



صندوق العلوم والتنمية التكنولوجية
Science & Technology Development Fund



وزارة البحث العلمي
Ministry of
Scientific Research

STDF - National Challenges Program (STDF-NCP)

Science and Technology Development Fund

www.stdf.org.eg

Call for Proposals (Open Call)

Dead line: March 15, 2014

I. Introduction

The Science and Technology Development Fund (STDF) was established by Presidential decree number 218/2007. Its 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.

STDF's specific objectives are to improve Egypt's research and development (R&D) environment, to fund S&T activities and to develop the innovation capacity in Egypt. STDF implements its objectives within the context of the national S&T development strategy, which is established by the Higher Council for Science & Technology. The Egyptian ministries with the strongest impact on Egypt's national economy are represented in the council to direct the research activities towards the S&T activities which have a direct influence on the national development plans.

The current program reflects STDF's intention to build upon what has been achieved so far in a focused and efficient manner, to maximize the benefits, and to better utilize and develop the available national research capabilities in applications that meet the needs of society and overcome existing challenges.

II. Grant Description & Objectives:

STDF's National challenge program (STDF-NCP) is a new STDF open fast track funding instrument dedicated to applied and innovative projects, which build upon existing results, pilot studies, know-how and/or patents, to overcome existing challenges. Although, STDF-NCP is an evolved form of STDF targeted calls, it is focused meet industry and society needs.

STDF-NCP is proposed to encourage scientists to respond to Industry/market and society needs, and to apply innovative or applicable solutions to urgent and pressing problems. Other objectives of the program also include enhancing and

effectively transferring knowledge and technology to end-users with special focus on certain priority topics.

Through this grant the relevant state-of-the-art knowledge of the academic community will be exploited to resolve the problems and overcome the challenges (Attachment I).

III. Application Submission:

Research teams must upload their application forms to STDF's website www.stdf.org.eg No later than 20 February 2014

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IV. Eligible Expenses

Over estimation or under estimation of both budget and time will have a negative impact on the overall assessment of the proposal. In all cases, project team incentives should not exceed 25% of the total budget and must be set in accordance with the project tasks and within the guidelines set by STDF.

V. Eligibility Criteria

The following eligibility criteria apply to this grant:

- Any Egyptian affiliated to an Egyptian research institution or university, etc. with a well-documented scientific research / solution and/or development activities focused on one of the listed challenges is eligible for funding in accordance with governing rules and regulations of governmental funding,
- The applicant will act as the project's Principal Investigator (PI),
- A network of research groups (consortium) working on one of the priority areas can also apply. In this case, the collaborating groups should identify the coordinator (PI) of the project,
- The proposed activities must include a well-planned applied research project which has clearly defined objectives and desired outcomes, as well as a detailed methodology,
- Participation and cooperation between the PI institution and the local research entities working in the same area of the project to ensure the integration of ideas, sharing experiences and building a database for future use taking into consideration that preference will be for projects that are cooperating with industry,
- The proposed solutions should be economic, non-traditional and ready for immediate implementation,
- The submitted proposed solutions should be applied on semi- industrial scale in-order to be implemented on an industrial/ commercial level,
- Creating new technologies for industries and licensing it in cooperation with the research entities and industrial entities in Egypt,
- Full coordination between the targeted entities and the beneficiary of the submitted projects.

VI. Proposal Submission and Evaluation Process

All proposals must be drafted using the exact formatting requirements for the current call given in the attached Application Form (**Download application form here**). All proposals must then be uploaded to the STDF website (www.stdf.org.eg), to which registration is required. The proposals will be evaluated by independent experts, and STDF will ensure that the process is transparent, impartial and applicant-supportive. Proposals submitted to this program will be subjected to two different levels of evaluation:

- i. Scientific and technical evaluation, and
- ii. Feasibility, validity and economical evaluation.

Assessments will be undertaken by panels of independent scientists, industrialists, economists, and policy makers with special expertise in technology development. Applicants have to note that, if a proposal passes the scientific and technical evaluation, the PI of the proposal will be required to deliver a PowerPoint presentation of the proposal in front of the second panel.

The **selection criteria** will be as follows:

- A track record of success in the solution field for the applying institution(s), the PI and the project team,
- Feasibility and validity,
- An applied research plan with clear objectives, milestones and expected measurable outcomes,
- Proposal objectives should be well defined; actual application of the proposed solution should take place by the end of the project and any patent should be registered -if possible- to ensure the marketing success and commercial application,

- In certain cases -if the technology is not available locally- technology transfer can take place by cooperation with external entities.
- Preference will be for proposals that will end with an innovative technology, marketable products, economical and social impact.

VII. Project Monitoring and Follow-up

Financial reports:

According to the financial regulations of the government of Egypt, a financial report for the project must be submitted every three months. Copies of all expenditure vouchers must be attached. The reports, as well as all the attached expenditure vouchers, must be signed and stamped by the official seal of the endorsing institution.

Technical progress reports:

Semi-annual progress reports should be submitted by the PI during the execution of the project, starting after 6 months of project start date. In general, all technical reports should be written using the standard STDF templates. All technical reports should have a cover page which contains the basic information about the project (viz., the project title, the type of grant, the PI's name and affiliation, the project start and end dates, the project duration, the reporting period, the date of submitting the report, and the PI's signature). In addition to the cover page, each of the reports must include the following main sections: (1) Objective(s) of the reporting period, (2) Former achievements through this contract, (3) Technical/scientific and non-technical accomplishments/activities, (4) The PI's evaluation of the progress of the project, (5) Actual or expected problems encountered and resolutions, (6) Implementing team(s), and (7) Brief monetary report.

In cases where modifications in the research team and/or original work plan are necessary, such modifications must be pre-approved by STDF, and the progress report should include a modified (updated) Gantt chart that takes the approved modifications into consideration.

Final report:

Within one month following the official end date of the project, the final report must be submitted. It must include the following main sections: (1) Summary (in English and in Arabic), (2) Objectives of the project, (3) Technical/scientific accomplishments/ activities, (4) The Gantt chart for the project period, (5) The PIs' evaluation of the outcome(s) of the project, (6) Actual problems encountered during the project execution and resolutions, (7) Implementing team(s), and (8) Brief monetary report.

At the time of submitting the final report, another report, titled: "Achievements Report", shall also be submitted by the PI. This report should contain all the necessary information about the achievements/outcomes of the research project. For more information about the Achievements Report, please refer to the report template, accessible on www.stdf.org.eg.

Evaluation of technical reports:

All submitted reports are evaluated by STDF, and feedback is sent to the PI of the project. If the project is unexplainably not performing according to the original proposal, STDF will take all necessary measures in order to stop the project and recover the budget allocated.

In the event of receiving a progress report that is rejected by evaluators, the PI may be required to present additional follow-up reports (totally independent from the regular progress reports stated before). In the event that the evaluators of progress reports give a justified recommendation to terminate the project (for

reasons including scientific misconduct by the PI, lack of seriousness,... etc.), STDF reserves the right to terminate the project, in which case STDF will recover all funds and expenses paid prior to the project termination date.

VIII. General Terms and Conditions:

The following terms and conditions apply to the grant:

- All proposals will be evaluated on a competitive basis.
- The application must include a letter from the implementing institution's legal representative stating the project title, the name, position and affiliation of the PI in charge of the proposal, that the project was not funded or submitted to another agency (national or international), or otherwise declare, and that the institution approves the project. This letter must be signed and stamped by the institution.
- All proposals must be drafted using the exact formatting requirements for the current call given in the attached Application Form. Failure to adhere to the exact format required will automatically deem the proposal ineligible.
- All proposals must be uploaded to the STDF website (www.stdf.org.eg); proposals submitted by e-mail or sent as hard copies will not be considered.
- All proposals must be in English (in some cases proposals of social sciences and humanities can be accepted in Arabic)
- The project team must not include any foreign researchers. However, foreign consultants may be allowed, given that the relevant security approval has been obtained.
- Equipment purchased using STDF funds must be made available to all Egyptian researchers.
- All proposals must include, in addition to the scope, the exact outputs,

benefits and costing of the proposed work as indicated in the application template.

- The cost structure should be suitable for the proposed scope.

IX. Ethical Rules:

Applicants to STDF are expected to maintain a high level of scientific honesty and integrity in all aspects of their work. Applicants are expected to refrain from plagiarism, i.e. "the act of taking credit, or attempting to take credit, for the work of another" (quoted from the publication ethics policies for medical journals, at www.wame.org). Applicants are also expected to avoid self-plagiarism or multiple submission of the same content in more than one document. Multiple reporting of the same data or results in various projects is also considered self-plagiarism and is strongly discouraged. Fabrication of data or results, or suppression of unexpected results is not accepted by STDF. STDF expects all research activities involving human subjects to strictly follow the bio-ethical guidelines.

Breaching the rules of research integrity will result in halting all research funding activities to the involved parties for a suitable period of time after thorough investigation and judgment by a specialized STDF committee.

Applicants are also expected to adhere to the highest standards of integrity within the domains of bioethical, bio-safety and animal protection considerations. The following regulations are to be adopted, whenever needed, based on the field or topic of the proposed research:

- **Bioethical considerations:**

Projects dealing with human subjects are required to satisfy the STDF requirements of bioethical aspects, and to comply with any other relevant laws. Such projects may include, but are not limited to, experiments on human

subjects, testing of new therapeutic, preventive or diagnostic agents, handling human personal information,... etc.

In such cases, it is mandatory that the PI presents an ethical clearance form approved from the ethical committee or institutional review board (IRB), before finalization of the project contracting process. In the case of absence of an IRB in the PI's institution, obtaining an ethical clearance from a national, regional or collaborating body will be subject to consideration and assessment by the STDF.

- **Bio-safety considerations:**

Projects with bio-safety aspects, such as those dealing with genetically modified organisms (GMOs), should strictly adhere to the national bio-safety policies, which may require obtaining special permits and clearances from the relevant authorities.

- **Animal protection considerations:**

STDF strongly rejects the unnecessary exposure of animals to pain, distress or fatality during scientific experimentation. It is the responsibility of the PI and his/her institute that these principles are adhered to. In the case of unacceptable acts of cruelty against animals, the STDF has the right to immediately terminate/suspend the project activities, and to hold the PI accountable for such acts.

- **Obtaining permits from relevant authorities:**

STDF has the experience that the processing of research proposals involving activities which require special permits from the relevant governmental (or otherwise) authorities may be delayed. In order to speed up the process of handling the applications, the applicants are encouraged to obtain such permits before submitting their applications, and to include them in the project proposal. The following are examples of activities requiring approval from the authorities:

- Conducting surveys,

- Collecting data, or conducting any other research activities near the country's international borders, in the sea or on land,
- Sending genetic and biological resources outside the country,
- Ethical issues related to research on living matter (bio-safety, conservation of bio-diversity, research ethics, ... etc.),
- Involvement of or collaboration with foreign researchers in the research activities,
- Dealing with historical objects, or
- Development of patents that may violate the intellectual property rights of other (existing) patent holders.

X. Negotiation and Contract Signing

Negotiation and signing of the project's funding agreement will take place shortly after the announcement of the evaluation results. Since the processing and evaluation of the submitted proposals entail significant expenditure of financial and human resources, it is highly discouraged for the PI to decline from continuation of the project after proposal submission. Requests asking for project discontinuation by the PI after proposal submission, following contract signing, or during the project life-time will be thoroughly investigated by STDF. STDF has the right to financial compensation and/or to impose a ban period on the PI from participating in STDF-related activities. Moreover, the PI should clearly state in the proposal which of the following options he/she prefers in the unlikely event of his/her inability to complete the project:

- a- Discontinuation of the project; however, the PI should be aware that, if he/she chooses this option, all funds and expenses paid by STDF must be refunded to STDF upon termination of the project.
- b- Transferring all the PI responsibilities and rights to the Co-PI (if any).



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XI. Intellectual Property Rights (IPR)

The applicant and the endorsing institution(s) shall conform to the STDF-IPR regulations, detailed as a separate document on the STDF website (www.stdf.org.eg).

Attachment I

Challenges Topics

Challenge Topic	Maximum Suggested Duration (Months)
Metal Industries: STDF-NCP/MI/014/1/7	
1. Production of anti-fire paints	12
2. Recycling of engine and machinery oils	12
3. Metal/polymer composite	12
4. Chemical and physical vapor deposition	12
5. Electrolytic cells for chlorine, sodium hydroxide and sodium hypochlorite production.	12
6. Low cost recovery of zinc from wastes of galvanizing lines	12
7. High nitrogen steels for medical application	12
8. Development of silicon steels	12
9. Steel shots for cleaning of castings surfaces and cutting of marble and granite	12
10.Ultra-fine grained high toughness and ductility steel	12
11.High- Mn steels without heat treatment	12
12.Stainless steels from low grades Egyptian ores	12
13.Low density high toughness and high ductility steels.	12
14.Al-Si alloys from Egyptian ores and wastes of Al and Fe-Si industries	12
15.Ca-Si alloys from Egyptian ores.	12
16.Production technology of tool steels	12
17.Die design and manufacturing for different industries	24
18.Concentration of Barite ores of Bahria mines	12
19.Development and production of industrial muscles	24
20.Novel and economic utilization methods of black sands	24
21.Production and applications of Inconel alloys	24
22.Sectorial study and road map for the Egyptian foundry industry	12

23.A-Production technology of standard calibration samples for A-spectrographic chemical analysis B-Hardness measurements.	12
24.Iron castings for high temperature applications	12
25.Laser surface treatment of ferrous alloys	12
26.Abrasion resistant high Cr-irons for cement and ore processing industries.	24
27.Advanced casting technologies for Mg-alloys	24
28.Centre of excellence for ADI gears production	24
29.Design and manufacturing of gearboxes for agricultural equipment	12
30.Spare parts for petrochemical industries from elevated temperature and corrosion resistant alloys	24
31.spare parts for railways and underground applications	24
32.Industrial 3d printers	12
33.The Most feasible studies in terms of Technology and Economy to re-use cement dust	12
34. Welding Technology Of High Strength Cast Iron	12
35. Production of medium and high grade alloy steel (Delta steel company and Arco Steel)	24
36. Production of iron alloys (Ferro chrome and Ferro titanium, ... etc) at edco iron alloys company	24
37. A study of using coal instead of other fuels for electricity generation, cement production and gas providing for other industries	24
38. A study of establishment of units for foundries sand recovery	24
39. A study of establishment of foundry for (milling) rolling machine, and metal forming	24
<u>Food and Agriculture: STDF-NCP/FA/014/1/1</u>	
40.Innovative meals for school students	24
41.Smart Food Packing System	24
42.Geoinformatics in Agriculture	24
43.Technological solution to produce Potassium Nitrate for plan fertilizers	12

44.Bio-Microchips for different applications	12
45.Intensive Marine Aquaculture	12
46.Deepening the local manufacturing the Agriculture Machinery	24
47.Development of agriculture machinery powered by renewable energy	12
48.Potato Seed Production in the New Valley	24
49.Disposing of organic pesticides	24
50.New Techniques for diagnosis and biosurveillance	24
51.Database of Egyptian soil fertility and packing of recommendation of each crop	24
52.Aqua-ponic/Hydroponic tools manufacturing	12
53.Innovative Low cost controlled green houses	12
54.The use of anaerobic probiotic to improve dairy and beef cattle performance	24
55.Design and manufacture of innovative trailer to transport Wheat	24
56.Design and manufacture of mobile dryer grapes	24
<u>Environment and Waste Management: STDF-NCP/EWA/014/1/1</u>	
57.Biohazard waste Management	12
58.Water Recycling	12
59.Electronics Recycling	12
60.An innovative ways to reduce wastage of national wealth of marble	24
<u>Local and craft industries: STDF-NCP/LI/014/1/3</u>	
61.Development of hand looms to produce a wider variety of hand woven textiles	12
62.Natural and organic fabric finishing products and dyes	12
63.Leather preparations and finishing to improve the quality of leather for expo	12
64.Pigments handlooms	12
65.Stained glass	12
66.Drainage problems for the dyeing factories	12
67.Paint timber Workshop	12
68.Milk Pasteurization	6

69. Focusing on the concept of the Grass Root Innovation In Egyptian villages that depend on the traditional heritage and local industries	24
70. Stained Pottery	12
<u>Transportation:</u> STDF-NCP/TT/014/1/6	
71. Absorbing shocks unites	12
72. Prevention of train accidents	12
73. Traffic Monitoring system	12
74. Informatics moving vehicles to maintain highways.	12
75. Tracking systems	24
<u>Innovation, education and industrial design:</u> STDF-NCP/INNOEDU/014/1/10	
76. Graduation Projects and Its linkage to Technological Start Ups	36
77. Future road map for Technological Incubators in Egypt with a Set up of two models	36
78. Technology center for Start-ups	12
<u>Technology Centers</u> STDF-NCP/TC/014/1/11	
79. Technology Incubator for traditional furniture	36
80. Manufacturing leather tanning	12
81. Non-woven fabrics	24
<u>Earth Quakes:</u> STDF-NCP/EARQ/014/1/9	
82. Design And Implementation Of A Vertical Broadband Seismometer For The Egyptian National Seismic Network (ENSN)	12
<u>Petrochemicals Industries:</u> STDF-NCP/PECH/014/1/8	
83. Science park for development of petroleum, petrochemicals and their related industries	
84. Renewable Energy from Waste	36
85. Industrial wastewater treatment for petrochemical industries	24
86. Catalysts petrochemical industry	36
87. Plastic Recycling	18
88. Wooden Plastic-NFPC	12

89.Engineering Polymers	36
90.Production of environment friendly additives to prevent the separation of gasoline - methanol as a fuel for cars	24
91.Production of aromatics (benzene - toluene) from lignin	36
92.Green petrochemicals	36
93.Plastic Additives	24
94.New types of Poly Ethylene products	24
95.Coated Fertilizers Technology	24
96.Liquid fertilizers from bagasse	24
General Objectives: Technology transfer and application for the latest technologies in petroleum and petrochemical industries on semi industrial scale that maximize the added value and comply with the global standards and codes.	
<u>Sustainable Building</u> STDF-NCP/SB/014/1/11	
97.New innovative and sustainable low cost building materials (for bearing walls and ceilings)	12
98.Low cost energy control systems for buildings (based on open-source hardware)	12
99.Efficient cooling systems	12
100. Economic modeling software for sustainable settlements planning (covering wide range of integrated sustainable solutions)	12
<u>Water Desalination:</u> STDF-NCP/WD/014/1/5	
101. Design, development and local manufacturing of efficient low cost water desalination and purification units for rural areas and small communities	12
102. Local production of efficient high pressure pumps for RO desalination units	24
103. Membrane filters based on nanotech	24
<u>Energy:</u> STDF-NCP/E/014/1/4	
104. Design and development and local manufacturing of large scale low-cost vertical wind turbine (100Kw) suitable for Egyptian slow wind speed	12
105. Designing and local manufacturing of a passive air	12

condition system using solar chimney concept	
106. Designing and local manufacturing solar collector for absorption cooling system	12
107. PV systems for the Egyptian off-grid poor	12
108. Low cost Solar Water Heater	12
109. Low cost Commercial gasifier (with control regulate the performance)	12
110. Local biomass pelletizers	12
111. Bio-Char production plants	12
112. Floating piston stirling engine	12
113. Local deep-cycle battery production	12
114. Design of efficient and cost effective Egyptian PV grid connection box	12
115. Technologies for efficient energy and power transmission	12
<u>Information and Communication Technologies (ICT): STDF-NCP/ICT/014/1/2</u>	
116. <u>Beyond 4th generation wireless</u> : How can next generation reless technologies impact infrastructure in Egypt revolutionize ICT	18
117. <u>Internet of Things</u> : How machine to machine communication is going to revamp our lives and impact our future to eventually reach the ultimate autonomous machines that can sense, think and act.	18
118. <u>Wearable Computing in the medical field</u> : How wearable devices are going to improve our health and achieve breakthrough innovation in the healthcare industry.	18
119. <u>Securing our identities</u> : How can we achieve better multi-factor security to protect our identity in the cyber-world and in our daily transactions.	18
120. <u>Big Data analytics</u> : Analytics for High Performance Computing (HPC), medical field, tourism, education and Oil and Gas	18
121. Smart obstacle detection, tracking, and avoidance for visually impaired persons using sensor fusion.	18
122. Multi-view video playback using distributed video coding	18

123. Personal Identification system using Biometrics analysis (iris detection, finger print, sound recognition, etc.)	18
124. Video/audio data mining	18
125. Mind Control and Perceptual computing	18
126. Design DC data logger (volt, Amp) with multi prop for telecom application	6
127. Nano-electronic Industry for IP & Electronic Circuits design	12
128. Development of efficient low cost mobile scanner for detection of explosives and weapons in vehicles	6
129. Development of efficient low cost functional prototype for detection and mapping of landmines	6