review of the scientific/technical plans and approaches. Proprietary or confidential information must be clearly indicated in the proposal. Proposals must not be duplicative or substantially similar to any previous project or proposal submission.

The project leading to the development of a device/prototype/process with **Technology Readiness Levels (TRL) 5** and above and having potential for commercialization will be eligible for financial support. Basic R&D proposal leading to only research publications will not be supported under this call. The implementation or commercialization plan should be clearly spelled out with achievable milestones, timelines, justifiable budget requirement and engagement with prospective technology transfer partners or technology transfer facilitating bodies.

It is mandatory to include an industry-partner in the project to apply for this call.

The applications must include a statement on how the proposed collaboration brings added value for both countries.

6. PROCEDURE FOR SUBMISSION OF PROJECT PROPOSAL

The Danish and Indian applicants will develop one joint Project plan and the plan will be sent to both IFD Denmark and India (DST) using the forms of each organization, respectively. It should be ensured that applications with identical titles have been submitted from both counterparts.

The project proposal must include the name of one Principal Investigator (PI) each in India and Denmark. On the Indian side it is advised to include one Co-PI in the proposal.

The proposal, in English, must be submitted to IFD and DST, no later than June 2, 2022 (12.00 Danish Time/ 17.30 hrs. IST). This consensus decision is expected in October or November 2022.

Submission in India:

The Project Proposal could be submitted for financial support through **ONLINE MODE ONLY** by Scientists/ Engineers/ Technologists working in Universities and other Academic institutions; R&D institutions/ laboratories having adequate infrastructure and facilities to carry out R&D work. The PI(s) should have relevant experience as evident from previous prototype commercialization or development or practical experience in the chosen area/topic with field knowledge. On the Indian side, the Project Proposal could be submitted in the enclosed format through ONLINE MODE ONLY (www.onlinedst.gov.in). NO HARD COPY of the project proposal should be submitted.

Please ensure that following documents have been completed and uploaded along with the proposal.

- i. Certificate from the investigator (in the enclosed format);
- ii. Endorsement from Head of the institution on Letter Head (in the enclosed format).
- iii. A signed certificate for the Conflict of Interest (in the enclosed format)
- iv. Bio data of PI/Co-PI

Applications received without above documents with incomplete information will not be entertained. Soft copy in pdf format is also to be emailed to ranjith.krishnapai@gov.in and rajivarc@nic.in on or before **02nd June, 2022** (05:30pm).

Submission in Denmark

The guidelines for the Danish applicants are described in the Guidelines for International Projects, to be published on 28th February 2022. Only registered legal entities in Denmark are eligible for investments from IFD. Foreign subcontractors are allowed after approval by IFD.

The application including the appendix A, B, C and budget must describe the joint proposal and not just the part conducted by the Danish partners. Please note that the budget file template calculates the total investment rate for all the project partners, however the Danish applicants applying to IFD should make sure that the applied investment rates comply (both the individual and total) with the investment rates mentioned in the Guidelines for International Projects.

Proposals must be submitted in Denmark through the application system www.e-grant.dk

7. CONTACT DETAILS:

Department of Science and Technology (DST),
Ministry of Science and Technology,
Government of India

Dr. Ranjith Krishna Pai
Director/Scientist 'E'
Technology Mission Division (Energy & Water)
S&T Block 3, Room No: 01
Department of Science and Technology (DST)
Ministry of Science and Technology, Govt. of India
Technology Bhavan, New Mehrauli Road
New Delhi-110016
Ph: 011-26590475
E-mail: ranjith.krishnapai@gov.in

Dr. Rajiv Kumar
Scientist 'E'
Department of Science and Technology,
Technology Bhawan, New Mehrauli Road,
New Delhi-110016 (India) E-mail: rajivarc@nic.in, <http://www.dst.gov.in/>
www.onlinedst.gov.in

Innovation Fund Denmark:

Cagdas Citirikkaya
International Investment Officer
Email: cagdas.citirikkaya@innofond.dk ; Tel.: +45 61905013

Martin Søndergaard
Investment Officer
Email: martin.sondergaard@innofond.dk; Tel.: +45 61905065

8. APPENDIX

DST NATIONAL EVALUATION CRITERIA

The proposal relevant to call objectives will be evaluated based on following criteria:

- a) Novelty of the proposed work,
- b) Need assessment and demand for proposed work,
- c) Scientific appropriateness of deliverable of proposed approaches and technical merit
- d) Expertise and track record of individual researcher or project consortium as applicable.
- e) Appropriateness of industrial partner, competence of each member, facilities available to conduct researcher will be given due consideration.

- f) Proposal formulation. Literature/patent review, qualified objectives, methodology and work plan, clear and well-defined deliverable.
- g) Synergy effects and added-value to ongoing research within the field.

GENERAL TERMS AND CONDITIONS FOR THE GRANT (applicable to Indian applicants)

1. Information regarding Proof of Concept and Early prototype should be provided in the project proposal.
2. The PI/Co-PI can submit only one proposal against this Call. Submission of more than one proposal from a PI/ Co-PI would liable to be disqualification of all the submitted proposal.
3. The Institution where project will be implemented, will assume financial and other administrative responsibilities of the project.
4. In case of multi-institutional project, the Principal Investigator has to obtain formal agreement from the collaborating Institutions/Scientists.
5. As the joint projects are funded in bilateral mode the mobility between the two countries should be balanced. Applicants are required to include sufficient budget for travel between India and Denmark. The sending side will provide round-trip economy-class airfare to the relevant entry city of the host country as well as medical insurance. The receiving side will provide accommodation and living expenses, i.e., transportation for pick-up service to and from the airport, food or per diem, etc. Project workshop in India and/or Denmark can be considered for funding.
6. The manpower recruited for the project should be paid as per the rules of the institute and guidelines of the Government of India (**OM. No. SR/S9/Z-08/2018 dated 30.01.2019 and SR/S9/Z-05/2019 dated 21.08.2019**). The posts which are not covered under the guidelines but permissible under projects at host institute are also permitted. The temporary staff employed for the project by the organization is not treated as employees of Government of India and the deployment of such staff at the time of termination of the project will not be the concern / responsibility of the Government of India.
7. It is the policy of DST to maximize the use of equipment. In this light, investigator shall permit the use of spare or idle capacities of equipment procured under the project by bona fide users (research workers in other DST funded projects or other projects of the institute).
8. All the assets including equipment acquired and prototypes fabricated from the grant will be the property of Government of India and should not be disposed of, or utilized for purposes other than those for which the grant has been sanctioned, without the prior sanction of the Department of Science & Technology.
9. The Principal Investigator/ Organization will be required to furnish progress report every six months on the progress made on all aspects of the project including expenditure incurred on various approved items during the period.
10. The Comptroller and Auditor General will have the right to access to the books and accounts of the organization for Grants received from the Government.
11. The organization would maintain separate account for the project. The grant should be kept in an interest earning bank account and the interest earned should be reported to the Department of Science &

Technology. The grantee organization will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final installment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

12. The grantee organization will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing bank account. For Grants released during F.Y. 2017-18 and onwards, all interests and other earnings against released Grant shall be remitted to Consolidated Fund of India (through Non-Tax Receipt Portal (NTRP), i.e. www.bharatkosh.gov.in), immediately after finalization of accounts, as it shall not be adjusted towards future release of Grant. A certificate to this effect shall have to be submitted along with Statement of Expenditure/ Utilization Certificate for considering subsequent release of Grant/ Closure of Project accounts.

13. Grant can be terminated by DST at any stage if it is convinced that the Grant has not been properly utilized or appropriate progress is not being made.

14. If the Principal Investigator wishes to leave the organization where the project is based, the organization/investigator will inform the same to DST and with its consultation evolve steps to ensure successful completion of the project, before relieving the Principal Investigator. The Investigator should submit three copies of complete and detailed report of the work done by them on the project before leaving the organization.

15. Sale proceeds, if any, of the components, prototypes, pilot plants etc. fabricated as a result of the development of the project arising directly from funds granted by the Department of Science & Technology shall be remitted to the Government of India. The Government of India, may, at its discretion allow a portion of such receipt to be retained by the organization.

16. The know-how generated from the project would be the property of the Government of India and any receipts by way of sale of know-how, utilization of know-how for production, royalties etc. shall belong to the Government of India. The Government of India, may, at its discretion, allow a portion of such receipts to be retained by the organization.

17. The Principal Investigator / organization will prepare all the documents that would be required for the transfer of know-how to the production agency/agencies and submit them to DST as and when required. The organization will be responsible to transfer the know-how developed to the production agency/agencies and supply all the needed information to the production agency/ agencies as and when required.

18. No financial support for manpower and equipment will be provided to the industry. However, industry can hire the manpower through academic institution. Industrial SIROs recognized by DSIR, the release is restricted to 50% of sanctioned amount. The balance 50% is released on the successful completion of the project as the reimbursement.

**DST – Innovation Fund Denmark Call for Joint Research Proposals
Application Forms for Joint Research Projects
(For Indian Scientists)**

Ref No. _____
(to be filled by DST/)

PROJECT SUMMARY
(Not more than 1 and half page)

Project Title:

Name of Prototype/Device proposed to develop with TRL

level: Use of proposed device and Potential User (One line):

Indian PI Name:

Age:

Contact No. Mobile & Office:

Email ID:

Danish PI:

Contact No. Mobile & Office:

Email ID:

Total Cost:

Duration:

Manpower:

Equipment proposed:

Industry Partner (if any):

Industry' financial Contribution (if any):

Objectives:

Methodology (in brief 150 words):

Deliverables:

Budget Details:

Sr. No.	Items	Budget(in Lakhs)			
		1 st Year	2 nd Year	3 rd Year	Total
1.	Equipment's				
2.	Salaries/ Fellowship s(Name & No.)				
3.	Consumables				
4.	Travel				
5.	Contingencies				
6.	Overhead Expenses*				
Total					

Any other relevant information including Novelty /Details of Proof of Concept/Prototype developed by Investigator/Team:- (maximum 150 words):-

PART-A PROJECT IDENTIFICATION

1. Research Field for Cooperation :
2. Sub-field of Proposed Research Field :

3. Title of Joint Research Project

4. Proposed Period of Joint Research Project : _____ Months
5. Proposed Budget from Indian Side : Rs.
6. Proposed Budget from Danish Side : Euro.
7. Indian Principal Investigator (PI):
 - Name : _____ Date of Birth : _____
 - Designation :
 - Organization :
 - Division/ Department
 - Postal Address

 - Telephone No. : (Office) _____ (Residence) _____
 - Fax No. _____ E-Mail _____
8. Danish Principal Investigator (PI):
 - Name :
 - Designation :
 - Organization :
 - Division/ Department
 - Postal Address

 - Telephone No. : (Office) _____ (Residence) _____
 - Fax No. _____ E-Mail _____

9. Indian Co-Principal Investigator (Co-PI):

Name : Date of Birth :
Designation :
Organization :
Division/ Department
Postal Address
Telephone No. : (Office) (Residence)
Fax No. E-Mail

10. Danish Co-Principal Investigator (Co-PI):

Name :
Designation :
Organization :
Division/ Department
Postal Address
Telephone No. : (Office) (Residence)
Fax No. E-Mail

11. Other Researchers in Indian Research Team

11.1 Name : Date of Birth :
Designation :
Organization :
Division/ Department
Telephone No. : (Office) (Residence)
Fax No. E-Mail

11.2 Name : Date of Birth :
Designation :
Organization :
Division/ Department
Telephone No. : (Office) (Residence)
Fax No. E-Mail

11.3 Name : Date of Birth :
Designation :
Organization :
Division/ Department
Telephone No. : (Office) (Residence)
Fax No. E-Mail

11.4 Name :
Designation :
Organization :
Division/ Department
Telephone No. : (Office) (Residence)
Fax No. E-Mail

11.5 Name :
Designation :
Organization :
Division/ Department
Telephone No. : (Office) (Residence)
Fax No. E-Mail

12. Other Researchers in Danish Research Team

12.1 Name :
Designation :
Organization :
Division/ Department

12.2 Name :
Designation :
Organization :
Division/ Department

12.3 Name :
Designation :
Organization :
Division/ Department

12.4 Name :
Designation :
Organization :
Division/ Department

12.5 Name :
Designation :
Organization :
Division/ Department

B. TECHNICAL INFORMATION

1. Aim / Joint Abstract of the Project: (What will you achieve with the project?)
2. Justification for collaboration :
(Why do you want to make the project as a joint Indo-Danish project?)
3. State-of-the-art
4. Relevance of the project
5. Research plan:
(no more than 8 / 15 pages for individual / consortium proposals respectively), including a clear description of the planned research and research collaboration, Year-wise and country-wise distribution of work and methods of implementation and description of any researcher training to be carried out within the project.
6. Risk Management :
(Identify, assess and prioritise the most important risks in the project with reference to the listed milestones. Briefly describe the plan to mitigate the specific risks and reduce the projects overall risk profile.)
7. Technology Readiness Levels (TRL)
[State the projects expected start and end Technology Readiness Levels (TRL) and also provide comments, if any]

Start TRL: [] End TRL: []
8. Societal Readiness Levels (SRL)
[State the projects expected start and end Societal Readiness Levels (SRL) and also provide comments, if any]

Start SRL: [] End SRL: []
9. Legal, ethical or regulatory demands:
10. Value creation - growth and employment:
11. Project outcome recipients:
12. Implementation:
13. Intellectual Property Rights :
(Are any of the expected results likely to have commercial value? How do you propose to share intellectual property rights?)

12. Facilities related to project activity available at the institutions where the project will be carried out:

At the Collaborating Indian Institutions	At the Collaborating Danish Institutions

13. Number of exchange visits required to achieve the project objectives (Year wise)

	INDIA TO DENMARK		DENMARK TO INDIA	
	Number of persons x visits	Duration for each person's visit	Number of persons x visits	Duration for each person's visit
1 st Year				
2 nd Year				
3 rd Year				

14. Expected final results of Cooperation (e.g. joint publications, patents etc.)

Are any of the expected results likely to have commercial value? (Up to 100 words)

15. Bio-data of Indian and Danish investigators to be attached as annexures.

(Description should highlight the expertise of PI(s) and other members of the project team in the proposed field of work supported by citing relevant publications only. (To be appended in about 2 pages).

16. Research History of both PIs. (Ongoing / Completed projects with the PIs (last 5 years))

Indian PI

National Projects:

S. No.	Project Title	Sponsoring Agency	Budget	Status

International Projects:

S. No.	Project Title	Name of the Collaborating Scientist & Institute	Sponsoring Agency	Budget	Status

Danish PI

National Projects:

S. No.	Project Title	Sponsoring Agency	Budget	Status

International Projects:

S. No.	Project Title	Name of the Collaborating Scientist & Institute	Sponsoring Agency	Budget	Status

C. Proposed Project Budget from the Indian Side and its justification

1. Summary of Budget Estimates (in Rupees)

Item	1st Year	2nd Year	3rd Year	Total
1. Equipment				
2. Salaries/wages				
3. Consumables				
4. Travel				
5. Exchange Visits				
6. Contingency **				
7. Other costs, if any				
TOTAL				

2. Budget for Equipment:

Sr. No.	Equipment / Accessories	Make & Model	Imported / Indigenous	Estimated Cost	F.E. Component
TOTAL					

Justification for equipment proposed.

3. Details of Budget proposed for Salaries/ Wages(in Rupees)

		1st Year / (m.m.*)	2nd Year / (m.m.)	3rd Year / (m.m.)	Total / (m.m.)
Designation	Monthly Emoluments				
Total					

*m.m.: man months to be given within brackets before the budget amount (As per OM. No. SR/S9/Z-08/2018 dated 30.01.2019 and SR/S9/Z-05/2019 dated 21.08.2019)

3.1. Justification for the manpower requirement.

4. Details of Budget proposed for Consumable Materials budget (in Rupees)

S.No.	Item	1st Year	2nd Year	3rd Year	Total
	Total				

4.1 Justification for consumable (Quantified list to be provided)

5. Details of Budget proposed for Internal Travel budget in India (in Rupees)

	1st Year	2nd Year	3rd Year	Total
Number				
Budget in Rs.				

5.1 Justification for travel .

** Please note under the contingency head, budget for only expected contingent expenditure should be project. As per DST norms maximum Rs. 50,000 per year is allowed under the contingency head.

6. Details of Budget proposed for exchange visits and estimated expenditure:

	1st Year	2nd Year	3rd Year	Total
India – Denmark				
Number of persons x visits				
Expenditure on Airfare, visa, transport and related expenditure in India				
Denmark – India				
Number of visits and Mandays for each visit				
Expenditure on Hospitality (per diem @ 2500 per day including local transport + accommodation) for short term visit upto 21 days and for longterm visit for 2 months (per diem @ 25000 per month including local transport + accommodation)				
Total budget				

6.1 Justification for travel .

7. Details of Budget proposed for Contingencies/ other costs Budget (in Rupees)

	1st Year	2nd Year	3rd Year	Total

7.1. Justification for specific costs/ contingences

8. List of facilities being extended by parent institution(s) for the project implementation.

9. Equipment available with the Institute/ Group/ Department/ Other Institutes for the project:

Equipment available with	Generic Name of Equipment	Model, Make & year of purchase	Remarks including accessories available and current usage of equipment
PI & his group			
PI's Department			
Other Inst In the region			

10. Details of any other item of budget proposed and its justification

D OTHER SOURCES OF SUPPORT

1 Is this research currently being supported by other sources?

YES	NO
-----	----

If yes, please indicate the sources, amounts and periods of support.

Indian side:

Danish side:

2 Has this project been submitted to other agencies for financial support?

YES	NO
-----	----

If yes, please indicate which agencies, and when.

Indian side:

Danish side:

3. Please indicate name of atleast 3-4 Indian senior scientists working in this field:

NO	NAME	INSTITUTION	TEL & POSTAL ADDRESS	E-MAIL
1.				
2.				
3.				

SIGNATURES OF THE INDIAN AND DANISH PRINCIPAL INVESTIGATORS

INDIAN

DANISH

DECLARATION FROM THE HEADS OF THE COLLABORATING INSTITUTIONS

It is certified that:

- (i) The Institutions agree to participate in this joint research project;
- (ii) The Institutions shall provide infrastructure and necessary facilities for implementing the joint project;
- (iii) The Institutions assume to undertake financial and other management responsibilities for the part of the project work to be carried out at their institution; and
- (iv) The back-up funding for human resources, consumable, etc. is available to this project.

SIGNATURE & SEAL OF THE HEAD OF THE INSTITUTIONS

INDIAN

DANISH