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SCIENTIFIC AND TECHNICAL ADVISORY PANEL (STAP) OF THE GLOBAL ENVIRONMENT FACILITY:

REDUCING THE LONG TERM COSTS OF LOW GREENHOUSE GAS-EMITTING ENERGY TECHNOLOGIES

(Prepared by the Scientific and Technical Advisory Panel)

Scientific and Technical Advisory Panel
to the Global Environment Facility:
reducing the long term costs of low
greenhouse gas-emitting energy
technologies

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Executive summary

1. GEF projects to increase the market share and accelerate the technological development of low greenhouse gas emitting technologies (under Operational Programme 7) have proved both difficult to design and to implement. STAP was asked to provide advice on how this might be remedied: a workshop was held in March 2003.
2. There are two main problems. First, the technologies promoted to date have been regarded as too risky, because they are large scale and capital intensive, produce power which costs more (a financial risk) and also carry higher technological risks. And second, the need to reconcile the global, long-term benefit of lower greenhouse gas emissions with sufficient local benefits, i.e. more reliable generation of electricity at affordable prices.
3. STAP believes that promoting low greenhouse gas emitting technologies should remain fundamental to the GEF's work.
4. Its principal recommendations are:
 - i. projects should pay more attention to developing a supportive policy and regulatory environment which reduces the cost of energy services, rather than focusing on buying down the hardware cost of large, high risk, capital intensive projects;
 - ii. the GEF cannot and should not seek to shoulder the burden of developing these technologies on its own, but should seek to do so by developing partnerships with the private sector, and with both developed and developing countries, which may require adjustments to its operating modalities;
 - iii. the GEF needs to make long-term strategic commitments to country and private sector partners, and thereby provide greater stability and confidence;
 - iv. the GEF should broaden the range of projects it supports to include smaller scale technology applications and energy efficiency; and
 - v. the GEF should undertake an analysis of why many OP7 projects have slipped, and set deadlines for rectifying the slippage.

INTRODUCTION

1. The GEF has operational programmes (OP)¹ that promote energy efficiency (OP 5)² and renewable energy (OP 6)³ by helping to remove barriers to the use of commercial or near-commercial technologies. A third operational programme (OP 7) aims to reduce greenhouse gas emissions by accelerating the technological development of, and increasing the market share of, low greenhouse gas-emitting technologies that have not yet become commercial, but which show promise of becoming so in the future. The GEF's approach has been to subsidise the incremental cost of these technologies, with the long term aim of reducing the cost, and encouraging greater take-up through learning-by-doing.
2. Only a small number of OP 7 projects have been funded by the GEF, and their achievements have been limited. Projects have proven difficult both to design and to implement.
3. The GEF therefore asked STAP to re-examine the assumption on which OP 7 based, viz **that GEF projects can help to “buy down” the long term costs of these technologies to commercially competitive levels**; and to provide advice on possible new approaches to OP 7 and a new role of the GEF. STAP therefore held a workshop on this in Washington DC, in March 2003; this note reports the conclusions.⁴

ANALYSIS OF DIFFICULTIES WITH OP7 PROJECTS

4. The main expected benefits of OP 7 projects are global, in the form of reductions in the cost of technologies, and more experience with low-carbon technologies. But local benefits, e.g. additional capacity to generate electricity at affordable prices, and

¹An Operational Programme (OP) is a “conceptual planning framework for the design implementation and coordination of a set of projects to achieve a global environmental objective (that) organises the development of country-driven projects and ensures systematic coordination between the Implementing Agencies and other actors”.

² OP 5 “Removing barriers to energy conservation and energy efficiency”.

³OP 6 “Promoting the adoption of renewable energy by removing barriers and reducing implementation costs”.

⁴ The STAP workshop was lead by Anjali Shanker, with support from Dennis Anderson and Peter Hennicke, with assistance from the STAP Secretariat.

a more reliable source of energy, are essential if developing countries are to have sufficient incentive to host OP 7 projects.

5. And local stakeholders need to have confidence if they are to make long term commitments to environmentally sound technologies. For this, they need a regulatory framework in the power sector which is conducive to new low greenhouse gas-emitting technologies. In designing OP 7 projects inadequate attention has been given to these factors, and to analysing the local market and understanding investors' interests. From a local perspective, the OP 7 technologies promoted to date (large scale and capital intensive) are often perceived to be inferior, because the power produced costs more (a financial risk), and because of higher technological risk. In these circumstances, both local project promoters and international firms have been unwilling to bear additional risks in the absence of the "right" incentives.
6. The challenge for OP 7 therefore remains how to reconcile the global, long-term benefit of low greenhouse gas-emitting technologies with the need for sufficient local benefits to ensure projects are successful, i.e. to bring global benefits in line with national priorities and energy plans, as well as with the need to ensure proper sharing of risks and rewards with private players.
7. The GEF has so far been unable to "buy-down" the cost of low greenhouse gas-emitting technologies. For example, the first CSP projects entered the GEF portfolio in 1995, but have yet to reach the implementation stage, and other projects have simply been one-off. The expected demonstration effects and economies of scale have not so far been realised. By contrast, a larger number of small projects might be a better approach to building up market confidence. Clusters of projects using similar technology across diverse geographical areas would help to demonstrate technical performance over a wide range of climate and market conditions.
8. To succeed, OP 7 projects need in-country stakeholder champions who subscribe to the development of new technologies, and who are willing to build the necessary constituency. These stakeholders could be national policymakers, but not

necessarily: a strong national constituency can also be built if there is an in-country industry, or joint venture willing to push for the development of the technology. A change in GEF operating modalities and the involvement of a coalition of partnerships would be extremely conducive to obtaining a higher level of commitment from the private sector.

9. When OP7 projects were initiated, there was an understanding that industrial countries would continue to support the development of technologies, but the GEF has been left to shoulder the burden alone. In many cases, it is GEF support which has helped the international community and industry to maintain interest.

STAP'S ADVICE

10. The development and use of low green house gas-emitting technologies remains fundamental to the work of the GEF, in order to assist the international community's efforts in finding pathways to a low carbon energy future, consistent with the goals of developing countries in pursuit of economic prosperity.

Policy and institutional aspects need to be fully integrated at the project design stage

11. Instead of focussing on buying down the hardware cost of large, high risk, capital intensive projects the GEF should pay more attention to integrating technological options, policies and measures which decrease the cost of energy services provided. It is clear that OP 7 projects need a supportive policy and regulatory environment. This requires due consideration to be given to incentives for the adoption of OP 7 technologies within the context of national environmental, technology and energy policies. The GEF should identify experience so far (both in developing and industrialised countries) and assist countries in identifying the appropriate policy mix, eg. combining feed-in laws, taxes, tradeable permits, portfolio standards, etc. This suggests that OP 7 should be integrated with OP 5 (energy efficiency) and OP 6 (renewable energy), which are also concerned with the removal of barriers. A project should not be hindered because it proposes activities across several OPs.

Developing the necessary partnerships (private sector, countries) may require some adjustments to the GEF's operating modalities

12. The GEF cannot and should not seek to shoulder the burden of developing low-emission technologies on its own because this would require huge amounts of capital to be mobilised from the international private sector and national budgets. The GEF's role is to initiate and to accelerate this process, but it can only do so as part of a joint worldwide effort: the benefits from learning arise at the regional and international level and not from single projects in any one country, or a single institution, such as the GEF.

13. The GEF should be more active in stimulating local and international leadership, and in promoting champions by establishing partnerships with private sector companies. There is evidence that GEF procedures inhibit private sector innovation and long term commitment. The GEF should therefore review its current procedures for developing and financing projects, and identify where time savings can be made: the aim should be a much quicker and simpler process. This should include reviewing the GEF's bidding procedures, and learning from successful procurement, and technology transfer programmes elsewhere. Long project gestation periods and high preparation costs have proven to be strong deterrents to wouldbe project promoters. The GEF needs to find a faster track for its projects; this will mean avoiding the time consuming tendency to search for the "perfect" project.

Make long-term strategic commitments to country and private sector partners

14. The GEF should do more to provide greater stability and confidence for stakeholders and to encourage them to be continuously engaged in the process of developing projects. "Stop-go" policies discourage stakeholders from getting involved. The GEF could provide more certainty by being clearer about its programmes and priorities, by making medium term commitments and adopting a programmatic approach.

Ensure proper dissemination of information

15. The GEF should do more to disseminate the lessons learned by making more systematic use of knowledge management – both what works, and what to avoid. This is an essential element in replication.

Widen the type of projects to include small scale projects, energy efficiency and policy support

16. OP 7 contains a small list of technologies which are eligible for support: it is essential that this list not be closed. Furthermore, the GEF should extend funding to include energy efficiency, systems solutions and smaller scale technology applications, thus avoiding one of the major pitfalls of the current OP 7 portfolio which is the lumpiness of projects; this would also have the advantage of a wider demonstration effect. OP 7 should also be open to considering medium-sized projects which focus exclusively on policy and institutional issues. The technologies could include e.g. adapting highly energy-efficient European buildings and technologies to the South, for example, by reducing or eliminating demand for air conditioning through more energy efficient building design, distributed power systems and hybrid systems.

Project slippage

17. Slippage is of course not unique to OP 7, or to the GEF – projects in all fields may experience delays. But experience with OP 7 projects shows that slippage is of particular concern for innovative technologies and demonstration projects. The important point is to identify *why* slippage occurs:
- i. if it is due to lack or loss of interest in the technology in the client country the Implementing Agencies may (rightly) decide to pull out;
 - ii. if it is due to some defect in the technology, this may require additional resources to address the technological problem, if the problem can be resolved; and
 - iii. if it is due to institutional barriers or contradictions in policies, a re-examination of these policies should be considered.

18. In the case of thermal solar for example, discussions with the Implementing Agencies have shown that there is a conflict between privatisation and deregulation programmes, and the incentive structures for environmental policies. Privatisation policies have been pursued while at the same time no effort has been made to provide an institutionally supportive framework for the use of environmentally friendly technologies and practices. The problem here is a deadlock caused by deficiency in policy, not due to the technology itself.
19. Where the deadlock is not addressed within a reasonable time period, potential private actors are likely to lose interest, because of the risks involved in delay. It is important therefore to set time frames and triggers in project design so that slippages are *systematically* reviewed. The GEF should therefore undertake this analysis, and set deadlines for rectifying slippage in the current OP 7 portfolio.