

Call for Proposals

STDF Targeted Calls

“TC/1/Energy/2009/Renewable”

1. Preamble:

According to the Presidential decree number 218/2007, under which the Science and Technology Development Fund (STDF) was founded, the STDF mandate is to promote science and technology (S&T) through funding scientific research and technological development in a way that supports the complete cycle of innovation. The STDF vision is to act as a tool of change for the improvement of the life of Egyptians. Its mission is to generate a critical mass of human, logistic and infrastructure resources that are needed for a complete cycle of innovation. Consequently, the STDF specific objectives are to fund S&T activities, develop innovation capacity, enhance and monitor S&T systems and develop appropriate and flexible funding mechanisms for S&T. A major component of the STDF general plan is to implement its objectives within the context of the national S&T development strategy which is the direct product of the Higher Council of Science & Technology and the individual strategies of the Egyptian Ministries.

2. Call reference no.: TC/1/Energy/2009/ Renewable

3. Call name: Renewable Energy Research Program

4. Call description:

Energy is a basic human need for both human development and economic growth. A national priority is to ensure secure , reliable , affordable , clean and sustained energy supply.

Egypt is relatively modest in its resources of conventional energies (oil and gas) as compared with most of the Arab countries or Iran. Figures of June 2008 show that oil reserves in Egypt is 4.1 Bbl , compared to Saudi Arabia of 264 Bbl and Iran of 138.4 Bbl. As for natural gas , the situation is somewhat better. Resources announced show Egypt with 73 Tcf, Saudi Arabia with 253 Tcf and Iran with 982 Tcf.

The last 5 years showed an average annual increase in primary energy consumption of nearly 5%. To ensure sustainability of energy supply in the long term, it is clear that we need to exploit additional sources other than oil and gas.

Egypt is now adopting a National Energy Strategy, announced by the President in October 2007. It is composed of 6 basic elements :

1. Developing more resources and increasing levels of production of oil and gas,
2. Become a regional hub and center for trade and services for oil and gas activities & industries,
3. Setting clear energy efficiency and conservation policies and plans,
4. Managing the level of oil and products' subsidies in the context of other public priorities,
5. Upgrading contribution of renewable energies in the energy mix to levels compatible with our natural potentials , and
6. Resorting to nuclear energy for part of our electricity needs as a strategic option.

In implementation of this Energy Strategy, the Supreme Council for Energy has set a target of 20 % of our electric energy needs by 2020 to come from renewable sources, particularly wind and solar. The installed capacity needed by 2020 from renewable energy – in light of forecasted growth – is estimated to be between 8000 to 10000 MW. Double that amount is needed for the period 2020/2030 for local consumption .

5. Call objectives and desired outcomes:

The current call of Renewable Energy research program represents an integrative approach towards the development of renewable energies technologies in Egypt, capitalizing on the general plan of the STDF and its objectives regarding the promotion of innovation in the Egyptian scientific community. This would entail reaching, through the proposed research projects, innovative approaches towards development of renewable energies, with high scientific value as well as potential economic revenues.

6. Call subjects/topics:

A) Wind Energy:

❖ **Researchers or teams of researchers from different institutes are invited to submit proposals in the following topics:**

- Wind turbine blades including:
 - Wind turbine airfoil development.
 - Wind turbine blades from composite materials.
 - Manufacturing technologies for wind turbine blades.
 - Flutter and stability of wind turbine blades.
 - Mitigation of cracks in wind turbine blades.
 - Sound propagation of waves from wind turbine.
 - Blade handling technologies.
- Bearings for wind energy applications including:
 - Bearing selection and lifetime.
 - Lubrication system for bearings.
 - Special bearings technologies.
- Gearboxes for wind energy applications including:
 - Wind energy gearbox technologies.

- Lubrication system for gearboxes in harsh environments.
 - Monitoring of gearboxes.
 - Testing of wind turbine gearboxes.
 - Improving gearbox reliability.
- Wind turbine couplings applications including:
 - Sizing of wind turbine couplings.
 - Maintenance-free couplings.
 - Alternators and Generators applications including:
 - Maintenance-free operation.
 - Alternators for gearless system operation.
 - Methods for uniform power generation.
 - Integrating wind energy into systems including:
 - Wind turbine control system strategies.
 - Wind farm energy production control.
 - Control system components and maintenance.
 - Connection of power from wind energy to national grid.
 - Sustainability and reliability of wind turbine control systems.
 - Remote monitoring technologies of wind turbine farms.
 - Environmental issues including:
 - Siting considerations in selecting wind farms.
 - Effects of wind farms on environment and applications.
 - Climate effect on operation and maintenance.
 - System integration and testing issues including:
 - Sizing considerations in wind turbine applications.

- System models of wind turbine trains.
- System model of wind turbine farms.
- Testing standards of wind turbines.
- Testing facilities of wind turbines.
- Wind turbine reliability and efficiency testing.

❖ **Industrial and civil society enterprises are invited to submit proposals for the technological enhancement of wind turbine industrial base, including the following topics:**

- Ensuring wind turbine supply chains.
- Ramp up issues for existing industries.
- New technologies in fiberglass, composites and carbon fiber manufacturing capacity.
- Large gearbox manufacturing.
- Automated, repeatable and low cost blade manufacturing.
- Develop manufacturing techniques that reduce labor intensity and production costs and increase quality and process control.
- Develop methods and design for crane-free wind turbine operations.
- Improve gearbox reliability through higher resolution simulation and testing of loading conditions for complex wind environments.
- Improving surface engineering treatments.
- Methods of quality verification for bearing and gears.
- Testing facilities for wind turbine components.

B) Solar Energy Research:

❖ **Researchers or teams of researchers from different institutes are invited to submit proposals in the following topics:**

- Thin film photovoltaic research.

- The use of Nano technology in photovoltaic development.
- The use of local silicon in new photovoltaic systems.
- Centralized photovoltaic systems.
- Grid-connection of photovoltaic systems.
- Mini-grid photovoltaic systems.
- New development of CSP systems.
- Maintenance-free CSP systems.
- Increasing utilization of CSP systems.

C) Peaceful Applications of Nuclear Energy

D) Common Research Areas:

- Legal and commercialization Issues.
 - Models for commercialization of renewable energy.
 - Legal issues for renewable energy.
 - Techno/economic considerations for renewable energy.

7. Eligible applicants:

Any Egyptian citizen who is affiliated to an Egyptian institution may apply as a principal investigator (PI). For a non-Egyptian resident who is affiliated to an Egyptian institution, he/she may apply as a PI but the deputy-PI or co-PI must be an Egyptian citizen. Overall, at least 65% of the research team members must have Egyptian nationality.

8. General terms and conditions: (for detailed information about the application procedures, see annexes A & B)

- All research projects shall be evaluated on a competitive basis.
- All proposals must include in addition to the scope, the benefits and costing of the proposed work.

- The cost structure should be suitable to the proposed scope. No preset limit is defined in this type of national targeted projects.
- General guidelines for preparing the proposals are available at the STDF website: www.stdf.org.eg
- Teams of researchers, of academia and industry or of industrial partners are encouraged. The benefit of partnerships should be highlighted in the proposal.
- All submitted proposals should consider Egypt's environmental conditions.

9. Submission process:

The submission process must be uploaded through the STDF website (www.stdf.org.eg) to which registration is required. The submission will be a two stage process, as follows:

The first stage: A preproposal is submitted (as detailed afterwards in annex A).

The second stage: The applicant principal investigators, whose preproposals were selected in the first stage, will be asked to present their full proposals (as detailed afterwards in annex B). A refresh course on the proposal application process [tips on the smart design, the LFM form and the GANTT chart] will optionally be given to those who passed the first stage shortly after announcement of the preproposal results.

10. Evaluation process:

The evaluation process will be executed by independent experts and the STDF will assure that the process is transparent, impartial and researcher-supportive. Also, after full proposal submission, the STDF officers may make field visits to assess the facility preparedness for the proposed research.

11. Negotiation and contract signing:

Negotiation and grant contract agreement will come into force shortly after the announcement of the second stage results. The intellectual property rights (IPR) will be a core part of the process and will be followed according to the STDF IPR rules (as detailed in the STDF website).

12.Important dates:

- Deadline date for preproposal submission: 30/9/2009
- Date of announcement of the accepted preproposals: 15/11/2009
- Date of the refresh course on the full proposal application process: 25/11/2009
- Deadline date for full proposal submission: 31/1/2010
- Date of announcement of the accepted full proposals: 15/3/2010
- Date for grant contract agreement: 31/3/2010

Annex A

Components of the preproposal (First stage submission)

The preproposal must include:

a] A cover page containing the following items:

- Title of the project
- The name, title, affiliation and contact information of the PI applicant
- Call subject category
- Grant duration
- Total budget

b] The preproposal text comprising:

- Statement of the proposed research [half page maximum]
- Objective(s), research approach and expected outputs [two pages maximum]
- Description of the project management and the available facilities [1 page maximum]
- Budget breakdown and justification [one page maximum]
- Five references of most significant literature

The preproposal should be written in a 12-point Arial font format, one and half-line spacing and 1-inch page margins from the 4 sides. The preproposal must be submitted as a pdf file.

Annex B

Full proposal application form (second stage)

The full proposal must include:

a] A cover page containing the following items:

- Title of the project [English and Arabic]
- The name, title, affiliation and contact information of the PI applicant
- Call subject category
- Grant duration
- Total budget

b] The proposal text comprising:

- Abstract.
- Introduction.
- Background
- Wider Objectives.
- Statement of Proposed Research.
- Methods & Procedures.
- Facilities and Equipments.
- Budget.
- References.
- Appendices (Any additional documents).
- Curriculum Vitae.

The proposal should be written in a 12-point Arial font format, one and half-line spacing and 1-inch page margins from the 4 sides. The proposal must be submitted as a pdf file. Further information on proposal writing can be found on stdf website www.stdf.org.eg.