

**CONDITIONS OF SUBMISSION AND SELECTION FOR ERANET
 ELECTROMOBILITY⁺ PROJECTS WITH FRENCH PARTNERS RELATED TO THE
 ANR RENEWABLE ELECTRICITY PRODUCTION AND MANAGEMENT
 (PRODUCTION RENOUVELABLE ET GESTION DE L'ÉLECTRICITÉ: PROGELEC)
 2011 CALL**

3.1 CONTEXT

Electromobility⁺ is a contribution of 13 European countries and regions to the European Green Cars Initiative. The initiative aims at the creation of long-lasting conditions for the development of electric mobility in Europe on the horizon of 2025.

France is contributing to the *Electromobility⁺* transnational call through three national calls. Two of them are operated by the French National Research Agency (ANR): Sustainable Land Transport (Transports Terrestres Durables, TTD) and Renewable Electricity Production and Management (Production Renouvelable et Gestion de l'Électricité, PROGELEC). The third is a joint MEDDTL (CGDD/DRI) and ADEME call mirror of the European call.

Electromobility⁺ transnational projects with French partners need to be submitted both in parallel to the *Electromobility⁺* call¹ and to one of the three French calls corresponding to the thematic area of the project.

3.2 OBJECTIVES OF THE PROGRAMME

The Sustainable Electricity Production and Management (PROGELEC) program is based on three former programs « Intelligent Housing and Photovoltaic Solar Energy (HABISOL) », « Innovative Energy Storage (Stock-E) », « Hydrogen and Fuel Cells (H-PAC).

The program intends to accelerate the French research for developing renewable energies and integrating innovative systems allowing an optimized electricity management. The objectives are to reinforce the partnerships between the industrial and scientific communities, and to improve the competitiveness of the French technologies by favoring technological breakthroughs. The program also intends to support more fundamental research allowing new industrial orientations to be prepared at mid-term.

The objectives of the PROGELEC program are:

- To develop innovative electricity production systems from renewable energies, especially from photovoltaic solar energy;
- To manage the intermittent production through the development of buffer storage systems ;

¹ <http://www.transport-era.net/electromobility.html>

- To develop performing stationary and on-board storage and/or production systems ;
- To pilot domestic and mobile usages of electricity ;
- To design reliable and « intelligent » devices for energy management from multiple sources.

3.3 THEMATIC AREAS

The transnational call *Electromobility*⁺ is composed of five thematic key directions.

1. Energy and environmental policy approach
2. Usage patterns, economic models, actors involved
3. Technical dimensions of the recharging systems
4. Testing, trials and normative standards
5. Technology based Innovation

The three French calls TTD, PROGELEC and the Ministry of Ecology-ADEME mirror call cover the major part of these thematic areas. The MEDDTL-ADEME mirror call focuses on strategic research in the first four thematic dimensions while TTD and PROGELEC focus on technological research mainly corresponding to the fifth dimension and partially to some technological aspects of the third dimension. While TTD is focused on research on vehicle and their environment, PROGELEC is focused on research on electricity production, storage and management.

More specifically, the thematic areas of the PROGELEC call are described in the text of the call². They mainly correspond to some items of the fifth dimension of the *electromobility*⁺ call as well as a few ones from the third. In order to guide the project holders, the following thematic areas of the *Electromobility*⁺ call have been identified to correspond to some of the thematic areas of the PROGELEC call:

- 3. Strategic research on technical dimensions of the recharging, storage and distribution systems**
 - a. Technical models of battery recharge solutions**

Research Topics:

BATTERY TECHNOLOGY

- Battery management
- Solutions for battery charging and exchange
- In depth study of degradations originating from fast battery recharges
- Direct effects of fast recharges on the electrical network

² <http://www.agence-nationale-recherche.fr/PROGELEC-2011>

- Battery Lifetime / Battery pack rest value: Modelling degradation due to charging / recharging

b. Managing the power grid

Research Topics:

- Simulation of the effects of an EV and PHV park on the grid and on the carbon content of electricity
- Feasibility of providing all (fast and slow) battery recharging spots with their own primary intermediate electricity storage system in order to be able to store electricity during off-peak hours or when intermittent renewable sources provide much energy because of favourable weather conditions (strong winds or shiny Sun)
- Feasibility and advantages of utilizing vehicle batteries for storing energy in order to balance the grid and minimize the need to use highly carbonated electricity sources. Modelisation and calculation of the global efficiency of the system
- Usage of hydrogen as a storage component

5. Technology based Innovation

Electromobility / low carbon vehicles are considered to harbouring a huge potential, but the key to that is to multiply Innovation on new technologies for components of functions and vehicles. There is a very large gap between pure ICE powered vehicles and electrical ones. The full propulsion device should be changed. Therefore, technological innovation is needed. For battery- and fuel cell-related electric and hybrid engines, the following topics should be covered and give the opportunity to design demonstrators and concrete technological, innovative products. The present key dimension is open for projects for demonstration and experimental development.

a. Energy storage and management

Research Topics:

- Improvement of lithium-based batteries by optimising electrode materials (solid-state chemistry)
- Basic research on lithium-air batteries
- Explorative works on future generation batteries. Role of nano-materials.
- Fast recharging batteries (nano-structured materials)
- New supercapacitor materials and electrolyte
- Electronics and optimisation programmes for BMS (electrical and thermal management)
- Simulation programmes for energy use optimisation

b. Auxiliary power units

Research Topics³:

- Materials and devices for Seebeck effect
- Large scale use of Seebeck effect
- Usage of fuel cells as APU's

Electromobility⁺ transnational projects with French partners for which the thematic area of the work carried out by the French partners mainly correspond to the thematic areas of PROGELEC can be submitted to PROGELEC. Those that do not correspond to the PROGELEC thematic areas should be submitted either to the ANR TTD call⁴, either to the MEDDTL-ADEME call⁵ mirror of the *electromobility*⁺ call⁶.

3.4 EXAMINATION OF PROJECT PROPOSALS

The evaluation will be implemented in two steps

Step 1: Evaluation on national/regional level

The submitted projects will be examined by the evaluation panel of the ANR program PROGELEC.

Step 2: Evaluation by international peer review.

The details of the submission and evaluation process is available in the *Electromobility*⁺ guide for applicants⁷ § 4.2.

Applicants shall write a joint proposal that will be submitted in parallel by the coordinator of French partner applicants to ANR and by the transnational project coordinator to the *Electromobility*⁺ call and to the corresponding other national calls of the countries of each participant.

3.5 ADMISSIBILITY CRITERIA

- The French partners must satisfy the admissibility criteria set out in the PROGELEC call for projects (see § 3.1 of the PROGELEC call for projects).
- Applications must be submitted in each partner's country in the required format, in compliance with each country's admissibility and eligibility rules and closing dates for tenders, as well as in the *Electromobility*⁺ call. Projects that are not submitted to the *Electromobility*⁺ call and to each partner's country call will not be examined.
- Proposals submitted to more than one national call (in France ANR TTD, PROGELEC and MEDDTL-ADEME mirror call) are not receivable.

³ The here mentioned needs for R&D are valuable of course for cars and light trucks, but most of the subjects are also valid for railways vehicles for which a more efficient use of energy and an optimised architecture (e.g. high speed trains or tramways) is a major concern.

⁴<http://www.agence-nationale-recherche.fr/programmes-de-recherche/appel-detail/transports-terrestres-durables-2011/>

⁵ <http://www.predit.prd.fr/predit4/syntheseAap.fo?cmd=edit&inCde=41475>

⁶ <http://www.transport-era.net/electromobility.html>

⁷ http://www.transport-era.net/fileadmin/electromobility_plus/Electromobility_GfA.pdf

3.6 ELIGIBILITY CRITERIA

- The French partners must satisfy the eligibility criteria set out in this call for projects (see § 3.2 of the PROGELEC call for projects).

3.7 EVALUATION CRITERIA

The evaluation criteria are described in the text of the PROGELEC call for projects (see § 3.3).

3.8 IMPORTANT RECOMMENDATIONS

It is particularly important that projects submitted to the ANR include the contributions of all transnational teams. Sufficient information must be given (descriptive text, tables summarising budgets and resources) to allow their respective contributions to be assessed in terms of each team's scientific input, resources and grant requests.

RECOMMENDATIONS CONCERNING PARTNERSHIPS

In the event of at least one negative evaluation of a proposal from the involved agencies or by the *electromobility** international peer review, the project may under no circumstances receive funding. It is therefore very important to give particular attention to the admissibility, eligibility and assessment criteria used by each of the agencies and by the transnational call.

RECOMMENDATIONS CONCERNING THE GRANT APPLICATION

Applicants are reminded that, in addition to the material required in all project applications for the PROGELEC program, they must fill in paragraphs 1.6 and 1.7 of the scientific dossier:

- The respective contributions of the transnational partners must be presented in a table showing staff requirements in person-months per task, equipment used and the financial support requested by the partners in each country.
- The respective scientific contributions and responsibilities of each partner in the project must be clearly stated.
- The added value of international cooperation must be stated.
- A synoptic description of the transnational partners must be provided to substantiate the relevance of the choice of laboratory to carry out the project.
- A brief CV must be provided for the transnational scientific and technical project leaders, showing their five main publications / patents taken out in the last five years.
- If one of the partners is already receiving funding for a related topic, the difference and added value of this project must be explained and the budget adjusted accordingly.

RECOMMENDATIONS CONCERNING THE LANGUAGE IN WHICH THE APPLICATION IS MADE

International projects must be submitted to the ANR in English

FOR MORE INFORMATION ON RULES FOR FOREIGN PARTNERS

It is important to take into account the guidelines available in the *Electromobility** guide for applicants.

3.9 GENERAL PROVISIONS ON FINANCING

The general financing provisions applying to French teams are those set out in the ANR call for projects.

3.10 CONSORTIUM AGREEMENTS

The regulatory and contractual obligations are those set by the ANR call (§ 6.2). In particular consortium agreements are mandatory for all projects including those involving international cooperation.

3.11 COMPETITIVENESS CLUSTERS

The general provisions concerning competitiveness clusters are those set out in the text of the ANR call for projects.

3.12 OTHER PROVISIONS

The “other provisions” set out in the text of the ANR call for projects also apply to international projects.