

The future of energy: leading the change

A research program analyzing how to implement a successful energy transition

Call for projects 2014

Synopsis

This Call for proposals addresses topics in the field of energy and mobility. It is open to the academic research community as well as to other actors in the domain (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 – February 28, 2015

1. BACKGROUND - THE *FONDATION TUCK*

The *Fondation Tuck* (www.fondation-tuck.fr) is dedicated to the promotion of education and research 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 that meet the needs of industry and society in the fields of energy, oil and its substitutes, gas, petrochemicals and power trains. Actions in the domain of research are focused on funding high level R&D 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 research program "The Future of energy" is rooted in our profound conviction that the energy sector, including the transport and housing sectors, will undergo very significant changes during the coming decades. However, the pace, form and characteristics of these changes are highly uncertain. Reducing this uncertainty is of prime importance for both, public policies and industrial

investments, in order to anticipate future evolutions, to possibly steer the change in desired directions and to avoid brutal disruptions that may put our societies in danger.

From year to year, depending on the donations received, the program will choose different topics to be investigated. 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 chosen topics will be publicised to the research community through competitive calls for proposals and proposals selected through an evaluation procedure will be funded by the foundation. 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.

More information on the scope and context of the program will be available soon at www.fondation-tuck.fr.

3. SCOPE OF PROJECTS AND DELIVERABLES

The projects addressing the yearly topics will focus on answering specific questions. Generally speaking, the objectives to be reached by the projects are:

- summarize the current situation and its historical advent;
- present different possible future evolutions or scenarios, based on available literature;
- elaborate an expert's view on most likely pathways of change.

It is not expected that the projects perform extensive specific research work, the emphasis is clearly given to producing synthetic and expert's views. The project proposals will propose operational objectives and will detail the strategy and methodology applied to reach them.

The deliverables of the projects will be twofold: 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. Both the report and the meeting will be open to the public.

4. BUDGET AND FUNDING

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

The projects may request funding from the *Fondation Tuck*. The level of funding 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 funding sources, as long as this does not impact the public nature of the deliverables.

5. TOPICS FOR CALL 2014

For the call 2014, around 20 topics have been reviewed by the program and three have finally been selected. They address, on an international scale, the impact of differentiated regional energy supply on the transport sector, the potential of power to gas conversion, and energy autonomy of urban areas.

Topic 1 - Regional trends of energy scenarios 2030-2050 and their impact on the transport sector

The project addresses energy scenarios by 2030-2050 and their potential impact on the development of the transport sector. The core question to be addressed is "Will different world regions develop specific energy sources used for mobility?". The answer to this question will have important consequences for the development of transport infrastructures, mobility offers and transportation vehicles.

The following issues could be considered for elaborating the research methodology:

- Mid- and long term regional energy supply scenarios.
- Available technology options for mobility by 2030 - 2040 – 2050.
- Economic, social and environmental specificities of world regions.
- If considered relevant, passenger and duty vehicles may be regarded separately.

It is expected that the project proposal details its intermediate objectives, information sources and work methodology used.

Topic 2 - Technical and economic potential of Power to gas technologies

The intermittent nature of renewable electricity production raises the problem of electricity surpluses during times of low demand and electricity shortages during times of high demand. The core question to be addressed is "Is the conversion of surplus electricity to gas a technologically and economically feasible option for mitigating intermittency?".

The following issues could be considered for elaborating the research methodology:

- Available and future power to gas and gas to power technologies (which kind of gas to use?).
- Overall energy efficiency of power to gas to power cycles.
- Gas storage and the role of existing infrastructures.
- Scale of electricity supply variability (hours, days, weeks, months).
- Role of specificities of the energy system in different world regions.
- Identification of relevant economic, social and environmental aspects.

It is expected that the project proposal details its intermediate objectives, information sources and work methodology used.

Topic 3 - Energy autonomy of urban areas

Energy autonomy is attracting a growing interest in urban areas, in order to improve the resilience with respect to disruptive events (oil crisis, electric network breakdown, fuels supply disruption) but also to limit the need for the development of large scale energy production and transportation infrastructures. The core question to be addressed is "Which technologies are or will be available by 2030-2050 to contribute to the energy autonomy of urban areas and how will the associated economic and business models look like?".

The following issues could be considered for elaborating the research methodology:

- Available energy sources (renewables like biomass, waste, solar, wind, geothermal, and fossil fuels, in particular gas and coal).
- Available and future electricity and heat/cold generation and storage technologies.

- Integration of buildings and mobility.
- Integration of housing, industry and tertiary sector activities.
- Geographical and societal specificities.

It is expected that the project proposal details its intermediate objectives, information sources and work methodology used.

6. PROJECT SUBMISSION AND TIMELINE

Project proposals based on the template presented in Annexe A are to be submitted in PDF format by e-mail to andreas.ehinger@ifpen.fr

before February 28, 2015.

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 the proposing party in order to obtain additional information or revisions of the proposal. The funding decisions will be taken within two months after the deadline and projects are expected to start soon thereafter.

The funding contracts will be established between the *Fondation Tuck* and the organisations of the selected projects.

ANNEX 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

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

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

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