

## COMMENTS ON MALAYSIA ENERGY EFFICIENCY IMPROVEMENT PROJECT

January 26, 1998

- 1) My overall impression is that this is a good project that will have substantial economic and environmental benefits for Malaysia. There is enormous potential for energy efficiency improvement in the industrial sector, but there are barriers to realizing this potential which the project will address. It is well within the guidelines and operational strategy of the GEF, and should receive funding in my view.
- 2) I believe this project is highly relevant to both the Climate Change Convention and national priorities of Malaysia. Increasing energy efficiency is one of the most effective ways of limiting greenhouse gas emissions. However, there are many barriers inhibiting widespread adoption of energy efficiency improvements in countries like Malaysia. This project will help to overcome these barriers. It will also help Malaysia's industries reduce their cost of production and thereby enhance industrial productivity and competitiveness. In addition, it will help to reduce emissions of other pollutants besides carbon dioxide.
- 3) The background and justification for the project is well elaborated in the project proposal.
- 4) The project appears to be sound from a technical perspective and the objectives look reasonable. The goal of reducing energy use and greenhouse gas emissions in the industrial sector by 10% by 2002 is relatively ambitious. It might be desirable to provide more time for realizing this goal, say by changing the target date for achieving 10% savings to 2005.
- 5) The proposed activities seem appropriate, both the establishment of any energy efficiency group within the Ministry and the specific project components. However, I have some suggestions for expanding and/or modifying the activities in order to improve the effectiveness of the project and increase the long-term benefits.

Concerning component 1, I support the idea of setting up a benchmarking program within key sectors. This has been successfully done in the U.K. and the experts who played a key role in that program (from the Energy Technology Support Unit of the University of Sussex) might be willing to help set up and implement a similar program in Malaysia.

Concerning component 2, I suggest designing the audit program in ways that will encourage maximum implementation of recommended measures by audited companies. For example, companies could be required to implement a large fraction of cost-effective recommendations (e.g., at least 80% of measures that have a payback under two or three years) in order to get a free audit. Companies that fail to meet this requirement after a reasonable period (say 1-2 years later) would be charged for the audit. Having the audits performed by ESCOs could also help to stimulate

implementation, since the ESCOs would be interested in helping companies follow-up with implementation.

Concerning component 3, it would be useful to identify which products will be tested and labeled. As part of this component, it will be necessary to establish standardized test procedures in Malaysia. These can be based on regional or international test procedures. In the case of some products such as motors, I suggest attempting to adopt minimum efficiency standards once testing and labeling is underway. The standards, which could either be voluntary or mandatory, could greatly increase the amount of energy savings and greenhouse gas emissions reduction.

Concerning components 4 and 5, I endorse the ideas of establishing a database on energy efficiency projects as well as training, accreditation and other support for ESCOs. In addition, it might be helpful to include training courses for energy managers from industry. Short courses could be developed and offered on specific topics like energy savings in motors and motor systems; energy savings from boilers; and energy savings in refrigeration systems.

Concerning component 6, I support implementing a demonstration program. In addition to the technologies listed, there are some newer technologies that have been commercialized in the US in recent years, such as membrane filtration for the food industry, oxygen-enriched combustion in the glass industry, use of adjustable speed drives in motor systems, and improved cogeneration systems, that possibly could be used in Malaysia. The Office of Industrial Technologies of the US Department of Energy might be willing to help in the design of demonstration projects for many of these technologies (which DOE helped to develop and commercialize). Contact Denise Swink, DOE Office Director at 202/586/0559 or Peter Salmon-Cox, responsible for international activities in the office at (202/586/2360).

Component 7 strikes me as being relatively innovative and quite interesting. Careful assessment of industry capabilities and proposals will be critical to the success of this activity. Also, it would be useful to link it back to the other promotion and market stimulation activities in order to help build the demand for the various technologies supported through these manufacturer incentives.

Financing is one area identified as a barrier but not addressed by the proposed project components. While it may be too late to include a financing component in this project, it might be useful to include an activity to assess this issue in greater detail and provide recommendations concerning how to create financing mechanisms for industrial energy efficiency project in Malaysia in the future.

In addition to the components included, I recommend adding a component or activity involving analysis and advice concerning new industrial facilities constructed in Malaysia, either on a mandatory or voluntary basis. The project could hire experts who could review plans for new manufacturing plants and provide advice to encourage construction of state-of-the-art facilities. This is extremely important given the long lifetime of some manufacturing facilities and the fact that it is more cost-effective and feasible to make them energy-efficient to start with rather than trying to retrofit them

after they are built. This activity could be included under component 2 (i.e., "auditing" of proposed new facilities, as well as existing facilities) or under component 4 (i.e., as part of general energy efficiency promotion. The incremental cost for this activity might be around US\$500,000-\$1 million (averaging \$125,000-\$250,000 per year for four years).

- 6) Regarding the question of stakeholder and community participation, this is a relevant issue in my opinion. The project will not succeed without active involvement and cooperation of industries in Malaysia. The formulation of the LPAC should help in this regard. In addition, it might be useful to have periodic informal consultations with industries unrelated to the formal operation of the LPAC.
- 7) The project proposal includes an estimate of avoided CO<sub>2</sub> emissions that could occur as a result of the project (10% of projected sector emissions by 2002). But it is not clear how this value was derived. I suggest providing this analysis, perhaps based on savings estimates and avoided emissions sector by sector. Also, the analysis should take into account both direct emissions reductions and indirect reductions through electricity savings and avoided emissions by the utility sector.
- 8) I believe this project has value in terms of demonstrating a strategy and approach that, if successful, could be replicated in other developing countries. Also, there is enormous potential for end-use efficiency improvements in the industrial sector in other developing countries.
- 9) Regarding capacity building, the project proposal covers this relatively well in my view through establishing the energy efficiency group in Ministry and through activities such as training and support for ESCOs. I suggest that, if funding allows, the energy efficiency group be expanded to six professionals including a coordinator, two technical specialist (perhaps one electrical engineer and one specialist in thermal systems), a marketing specialist, an evaluation expert, and a data base manager.
- 10) The proposed project funding and budget seem reasonable although the budget might be increased to cover the additional activities I suggest above. If this is not possible, then I suggest reducing the budgets for components 6 and 7 in order to add some funding for the additional training and advisory activities that I have suggested.