

**Ideas to Impact Programme**  
**Innovation Prizes for Environment and Development (IP4ED)**  
**Terms of Reference**

**Introduction**

1. The Department for International Development (DFID) leads the UK government's fight against world poverty. We run long-term programmes to help address the underlying causes of poverty and respond to humanitarian emergencies. This Terms of Reference (TOR) lays out DFID's requirement for a Service Provider (an individual organisation or consortium) to design and implement a new programme to launch and reward up to five innovation prizes and three frontier technology calls over five years. Each prize and frontier technology bid will focus on a well-defined 'problem statement' with no existing solution.

**The objective**

2. The Service Provider will be required to design and implement a new innovative programme, to support research and development (R&D) in climate technologies for developing countries. The programme will launch a variety of innovation prizes designed to stimulate and incentivise research to develop and deploy technologies for low income consumers that will improve poor people's access to affordable clean energy, safe drinking water and resilience to climate change.
3. The expected impact of the programme is that 12 million people will have improved access to energy and water services through innovative, affordable technologies and business models for 'bottom of the pyramid' (BoP) consumers by 2025. It is intended that this programme will lead to the development of a range of affordable and accessible technologies and business models researched and tested that will improve the access of poor people to these technologies. The programme should also 'crowd-in' new investment. In practical terms, the programme aims to deliver the following outcome indicators by the end of the programme:
  1. At least 22 new, affordable and accessible climate and frontier technologies developed for poor people
  2. At least 5 affordable and accessible climate technologies deployed to poor people
  3. At least £35m of new private investment in technologies and business models

At least 50% of entrants applying for prizes are new teams/organisations to DFID's funding for research in this area

**The recipient**

4. The principal recipient for this programme is the Climate, Energy and Water Team (CEW) in the Research and Evidence Division (RED) in DFID. The associated research on environment and development 'problem statements', and the use of prizes to address these, will be made publicly available. Prizes will be financial in nature and awarded to entrants that meet the prize conditions and achieve the required results. The focus of the programme is to support R&D in

solutions for poor consumers, as such; the ultimate beneficiaries are BoP consumers who will gain improved access to services (e.g. low carbon energy or safe drinking water).

## The scope

5. This contract involves the design and implementation of a global innovation prize programme to launch at least five separate prizes over five years. Given the broad range of skills/expertise required, DFID would actively encourage bidders to consider a consortium approach to delivering this requirement.
6. The scope of the programme involves:
  - Establishing and implementing an international programme of innovation prizes
  - Designing, launching, managing, awarding and evaluating the individual prizes
  - Catalysing a network of innovators to work on solutions for poor consumers
  - Ensuring end-user needs are built into the research commissioning process
  - Producing research outputs / reports on:
    - 5 prize problem statements
    - 3 different types of prize designs<sup>15</sup> frontier technology innovation case studies
7. Crucial to success will be the Service Provider's ability to deliver on:
  - **Effective consultation** – it is essential that a strong 'problem statement' is developed to be addressed by the prize. This must include consultation with the demand side / end users of the intended product/service to assist successful uptake of the product/service once the prize is awarded. The programme should therefore be inclusive of poor consumers in both the process, as well as the outputs.
  - **Understanding the innovation process** – prizes and frontier technology proposals are to be developed for problem statements across the length of the innovation process (e.g. new technologies through to new business models to reach BoP consumers). Some prizes will be designed to tackle the deployment/commercialisation 'valley of death'.
  - **In-depth knowledge of innovation prizes** – some prizes should test a 'stage-gate' approach, where competitors compete multiple times along the various stages of the innovation process until there is one winner.
  - **Global presence** – some prizes will be best applied locally, nationally, regionally or internationally. The successful bidder must have the ability to do all of these (in time) as the need arises.
  - **Linking with developing country innovators and technology suppliers** – to encourage collaboration and lesson learning amongst prize competitors, there may be a need to stipulate conditions that ensure a sufficient amount of input from developing country stakeholders in order to compete. This will be agreed with the service provider during the design phase.
  - **Lesson learning and sharing** – there must be a strong evaluation and lesson learning process. All failures should be regarded as 'public goods',

providing open access knowledge on why these have failed ensuring the international community can learn from these efforts; including learning from failure and pivoting will be critical for ensuring continuous innovation.

8. The programme's intended areas of focus are:

- Low carbon energy – modern energy services are crucial to human well-being and to a country's economic development. However globally over 1.3 billion people are without access to electricity and 2.7 billion people are without clean cooking facilities. The recent launch of the UN's Sustainable Energy for All targets and goals for 2030 provide an opportunity to build on international interest in this field and incentivise innovation and investment in developing countries aimed at addressing the needs of the poor.
- Climate change adaptation - the world is already locked into some warming due to past emissions and projected impacts of climate change are severe. Adaptation solutions are urgently needed in developing countries, particularly areas already prone to erratic rainfall, droughts, floods and cyclones, as climate change will further exacerbate on-going challenges.
- Water, sanitation and hygiene (WASH) - while major gains have been made, with the MDG drinking-water target being met in 2012, challenges remain, particularly in the area of sanitation. There are likely to be about 800 million people with unimproved water supplies and more than 2 billion lacking sanitation facilities by 2015. In addition, there is a growing understanding of the links between water and climate – with energy needed for water purification, pumping and transporting; and water-related climate impacts increasing the need for adaptation.

## The requirements

9. DFID is seeking a Service Provider to design, establish and manage a new 'Innovation Prizes for Environment and Development (IP4ED)' programme. DFID has **£9m** available to disperse to prize incl. frontier technology winners. Additional costs that will need to be accounted for by the tender responses are:

- Administration spend:
  - **Indirect costs** – overheads to support maintenance of organisation: electricity, rent, office services, etc.
  - **Direct costs** – salaries for those involved in managing the prize and call process – secretariat costs of transferring funds, booking travel, pre-financing costs etc.
- Programme spend:
  - **Direct costs** – costs against actual activities. Including:
    - Prize and frontier technology idea generation and call management (research and consultation)
    - On-going consultation with beneficiaries, private sector/technology suppliers, researchers, etc.
    - Prize and frontier tech call design based on research (including stakeholder identification, launch, operation and awarding of prize)
    - Launch and run individual prizes and 3 frontier technology calls (including expert panel to review and reward)

**Monitoring and Evaluation (M&E) plan and activities; including a learning framework**

10. We will expect bidders to make clear the overall cost of the programme is split into these different areas.

11. Outputs for the five year programme are:

- 5 innovation prizes and 3 frontier tech calls launched and at least 18 successful awards with 3 prizes awarded and 15 frontier technologies successfully deployed. At least 5 research papers on chosen prize themes, and 15 frontier technology case studies – the ‘problem statement’ (one on each theme) which will be made publicly available at the time of the prize launch, providing evidence of problem and analysis of opportunities. This research is critical to the success of the prize and will result in a high level of open source information and evidence on real and perceived gaps in the service delivery market for poor consumers.
- At least 5 papers on the evaluation of the individual prizes providing an evaluation of the response, including details on failures to build the evidence and share lessons learnt on the use of innovation prizes to achieve environment and development goals, particularly for the bottom of the pyramid consumers.
- At least 3 papers on the value and use of different innovation prize types as tested by the programme. The programme will be required to test at least three different ‘types’ of innovation prizes and will produce evaluation reports on the effectiveness of these types throughout the course of the programme.

12. The contract will be implemented in two stages: (1) design and (2) implementation. DFID must be content with the design prior to commencing implementation.

13. The six month design phase will require the Service Provider to:

- Research, consult on and propose between five and seven principle prize concepts and design models to take forward under the programme, including details on:
  - Evidence of need and cost-benefit analysis for each prize;
  - Categorises of risk; and
  - Proposal to address risk of the entire portfolio over the five years.
- Establish / convene governance, management, operational, advisory committee structures.
- Updated work plan and revised costs for implementation phase (within agreed budget), as necessary.

14. During the implementation phase the Service Provider will be required to:

- Continue research and consultation on prospective ‘problem statements’ to ensure they reflect developments in the market
- Launch prizes, including outreach to target audience and publication of underlying ‘problem statement’ evidence
- Manage on-going prize processes to achieve intended results

- Convene judging panels
- Verify results with independent assessors
- Award prizes to successful winner/s
- Undertake and publish an evaluation for each individual prize
- Work with independent evaluators at the mid-term and end of project evaluations
- Report to DFID according to agreed reporting schedules (to be confirmed in the design phase)
- Forecast and invoice for spending according to agreed schedules (to be confirmed in the design phase)

15. Specific milestones (dates and targets) will be confirmed as part of the design process.

### **Constraints and dependencies**

16. The successful supplier will need to be open to working with similar UK Government initiatives currently under development. In particular, there may be opportunities to jointly promote individual prizes and draw on expertise.

### **Reporting**

#### ***Design phase***

17. Deadlines are to be confirmed with the Service Provider, but we anticipate three formal reporting requirements during the six month design phase:

- Approximately three weeks after contract award date: a short written project plan for the design phase, presented to the DFID project team, including what will be addressed; by when; consultations that will take place; risks to delivery; etc.
- Mid-way through the design phase: a written report, presented to the DFID project team describing key results and developments so far.
- End of design phase: written implementation and programme plan for the duration of the programme, presented to the DFID project team, including details of required as specified in the Requirements section of this TOR.

#### ***Implementation phase***

18. The programme's results framework (finalised in the design phase) will include a reporting schedule and milestones for the key outputs, including the individual prize research papers (pre-launch and evaluation); and the broader innovation prize evaluation reports.

19. Standard reporting requirements will be:

- Financial forecasts due one month prior to milestone due date

- Quarterly progress reports to the DFID project team
- International Climate Fund (ICF) Key Performance Indicators report twice a year (October and April)
- DFID Annual Review (will be led by a DFID team, but will likely include interaction with the supplier and possible site visits)
- Annual Audited statement of accounts disclosing DFID funding

## Contractual Arrangements

20. Tenderers will be asked to propose an appropriate payment plan as part of their bid. This plan should link payments to successful delivery of programme outputs and performance, and should clearly demonstrate the Service Providers acceptance of risk of non-delivery.
21. Tenderers will also be asked to propose a suite of Key Performance Indicators (KPIs) as part of their bid, against which their own performance will be measured. KPIs should cover the following areas: quality and delivery; management, strategy and financial; personnel; and innovation and continuous improvement indicators.
22. A contract will be issued for the full programme duration (5 years), however there will be a formal break point in the contract at the end of the 6 month Design Phase. Progression to the Implementation phase will be dependent on effective delivery of Design phase outputs, satisfactory performance of the Service Provider and DFIDs agreement to work-plans and any revised costs for the Implementation period.
23. There will subsequently be an independent mid-term review of the programme after 2.5 years, accompanied by another formal break point in the contract. Progression to Phase II is subject to the outcome of this review, satisfactory performance of the Service Provider and agreement to any revised work plans or budgets.
24. **DFID reserves the right to scale back or discontinue this programme at any point (in line with our Terms and Conditions) if it is not achieving the results anticipated. Conversely, we may also scale up the programme should it prove to be having a strong impact and has the potential to yield better results.**

## Timeframe

25. This is a five year programme running from late 2013/14 to 2019/2020 (October 2019). The contract will be for 66 months in total, including 6 months for Design phase.
26. Our envisaged timeframe for launching the individual prizes under this programme is detailed below. However, some flexibility exists and a finalised timeframe will be agreed upon during the design phase:
  - 1 prize in 2014/15
  - 2 prizes in 2015/16 (and award the prize from 2014/15)

- 2 prizes incl. 1 frontier tech call and 5 awards in 2016/17 (and award the prizes from 2015/16)
- 0 prizes incl. 2 frontier tech calls and 10 awards in 2017/18 (and award the prizes from 2016/17)

## **Duty of Care**

27. The Supplier is responsible for the safety and well-being of their Personnel (as defined in Section 2 of the Contract) and Third Parties affected by their activities under this contract, including appropriate security arrangements. They will also be responsible for the provision of suitable security arrangements for their domestic and business property. DFID will share available information with the Supplier on security status and developments in-country where appropriate.
28. The Supplier is responsible for ensuring appropriate safety and security briefings for all of their Personnel working under this contract and ensuring that their Personnel register and receive briefing as outlined above. Travel advice is also available on the FCO website and the Supplier must ensure they (and their Personnel) are up to date with the latest position.
29. Tenderers must develop their PQQ Response and Tender (if invited to Tender) on the basis of being fully responsible for Duty of Care in line with the details provided above
30. They must confirm in their PQQ Response that:
- They fully accept responsibility for Security and Duty of Care.
  - They understand the potential risks and have the knowledge and experience to develop an effective risk plan.
  - They have the capability to manage their Duty of Care responsibilities throughout the life of the contract.
31. If you are unwilling or unable to accept responsibility for Security and Duty of Care as detailed above, your PQQ will be viewed as non-compliant and excluded from further evaluation.

## **Open Access**

32. All programmes with research outputs will be required to comply with DFID's Enhanced and Open Access Policy
33. At the full tender stage, applicants will be required to submit an Open Access and Data plan, using the template included in the policy document. Where appropriate the costs of complying with DFID's open access policy should be clearly identified within your commercial proposal.

34. **DFID co-ordination** The DFID coordination of this work will be led by Senior Innovation Adviser, as Senior Responsible Officer for the Ideas to Impact Programme and Senior Energy Innovation Adviser leading on frontier technologies within the Climate, Environment and Water Team (CEW) in the Research and Evidence Division (RED).

### **Format and content of responses**

35. Bidders must register for DFID's supplier portal in order to bid for this requirement. Please refer to the PQQ and Invitation to Tender documentation which will contain full guidance for suppliers on how to prepare your response. Suppliers must raise any questions relating to the TOR or bidding process using the dialogue function on the Supplier Portal.

### **Background**

#### ***The problem we are trying to address***

36. 1.29 billion people live on less than US\$1.25 a day and lack access to basic services including energy, water and sanitation. Global and local challenges exacerbate the problem:
- resources are becoming more scarce and expensive
  - climate change is threatening communities and livelihoods
  - population is growing
  - the global economy is becoming more volatile, with the poor suffering more frequent shocks and stresses
37. The scale and urgency of this challenge means a step-change in our response is required and there is value in adding new tools to the way we help alleviate poverty in the currently rapidly changing world.
38. Step-changes are normally driven by innovation. Accelerating innovation in frontier technologies and business models is essential to help reduce the current and long-term impacts of climate change and support green growth. They can also play a critical route to addressing wicked problems as outlined in the recently launched DFID report on frontier technologies. But developing countries have relatively weak innovation systems and institutional capabilities to facilitate and promote innovation, compared to most industrialised countries. In addition, most global R&D is focused on high-end developed world products and services because the demand and people's willingness to pay is well understood. This is not the case with bottom of the pyramid consumers in developing countries. As such, the vast majority of public and private spending on technology development pays little attention to the needs of the poor.
39. However, there are significant opportunities for developing countries to innovate and apply frontier technologies and leapfrog the developed world's pattern of technology development and growth.

#### ***Innovation Prizes***

40. Developing countries suffer not only from an inadequate pipeline of adapted and/or new technologies and products to suit their needs, but also from market



demand incapable of exerting the kind of ‘pull’ that might solve that problem without public intervention. Developing market consumers generally do not have the collective purchasing power that would stimulate such innovation and adoption of frontier technologies.

41. Innovation, incentive or inducement prizes serve as a means to induce, or “pull” innovation and are one tool increasingly used to incentivise R&D in markets where uncertainty of returns stifle innovation. Prizes offer rewards (generally financial, but sometimes business development assistance) for pre-specified scientific or technological achievements, such as the development of a device or method to perform a particular function within given parameters. Prizes are well understood and have been used for centuries to encourage innovation. Perhaps the most well-known early prize was the Longitude Prize of 1714 – the winning technology is still used today. However, to date they have not generally been used to encourage innovation and frontier technology that addresses the needs of the poor.
42. Prizes work best in situations where there are clear, objective goals and a well-defined ‘problem statement’, with many participants who are willing to bear risks. McKinsey’s report on philanthropic prizes (2009) identifies when prizes are more likely to be effective (i.e. clear, achievable goal; many solvers; and solvers willing to accept outcome risk). The pull mechanism of prizes can be deployed either on its own; as a complement to other pull mechanisms such as advance market commitments (AMCs) (e.g. commitments to buy a percentage of the prize winning solution); or in conjunction with “push” mechanisms such as research grants (e.g. grants to allow individuals to compete in the competition – the hybrid prize-grant option identified below). DFID would be eager to explore the use of prizes alongside these other tools.
43. The economic characteristics and functions of prizes, as identified by Vivid Economics are:
  1. They provide a financial incentive, which serves to lever investment towards specific purposes
  2. In the process of competing for a prize, investors, entrepreneurs, inventors, and potential future customers are brought together;
  3. They encourage commercialisation of innovations, both through by linking and networking potential funders, competitors, audience, and through signalling the most promising innovations;
  4. They have broader sociological impacts, such as the popularisation of a particular challenge, which may further strengthen the financial, matching, and commercialisation effects of prizes.
43. Further evidence from DFID’s commissioned reports highlight the case for exploring the use of innovation prizes to develop and deploy frontier technologies for development and environmental problems in developing countries. These reports have been drawn on considerably in designing this programme and are referenced throughout this business case.
  - An evidence review commissioned through the DEW Point resource centre on the value for money and effectiveness of prizes for development. This study found that prizes can be effective when appropriately designed and targeted, and that potential payoffs and value

for money of adding prizes to a toolkit for encouraging innovation are considerable.

- A report by the X-Prize Foundation and the Indian Institute of Technology (IIT-Delhi) on the use of prizes to address market failures in developing countries. The report highlights the importance of the research, design and planning process, and includes guidance on designing and operating prizes and eleven stakeholder-suggested prize concepts, spanning energy, agriculture, buildings, water and sanitation.
- IDS Frontier technologies report commissioned by DFID looked at the application and deployment of 10 technologies and their relevance to development challenges.
- 44. Prizes are not a universal solution and are most effective where they complement existing policies. There are functions which other policies might perform better than a prize e.g. once a technological breakthrough has been achieved, regulation may be more effective at encouraging wide roll-out and technology diffusion through, for example, imposing sector-wide standards.

Everett (2011) categorised the types of prizes into:

- Market stimulation – large international, highly publicised prizes with one large prize purse (typically greater than US\$1m) e.g. X PRIZE Challenges. These prizes can run for more than four years until the successful ‘solution’ is awarded.
- Innovation awards – prizes typically awarded for new start-up business ideas or technologies e.g. the annual Shell Springboard and the annual Ashden Awards for Sustainable Energy.
- Open innovation – posting a specific problem to a wide audience, taking advantage of a large pool of potential problem solvers – the successful solver wins the prize e.g. InnoCentive and NineSigma platforms.
- Social challenges – design to engage with and benefit communities e.g. the Nirmal Gram Pursakar Total Sanitation Campaign in India.

45. In addition, a single prize can be designed and disseminated in a variety of ways, including:

- Single, large: one, large prize directed toward a specific, measurable, *ex ante* target with one irrefutable prize winner.
- Stage-gate: a framework for dividing product development into discrete stages which are separated by decision points or ‘gates’. The purpose of gates is to ensure that the successful project is on track and to make a “go/kill” decision for continuation. Gate reviews are based on established criteria that must be met in order to proceed to the next stage in the process. One option is to progress fewer and fewer successful projects after each gate, until a final one or two win a final prize.
- Proportional: pays out in proportion to success, where success is defined as a level of impact. For example, a prize could be paid out to educators in proportion to the number of school children that achieve certain test levels, thus rewarding the most successful techniques.

- Incremental: similar to stage-gate prizes, these could measure incremental efficiency increases in performance, for example, on an annual basis.

### ***This Programme***

46. DFID funding will support the design and establishment of a new, global prize programme; including the research associated with defining the appropriate ‘problem statements’, and the launch five innovation prizes and three frontier technology calls that seek solutions to poor people’s access to affordable clean energy, safe drinking water and other climate/environmental services.
47. By offering a financial and reputational reward (on successful achievement of results), this programme will encourage new, private investment in environmental technologies that will benefit the poor, while simultaneously helping to build developing country capacity to innovate by actively encouraging participants from developing countries.

### ***Supporting DFID and ICF priorities***

48. This work aims to support DFID’s Research and Evidence Division (RED) and the UK’s International Climate Fund (ICF) priorities, including building a robust evidence base for policy making, working with the private sector, and supporting innovation in climate change. The intervention will directly support a number of RED and ICF priorities that have been identified as needing a greater focus, including:

- Creating and using new frontier technologies
- Demonstrate results in producing pioneering technologies in both traditional and new fields
- Building knowledge and innovation through research and development
- Influence the architecture and delivery of finance by piloting new innovative mechanisms
- Promote private sector investment in low carbon infrastructure and service delivery
- Help demonstrate a range of approaches, with a rigorous focus on lesson learning and learning by doing

### ***Contributing to the evidence base***

49. There are three key opportunities to contribute to the evidence base on climate technology innovation through this programme:

#### **1. Frontier technologies developed and initial deployment**

The programme will directly incentivise increased R&D in climate technologies for poor consumers. Examples from other innovation prizes demonstrate how significant this can be: the Ansari X-Prize was a US\$10m prize which resulted in US\$100m of R&D by private companies striving to win. Reporting on both the winners and losers will be an important part of the M&E framework to contribute to the evidence base and understanding innovation for climate technologies for low income consumers.

#### **2. Research of ‘problem statements’**

In identifying appropriate problem statements to be addressed by a prize, the programme will conduct in-depth research and consultation with a wide group of

stakeholders, mapping the state of play of currently available technologies and active stakeholders. This research is critical to the success of the prize and will result in a high level of publically available information and evidence on real and perceived gaps in the service delivery market for poor consumers.

3. Evaluation of the use of innovation prizes incl. frontier technologies

The programme will provide insight into the use of innovation prizes and frontier technologies to achieve environmental and development goals, particularly for the bottom of the pyramid consumers, by evaluating each prize/award and building an understanding of lessons learnt.

***Empower women and girls, and youth***

50. This programme presents an opportunity to help meet DFID's new strategic vision for girls and women. A UN report highlights the importance of both ensuring women's role in science and technology (women IN science) and developing and implementing science and technology approaches which benefit women (science FOR women). This involves consulting and working with women in the choice, development and application of technologies; providing them access to resources; ensuring their contribution to and benefit from science and technology innovations; and recognising and supporting their local knowledge and innovative practices.