

The Future of Energy: leading the change

*A scientific program in support of
a successful energy transition*

Call for proposals 2020

Synopsis

This Call for proposals addresses two topics: hydrogen, and large scale deployment of wind and solar electricity production. It is open to the academic research community as well as to other actors in the field (consultancies, NGOs,). Project duration is expected to be of the order of (several) months and funding requests should not exceed 50.000 Euros.

Deadline for submission – September 4, 2020 – 12pm Paris time

1. BACKGROUND – ABOUT THE *FONDATION TUCK*

The *Fondation Tuck* (www.fondation-tuck.fr) is a French public interest foundation dedicated to the promotion of education, research and future studies in the field of energy and sustainable development. Actions in the domain of education are focused on granting student scholarships and research chairs at IFP School, a French public higher education institution offering applied graduate programs open to students from all over the world with the aim of providing highly qualified professionals to industry and society in the fields of energy and mobility. Actions in the domain of research and future studies are focused on funding projects through competitive calls for proposals, as for example The Future of Energy program.

The actions of the foundation are made possible thanks to non-endowed expendable donations received, in particular, from industry.

2. CONTEXT AND SCOPE OF THE PROGRAM

The multi-year scientific program The Future of Energy is rooted in our profound conviction that the energy sector, including the transportation and building sectors, will undergo very significant changes during the coming decades. However, the pace, form and characteristics of these changes remain highly uncertain. Reducing the uncertainty level is of prime importance for both, public and industrial investors, in order to anticipate future evolutions, support most desirable orientations and avoid sudden disruptions.

From year to year, different topics are proposed to the research community through competitive calls for proposals. These topics and the associated findings will be the building blocks of a global, multi-sector, multi-disciplinary, systemic vision of the future of energy.

The proposals will be subject to an assessment procedure involving a review by experts and the final selection will be made by a dedicated selection committee. The selected projects will be funded by the foundation.

The language of the program is English.

3. GENERIC RULES FOR PROPOSALS AND DELIVERABLES

The topics (see section 5 below) are generally formulated in such a way that quite different project proposals can be made. The proponents thus need to clearly motivate and explain their specific choices.

Innovative and systemic approaches (from a technical but also social standpoint) will be favoured and out of the box thinking and solutions are particularly encouraged. Still, the practical feasibility is considered as an important criterion, social and environmental constraints should be appraised, and sustainability and environmental aspects will be taken into account. A critical view on well-spread concepts is welcomed, if based upon a rigorous analysis.

A typical work program could include several parts such as:

- Current state of the art (eventually including main historical advents);
- Possible evolution paths or scenarios, based upon available literature and/or personal information;
- Original proposals / solutions
- Future outlook: Expert's view on most likely evolutions, long term benefits and threats.

It is not expected that extensive specific research work is to be performed during the project. The priority is clearly given to synthetic analysis and expert's views. The proposals should include clear objectives and a detailed presentation of the strategy and methodology applied to reach them.

The expected deliverables of the projects are of two kinds: one written report, and the participation in a physical meeting close to Paris, France, in order to discuss the findings of the projects with experts and peers. The report will be made freely available on the foundation's website and the meeting will be open to the public.

It is expected that the projects organize kick-off and progress meetings. The *Fondation Tuck* will mandate representatives to participate in these meetings, at its own expenses.

4. BUDGET AND FUNDING

It is expected that the overall budget for a given project corresponds to several person months and that it includes the necessary travel expenses, including those related to the Paris meeting. It is not expected that significant other costs arise for the projects.

The projects may request funding from the *Fondation Tuck*. The level of funding (percentage of project budget) requested needs to be explained. If other funding sources will be used, they have to be mentioned. The *Fondation Tuck* welcomes projects that are co-funded from one or several other funding sources, as long as this does not impact the public nature of the deliverables. Funding requests should not exceed 50.000 Euros.

5. TOPICS FOR CALL 2020

The call 2020 of the The Future of Energy program focuses on two topics:

- Hydrogen: energy carrier of the future? Holistic SWOT analysis
- Critical path analysis for deployment of renewable electricity generation

Topic 1 – Hydrogen: energy carrier of the future? Holistic SWOT analysis

Hydrogen is perceived as a potentially versatile energy carrier in a future carbon neutral energy system. Produced from renewable energy sources, used directly or possibly converted into other substances, for storage, transportation and use, it may in particular play a crucial role as the “missing link” between asynchronous electricity production and consumption. Many studies have been published on hydrogen in the last years, including the 2019 IEA report “The Future of Hydrogen”. This large knowledge base should allow analysing the strengths and weaknesses, opportunities and threats (SWOT) of a hydrogen pathway for the future energy system (including the housing and mobility sectors) compared to alternative pathways. While technical/scientific issues certainly need to be considered alongside economic aspects, it seems also important to analyse societal issues (desirability) in the more holistic view of a possibly redesigned electricity and mobility system. Also, in view of possible future disruption events, the resilience of hydrogen-based system components could be analysed.

Topic 2 – Critical path analysis for the deployment of renewable electricity generation

The large scale deployment of solar and wind generated electricity is of critical importance for reaching the global greenhouse gas emissions reduction objectives. However, a number of barriers may arise on the way of reaching this objective, with some of the barriers being specific to specific technologies. In this study, large scale solar energy deployment and large scale wind energy deployment should be analyzed taking into account all relevant aspects. Among those, particular attention could be paid to impacts on local resources, in particular land use and water consumption, to its requirement in global resources (materials), indirect (imbedded) greenhouse gas emissions, resilience with respect to evolving climate and weather patterns, as well as social acceptability/desirability. A ranking of barriers in terms of criticality for deployment should be proposed.

6. PROJECT SUBMISSION AND TIMELINE

Project proposals based on the template presented in Appendix A are to be submitted in PDF format by e-mail to contact@fondation-tuck.fr. Proposals must not contain any confidential information.

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The evaluation procedure will in particular involve a review of proposals by experts mandated by the program and the selection will be done by a dedicated selection committee. The *Fondation Tuck* may contact a proposing party in order to obtain additional information or revisions of the proposal.

Projects are expected to start during autumn 2020. The funding contracts will be established between the *Fondation Tuck* and the organisations of the selected projects. Selected projects are expected to contribute to communication and dissemination activities of the *Fondation* and the The Future of Energy program.

If you envisage applying, we would be pleased to receive a short, informal message at contact@fondation-tuck.fr at your earliest convenience.

For additional information, please contact contact@fondation-tuck.fr.

APPENDIX A – Project proposal

This project proposal must not contain any confidential information. It will be evaluated by the program's scientific committee and possibly by external evaluators.

Identification

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| Call topic addressed | |
| Project title | |
| Name of organisation | |
| First name, Name of Principal Investigator | |
| Current position | |
| Contact details (address, e-mail, phone, mobile) | |

Project description

Describe methodology used, programme of work, timeline, contributors, collaborations, (2 to 5 pages),

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Qualification

Explain why you or your group / organisation are qualified for this work, provide bibliographic references (1 to 2 pages)

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Project budget and funding request

Explain project budget (breakdown personal cost, overhead cost, other costs), funding request, co-funding organisations, (1 to 2 pages)

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Additional information

Optional: Provide additional information that you consider relevant for your proposal (limited to 5 pages)

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