

ASIAN DEVELOPMENT BANK

TAR: SRI 36177

TECHNICAL ASSISTANCE

TO THE

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

FOR THE

ENERGY SECTOR MASTER PLAN

May 2003

CURRENCY EQUIVALENTS

(as of 3 April 2003)

Currency Unit	–	Sri Lanka Rupee/s (SLRe/SLRs)
SLRe 1.00	=	\$0.0103
\$1.00	=	SLRs 96.64

ABBREVIATIONS

ADB	–	Asian Development Bank
ESMP	–	Energy Sector Master Plan
MOPE	–	Ministry of Power and Energy
PUC	–	Public Utilities Commission
TA	–	technical assistance

NOTES

- (i) The fiscal year (FY) of the Government and its agencies ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

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I. INTRODUCTION

1. During the Country Programming Mission of the Asian Development Bank (ADB) in 2002, the Government of Sri Lanka (the Government) requested ADB technical assistance (TA) to prepare an energy sector master plan. A fact-finding mission visited Sri Lanka in January 2003 to formulate the proposed TA project and reached an understanding with the Government on the implementation arrangements, cost estimates, and terms of reference of consultants.¹

II. ISSUES

2. During the past 2 years the Government has introduced policy decisions reforming and restructuring the public utility sector by unbundling the traditional integrated utility monopolies,² and by creating environments conducive for private sector participation in a number of the energy subsectors. The Government is currently implementing the legal framework applicable to the energy sector, moving toward its policy objective of leveling the opportunities between public and private sector entities. The establishment of autonomous regulatory institutions is an integrated part of the Government's strategy to meet the stated objective. In the Sri Lankan context, this means a multisector regulatory commission, the Public Utilities Commission (PUC). Currently, the PUC covers the electricity sector, and it is envisioned to handle the water sector with other utility sectors to be added in the future.

3. The proposed energy sector master plan (ESMP) will cover the power, petroleum, oil and gas exploration, liquefied petroleum gas, and renewable energy subsectors. The Government has successfully commenced reforms and restructuring activities within each of these energy subsectors, but on an individual subsector basis. Sri Lanka needs to develop for the energy sector, a macro-level, medium- to long-term interactive planning framework. Such a plan is needed for Sri Lanka to achieve an efficient and financially sustainable energy sector through the introduction of market-based incentive structures. The ESMP is to be revised and updated on a regular basis (at 3 year intervals), and will continue to be a reference document for the energy sector. The ESMP could be updated by PUC through an interactive approach with energy sector stakeholders.

4. Environmental management in the energy sector continues to be an issue pertinent to current and the required future facilities. Environmental aspects must be an active part of the medium- and long- term energy strategy.

5. Sri Lanka recently adopted a poverty alleviation strategy that has direct impact on the energy sector. The current lack of or limited energy supply to identified rural geographical areas needs to be addressed. A financially sustainable energy supply mechanism is needed, with particular attention to the ability to pay for the installation and monthly utilization costs. The ESMP will recommend methods for sustainable financing of these costs, and clarify the Government policy in this regard.

¹ The TA first appeared in *ADB Business Opportunities* (Internet version) on 20 December 2002.

² The TA should be seen in the context of (i) Loan 1929/1930 approved on 31 October 2002 for \$130 million (ADB. 2002. *Power Sector Development Program*. Manila.) and (ii) TA 3857 approved on 15 April 2002 amounting to \$800,000 (ADB. 2002. *Restructuring the Power Sector – Phase II*. Manila.).

6. Given that Sri Lanka is importing all thermal based energy resources and given the rapid development of the energy sector in South Asia, opportunities available to Sri Lanka should be reviewed in terms of regional energy sector cooperation. Exploring the possibilities of regional energy sector cooperation could identify financially and economically preferable solutions of meeting energy demand in Sri Lanka.

7. Other funding agencies have also been active in promoting energy sector reforms and restructuring. These organizations welcome ADB's timely assistance to the Government and support the establishment of the ESMP. Further interaction with these organizations, to benefit from a wider network of experience, will take place during the TA implementation. The envisioned assistance from other agencies is either project-specific or linked to the implementation of the regulatory functions. No studies aiming at the overall energy sector environment are being pursued by other institutions. The TA is also in line with ADB's country strategy and program for Sri Lanka, which seeks to support sustainable growth by reforming public utilities and restructuring the state-owned enterprises.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

8. The purpose of the TA is to assist the Government to formulate a strategy (the ESMP) to develop a sustainable energy sector. This strategy will improve the policy and regulatory framework, and promote sector restructuring with a view to increase energy sector efficiency, energy sector investments, private sector participation, and to ensure that energy supply is expanded to remote areas in a sustainable manner. The TA framework is attached as Appendix 1.

B. Methodology and Key Activities

9. The TA will prepare a strategy for the energy sector with a time horizon from 2004 and 20 years into the future, with particular emphasis on the (i) 3-5 year, and (ii) 5-10 year horizons. The strategy will be developed based on an assessment of (i) Sri Lanka's energy resources; (ii) energy sector studies financed by other institutions; (iii) energy sector policies, institutional frameworks, and regulations; and (iv) existing Government strategies, programs, and plans. In addition to recommendations on traditional energy sector aspects, the TA will recommend measures aimed at providing adequate energy to the poor and disadvantaged, including people in remote regions currently not covered by the power grid, in an efficient manner. The TA will establish a broad framework to (i) assess the scope to improve the energy supply system's reliability and efficiency, (ii) determine the priorities for its rehabilitation and maintenance, (iii) determine optimal alternatives of renewable energy development, and (iv) ensure proper environmental considerations during TA development, implementation, and operations. Outline terms of reference for the consultants are shown in Appendix 2.

10. The TA will identify barriers to market-oriented energy sector development and recommend measures to help achieve sustainable environmental improvement. The ESMP will also outline prioritized investments required for rehabilitating and restructuring the energy sector, and a renewable energy development program for support by external funding agencies,

including ADB. A medium- and long-term strategy for implementing the Government's energy sector development program will be formulated in accordance with market-oriented policy requirements and project viability. The ESMP will formulate an action program for further policy and institutional reforms in the energy sector, including measures for (i) creating a modern energy delivery system by increasing the efficiency of energy use and demand-side management, and (ii) removing energy sector bottlenecks. Environmentally sustainable energy expansion will be promoted by replacing fossil fuels with cleaner energy sources to reduce air pollution, with a special emphasis on investigating climate change issues. A financing strategy will be prepared including domestic resource mobilization through tariff reforms to recover costs. The ESMP will outline measures for improving governance and enhancing private sector participation in the energy sector.

C. Cost and Financing

11. The total cost of the TA is estimated at \$650,000 equivalent, comprising about \$410,000 in foreign exchange and \$240,000 equivalent in local currency costs. The cost estimates are presented in Appendix 3. ADB will provide \$500,000, comprising \$410,000 in foreign exchange costs and \$90,000 equivalent of local currency cost. The TA will be financed on a grant basis by ADB's TA funding program. The Government will finance the remaining \$150,000 equivalent of the local currency costs.

D. Implementation Arrangements

12. The Ministry of Power and Energy (MOPE) will be the Executing Agency of the TA. A steering committee will be established to coordinate with all the involved Government agencies. The steering committee will be headed by the secretary, MOPE, and he will assign a TA director, who will be responsible for coordinating between the consultants and the steering committee. MOPE will coordinate with the Ministry for Policy Development and Implementation and with PUC (a multisector regulator). Active participation by these agencies will be sought at the time of the workshops to be conducted under the TA.

13. The TA is expected to commence in August 2003, and be carried out over 9 months by an internationally recognized consulting firm in association with domestic consultants. The TA is to be completed in April 2004. The total input of international and domestic consultant services will be about 14 and 20 person-months, respectively. The consultants will be expected to have demonstrated experience in overall energy sector planning and in the individual energy subsectors. The outline terms of reference for the consulting services is presented in Appendix 2. ADB will use simplified technical proposals and quality- and cost-based selection methods for consultant selection. Consultants will be selected in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB on the engagement of domestic consultants. The consultants will prepare and submit to ADB: (i) inception report, within 4 weeks of commencement of assignment, (ii) interim reports, within 1 week of the scheduled workshops and inclusive of the presentation material delivered at the workshop; (iii) draft final report, after 8 months of commencement of assignment; and (iv) final report, after 9 months of commencement of assignment.

IV. THE PRESIDENT'S DECISION

14. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$500,000 on a grant basis to the Government of Sri Lanka for the Energy Sector Master Plan, and hereby reports this action to the Board.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal Support sustainable economic growth by (i) promoting sustainable energy development; (ii) improving the availability of energy in urban, rural, and remote areas; (iii) promoting regional cooperation; and (iv) restructuring energy subsectors in line with the needs of the market.</p>	<p>Better balance in energy use through restructuring and reliable supply to needy communities, improved policy and governance frameworks, and increased private sector participation.</p>	<p>Policy dialogue with national and provincial government agencies, energy sector companies, review missions, and periodic progress reports.</p>	<p>Continued Government commitment to promote sustainable energy sector development and implement sectoral reforms and restructuring.</p>
<p>Purpose Formulate a strategy for sustainable energy sector development for the next 20 years, to increase the efficiency of the energy sector and encourage investments to improve energy supply to remote areas.</p>	<p>Recommend improvements to the policy and regulatory frameworks that will promote efficient energy sector development.</p> <p>Outline a prioritized program for increased investments.</p>	<p>Policy dialogue, review missions, and periodic reports.</p>	<p>Government commitment and capabilities to implement the policy measures.</p> <p>Implementation of promotional and investment programs.</p>
<p>Outputs Policy guidelines and institutional measures to guide market-oriented energy sector development, including rehabilitation and restructuring.</p> <p>Institutional framework for assessing energy potential and supporting increased investments.</p> <p>Diagnostic study of energy sector agencies.</p>	<p>Develop a broad framework for improving decentralized energy supply based on review of government policies and future perspectives of the energy sector.</p> <p>Introduction of independent regulatory mechanisms, market based instruments, and enhanced private sector role in energy development.</p> <p>Assessment of governance structure, identification of major impediments to improving efficiency, and recommendation for capacity building.</p>	<p>Policy dialog, review missions, periodic reports on policy and institutional reforms, and consultant's progress reports.</p>	<p>Implementation of ongoing sector reforms.</p> <p>Better environmental protection of viable projects</p> <p>Continued government commitment and success in introduction of institutional reforms.</p>

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Specific strategies and programs for sustainable financing of selected energy projects.	An optimal strategy for involvement of external agencies in the energy sector, in conformity with poverty reduction strategy and thematic priorities.		Availability of foreign exchange and domestic financing.
<p>Activities</p> <p>Review existing facilities, institutional frameworks, regulations, and standards, and identify barriers to market-oriented energy sector development.</p> <p>Review energy sector studies financed by the Asian Development Bank and other agencies, and existing government plans and strategies.</p> <p>Outline measures to enhance energy availability and achieve sustainable environmental improvements.</p> <p>Outline and estimate prioritized investment requirements for energy sector development programs for support by external funding agencies.</p> <p>Organize workshops in conjunction with the reviews of study findings.</p>	<p>An action program for further policy and institutional reforms, including governance reforms, private sector participation, and improvement of sustainable environmental management.</p> <p>An optimal strategy for energy sector development.</p> <p>Medium- to long-term development programs for the sectors, in compliance with market-oriented policy requirements and project viability.</p>	Policy dialog, review missions, and periodic reports.	<p>Availability of suitable counterparts and cooperation of national and provincial government agencies and corporations.</p> <p>Availability of data and information on energy demand and supply, potential problems, and constraints.</p> <p>Cooperation of concerned agencies in providing information.</p> <p>Adoption of market-oriented considerations in project design and formulation.</p>
<p>Inputs</p> <p>International and domestic consulting services.</p> <p>Funds</p>	<p>International consulting services for 10 person-months and domestic consulting services for 16 person-months.</p> <p>\$650,000 equivalent, including \$410,000 in foreign exchange and \$240,000 in local currency.</p>	Policy dialog, review missions, and periodic reports.	Engagement of capable consultants with the requisite skills. Provision of the required support by domestic consultants.

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Financing	\$500,000 from the Asian Development Bank funded Technical Assistance program and \$150,000 equivalent in local currency from the Government of Sri Lanka.		Availability of counterpart funds to meet local currency costs.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The responsibilities of the consultants will include the following.

A. International Consultants (14 person-months)

1. Energy Sector Specialist and Team Leader (7 person-months)

2. The specialist will have had extensive experience in the power sector, preferably generation and transmission; knowledge of distribution; and experience with other aspects of the energy sector. The specialist will do the following:

- (i) Summarize the current and projected energy situation in Sri Lanka, and assess the future demand and supply for each energy source (electricity, oil, gas, liquefied petroleum gas, biomass) as well as future energy sector developments.
- (ii) Assess energy supply options, taking into account planned restructuring and expansion of the energy system, and formulate a strategy for encouraging foreign investment and domestic private sector participation.
- (iii) Assess the future of oil and gas exploration activities, and assist in further strategic development of this subsector.
- (iv) Review current and proposed rehabilitation plans for power systems and identify proposals for further high-priority rehabilitation work.
- (v) Identify major policy, regulatory, institutional, management, operational, and financial impediments that need to be removed to improve the efficiency of energy supply. This includes an energy conservation assessment.
- (vi) Recommend initiatives to remove the barriers (v), including action plans to promote sustainable energy development, and including energy conservation and demand-side management.
- (vii) Review the policy framework and measures under consideration by the Government and its agencies to promote and develop energy resources in remote areas.
- (viii) Determine if energy prices encourage development of sustainable energy, including renewable energy, and ensure cost recovery and use of market incentives to encourage environment-friendly behavior.
- (ix) Review the opportunities for Sri Lanka to participate in regional energy sector cooperation, and assess the potential available on a medium- and long-term basis.

- (x) Review external assistance to the energy sector, and outline measures for mobilization international and domestic resources to finance sustainable energy sector development.

2. Petroleum Sector Specialist (5 person-months)

3. The specialist will

- (i) assess in detail the impact of recent government efforts to restructure, unbundle, and privatize petroleum sector products and enterprises;
- (ii) review the Government's present and proposed petroleum sector policy and provide an overview of existing policies, regulations, legislation, and institutional frameworks;
- (iii) recommend measures to improve the regulatory framework, taking into account the progress and constraints of the restructuring efforts the past 5 years in the petroleum sector;
- (iv) review the options for longer term reorganization of the petroleum sector with a view to recommending a structure that promotes operational efficiency, efficient investment, reliability and quality of supply, and efficient use of energy, taking into account consumer needs and requirements; and
- (v) outline measures for increasing private sector participation in the energy sector.

3. Environmental Specialist (2 person-months)

4. The specialist will

- (i) assess national and provincial energy policies and programs to improve the environment.
- (ii) assess the potential environmental impacts of the strategic alternatives, including the effects of fuel substitution on air pollution, with a special emphasis on climate change;
- (iii) review environmental standards applicable to the energy sector and assess actual compliance and steps taken to enhance compliance;
- (iv) determine the possibility of introducing mechanisms to curtail pollution resulting from new investments or major restructuring programs of energy entities; and
- (v) outline a methodology for undertaking strategic environmental assessment of energy sector programs that would facilitate (a) meaningful participation of environmental authorities, nongovernment organizations, and other stakeholders in the preparation of the strategic environmental assessment; (b) identification of

potential conflicts among the groups; and (c) systematic efforts to resolve the potential environment conflicts relating to the strategic alternatives.

B. Domestic Consultants (20 person-months)

5. The domestic consultants will assist the international consultants to undertake the following tasks.

1. Energy Sector Specialist (6 person-months)

6. The specialist will have had extensive experience in the power sector, preferably generation and transmission, with knowledge of the distribution sector, and experience with other aspects of the energy sector. The specialist will

- (i) summarize the current energy situation in Sri Lanka, including the impact of hydro data, import of fuel sources, and rural energy developments in recent years, taking into account all available data and studies;
- (ii) review current and proposed rehabilitation plans for power transmission systems and identify proposals for further high-priority rehabilitation work;
- (iii) assess energy supply options, taking into account planned restructuring and expansion of the power and gas systems, and formulate a strategy for encouraging foreign investment and domestic private sector participation;
- (iv) examine the constraints and barriers to commercial use of renewable energy, and highlight the major issues relating to its development, taking into account ongoing research on macro policy development to accelerate the commercialization of renewable energy; and
- (v) determine whether energy prices encourage development of sustainable energy, including renewable energy, and ensure cost recovery and use of market incentives to encourage environment-friendly behavior.

2. Petroleum Sector Specialist (6 person-months)

7. The specialist will

- (i) assess in detail the impact of recent government efforts to restructure, unbundled, and privatize petroleum sector product lines and enterprises;

- (ii) review the Government's present and proposed petroleum sector policy and provide an overview of existing policies, regulations, legislation, and institutional frameworks; and
- (iii) recommend measures to improve the regulatory framework, taking into account the progress and constraints of the restructuring efforts the past 5 years in the petroleum sector.

3. Environmental Specialist (4 person-months)

8. The specialist will

- (i) assess the environmental aspects of the energy strategy relating to restructuring, new investments, and pricing, and review (a) environmental standards, (b) actual compliance, with the standards; and (c) steps taken to enhance compliance;
- (ii) assess national and provincial energy policies and programs to improve the environment;
- (iii) assess the potential environmental impacts of the strategic alternatives, including the effects of fuel substitution on air pollution, with a special emphasis on climate change;
- (iv) review environmental standards applicable to the energy sector and assess actual compliance and steps taken to enhance compliance;
- (v) determine the possibility of introducing mechanisms to curtail pollution resulting from new investments or major restructuring programs of energy entities; and
- (vi) outline a methodology for undertaking strategic environmental assessment of energy sector programs that will facilitate (a) meaningful participation of environmental authorities, nongovernment organizations, and other relevant stakeholders in the preparing of the strategic environmental assessment; (b) identification of potential conflicts among the groups, and (c) systematic efforts to resolve the potential environment conflicts relating to the strategic alternatives.

4. Social Dimensions and Poverty Reduction Specialist (4 person-months)

9. The specialist will

- (i) assess the social implications of the proposed policies and strategies, particularly for poverty reduction, and suggest mitigation measures for any adverse impacts;
- (ii) review the poverty reduction implications of the proposed policies; evaluate the policies' impacts on individuals, households, and vulnerable groups; and suggest possible mitigating measures; and

- (iii) quantify the target group of beneficiaries and all other stakeholders, and estimate the economic benefits of the proposed energy sector development program in terms of direct and indirect earnings, cost savings, and poverty reduction impacts.

C. Reporting Requirements

10. The consultants will prepare and furnish the following reports to the Executing Agency and Asian Development Bank:

- (i) inception report, within 4 weeks of commencement of assignment;
- (ii) interim reports, within 1 week of the scheduled workshops and inclusive of the presentation material delivered at the workshop;
- (iii) draft final report, after 8 months of commencement of assignment; and
- (iv) final report, after 9 months of commencement of assignment.

COST ESTIMATES AND FINANCING PLAN
(\\$)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing^a			
1 International and Domestic Consultants			
a. Remuneration and Per Diem			
i. International Consultants ^b	350,000	0	350,000
ii. Domestic Consultants ^c	0	80,000	80,000
b. International and Local Travel	20,000	2,000	22,000
c. Misc. Admin and Support Services	0	1,000	1,000
2 Computers, Equipment and Supplies ^d	3,000	0	3,000
3 Report Preparation, Production, and Distribution	2,000	2,000	4,000
4 Workshops	0	5,000	5,000
5 Contract Negotiations	5,000	0	5,000
6 Contingencies	30,000	0	30,000
Subtotal (A)	410,000	90,000	500,000
B. Government Financing			
1 Workshops	0	10,000	10,000
2 Counterpart Staff	0	80,000	80,000
3 Local Transportation	0	10,000	10,000
4 Office Accommodation/Utilities	0	50,000	50,000
Subtotal (B)	0	150,000	150,000
Total	410,000	240,000	650,000

^a ADB's TA funding program.

^b Assuming 14 person-months of international consultants at \$25,000 per month.

^c Assuming 20 person-months of domestic consultants at \$4,000 per month

^d All computers and office equipment will be handed over to the Executing Agency on completion of the technical assistance. Equipment will be procured in accordance with the Asian Development Bank's *Guidelines for Procurement*, through the direct purchase procedure.

Source: Asian Development Bank estimates.