



Technical Assistance Report

Project Number: 47107
Regional—Capacity Development Technical Assistance (R-CDTA)
February 2014

South Asia Subregional Economic Cooperation Cross-Border Power Trade Development (Financed by the Regional Cooperation and Integration Fund)

This document is being disclosed to the public in accordance with ADB's Public Communications Policy 2011.

Asian Development Bank

ABBREVIATIONS

| | | |
|--------|---|--|
| ADB | – | Asian Development Bank |
| EWG | – | energy working group |
| kV | – | kilovolt |
| SAARC | – | South Asian Association for Regional Cooperation |
| SASEC | – | South Asia Subregional Economic Cooperation |
| SARPES | – | South Asia Regional Power Exchange Study |
| SETUF | – | SASEC Electricity Transmission Utility Forum |
| SRETS | – | SAARC Regional Energy Trade Study |
| TA | – | technical assistance |
| TCF | – | trillion cubic feet |

TECHNICAL ASSISTANCE CLASSIFICATION

| | | |
|---------------------------------|---|--|
| Type | – | Regional—capacity development technical assistance (R-CDTA) |
| Targeting classification | – | General intervention |
| Sector (subsector) | – | Energy (energy sector development) |
| Themes (subthemes) | – | Economic growth (widening access to markets and economic opportunities), regional cooperation and integration (trade and investments) |
| Location impact | – | Regional (high) |
| Partnership | – | Regional Cooperation and Integration Fund |

NOTE

In this report, “\$” refers to US dollars.

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I. INTRODUCTION

1. This technical assistance (TA) seeks to address the recommendations of the meeting of the South Asia Subregional Economic Cooperation (SASEC) energy working group (EWG) held in November 2012 in Thimphu, Bhutan, in which representatives of the governments of Bangladesh, Bhutan, India, Nepal, and Sri Lanka participated. These recommendations were based on the proposals of the Asian Development Bank (ADB) to take forward regional energy cooperation activities on the basis of recent ADB-financed studies such as the South Asian Association for Regional Cooperation (SAARC) Regional Energy Trade Study (SRETS) and the South Asia Regional Power Exchange Study (SARPES).¹ The outline of the TA, with emphasis on its impact, outcome, outputs, implementing arrangements, cost and financing, and terms of reference for consultants, was discussed briefly during the inaugural meeting on 1 October 2013 in Sri Lanka of the SASEC Electricity Transmission Utility Forum (SETUF), which represents all the countries participating in the SASEC energy sector. The activities relating to the TA were noted, and some were included in the SETUF work plan for the year 2013/14.²

II. ISSUES

2. Population growth over the next 4 decades will be concentrated in South Asia. The share in Asia of South Asia's population is also expected to grow. Fulfilment of basic energy needs for the growing population and the accompanying economic growth are major challenges, particularly because energy resources are not always concentrated in areas where demand is growing. In most cases, such concentrations go beyond country boundaries. At present, there is no systematic approach to address the long-term energy needs of these populations, considering the opportunities beyond national boundaries, or to harness the geographically distributed resources for the benefit of communities across the region.

3. Power systems in South Asia offer significant diversity in terms of availability of primary energy resources for electricity generation and demand for power.³ However, efforts to exploit this diversity for the benefit of the region's economies have been very limited. Many countries in the region continue to have peak electric power supply shortages because generation capacity additions do not match demand growth. Power system planning in each jurisdiction is also heavily focused at the national level, with limited recognition of the availability of cleaner and cheaper resources across national borders. This includes limited attention to technological advances, particularly in renewable energy development, and increasing emphasis on decentralized sources of power generation.

4. Any effort within the region to reduce electricity shortages would have significant economic benefits because of the high economic cost of unserved electricity.⁴ One feasible option is to allow cross-border electricity trade in any surplus that the countries may have—over a day, over seasons, or at any other time. Power-exporting countries will benefit from increased export revenue, which can be used to enhance budgets for efficient delivery of infrastructure

¹ ADB. 2012. *Energy Trade in South Asia: Opportunities and Challenges*. Manila; ADB. 2010. *Technical Assistance for Study on Feasibility of a South Asia Regional Power Exchange*. Manila.

² The TA first appeared in the business opportunities section of ADB's website on 28 November 2013.

³ The estimated resources are (i) hydropower: Nepal, 42 gigawatts; Bhutan, 30 gigawatts; (ii) coal: India, 90.0 billion tons; Pakistan, 17.5 billion tons; and (iii) natural gas: Bangladesh, 8 trillion cubic feet (TCF); India, 15 TCF; Pakistan, 33 TCF.

⁴ P.D.C. Wijayatunga and M.S. Jayalath. 2008. Economic Impact of Electricity Supply Interruptions on the Industrial Sector of Bangladesh. *Energy for Sustainable Development*. XII(4). pp. 5–12.; P.D.C. Wijayatunga and M.S. Jayalath. 2004. Assessment of Economic Impact of Electricity Supply Interruptions in the Sri Lanka Industrial Sector. *Energy Conservation and Management*. 45(20). pp. 235–237.

and social services. Findings of the ADB-financed SRETS and SARPES highlighted and quantified the large potential of such cross-border power trading through regional power interconnections. This potential should be recognized in power system planning so that generation and transmission developments within each country can be aligned over time to consider large-scale, cross-border power trading.

5. One of the major issues associated with development of the regional power market—based on large-scale, cross-border power trading—is the absence or unavailability of adequate cross-border interconnection capacity. Currently, Bangladesh, Bhutan, and Nepal have a limited number of cross-border power interconnections with India. There are proposals to enhance these interconnection capacities, as well as to establish interconnections between India and Sri Lanka, and between India and Pakistan. Given the untapped hydropower potential in the region, it is envisaged that cross-border interconnection capacity would exhibit a significant increase beyond the existing and planned interconnectors over the next 20 years. Rationalized regional power sector planning to identify and prioritize new power interconnectors will give a firm implementation basis to the vision enshrined in the SRETS and SARPES.

6. Development of adequate cross-border transmission capacity needs to be carried out on a regional basis to reap maximum economic benefits. This requires the development of a regional transmission plan for cross-border power trade, which was unanimously requested by the member countries at the SASEC EWG meeting in November 2012 and at the SETUF inaugural meeting. Progressing toward cross-border power trade among member countries of SASEC would require close dialogue and networking among all stakeholders concerned, which can be largely handled through the SASEC EWG and SETUF.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

7. The impact of the TA will be the cross-border regional electricity transmission plan implemented. The outcome of the TA will be improved planning capacity of SASEC to foster cross-border power trading.

B. Methodology and Key Activities

8. The key output of the TA will be regional electricity transmission plan for cross-border trade among SASEC countries completed. The second output would be improved networking among SASEC countries and knowledge on cross-border power trading.

9. The TA will first develop a 400 kilovolt (kV) and above transmission network database for long-term regional transmission planning using a transmission planning software. It will examine the power generation options for the region, with optimal use of renewable energy sources; and estimate the intermittency of their energy outputs together with nonrenewable energy sources, capturing their availability and transport constraints. A regional electricity generation plan will then be developed, taking into account available national generation plans and expanding them considering both renewable and nonrenewable resource availability. Based on these inputs, a regional transmission master plan will be developed with a focus area to identify economic opportunities for cross-border power exchanges. Particular emphases will be on the major interconnection points along the India–Nepal and India–Bhutan borders; and the backbone power transmission system within Nepal and Bhutan at 400 kV level for transfer of large quantities of hydropower.

10. During the analysis, a limited number of scenarios relevant to a regional power exchange operation will be developed, including some combinations of (i) deep emissions cuts in the region, (ii) high cost of demand growth, (iii) limited coal availability and high coal and gas prices, and (iv) high renewable energy development. The economic analyses of different power trade options will be carried out from the perspective of (i) optimizing regional resources, (ii) improving the overall reliability of electric supply in the region, and (iii) environmental benefits.

11. The activities under the proposed subproject on Power Trading in Bangladesh and Nepal under regional technical assistance on South Asia Regional Economic Integration Partnership will supplement the activities of the TA. Both the subproject and the TA will be executed and all the activities will be coordinated by the South Asia Energy Division of ADB.

12. The TA will also use consultants to assist in arranging the capacity development programs and intergovernmental meetings associated with operation of SETUF.

C. Cost and Financing

13. The TA is estimated to cost \$500,000, which will be financed on a grant basis by the Regional Cooperation and Integration Fund.⁵ The cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

14. ADB will be the executing agency of the TA. The activities of the TA will be carried out in consultation with the SASEC member states and the members of SETUF in particular, on a regular basis. The activities of the TA are expected to commence by 1 February 2014, and estimated completion will be 31 March 2016.⁶

15. The TA will require the services of three international consultants for a total of 15 person-months and one national consultant for 12 person-months. The consulting team will consist of an international power system economist (team leader), an international power system planning specialist, an international senior advisor, and a national senior programs analyst. ADB will recruit the consultants in accordance with its Guidelines on the Use of Consultants (2013, as amended from time to time). All four consultants will be recruited as individual consultants. The outline of the terms of reference of the consultants are given in Appendix 3. Procurement of goods will be carried out in accordance with ADB's Procurement Guidelines (2013, as amended from time to time). Disbursements under the TA will be made in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

16. The findings of the study will be disseminated through stakeholder seminars to be held after completion of the study report, and through internal as well as external seminars and conferences. The report and the outcome evaluation will be made available on the ADB website

⁵ Established by ADB.

⁶ Any activity in a SASEC member state will commence after ADB has received a no-objection in writing to its inclusion in the TA.

and the SASEC website.⁷ The interim findings will be presented and discussed during several intergovernmental meetings held with the participation of the SASEC member countries.

IV. THE PRESIDENT'S DECISION

17. 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 for South Asia Subregional Economic Cooperation Cross-Border Power Trade Development, and hereby reports this action to the Board.

⁷ As agreed at the inception meeting of SETUF, a SETUF web portal will be established within the SASEC website (www.sasec.asia) to enable exchange of knowledge among SETUF members and serve as repository of relevant knowledge on regional energy cooperation.

DESIGN AND MONITORING FRAMEWORK

| Design Summary | Performance Targets and Indicators with Baselines | Data Sources and Reporting Mechanisms | Assumptions and Risks |
|---|--|--|---|
| <p>Impact</p> <p>Cross-border regional electricity transmission plan implemented.</p> | <p>By 2018:</p> <p>Construction of at least two electricity interconnection projects identified in the transmission plan</p> | <p>Annual reports of the respective transmission utilities</p> | <p>Assumption</p> <p>Continuous commitment of participating countries to implement agreed plans to strengthen cross-border electricity infrastructure in a timely manner</p> <p>Risk</p> <p>Political considerations override all other considerations in regional energy cooperation</p> |
| <p>Outcome</p> <p>Improved planning capacity of SASEC foster cross-border power trading</p> | <p>By 2016:</p> <p>At least four member countries of the SASEC EWG (consisting of Bangladesh, Bhutan, India, Nepal, and Sri Lanka) approved the SASEC electricity transmission plan</p> | <p>Minutes of the SASEC EWG meeting</p> <p>Letters to ADB stating endorsement of the SASEC electricity transmission plan</p> | <p>Assumption</p> <p>Consistent and active participation of member countries in EWG and SETUF meetings, and preparatory activities carried out in between meetings</p> <p>Risks</p> <p>SASEC EWG not being able to agree on the specific recommendations</p> |
| <p>Outputs</p> <p>1. Regional electricity transmission plan for cross-border trade among SASEC countries completed</p> <p>2. Improved networking among SASEC countries and knowledge on cross-border power trading</p> | <p>By 2016:</p> <p>Electricity transmission plan with implementation schedule submitted for approval by SASEC EWG</p> <p>Successfully completed at least two intergovernmental meetings, two SETUF meetings, one dissemination seminar, and one technical visit on regional cooperation outside South Asia</p> | <p>Agenda and minutes of the SASEC EWG</p> <p>Minutes of the SASEC EWG and SETUF</p> | <p>Assumption</p> <p>Timely access to all available data and information needed for the study</p> <p>Risk</p> <p>Member countries fail to nominate on time the relevant officials for the programs</p> |

| Activities with Milestones | Inputs | | | | | | | | | | | | |
|--|--|------|-----------------|----------------|-------|--------------|------|--|------|---|------|------------------|------|
| <p>1 Regional electricity transmission plan for cross-border trade among SASEC countries completed</p> | <p>Asian Development Bank: \$500,000 (Regional Cooperation and Integration Fund)</p> | | | | | | | | | | | | |
| <p>1.1 Inception 1.1.1 Review the overall TA scope and requirements (1–15 Feb 2014) 1.1.2 Propose work plan to carry out TA activities (16–24 Feb 2014) 1.1.3 Submit the work plan to ADB (24–25 Feb 2014) 1.1.4 Hold a SASEC meeting to finalize work plan (1–15 Mar 2014)</p> | <table border="1"> <thead> <tr> <th>Item</th> <th>Amount (\$'000)</th> </tr> </thead> <tbody> <tr> <td>1. Consultants</td> <td>395.0</td> </tr> <tr> <td>2. Equipment</td> <td>40.0</td> </tr> <tr> <td>3. Training, seminars, and conferences</td> <td>30.0</td> </tr> <tr> <td>4. Miscellaneous administration and support costs</td> <td>10.0</td> </tr> <tr> <td>5. Contingencies</td> <td>25.0</td> </tr> </tbody> </table> | Item | Amount (\$'000) | 1. Consultants | 395.0 | 2. Equipment | 40.0 | 3. Training, seminars, and conferences | 30.0 | 4. Miscellaneous administration and support costs | 10.0 | 5. Contingencies | 25.0 |
| Item | Amount (\$'000) | | | | | | | | | | | | |
| 1. Consultants | 395.0 | | | | | | | | | | | | |
| 2. Equipment | 40.0 | | | | | | | | | | | | |
| 3. Training, seminars, and conferences | 30.0 | | | | | | | | | | | | |
| 4. Miscellaneous administration and support costs | 10.0 | | | | | | | | | | | | |
| 5. Contingencies | 25.0 | | | | | | | | | | | | |
| <p>1.2 Database 1.2.1 Prepare a 400 kV and above regional transmission planning dataset up to 2030 (1 Mar–31 May 2014) 1.2.2 Obtain comments from SASEC member states (1–30 June 2014) 1.2.3 Hold a SASEC meeting to finalize dataset (1–7 July 2014)</p> | <p>Note: The SASEC member states will provide counterpart support in the form of officials' time, resource persons, and other in-kind contributions.</p> | | | | | | | | | | | | |
| <p>1.3 Generation Options 1.3.1 Develop power generation options (30 Jun–30 Nov 2014) 1.3.2 Obtain comments from SASEC member states (1–31 Dec 2015) 1.3.3 Hold a SASEC meeting to review progress (1–15 Jan 2015)</p> | | | | | | | | | | | | | |
| <p>1.4 Regional Plan 1.4.1 Develop a regional generation plan (1 Jan–31 Mar 2015) 1.4.2 Develop a regional transmission master plan (1 Apr–30 Jun 2015) 1.4.3 Obtain comments from SASEC member states (1–31 Jul 2015) 1.4.4 Hold a SASEC meeting to review progress (1–7 Jul 2015)</p> | | | | | | | | | | | | | |
| <p>1.5 Integrated Output 1.5.1 Integrate all the outputs (31 July–30 Sept 2015) 1.5.2 Submit draft of integrated output to ADB (1–15 Oct 2015) 1.5.3 Hold final SASEC meeting on draft output (15–31 Oct 2015)</p> | | | | | | | | | | | | | |
| <p>1.6 Dissemination 1.6.1 Submit the final output to ADB (1 Nov–31 Dec 2015) 1.6.2 Disseminate output (1 Jan–31 Mar 2016)</p> | | | | | | | | | | | | | |
| <p>2 Improved networking among SASEC countries and knowledge on cross border power trading 2.1 Hold first meeting of SETUF (1–15 Mar 2014) 2.2 Hold second meeting of SETUF (15–31 Oct 2014) 2.3 Conduct first technical visit on regional energy cooperation (1 Jun–31 Dec 2014) 2.4 Conduct second technical visit on regional energy cooperation (1 Jun–31 Dec 2015)</p> | | | | | | | | | | | | | |

ADB = Asian Development Bank, EWG = energy working group, kV = kilovolt, SASEC = South Asia Subregional Economic Cooperation, SETUF = SASEC Electricity Transmission Utility Forum, TA = technical assistance.
 Source: Asian Development Bank.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

| Item | Amount |
|--|--------------|
| Asian Development Bank^a | |
| 1. Consultants | |
| a. Remuneration and per diem | |
| i. International consultants | 300.0 |
| ii. National consultants | 45.0 |
| b. International and local travel | 40.0 |
| c. Reports and communications | 10.0 |
| 2. Equipment ^b | 40.0 |
| 3. Training, seminars, and conferences | |
| a. Facilitators | 10.0 |
| b. Training program | 20.0 |
| 4. Miscellaneous administration and support costs ^c | 10.0 |
| 5. Contingencies | 25.0 |
| Total^d | 500.0 |

^a Financed by the Regional Cooperation and Integration Fund.

^b Licensed transmission electricity planning software is to be procured only for the duration of the technical assistance (TA), so no disposal requirement will arise.

^c Administration and support costs, such as those relating to meetings of the expert groups.

^d Does not include in-kind contributions in the form of time and expertise provided by the South Asia Subregional Economic Cooperation (SASEC) member countries and other forms of assistance in organizing meetings in those countries.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Introduction

1. The consultants will provide a comprehensive study of generation and transmission development opportunities in the region, focusing on increasing opportunities for cross-border electricity trade among member states of the South Asia Subregional Economic Cooperation (SASEC). The technical assistance (TA) will be executed and implemented by the Asian Development Bank (ADB) with the assistance and guidance of the SASEC member states.

2. The TA will require the services of three international consultants: an international power system economist (team leader), an international power system planning specialist, and an international senior advisor for a total of 15 person-months; and a national senior programs analyst to support the consulting team for a total of 12 person-months, all on an intermittent basis. The consulting services will be for a duration of 26 months from the start of the TA.

3. ADB will recruit all four consultants as individual consultants in accordance with its Guidelines on the Use of Consultants (2013, as amended from time to time). Disbursements under the TA will be made in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

B. Scope of Work

4. The TA's duration is 26 months from the start of services. All consultants are expected to participate in ADB's missions and contribute to preparing any aide-mémoire as mission members. The consultants will perform the following tasks:

- (i) develop a high-level 400 kilovolt (kV) and above regional transmission planning dataset for the long term up to 2030, keeping a manageable zonal focus to the extent permitted by data availability for use with Power System Simulator for Engineering (PSS/E) transmission planning software;
- (ii) develop power generation options for the region, maximizing renewable energy resources and estimating the intermittency of their energy outputs using both relevant past data and climate change model-based future projected data, together with nonrenewable energy resources that capture their availability and transport constraints;
- (iii) develop a regional generation plan, taking into account available national generation plans and expanding on them considering both renewable and nonrenewable resource availability;
- (iv) develop a regional transmission master plan with a focus area to identify economic opportunities for cross-border power exchanges, in particular the major interconnection points along the India–Nepal and India–Bhutan borders, including the backbone power transmission system within Nepal and Bhutan at 400 kV level;
- (v) disaggregate the economic benefits country-wise for each of the transmission links involved;
- (vi) assist in arranging the capacity development programs, including the establishment and subsequent meetings of the SASEC Electricity Transmission Utility Forum (SETUF); and

- (vii) where necessary to meet ADB standards and requirements, and as the data sources need to be clarified in all the documents, conduct primary data collection and analysis.

5. The professional titles, person-months, and activities for the required positions are as follows.

1. **Power System Economist and Team Leader** (international, 6 person-months)

6. The consultant should have graduate qualifications and a minimum 15 years of experience in power systems engineering and economics, with the ability to understand analysis carried out on power system planning, including modeling of renewable resource energy output variation and stochasticity, control and operations aspects, and legal and regulatory aspects of a power exchange. Tasks will include the following:

- (i) act as the team leader responsible for consolidating and compiling the inception report, interim report, draft final report, and final report and presentations at all the meetings and dissemination activities;
- (ii) supervise the data collection efforts and closely interact with the power system planning specialist to ensure consistency of assumptions that form inputs to the planning optimization studies;
- (iii) undertake a literature review of international best practice in interconnection planning including regulatory processes, planning methods, modeling techniques, and implementation of generation and transmission planning models for real-life power systems;
- (iv) develop a set of scenarios for a regional transmission planning exercise combining an internally consistent set of key parameters around demand growth, fuel price, renewable and nonrenewable resource availability, and carbon reduction targets;
- (v) undertake a composite generation and transmission planning optimization model in 2014–2030 for South Asia to identify economic cross-border opportunities covering a base case and at minimum three major scenarios;
- (vi) based on the findings of the modeling exercise, develop a detailed cost–benefit analysis of alternative transmission expansion options for interregional power trading, including benefits disaggregated by country for each of the transmission links;
- (vii) develop an analysis of renewable power development in the region, including a comparative analysis of national renewable energy targets vis-à-vis regional renewable energy targets, taking into consideration the stochastic nature of renewable energy resources;
- (viii) develop a clear set of recommendations on long-term cross-border transmission capacity to promote renewable energy development in the region, along with justifications based on benefits to individual countries; and
- (ix) assist ADB in arranging capacity development programs, including meetings, related to SETUF activities.

2. **Power System Planning Specialist** (international, 4 person-months)

7. The consultant should have qualifications in electrical engineering or power system planning, preferably at the graduate level, and a minimum 15 years of experience in power system generation and transmission planning. Tasks will include the following:

- (i) develop the necessary regional load flow database, compiling the available PSS/E database available for South Asian power systems;
- (ii) develop a zonal approximation of the integrated South Asian power system suitable for long-term planning optimization;
- (iii) develop alternative cross-border transmission capacity expansion scenarios;
- (iv) collect detailed generation expansion planning data for all South Asian countries (e.g., background data to the National Electricity Plan, 2012 in the case of India) including (a) generation plans with power station names, capacity, cost, etc.; (b) demand projections; (c) reliability criteria; and (d) generation development scenarios;
- (v) develop a common set of power system planning assumptions for the region up to 2030, collating existing plans and any generic assumptions needed; and
- (vi) prepare a model database for generation–transmission planning software used by the power system economist and team leader (cleaning, inputting, and checking all country data).

3. **Senior Advisor** (international, 5 person-months)

8. The consultant should have graduate qualifications in power system planning and at least 20 years of experience in regional cooperation-related activities, and will act as the main advisor for all the project activities and the consultants. The senior advisor will closely coordinate with ADB and SASEC member states, report to ADB, and ensure the quality of outputs of the study. Tasks will include the following:

- (i) work closely with ADB and SASEC member states to prepare a detailed work program for the study;
- (ii) monitor and review all the activities of the international consultants on a continuous basis under the overall guidance of ADB, and ensure the required quality of their outputs;
- (iii) review the draft outputs of the consultants and provide comments and suggestions, drawing experience from other regions and international best practices;
- (iv) attend all the intergovernmental and other relevant meetings, all major workshops, dissemination and awareness seminars, and technical visits as a resource person and ADB TA team member; and
- (v) lead the preparation of the knowledge products resulting from the TA activities.

4. **Senior Programs Analyst** (national, 12 person-months)

9. A senior programs analyst (a national of the Philippines) with at least a bachelor's degree and a minimum 10 years of experience in handling activities similar to that of the TA will be recruited at ADB's headquarters for 12 person-months to

- (i) prepare a checklist of logistics requirements and assignments, and arrange at least three intergovernmental meetings and one dissemination workshop on the TA;
- (ii) assist ADB staff in TA administration, including budget preparation and liquidation of all individual activities under the TA;
- (iii) prepare and maintain a comprehensive and orderly filing system for the TA, and update files regularly;

- (iv) help ensure the smooth flow of documents and communications related to TA implementation;
- (v) help draft routine communications; and
- (vi) participate in ADB missions, meetings, workshops, and seminars, as required.

C. Reporting Requirements

10. The consultants will submit the following reports:

- (i) inception report within 1 month of the start of services;
- (ii) interim report 1 containing database development within 6 months of the start of services,;
- (iii) interim report 2 containing generation options within 12 months of the start of services,;
- (iv) interim report 3 containing regional plans within 18 months of the start of services;
- (v) draft final report with the intergrated output within 20 months of the start of services, integrating interim reports 1–3 and responses to comments received for review and discussion by the member states before finalization;
- (vi) final report 2 months after submission of the draft final report, incorporating responses to comments; and
- (vii) a report within 1 week of conducting the dissemination seminar, summarizing its proceedings.