

Indo-Canada Joint Call for Proposals
***Improving Occupant Survivability in Buildings During Fires Using Innovations in
Structural Engineering, Materials Science and Cyber-Physical Interfaces***

DST and IC-IMPACTS

Fire represents one of the most severe hazards encountered by built environments and thus providing appropriate fire safety measures is a major requirement in building design. Fire in a building can result from an accidental event (short circuit etc.) or as a secondary event following other hazards (such as earthquake, explosion, and impact). Fires, if not contained or controlled in early stages, can create severe life-threatening conditions leading to loss of life, injuries and property damage. Hence, appropriate fire safety measures in buildings are critical for ensuring the safety of occupants, fire-fighters, emergency responders, as well as for minimizing fire-induced damage and collapse of structural systems.

Recent fire statistics clearly show that India has the highest fire-related deaths of any country in the world. For instance, in 2014, there were more than 300,000 fires in India that resulted in about 25,000 deaths and fire losses in the order of thousands of crores (rupees). According to the statistics released by the National Crime Records Bureau (India), fire accounts for about 5.9% (23,281) of the total deaths reported due to natural and unnatural causes during the year 2012. Further, recent statistics also show that fire losses in India are increasing at a faster pace due to rapid urbanization and growing economy. Much of this increased fire-related deaths and losses are due to the rapid rise in high-rise buildings, increased fuel load in buildings and slower response time to fight fires.

In Canada, First Nations Communities are ten times more susceptible to die in house fires than the population at large. (2015, December 21.)

(Retrieved from http://www.cbc.ca/news/indigenous/first-nations-10-times-more-likely-to-die-in-house-fires_1.3374631)

To address growing fire problem in India and Canada, IC-IMPACTS and the Department of Science and Technology (DST) are soliciting research proposals aimed at developing strategies for mitigating fire hazard in built infrastructure. Especially, this call is for proposals focused on the development and evaluation of novel ideas, methodologies, materials, and cyber-physical strategies that can enhance fire safety in buildings. Proposals under the following broad themes are invited:

- **Structural fire safety**
 - Development of techniques and design methodologies for enhancing structural performance
 - Development of new materials with improved fire resistance properties (including cladding/insulation materials)
 - Guidance for improved architectural and structural features aimed at enhancing fire safety in buildings

- **Active protection systems**
 - Enhancing reliability of heat and smoke detection systems
 - Developing cost-effective sprinklers and self-extinguishing systems
- **Evacuation strategies**
 - Evaluation of human behaviour under fire conditions
 - Development of improved evacuation procedures and efficient design of egress paths
 - Development of guidelines for efficient evacuation strategies
- **Cyber-Physical interfaces and sensing technologies for mitigating fire hazard in buildings**
 - Improving reliability of fire detection systems through better sensors.
 - Sensors for faster response (times) from fire department.
 - Sensors for monitoring structural performance under fire conditions.
 - Post-fire capacity assessment of fire damaged structures through new sensor technologies.

Implementing Agencies for This Call for Proposals

- **The Department of Science and Technology (DST)**, Ministry of Science and Technology, Government of India, was established with the objective of promoting new areas of science and technology and to play the role of a nodal department for organizing, coordinating and promoting these activities in India. The department is mandated to formulate policy statements and guidelines and to support basic and applied research in national institutions.
- **IC-IMPACTS** Centres of Excellence is a not-for-profit organization, established by the Federal Government of Canada through the Networks of Centres of Excellence Program to serve as a pan-Canadian agency responsible for the delivery of research programs in the areas of safe and sustainable infrastructure, integrated water management, and public health, disease prevention, and treatment between Canada and India. It is the only Networks of Centres of Excellence (NCE) with a mandate focused on research collaborations between Canada and India.

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Timeline

- Launch of the Call for Proposals on IC-IMPACTS and DST websites: **Wednesday, March 28, 2018**

- Deadline for Project Proposal Submissions: **Monday, June 18, 2018 (4:30 pm DST)**
- Projects approved: **September 2018**
- Projects need to be launched as soon as approved, and no later than **December 2018**

Eligibility

- All Indian researchers normally eligible to apply for DST funding opportunities are eligible to apply as Principal Investigators from India with a Canadian Principal Investigator.
- All Canadian researchers eligible to receive funding from IC-IMPACTS and tri-council agencies in Canada are eligible to apply as Principal Investigators from Canada with an Indian Principal Investigator.

Intellectual Property

DST and IC-IMPACTS funded participants to the projects shall agree upon the ownership, access rights and exploitation of the intellectual property generated during the cooperation. The agreements shall be made in writing. The guidelines of the funding organizations should be followed when making the agreements. At a minimum, a letter of intent between the collaborators should be included in the application stating the desire for cooperation and acknowledging that each participant has understood the general terms and conditions of the other project parties.

Application Instructions

Please note following important application instructions:

- Research projects of one (1) or two (2) years in duration are eligible for funding.
- Funding beyond the first year of the project will be contingent upon successful progress being made in the previous year as determined by the review processes in place by each funding organization.
- Each project application must consist of a Indian and Canadian applicant (Principal Investigators) who together have developed a joint project proposal and project budget. The joint project proposal along with all supporting documentation required by each funding organization must be submitted online via <https://onlinedst.gov.in/Projectproposalformat.aspx>. All documents and forms required for a project application are accessible online.
- The online application will be automatically sent to both DST and IC-IMPACTS together with all funding organization specific documents submitted as part of the online application process.
- The budget documentation must clearly delineate funding being requested from DST in support of Indian researcher participation and funding being requested from IC-IMPACTS for Canadian research participation. Cash and In-kind contributions from other collaborating partners, if any, must be clearly identified in the budget documentation.

- Applicants are encouraged to contact their national funding organization before submitting their applications if they have any questions regarding the Call for Proposal or budget eligibility.

Evaluation Criteria

The research projects funded in this call are expected to be of a high international standard that will lead to a technology or solution directly impacting the lives of Indian and Canadian citizens.

Indian-Canada joint projects must be based on meaningful engagement, include a common project plan, and involve at least one researcher from Canada and one researcher from India. Student and HQP (High Quality Professional) training is a mandatory component of all funded projects.

Research proposals submitted to DST and IC-IMPACTS for funding through this call will be evaluated against the following selection criteria:

- Relevance to Indian and Canadian national and community health challenges;
- Potential for research outcome to be deployed in remote and low-resource settings in India and Canada;
- Quality and originality of research program;
- Qualification and excellence of research team and proven record of successfully delivering prior research project objectives (Note: there must be a lead Indian and lead Canadian researcher for each research project submitted);
- Expected results and outcomes and appropriateness of budget strategy to achieve them;
- A local partner organization (e.g., industry, public health agency, hospital, education or a not-for-profit institute) willing to participate and share cost and benefits-
- Applicants should submit a Letter of Support from the partner organization with details of potential funding commitment;
- Potential for successful commercialization and/or community adoption of research outcomes;
- Potential to scale up the application rapidly and apply to other water bodies;
- Training of Highly Qualified Professionals;
- Inclusion of multidisciplinary aspects of the research program; and,
- Engagement of partners from academic, industrial, government, community sectors (Note: it is not a requirement to have non-academic partners on the research project, however, multi-sector partnerships will be evaluated more favourably. All partners participating in a research project must demonstrate meaningful engagement and commitment to the project).

Review Process for Evaluation of Applications

- All applications will be handled in the strictest of confidence.

- A Joint Evaluation Committee comprised of representatives and independent external reviewers from Canada and India will thoroughly examine the proposals and reach consensus within the overall budget framework of the two contributing organizations about which projects should be funded.
- Once a consensual decision has been reached on projects to be jointly funded by DST and IC-IMPACTS, DST and IC-IMPACTS will follow their organization's normal processes and norms to notify applicants about their funding decisions.

**For detailed guidelines and application format, please visit
International Cooperation (Bilateral) at**

<https://onlinedst.gov.in/Projectproposalformat.aspx>