

Facesheet

(Tick ✓ one) **Project seeking APEC funding** **Progress Report** **Evaluation Report**
 (Tick ✓ one) **Operational Account** **TILF Special Account** **Self-funded Project**

Project number: (To be filled in by Secretariat)		Date received by Secretariat:	Late / Not late () ()
Name of Committee/Working Group: Expert Group on Clean Fossil Energy/Energy Working Group			
Title of Project: Feasibility of Supercritical Technology for New Coal-Fired Power Plants in APEC Developing Economies			
Proposing APEC Member: USA			
Co-sponsoring APEC Member(s): Korea, Japan			
Project Overseer: Name, Title and Organisation		(M)	
Scott M. Smouse, Chair APEC Expert Group on Clean Fossil Energy			
Postal address: U.S. Department of Energy National Energy Technology Laboratory P.O. Box 10940 Pittsburgh, PA 15236-0940 USA		Tel No: 412-386-5725 Fax No: 412-386-4561 Email: scott.smouse@hq.doe.gov	
Financial Information	Total cost of proposal (US\$): 50,000	Amount being sought from APEC Central Fund (US\$): 50,000	
Type of Project: () seminar/symposium () short-term training course <input checked="" type="checkbox"/> survey or analysis and research () database/website () others (Please specify)			
Project start date: January 2003		Project end date: December 2003	
<p>Project Purpose:</p> <p>Information on the most cost-effective ways to reduce emissions of gases that contribute now or are likely to contribute in the future to global climate change will be of increasing importance to policymakers in APEC member economies. CO₂ is the most important of these gases and the electric power sector is a major source of carbon dioxide (CO₂) emissions. Phase I of the EGCFE Study on CO₂ Emission Reduction Options for the Electric Power Generation Sector in APEC Economies assessed what options are available to reduce CO₂ emissions from power generation in APEC economies. Most of these options were applied to existing generating capacity, and involved upgrading, repowering, or fuel-switching. Current generating capacity in APEC economies totals 1957 GW, and more than 800 GW of new capacity are expected to be built during the next two decades. The choice of fuel and technology for this new generation will have an important impact on the atmospheric loading of CO₂ during this century and beyond.</p> <p>While natural gas is the fuel of choice for new power generation in places where it is available at a competitive price, coal is still expected to account for more than a quarter of new generating capacity in the APEC region during the next two decades. Consequently, it is important to increase the efficiency of generation from coal to the maximum extent that is consistent with cost and reliability/operability goals.</p> <p>The annual emissions of CO₂ from a 1-GW conventional (subcritical) coal-fired plant operating at baseload amount to approximately 6.3 million tonnes. If just 5 percentage points of efficiency could be gained by applying state-of-the-art technology in new plant construction instead of conventional technology, the annual savings in CO₂ emissions from adding 200 GW of coal-fired capacity in the next two decades would be 140 million tonnes. The cumulative savings over two decades as these plants come on-line gradually over the period would be of the order of ten times this figure. Moreover, these savings would continue over the lifetime of the plants, adding up to more than 5 billion tonnes of CO₂ over 40 years.</p> <p>Supercritical pulverized-coal generating technology points the way to achieving this level of efficiency improvement with today's state-of-the-art, and even higher levels as knowledge of materials improves the ability and confidence to generate at higher temperatures and pressures. Similar CO₂ emission reductions could also be achieved by integrated coal gasification combined cycle technology, along with other environmental benefits such as reduced emissions of SO₂ and NO_x.</p> <p>Supercritical plants have been built in OECD countries for more than a decade, and a few are in operation or construction in developing countries. However, this technology is not usually considered the technology of choice</p>			

for new coal-fired plants, which continue to be ordered and built using subcritical technology with generating efficiency less than 40%. The main issues cited are the capital cost of supercritical plants, their reliability and operability, especially in a developing country.

This project would compare the capital cost and cost of electricity generated by supercritical coal-fired power plants with conventional subcritical plants of the same size in APEC developing economies. Cost estimates would be based on preliminary engineering design and local economic parameters for the country concerned. Parameters to be varied are:

1. Size: 300 MW, 600 MW, and 1000 MW.
2. Temperature/Pressure: Several cases from subcritical to ultra-supercritical.
3. Country/Fuel Price: One economy with low-cost domestic coal and one using imported coal at internationally traded price levels.
4. Environmental Controls: World Bank Guidelines, and best available technologies.

In addition to the cost information, the project would provide a risk assessment for the supercritical technologies indicating the most important risk factors affecting plant performance and reliability in the countries covered by the study, and how the risks can be mitigated. It would also estimate the reductions in annual and lifetime CO₂ emissions compared to those of a subcritical plant, and the potential reductions in cumulative national CO₂ emissions to 2050 for the country concerned given current APEC growth forecasts for coal-fired power generation.

Signature of Project Overseer:

(Separate written confirmation acceptable for e-mail submission)

Date:

Signature of Committee Chair/WG Lead Shepherd:

(Separate written confirmation acceptable for e-mail submission)

Date:

ECOTECH Weightings Matrix

[Feasibility of Supercritical Technology for New Coal-Fired Power Plants in APEC Developing Economies]

Criteria	Supporting Information (indicate paragraph number if details are in the project proposal)	Linkage ⁶
<p>Responds to a specific instruction from Leaders/Ministers¹</p>	<p>MANILA DECLARATION</p> <ul style="list-style-type: none"> • Strengthen economic infrastructure • Develop stable, safe and efficient capital markets • Harness technologies for the future • Safeguard the quality of life through environmentally sound growth <p>THE OSAKA ACTION AGENDA Implementation of the Bogor Declaration Part Two: Economic and Technical Cooperation</p> <ul style="list-style-type: none"> • improving the flows of technological information and technology; • improving the transparency of regulatory frameworks; • contributing to sustainable development <p>THIRTEENTH APEC MINISTERIAL MEETING JOINT STATEMENT Shanghai, People's Republic of China</p> <p><i>"Energy security stands as an important issue for economic development and regional prosperity. They called for further energy technology development, exchange, application and deployment, and for the facilitation of a diverse and efficient supply mix to avoid the risks posed to the economy by volatility in the international oil market."</i></p> <p>Expansion and improved operations of coal-power sector in APEC economies will improve further diversify fuel supplies at the lowest cost, by reducing global oil demand and better utilization of local and regional resources; thereby, promoting economic development and regional prosperity.</p>	<p>1</p>
<p>Meets a core ECOTECH theme under the Manila Declaration¹</p>	<p>IV. Organizing Themes and Priorities</p> <p>Strengthen economic infrastructure to eliminate bottlenecks to economic growth, especially in such areas as telecommunications, transportation, and energy, in order to further integrate members into the regional economy, and the region into the global economy.</p> <p>Harness technologies for the future to ensure that APEC joint activities promote the flow and expand the capacities of its members to absorb existing industrial science and technology as well as develop new technologies for the future, thus promoting a free flow of information and technology.</p>	<p>1</p>

<p>Responds to the Common Policy Concepts, Activities and Dialogues identified in Part II of the Osaka Action Agenda¹</p>	<p>Section B, Item 5 - Energy: Common Policy Concepts</p> <p>APEC economies will set priority on the following:</p> <ul style="list-style-type: none"> - fostering a common understanding on regional energy issues; - facilitating investment in the energy sector where appropriate; - reducing the environmental impact of the energy sector; and - accepting equivalence in accreditation and increasing harmonization of energy standards <p>Joint Activities/Dialogue</p> <ul style="list-style-type: none"> - improve environmental performance through expanded programs in the fields of clean coal technology, renewable energy sources and end-use energy conservation measures, leading to exploration of cooperative multilateral programs to reduce climate change concerns such as demonstration projects which lead to joint implementation 	<p>1</p>
<p>Responds to a <u>specific</u> ECOTECH initiative²</p>	<p>APEC Cleaner Production Strategy</p> <ul style="list-style-type: none"> - Facilitate cleaner production demonstration projects with wide application in member economies 	<p>1</p>
<p>Improves skills, including in new technologies</p>	<p>Increases understanding of construction and operation of state-of-the-art coal-fired power generation technologies. Facilitates joint implementation projects that will result in transfer of technology and skills.</p>	<p>1</p>
<p>Builds capacity and strengthens institutions</p>	<p>Will result in more rapid growth of efficient coal-fired power generation capacity, improving electricity availability and facilitating economic development.</p>	<p>1</p>
<p>Measurably improves economic efficiency/performance³</p>	<p>Can lead to substantial improvements in coal-fired power generation efficiency (10% or greater) for new plants in the future, resulting in equivalent reductions in CO₂ emissions and other pollutants.</p> <p>Consistent with the call by Energy Ministers at their San Diego meeting in 2000 for implementation of priority energy initiatives, including strategies to enhance energy efficiency</p>	<p>1</p>
<p>Is of <u>practical</u> benefit to the private sector; has private sector <u>participation</u>; and/or <u>funding</u>⁴</p>	<p>Will benefit the private sector through better understanding of issues relating to supercritical coal-fired power plant costs, reliability and operability in developing economies, and through opportunities for investment in the power sector of these economies. The power engineering and technology supply sectors will be major sources of the information used in the study. A private sector power plant engineering model is likely to be used in this project.</p>	<p>3</p>
<p>Assists economies attain sustainable growth and equitable development, while reducing economic disparities among APEC economies and improving economic and social well-being</p>	<p>Likely to lead to lower future growth of emissions and more sustainable growth in power generation in developing economies, and reduce economic disparity by facilitating inward investment in upgrading the electricity generation sector, thereby improving economic and social well-being via more secure and reliable electricity supply.</p>	<p>1</p>

Supports a TILF objective, as laid down in Part I of the Osaka Action Agenda ¹	Facilitates inward investment in electric power generation in developing APEC economies through identifying opportunities for joint implementation projects in coal-fired electricity generation that result in improved efficiency.	1
Disseminates information including through seminars/websites/databases ⁵	The final report will be circulated to key decision-makers in the private sector as well as public and government officials; to technical experts; to electric utility and related industry sector representatives; and to research institutes. A summary of the final report will be posted on the EGCFE web site for immediate viewing. A full version will be available for downloading. The results will be presented at an EGCFE technical seminar. Based on the results, one or more additional papers and/or conference presentations may be written.	0
Outline the outcome and how members will benefit ⁵	Builds on substantial work done in this field in industrialized countries, and adds value by facilitating application to developing economies and identifying issues needing attention. More efficient power plants will produce economic and environmental benefits for members. Joint implementation projects could provide assistance from developed economies.	0
	Net Score	12

Footnotes

1. Identify which instruction/ECOTECH theme/OAA element
2. See <http://www.apecsec.org.sg/ECOTECH/index.html>
3. Policy outcomes that include development of energy efficiency guidelines, food safety standards etc.
4. One point scored for each element up to a maximum of 3 points
5. Not scored.
6. Yes = 1 point, No = 0 points

Remarks (Please indicate if not applicable eg for TILF projects. Additional information in support of projects which do not score highly may also be provided here by the Lead Shepherd/Chair).

FORMAT FOR PROJECTS SEEKING APEC FUNDING

This format should be completed with reference to the Guidebook on APEC Projects. It is recommended that the “Guide to Strengthening Project Management and Performance” would be a useful reference. Both Guides are available on the APEC Secretariat website at www.apecsec.org.sg

Please note that items followed by an asterisk (*) fall within the category of criteria which relate to “APEC values” in the Criteria of Assessment of APEC Projects set out in [Annex B](#).

Please provide your answers in point form or as succinctly as possible below each paragraph heading.

A. PROJECT DESIGN

Project

1. *Name of project.*

Feasibility of Supercritical Technology for New Coal-Fired Power Plants in APEC Developing Economies

2. *Name of the working group or committee taking responsibility for the project and the dissemination of its results.*

APEC Energy Working Group/Expert Group on Clean Fossil Energy

Objectives

3. *Describe briefly how you will measure your results (in the short and longer term) to know if your project has been successful. (You must provide detailed assessment measures in paragraph 19).*

In circulating the final report of the project, a survey will be included for recipients to complete giving their views on the content and utility of the report and on the benefits that recipients derive from it. Further measures of success will be any joint implementation projects that the project may stimulate, and the extent to which new orders for coal-fired power plants in APEC developing economies prescribe the use of supercritical generation technology.

4. *How, briefly, this project responds to the priorities set by APEC Leaders and Ministers, as evidenced by parts of the APEC Action Agenda including Action Program, work plan, vision statement, and policy statement that relate to this project.*

The ECOTECH Weightings Matrix above provides elements of the response to this item. The proposed project is fully supportive and furthers the goals of energy aspects of the APEC Action Agenda, specifically by fostering a common understanding of regional energy issues. The project addresses the elements embraced in the 3Es initiative by laying the analytical groundwork for reducing the environmental impact of the energy sector, and facilitating inward investment in electricity generation in developing economies.

5. *For applications under the TILF Special Account: How briefly this project contributes to APEC Trade and Investment Liberalisation and Facilitation (e.g. relevance to specific parts of the Osaka Action Agenda).*

N/A

Linkages

6. *The kinds of institutions in member economies intended to benefit from the results of the project. Highlight the direct benefits to the institutions, the types of business in member economies which will benefit from the results of the project and what the direct benefits are.*

Each of the member economies will benefit in a number of ways. Developing economies will understand better the costs, risks and other issues associated with a decision to adopt supercritical coal-fired technology for new power generation, and will be able to identify projects suitable for joint implementation. Developed economies and private sector companies will be better placed to identify opportunities for investment in such projects. The power generation sector will benefit from improved knowledge and access to information on building and operating more efficient new plants. It will also benefit by evolving more knowledgeable O&M staff. The power engineering and technology supply sectors will be better placed to identify opportunities in developing APEC economies.

7. *How the participation of the business/private sector and non-governmental institutions has been sought or will be sought. Illustrate how the business/private sector has been involved in the planning and delivery of the project and whether any other APEC fora have been consulted. (*)*

Industrial and private sector experts in all aspects of coal technology and electric power generation have responded enthusiastically to the invitation to participate in past projects. The idea for this project stems from some earlier work on cost comparison of supercritical and conventional technologies carried out by the International Energy Agency's Coal Industry Advisory Board

(CIAB)¹. This proposed project would broaden the analysis and apply it to conditions in selected APEC developing economies. The private sector is the source of much of the information that will be used in the assessment. Private sector companies possess power plant engineering models, and it may be possible to access one of these for use in project. Some power engineering companies may be interested in responding to the RFP when issued, and will be better placed to be awarded the project if they offer the use of their power plant models.

8. *How this project will add "APEC value" (as to the potential benefits of implementing projects) in the context of other work that might have been done elsewhere in the same field. (*)*

The project will draw on some results of the project on CO₂ Emission Reduction Options for the Electric Power Generation Sector in APEC Economies, as well as on those of the earlier CIAB study (see item 07 above). It will build on substantial work done in this field in industrialized countries, and add value by facilitating application to developing economies and identifying issues needing attention.

The results of the project will be shared outside the APEC EGCFE through the publication of a report, which will be disseminated to all APEC members. Additional copies will be published and directly distributed to key government and industry officials and will be available through the APEC, EWG, and EGCFE web sites. Therefore, the results will be available to virtually every APEC member.

9. *An indication of how the project might contribute to related projects or activities in APEC or elsewhere.*

The project has a high potential to lead to future joint implementation projects in the power generation sector in APEC developing economies. The information to be developed will also interface with that of other project proposals related to CO₂ emission reduction submitted to the March 2002 Session of the EGCFE for consideration, if the latter are implemented.

10. *Describe the deliverables of the project and demonstrate how they will meet the needs of the targeted beneficiaries.*

The major deliverable of the project will be the final report, which will contain information and data comparing the capital cost and cost of electricity generated by supercritical coal-fired power plants with conventional subcritical plants of the same size in APEC developing economies. It will also highlight the most important risk factors affecting plant performance and reliability in the economies covered by the study, and how the risks can be mitigated. This will provide a sound basis for decisions on new coal-fired generation that will result in substantially lower CO₂ atmospheric loadings from power generation emissions in APEC economies. Finally, it will facilitate identification of opportunities for inward investment in joint implementation projects in this sector.

Methodology

11. *A concise description of the project's methodology by components, with its associated outputs clearly specified.*

The project will be carried out by a consultant with knowledge and expertise in supercritical coal-fired power generation technologies. He/She will review the work already done in this area in OECD countries, identify the relevant data for the power generation sector of the selected APEC developing economies designated by the EGCFE, carry out the assessment and write the report.

A project steering team from the EGCFE will provide guidance at appropriate stages of the project. The consultant will be responsible for publication of the report on the project after approval from the EGCFE.

The project components will be the following:

¹ Regional Trends in Energy-Efficient, Coal-Fired Power Generation Technologies, Appendix V., published by IEA, Paris 1998 (Report No. 61 98 28 1P)

- Review existing work in OECD countries on supercritical coal-fired power generation technologies.
 - Identify data needs for assessment of costs and risks of supercritical versus subcritical technologies for the selected APEC developing economies.
 - Identify an appropriate model that can be used by the consultant to carry out the cost comparison at the preliminary engineering design level.
 - Make use of the model to carry out the cost comparison.
 - Highlight the issues and risks associated with reliability and operability of supercritical and ultra-supercritical plants in APEC developing economies, and ways to reduce the risks.
 - Estimate the reductions in annual and lifetime CO₂ emissions for supercritical and ultra-supercritical plants compared to those of a subcritical plant, and the potential reductions in cumulative national CO₂ emissions to 2050 for the country concerned given current APEC growth forecasts for coal-fired power generation.
 - Prepare the final report, including conclusions and recommendations, for approval by the EGCFE and publication.
12. *A timeline for circulation and submission of this project proposal with drafts circulated well in advance to allow careful consideration.*

This proposal was circulated to the EGCFE in early February 2002, for discussion at its meeting in Kuala Lumpur on March 5, 2002. There it was approved for submission to the APEC Secretariat by March 15, which will then distribute it to the Energy Working Group and other fora for consideration.

13. *A timetable for the accomplishment of each component in (11).*

The first three bullets in (11) should be completed by spring 2003 and the results and proposals regarding the model to use presented to the project steering team for approval. Preliminary results of the assessment (including costs, risks, issues etc.) should be provided to the team for review and comment by end-March. Based on comments received, the consultant will complete the draft report and circulate it to the team and the EGCFE for comments and approval by end of summer 2003. The report will be finalized and published by the end of November 2003.

14. *The number of APEC member economies that will participate in this project. Please indicate the names of member economies participating in each component of the project as set out in (11). (*)*

To be decided

Budget

15. *An itemized budget for the project, including provision for any publication and dissemination of project results, in the prescribed format. Applications under the Operational Account should use the format at Annex A1. Applications under the TILF Special Account should use the format at Annex A2. The budget should illustrate the assumptions adopted (e.g. unit costs) for the computations.*

The cost of this project as estimated (US\$50,000) in the following budget is justified based on the anticipated amount of review of previous related work, research, analysis and discussion with experts from the public and private sector in a number of APEC economies, and the work required to assemble the results into a final report.

16. *A timetable for the drawdown of APEC funding requested for the project, including details of any advance payment or instalment payment requested and justifications for such requests.*

25% to be paid following the end-February submission to the project steering team, and 50% on submission of the preliminary results and assessment at the end of March 2003. The remainder to be paid upon completion and publication of the final report.

17. *Details of any request for waiver or exception from the normal APEC financial rules with justifications.*

None

Dissemination of Project Output

18. *A plan for the publication and dissemination of the results of the project, including:*

a. *the nature of the target audience, and, based on that audience;*

- Key decision-makers in the private sector as well as public and government officials;
- Technical experts;
- Electric utility and related industry sector representatives;
- Research institutes.

b. *the form and content;*

The final report will meet accepted standards for technical reports, and comply with the APEC style and nomenclature guidelines. A summary of the final report will be posted on the EGCFE web site for immediate viewing. A full version will be available for downloading (see below). Based on the results, one or more papers and/or conference presentations may be written.

c. *format (e.g. hard copies, floppy discs, internet uploading);*

Bound report for circulation by mail, plus electronic version in PDF format posted on the EGCFE website, available for viewing or downloading.

d. *number of copies for the publication;*

200 copies with the possibility of re-publication as determined by demand.

e. *accessibility of results for the targeted audience;*

The final report will be distributed to the targeted audience by mail. A more general audience may obtain the report from APERC, libraries, and interested energy or resource-oriented organizations. It will also be available from the EGCFE website (see above).

f. *a publicity plan for:*

i) *briefing the general or specialist media about key components of the project;*

Appropriate media releases will be prepared, and articles published in energy, environment or trade journals or conference proceedings will be available on the EGCFE web site.

ii) *the promotion of sales or other dissemination of the final product; and*

Journal articles, excerpts on APEC's Internet sites. Extra copies of the report will be available at the USDOE and the APEC Secretariat.

g. *a budget for publication and dissemination, to form part of the itemized budget.*

US\$4,000

Assessment of Project

19. *With reference to your objectives stated in paragraph 3, provide detailed criteria (quantitative and qualitative) for how you will measure your results in the short and long term to know if your project has been successful. State your current benchmarks for measurement, your target results from the project for each measurement criterion and the range of acceptable results both in numerical and percentage terms, where possible.*

In circulating the final report of the project, a survey should be included for recipients to complete giving their views on the content and utility of the report and on the benefits that recipients derive from it. The survey will ask recipients to judge:

- Appropriateness of the methodology, including the engineering model if used
- Clarity of presentation
- Applicability of the results to coal-fired generation in APEC economies using or intending to use coal
- Accuracy of data used for the assessment, in the context of APEC developing economies
- Degree to which the report provides new and relevant insights
- Degree to which the results are persuasive in supporting choice of supercritical technology.
-

These items will be rated on a scale of 1 (poor) to 5 (excellent), plus “Not known.” The target will be an average of 4 or greater, and acceptability will be 3 or greater.

Further measures of success will be any joint implementation projects that the project may stimulate, and the extent to which new orders for coal-fired power plants in APEC developing economies prescribe the use of supercritical generation technology

Gender Criteria for Formulation and Evaluation of Projects

Objectives

1. *Show how the objectives of the project provide benefits for women, where appropriate. APEC Ministers have indicated (Framework for the Integration of Women in APEC) that benefits might include: increased involvement of women; taking account of the differences in women's and men's lives (gender analysis); and collection/use of sex-disaggregated data.*

The primary objective of the project is information transfer and environmentally sustainable energy development in the APEC region. Having an adequate, dependable, efficient and environmentally safe supply of energy in the APEC Region benefits men and women equally. Women can be uplifted by provision of electricity to replace domestic fuels, such as wood or coal, for cooking and space heating, and freed from the daily time-consuming efforts to secure and use these fuels, as well as from the harmful health impacts of uncontrolled combustion at the household level.

Linkages

2. *Show how the participation of women has been/will be sought. Show how women are involved in the planning, management, allocation of resources, and implementation of the project.*

Women are encouraged to participate as equal partners in all phases of EGCFE projects. While the official representative of each economy to the EGCFE changes occasionally, at least one economy (P.R. of China) has been represented by a woman for a number of years. Women will be sought in organizing the workshop, and strong participation from women will be encouraged in all facets of the workshop, including as speakers and session chairs.

Methodology

3. *Provide a brief description of the way women will be able to participate equitably in the development and implementation of the project.*

The selection of the consultant will follow APEC guidelines.

4. *Provide a brief description to show that the project will collect and use sex-disaggregated data (if available) to measure the project's effects on women.*

N/A – the project is gender neutral.

Dissemination of Project Output

5. *Does the plan for the publication and dissemination of the project's results include communication methods that are appropriate for women?*

- *Questions that may be relevant include: Are women one of the target audiences? Does the plan take account of women with low literacy and women with low access to electronic media? Will the results be disseminated to women's organizations?*

The project report will be distributed widely within APEC and will also be posted on various APEC web pages. Men and women will have an equal opportunity to receive a copy.

Budget

6. *Are women involved in making decisions on the allocation of resources?*

Involvement of suitably qualified women will be sought in the project steering team.

7. *Where appropriate, provide details of the project's budget that are allocated to activities that address the specific needs of women.*

N/A – the project is gender neutral.

Assessment of Project

8. *Provide details of how the project proponent will assess whether he/she has met the gender criteria for APEC projects and how he/she will measure the impact of the project on women.*

N/A – the project is gender neutral.

Annex A1

**APEC Operational Account
Itemized Budget for Financial Year 2003***

Items			APEC Funding (USD)	Self Financing (USD)
<i>Direct Labour</i>	No.of Hours	Rate		
- Speaker's Honorarium				
- Consultant (including Researcher) Fees	350	\$100/hr	35,000	
- Consultant's Secretary Cost	75	\$40/hr	3,000	
<i>Travel</i>				
- Per Diem (including accommodation and "additional payment")		5 days	1,000	
- Airfare - Inter-City Transport		1 trip	4,000 1,000	
	No. of Copies	Unit Cost		
<i>Publication of report (including distribution)</i>	200	\$20.00	4,000	
<i>Photocopying</i>			1,000	
<i>Communications (Phone/Fax/Mail/Courier)</i>			1,000	
Total			50,000	

If project straddles more than one year, please indicate only the amount of funds required for the financial year in question.