ANNEXES

1. Tools for stakeholder engagement and consultation
2. Outline terms of reference for an SEA
3. PPP Screening form
4. List of issues to be covered by SEA Report
5. Example review of PPPs relevant to the Preliminary SEA of Bhutan's Road Sector Master Plan (2007-2027
6. Overview of selected analytical and decision-making tools for SEA
7. Example of objectives compatibility analysis: compatibility of objectives for Poole Port Masterplan (UK) against environmental and social quality objectives
8. SEA environmental and socio-economic quality objectives for key issues and suggested indicators developed for the ADB's Energy Transition Mechanism.
9. Developing scenarios
10. Consolidated checklist for the quality assurance, review, and performance evaluation of a comprehensive SEA
11. Trend analysis
12. Analytical methods that can be used in SEA
13. Comapartive assessment of growth scenarios assessments in Bangladesh (rated with and without mitigation measures)
14. Checklist questions for assessing significance of impacts
15. The role of a SEMP
16. List of issues to be covered by a Strategic Environmental Management Plan (SEMP)
17. international and regional organisations concerned with renewable energy
18. Sensitivity mapping for Chobe Forest Reserve, Botswana
19. Definitions of terms

Annex 1

Tools for stakeholder engagement and consultation

Source: UNECE and REC (2011)

This following approaches are described below

- Printed material inviting comments
- Displays and Exhibits
- Information hotline/ Staffed telephone lines
- Internet/Web-based consultations
- Questionnaires and Response Sheets
- Surveys
- Public Hearings
- Workshops
- Advisory Committee

Public participation method	***Enables …***			***Key features***		
	Provision of information	Gathering of comments	Collaborative problem solving	Usual cost of application	Problem-solving ability	Ease of commenting
Range of printed material inviting comments	✓	✓		$		😐
Displays and Exhibits	✓	✓		$		😐
Staffed displays and exhibits	✓	✓	✓	$$	○	☺
Information hotline	✓	✓		$		☺
Internet/web-based consultations	✓	✓	✓	$	○	😐
Questionnaires and response sheets		✓		$$		☺
Surveys		✓		$$		☺
Public hearings	✓	✓		$		😐
Workshops	✓	✓	✓	$	○○	☺
Advisory committee	✓	✓	✓	$	○○	☺

Key:

Enables	✓	Yes
Usual cost of application	$	Lower
	$$	Higher
Problem-solving ability	○	Low

Ease of commenting	○○	High
	☺	Moderate
	☺	High

Method	**Printed material inviting comments**
Description	● Printed materials are the easiest ways to publicize and provide information on a draft plan or programme and the SEA, or to publicize a participation process. Popular forms of the printed materials include: *fact sheets, flyers, newsletters, brochures, issues papers, reports, surveys etc*. These can be single purpose or produced as a series (e.g. newsletters). Printed material can be handed out, made available to be picked up, or mailed out either directly to a select mailing list, or included as 'bill stuffers' with regular mail outs such as utility bills, rates notice or other regularly posted bills. ● Printed materials aim to provide easily read information in words and drawings, to inform a wide range of stakeholders about the plan- or programme-making and assessment processes or documents. ● Printed material, whether handed out, dropped into letterboxes, distributed by mail, or mailed out with other material, is one of the easiest and most familiar methods for increasing awareness of an issue and soliciting responses to an issue or proposal. ● Available budget, and the use of other publicity methods and tools will determine just what type of printed material will best suit your need.
Advantages	• Printed materials can reach a large number of people through mailing or via free display • Information material with comment sheets or questionnaires facilitates feedback • Can facilitate the public participation process • Printed information can be a low-cost publicity means, which is easily handed out and carried away • Can be economically distributed by doubling up with existing mailing lists • Can reach a wide audience, or be targeted towards particular groups • Ongoing contact, information can be updated
Disadvantages	▪ The problem with most printed materials is the limited space available to communicate complicated concepts ▪ Needs time to design, prepare text, visuals, proofread, print and fold. ▪ There is no guarantee that the materials will be read – may be treated as junk mail ▪ If mailed, the guarantee of being read is only as good as the mailing list itself; mailing lists need regular updating ▪ Appearance of the material should be visually interesting but should avoid a 'sales' look ▪ Can be lost if included with many other flyers and bill stuffers (consider using coloured paper and bold headlines if mailing as a bill stuffer, to ensure this is not just binned without reading) ▪ Can exclude those who are not print literate unless visual elements are used ▪ Information may not be readily understood and may be misinterpreted
Examples of sources of information	International Association for Public Participation (2000) IAP2 Public Participation Toolbox, available at http://www.iap2/practitionertools/index.html/

Method	**Displays and Exhibits**
Description	These tools are events that are intended to provide project information and raise awareness about particular issues. Displays can be interactive, and can be used as part of a forum, workshop, exhibition, conference or other event. Displays and exhibits can include feedback opportunities such as blank sheets with one-line questions, and can include drawings, models, maps, posters, or other visual and audio representations illustrating an event, proposal or issue. Interactive displays can include 'post-it' idea boards, maps and flipcharts or blank posters for comments and questions. Displays and exhibits develop more concrete concepts of proposals or developments, and, where these provide options for interaction, provide public opinions and feedback that can be incorporated into the plan- or programme-making and assessment processes. Key issues to consider before, and the main steps to prepare for and carry out the methods, include: • Select a date and venue that will encourage the greatest number of participants to attend (generally weekends or public holidays/shopping centres/public spaces) • Arrange for a number of displays/exhibits to give details of the event/issue • Place the display/exhibit in a well-populated public space where those most affected by the issue/event are likely to pass by • Advertise and publicize the event with emphasis on the issue to be considered • Advertise times when display/exhibit will be open • Allow adequate time for setting up • Provide adequate staffing and consider the employment of volunteers, security and insurance issues • Provide coordinators to facilitate participation and answer questions • Collate feedback and publish results
Advantages	▪ The tool focuses public attention on an issue ▪ It can create interest from media and lead to increased coverage of the issue ▪ Allows for different levels of information sharing ▪ Provides a snapshot of opinions and community issues based on feedback ▪ People can view the displays at a convenient time and at their leisure ▪ Graphic representations, if used, can help people visualise proposals
Disadvantages	▪ The tool needs a facilitator to encourage involvement and written feedback ▪ Information may not be fully understood or misinterpreted if no staff provided to respond to questions or receive comments ▪ Public must be motivated to attend ▪ Can damage the proposal's reputation if done unprofessionally
Examples of practical application or key sources of further information	The Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management (Australia) http://www.coastal.crc.org.au/toolbox/alpha-list.asp International Association for Public Participation (2000) *IAP2 Public Participation Toolbox*. http://www.iap2.org/associations/4748/files/toolbox.pdf US Dept of Transportation (1997) *Public Involvement and Techniques for Transportation Decision-Making: Transportation Fair*. Washington, (accessed 12/12/02) http://www.fhwa.dot.gov/reports/pittd/tranfair.htm Wates, N. (1999) *The Community Planning Handbook*. London, Earthscan.

Method	**Information hotline/ Staffed telephone lines**
Description	An Information Hotline offers pre-recorded information on the planning document or an issue via the telephone and/or access to SEA and planning team members who can answer questions or provide additional information and assistance. It aims to deliver accurate, consistent information over the telephone to those who wish to know about an issue or who can provide additional information. Staffed telephone lines can serve as a link between the public and the developer during the duration of the plan or programme making and assessment, making the public feel involved. Key steps in application: • Determine the information to be recorded and timetable of updates • Advertise the phone number, e.g. via stationery and flyers printed, or a sticker e.g. on outgoing printed correspondence or promotional material. Advertise the number in the media, and ensure it is on all your outreach material • Set up a hotline number for callers by recording message and hooking up to the phone line. Record information that will answer the most commonly asked questions • If staffed phone line is used, assign the person to answer the calls. The person assigned to provide information has to be briefed and trained, and has to have a pleasant telephone manner, even with difficult callers • Set up a toll free number for non-local callers • In case of pre-recorded Information Hotline, offer the option of being put through to a specific person for more details • Record calls/common complaints/concerns in telephone journal for your records and input to the participation/consultation process
Advantages	• An Information Hotline offers an inexpensive and simple device that can ensure fast, easily and efficiently information dissemination • Provides a one-stop service to the public to access information about the planning activity. Can describe ways the public can get information and provide feedback. • Offers a reasonably low-cost for set up and updates • Portrays an image of 'accessibility' for an organisation, developer or the SEA team • A convenient way of receiving comments from interested parties. Not intimidating, easy for people to participate and provide comments. Promotes a feeling of accessibility.
Disadvantages	• Must be adequately advertised to be successful • If staffed, can be time consuming and limit staff member to perform other tasks • Designated contact must have sufficient knowledge of the activity to be able to answer questions quickly, accurately and professionally
Examples of practical application or key sources of further information	Department of Public Health (Flinders University) & South Australian Community Health Research Unit. (2000) *Improving Health Services through Consumer Participation - A Resource Guide for Organisations*. Commonwealth Department of Health & Aged Care. Canberra. Available at http://www.participateinhealth.org.au/how/practical_tools.htm. RCRA. 1996. *Public Participation Manual*. Ch 5: Public participation activities. http://www.epa.gov/epaoswer/hazwaste/permit/pubpart/chp_5.pdf. US EPA (2002) *National Pollution Elimination System (NPDES) Public Involvement/Participation Hotlines*. (Accessed 11/12/02) http://cfpub.epa.gov/npdes/stormwater/menuofbmps/invol_3.cfm

Method	**Internet/Web-based consultations**
Description	The tool typically comprises a website on the Internet. It is used to provide information or invite feedback. Care should be taken to keep the information up to date. More interactive forms of participation on the Internet may also be developed, e.g. on-line forums and discussion groups. Technically, the potential tools for Internet-based consultations can be: • HTML web pages with links to documents, pictures and graphics (moving or still) and sound • Dedicated email address to which non-structured submissions can be sent • Survey forms that elicit community response on particular issues (HTML or PDF to be faxed/mailed back) • Moderated bulletin boards that allow 'threaded' discussions about a range of issues • Virtual meetings using a chat room facility on specific topics • Web-casting (i.e. audio and visual broadcasting via the web) of meetings and events The Internet can enhance traditional techniques but it cannot replace them. The purpose of the website should be clearly articulated and information should be accurate and timely. The resource implications of maintaining the site need to be carefully assessed and budgeted for before it is established. It should be decided whether the management of the website will be done in-house or outsourced, what web-based tools to be used and what staff training is needed.
Advantages	1. The most straightforward and inexpensive, resource-efficient technique to present and distribute information to those that have Internet access 2. The audience is potentially global 3. Costs are reduced as no printing or postage costs are incurred 4. Has a possibility to provide timely and accurate information about and a historical record of the planning, assessment and consultation processes 5. It is a way to invite stakeholders to comment on the specific proposals and a means of receiving feedback 6. An interactive medium allowing discussion and debate
Disadvantages	• There are significant resource implications in setting up a new website • The responses can be difficult to analyze if questions are open-ended • Because not all stakeholders will have access to the Internet, it cannot be used to replace the traditional means of consultation – alternative means of information dissemination will also be required
Examples of practical application or key sources of further information	iPlan initiative in New South Wales (Australia), http://www.iplan.nsw.gov.au/engagement/techniques/website.jsp

Method	**Questionnaires and Response Sheets**
Description	Questionnaires are a basic tool used to collect information, and are usually developed and tested to ensure that they are easily understood. Questionnaires ensure that exactly the same questions are presented to each person surveyed, and this helps with the reliability of the results. Questionnaires can be delivered via face-to-face interviews, telephone interviews, self-completed forms, mail outs or on-line. Questionnaires can be distributed by email as well as posted or faxed. Response sheets can be collected at a workshop, or can be picked up at a workshop and mailed back. These can also be mailed out in ways that reduce postage costs, when they are included in routine mail-outs such as the distribution of fact sheets or accounts. Questionnaire preparation steps**:** • Draft questions. Keep as short as possible. • Test questions with a small pilot group to determine whether they are unbiased, straightforward and not open to misinterpretation. Wording of questions has to be clear to avoid bias. • Indicate the purpose of the questionnaire at outset • Include qualitative data such as age, sex, address, education etc. to allow for further extrapolation of the results and/or inclusion into the mailing list. • Send out with questionnaires. If mailed and if the budget allows, provide free mail reply (stamped addressed envelope; freepost mailbox, etc.) to improve responses. • Document and publicize the responses.
Advantages	• Less personal if interviews or telephone surveys are not used, but anonymity can encourage more honest answers • Useful to generate both qualitative and quantitative data • Works well to reach respondents who live in a large area • Provides information from those unlikely to attend meetings and workshops • Permits expansion of the mail list • Can be used for statistical validation • Allows results to be extrapolated by subgroups • Allows the respondent to fill out at a convenient time • More economical and less labour intensive than interviews and telephone surveys as they provide larger samples for lower total costs
Disadvantages	• Low response rates can bias the results • Needs a return envelope/freepost address to encourage participation • Depends on a high degree of literacy
Examples of practical application or key sources of further information	US Department of transport (2002) *Public Involvement Techniques for Transportation Decision-Making* (accessed 13/12/02) http://ntl.bts.gov/DOCS/pubinvol.html

Method	**Surveys**
Description	Surveys are a method used to collect information from a specific population. They can be used to collect broad general information from or about a large audience or specific information from target groups. Surveys can seek information that can be quantitative (facts and figures) and/or qualitative (opinions and values). Surveys use questionnaires to collect information, and these can be delivered through face-to-face interviews, self-completion written forms, telephone surveys, or electronic surveys (see also Questionnaires and Response Sheets). For a well-conducted survey using a large, random sample, surveys are usually high cost. Small-scale surveys using opportunistic sampling and volunteers can be relatively low cost, but may not produce results that can be generalised beyond a specific group of people. Surveys are designed to collect information in relation to a particular issue or planning document. The results of the surveys provide information about the demographics and/or opinions of a specific group of people. Relevant steps in designing and carrying out a survey: ○ Find out what is already known, and what relevant surveys are being done or planned elsewhere in order to avoid duplication, and define the scope of the survey ○ Talk to developer and relevant authorities to focus the questions ○ Determine the way the information will be obtained (see Questionnaires and Response Sheets) ○ Select your target audience. How will you sample them? How will you ensure that your survey gives a representation of the ideas of the group? ○ Pilot test the survey to ensure the readability and clarity of questions ○ Carry out the survey ○ Collate and analyse the results, prepare report ○ Make the report available to those surveyed, to appropriate authorities, and to the media
Advantages	○ Provides traceable data ○ Surveys can serve an awareness raising purpose ○ When properly constructed, can reach a broad, representative public or targeted group ○ Can derive varied information from the results
Disadvantages	• Poorly constructed surveys produce poor results • Can be expensive if surveying a large audience • Care must be taken that wording of questions is unambiguous to prevent skewed results • Care is needed in sampling to make sure representative samples are taken • Surveys with tick boxes are the fastest and easiest to process, however, this limits the detail in the information collected
Examples of practical application or key sources of further information	COSLA. (1998). *Focusing on Citizens: A Guide to Approaches and Methods*. Available at: http://www.communityplanning.org.uk/documents/Engagingcommunitiesmethods.pdf RCRA. (1996). *Public Participation Manual*. Ch 5: Public participation activities. http://www.epa.gov/epaoswer/hazwaste/permit/pubpart/chp_5.pdf US Department of Transportation (1996) *Public Involvement Techniques for Transportation Decision-Making* (13/12/02) http://www.fhwa.dot.gov/reports/pittd/surveys.htm

Method	**Public Hearings**
Description	Public hearings are a formal way of presenting and exchanging information and views on a proposal. Formal public hearings generally tend to be best used in conjunction with more informal methods of engagement such as informal meetings and facilitation. http://www.iplan.nsw.gov.au/engagement/techniques/publichearing.jsp - top#top Important points to consider before organizing the event: • Clearly describe the purpose of the public meeting and the issue to be considered • Describe where in the spectrum the public hearing sits. Be particularly clear about the extent to which input provided could influence the outcome of the process. • Decide whether a public hearing is appropriate when you receive a request for one • Advertise the public hearing by public notice. • Send the notice to each person who requested a public hearing. • Carefully schedule presentations by interested parties and ensure presenters can speak for their allotted time without interruption. • Prepare a report/record of the public hearing and make it public.
Advantages	• During such events the public is allowed, by prior arrangement, to speak without rebuttal • Available evidence can be worked through systematically • Comments received can are recorded and made public • If run well, can provide a useful way of meeting other stakeholders. • Demonstrates that the responsible authority is open to all interested parties for consultations and information exchange.
Disadvantages	• It does not foster dialogue • An adversarial mood can be created • Public meetings can be intimidating and may be hijacked by interest groups or vocal individuals • Minority groups and those who do not like to speak in public are not easily included • Whilst appearing simple, can be one of the most complex and unpredictable methods • May result in no consultation only information provision
Examples of practical application or key sources of further information	

Method	**Workshops**
Description	A workshop is a structured forum where participants are invited to work together in a group (or groups) on an assessment of an issue or SEA step. The goals of a workshop are to bring participants together in a structured environment (that is, through large and small-group activities, discussions, and reflection) to resolve issues and build consensus on the assessment, rather than provide information and answer questions. Alternatively, workshops can be organised to target representatives from a particular stakeholder group, e.g. NGOs, or experts of one area. Workshops require a facilitator who is able to engage all participants in the discussion; therefore they are participatory tools that are best used with smaller numbers of participants. A variety of tools can be used within a workshop. These include many of the tools listed in this toolbox (see the CRC reference below), e.g.: focus groups and/or visioning. A report has to be prepared as on outcome of the workshop, recording opinions, suggestions or conclusions that have been collaboratively developed and agreed to by all participants, on an issue or proposal.
Advantages	• Excellent for discussion on criteria or analysis of alternatives • Fosters small group or one-on-one communication • Offers a choice of team members to answer difficult questions • Builds ownership and credibility for the outcomes • Maximizes feedback obtained from participants. Ability to draw on other team members to answer difficult questions • Maximized feedback obtained from participants • Fosters public ownership in solving the problem (see IAP2 reference below) • Can provide a more open exchange of ideas and facilitate mutual understanding. Useful for dealing with complex, technical issues and allowing more in-depth consideration. Can be targeted at particular stakeholder groups.
Disadvantages	• Hostile participants may resist what they may perceive as the 'divide and conquer' strategy of breaking into small groups • Facilitators need to know how they will use the public input before they begin the workshop • Several small group facilitators are usually needed. (IAP2) • To be most effective, only a small number of individuals can participate, therefore, full range of interests are not represented
Examples of practical application or key sources of further information	Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management (the Coastal CRC) http://www.coastal.crc.org.au/toolbox/alpha-list.asp (Australia) IAP2 – The International Association for Public Participation: http://www.iap2.org/ Ontario Public Consultation Guide 1994, www.ene.gov.on.ca/envision/gp/H5.pdf (Canada)

Method	**Advisory Committee**
Description	Advisory committees generally comprise expert groups and governmental or non-governmental institutions with expertise in a specific field or interest in the draft plan or programme. In a consultation process, they can offer advice on appropriate changes to a plan or programme or recommend the introduction of specific measures. Although similar to task forces, advisory committees function as an ongoing structure while task forces tend to be formed on a short-term basis to focus specifically on the development of a particular proposal. Advisory committees are particularly useful for involving community representatives, especially people with required expertise, in complex, controversial or significant plan- or programme-making and assessment processes. Committees are not lobby groups – they have an important public function beyond individual members' own interests. Committees are more effective if their roles and tasks are clearly established before deciding on membership. Also establish selection criteria for membership. Time and resources must be committed to supporting the committee during the life of the project or the committee. The committee has to be informed of progress, the consultation results, developer and decision-maker conclusions; policy changes/emerging issues that will influence the committee's advice/role.
Advantages	• Advisory committees offer additional advice and guidance • They can help to reduce criticism from interest groups • They demonstrate a commitment to participatory engagement and suggest to the stakeholders that they will be able to influence decisions and outcomes within certain boundaries
Disadvantages	• Manage conflicts of interest that may occur during the life of the committee • May be time and resource consuming. Care needs to be taken to establish, manage and monitor their ongoing operation. • Where there are divergent views or where members have unequal status, knowledge or expertise, facilitation may be needed
Examples of practical application or key sources of further information	Steering group for SEA of Scottish Marine Renewables (see http://www.seaenergyscotland.co.uk)

Annex 2
Outline for setting terms of reference for SEA

This outline aims to assist a proponent in preparing TOR for an SEA in circumstances where it intends to engage consultants to undertake the SEA.

Terms of reference need to thorough and clear. Research shows that many SEAs are unsatisfactory because they fail to follow basic principles and good practice. In part, the reason for this is setting of poor Terms of Reference by the PPP proponent – often because they have limited knowledge or experience of the role and nature of SEA

Below are suggested generic contents for TOR for a SEA. They will need to be customised in every case and customised to the context and focus of the PPP concerned:

List of acronyms

1 Introduction

Provide a background to the SEA, and summarise national legal, regulatory and guideline requirements for SEA. Indicate the need to comply with these and with national development philosophy of Gross National Happiness, SEA good practice and principles (listing these) – and provide summary information on these. Information can be taken from these SEA guidelines.

2 Description of the PPP

Describe the focus and aims of the PPP, why it is being promulgated and what is seeks to achieve.

3 Key treaties, accords and policies, plans and proposals to be considered, and useful reports to be consulted

List those that are particularly relevant to the focus of the PPP and SEA under the following categories to guide the SEA team to important framework commitments:

7. International treaties and accords/conventions (those ratified by Bhutan and others that may be relevant);
8. Legislation and national-level strategies and policies;
9. Other useful reports and studies (including relevant EIA/SEA reports).

4 Aims of the SEA

Set out the specific aims of the SEA under the following headings:

4.1 Technical aims

10. Provide a thorough ***review and assessment of the direct, indirect and cumulative impacts*** (positive and negative) of the PPP and development activities, projects and initiatives that may arise during its implementation. Such assessment should address impacts under several ***scenarios*** (see below)

11. Identify impacts on national ***sustainable development objectives*** (local, regional, national)

12. Identify ***synergies*** (and how these can be enhanced) and ***conflicts/antagonisms*** (and how these can be minimised, avoided or mitigated) between such activities, PPPs and downstream projects/development activities.

13. Generate ***development scenarios*** (to be identified and agreed during scoping). These may represent development meta alternatives that examine how the PPP (and downstream projects/activities that may arise during implementation) may unfold over the short-, medium- and long-term, and in different combinations (i.e. under alternative roll-out situations – for example (but not limited to) business-as-usual, low-growth, moderate growth and high growth), and their consequent meta-level impacts.

14. Identify where ***EIA*** (addressing both environmental and social concerns) may need to be undertaken for particular types of downstream projects/activities likely to arise during PPP implementation and recommend key issues that should be addressed.

15. Identify issues that will need to be addressed when preparing a ***Strategic Environmental and Social Management Plan (SESMP)*** for the PPP – if the proponent judges that one is required.

16. Prepare required reports – these should include a ***scoping report*** , an ***interim SEA report*** covering the assessment of alternative, the ***SEA report*** (focusing on the preferred alternative) and an associated ***Strategic Environmental and Social Management Plan*** (SESMP) for the PPP (if required). Both draft and final reports will be required.

The SEA report should present baseline information, assessments, analyses and information in a way that is relevant, understandable and readily usable by policy-makers, planners and decision-takers. The SEA team should liaise directly with PPP proponent and NECS on the most appropriate format for presenting such information (note: information presentation is likely to require a mix of text, maps, tables, figures and photographs, and could be organised on a GIS basis).

4.2 Capacity building objectives

Indicate that SEA is still in its infancy in Bhutan and the country is still building its experience and skill base. In this regard, the proponent may wish to consider combining the technical assessment functions of the SEA with a capacity-building component – to benefit both selected government officials as well as Bhutanese environmental/social consultants and recent graduates. In this way, the SEA could provide opportunities for such people to ***gain SEA experience on-the-job*** at different stages of the SEA process –working alongside the SEA team members, tutored by them, and undertaking appropriate technical tasks.

5 Boundaries of the SEA

Indicate the geographical boundary or extent of the SEA, eg national, sector, region, district, catchment, protected area, cross-border, etc., and provide a map where appropriate.

6 Role of other bodies

Indicate what role the NECS, SEA Task Force or other body (e.g. SEA Steering Committee. Technical Assessment Committee. Independent Expert Committee), will play in guiding and/or evaluating the SEA.

7 Scope of work to be carried out

Provide a general overview of the scope of the work to be undertaken by the SEA. Indicate what reports should be produced. The SEA report should include recommendations on how to mitigate negative environmental and social impacts and how to enhance positive ones. Indicate that the intention is for such recommendations to be incorporated the PPP and the mitigation/enhancement measures put into practice during PPP implementation

The SEA should be applied at two levels of specificity, to address environmental and social impacts arising as a result of (a) the PPP and project/initiatives arising during its implementation, and b) those impacts arising as a result of 'external' developments (regional, national or international (i.e. the bigger picture).

8 Major tasks to be undertaken

8.1 Initiation report

Indicate that, following appointment, the SEA team should prepare an Initiation Report for the SEA within a prescribed time period (e.g. 4 weeks of taking up the assignment), setting out the background, their approach to the SEA to comply with the TOR and the SEA guidelines, the steps to be followed, and providing a provisional timeline.

8.2 Stakeholder analysis and action plan

Indicate that the SEA team should undertake a comprehensive ***stakeholder mapping*** covering:

17. Primary stakeholders: those ultimately likely to be affected, either positively or negatively by the PPP and projects/initiatives arising during its implementation;
18. Secondary stakeholders: the 'intermediaries' – those persons or organizations who are indirectly affected by the PPP and projects/initiatives arising during implementation;
19. Key stakeholders: (who can also belong to the first two groups) – those persons or organisations that have significant influence upon or importance related to the PPP and/or to projects/initiatives likely to arise during implementation, or play key roles within organisations.

The SEA team should prepare a ***stakeholder participation and disclosure plan*** to set out the roles and responsibilities of different stakeholders in the SEA/SESMP processes, indicating when and how they can engage in these processes, e.g. through providing information or views, engaging in workshops, meetings, focus sessions, interviews, dialogues, etc., responding to questionnaires, participating in phone-ins or web-based information access/provision, etc.

The SEA team should set up a ***communication mechanism*** to inform stakeholders of such events (date, timing, location, etc.) and indicate how feedback on progress in the SEA will be provided, when draft reports will be available for review and how (e.g. online, from an office), how stakeholders' views comments have been addressed, etc.

All SEA documents and the SESMP (where required) should clearly reflect what stakeholder participation has been organised/facilitated to support their preparation (e.g. listing workshops and meetings with dates), and indicate who participated in events and where a record of meetings and issues raised can be found – preferably minutes of all meetings and events should be attached as appendices to the master documents.

The above tasks may be undertaken as part of, or in parallel to, scoping (see 9.3).

8.3 Scoping requirements:

Indicate that scoping should verify, deepen and extend any preliminary analysis and undertake the following:

20. a ***review of relevant literature*** including: relevant international treaties and accords/conventions; national level policies, regulations and strategies; relevant policies and plans; and EIAs and specialist studies undertaken in the SEA area;
21. ***consult with stakeholders*** as well as ***interested and affected parties*** (I&APs) (including NECS, national, local and municipal authorities, relevant parastatals, concerned groups, local communities, technical experts, etc.) – through workshops, 'focus group' meetings, interviews and electronic communications;
22. take into account ***more recent developments*** (e.g. the release of new regulations or new proposed PPPs or projects) that might have relevance to or interact with the PPP being assessed;
23. secure the ***opinions of experts***;
24. an ***analysis of Bhutan's laws, policies, regulations, strategies and action plans***, as well as permit requirements insofar as they are relevant to the issues at hand;
25. an ***analysis of Bhutan's*** guidelines insofar as they are relevant to the issues at hand (to determine their relevance and applicability to the SEA area). Where Bhutanese safeguards are not in place, then other relevant safeguards may be consulted (eg new World Bank safeguards[1]);
26. Identify and secure agreement on ***SEA objectives***
27. Identify possible ***alternatives*** to the PPP or its component that should be considered by the SEA and establish definitions for each alternative.
28. identify and secure agreement on ***scenarios*** to be developed, against which the impacts of the preferred alternative for the PPP should be assessed
29. Identify how the SEA can strengthen the existing ***institutional and practitioner capacity***

A scoping report should be prepared. Indicate that this will be circulated to lead agencies and provided to the public for comment prior to its finalisation.

Indicate that if any significant changes are made to the TOR, it may be necessary to advise stakeholders of those and seek comments before the SEA team proceeds further.

8.4 Preparation of work plan

State that this should clearly set out all activities, outputs and a timeline, and indicating which team members will be involved, and when, in particular steps.

[1] World Bank safeguards are policies that aim to ensure strong protections for the world's poorest and most vulnerable people and for the environment
(see:. http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,menuPK:584441~pagePK:64168427~piPK:64168435~theSitePK:584435,00.html

8.5 Baseline studies

Indicate the need for the SEA team to carry out (or commission where specialist studies are required) research and analysis (drawing from published and unpublished, official and unofficial sources, existing EIA reports and ongoing work) and prepare a baseline profile of the SEA area, documenting environmental, social, economic, governance and other key characteristics, and any related trends, in sufficient detail to provide a basis for subsequent assessment of impacts. These characteristics may be listed in the TOR if preliminary scoping has been undertaken prior to appointing the SEA team.

Section 3.3.7 of the SEA guidelines lists typical characteristics that should be covered. The TOR should include such a list.

8.6 Legislative and regulatory profile

Indicate that the SEA team should prepare a concise overview of relevant Bhutanese laws and regulations and internal commitments (e.g. under MEAs that are pertinent to the PPP The consultant will prepare a concise overview of relevant Bhutanese laws and regulations and internal commitments (e.g. under MEAs that are pertinent to the PPP, with specific reference to compliance requirements and constraints. This should include a description of pertinent standards governing *inter alia*, health and safety, waste discharge, noise, etc. Also, the SEA team should provide a justified opinion as to whether any of the possible development downstream projects, activities or other initiatives that may arise when implementing the PPP could be deemed illegal under Bhutanese or international law, especially (but not only) in the context of effluent discharges into water courses and air, and where developments may be located in or may affect national parks, wetland sites), or other protected areas.

The profile should also include a matrix-based, cross-comparative analysis of interactions between legal and regulatory instruments, particularly showing where any are in conflict with each other with regard to how they might influence, promote or impede development PPPs, projects or initiatives, and thus where clarification or harmonisation may be necessary.

8.7 Assessment of environmental and social impacts

Indicate that the SEA team will be required to undertake a thorough ***review and assessment of the direct, indirect and cumulative impacts*** (positive and negative) of the development and initiatives that will be likely to arise during implementation of the PPP under different scenarios (including but not limited to business as usual scenario and future low, moderate and high growth scenarios – meta alternatives). Scenarios may be generated through multi-stakeholder brainstorming workshops. The SEA should also assess the impacts of agreed alternatives identified during scoping.

The assessment should include identifying ***synergies*** (and how these can be enhanced) and ***conflicts/antagonisms*** (and how these can be minimised or mitigated) between elements of the PPPs and between different PPPs.

The assessment should identify where ***EIAs*** (addressing both environmental and social concerns) may need to be undertaken for particular projects/initiatives likely to arise during PPP implementation and recommend key issues that should be addressed.

8.8 Key themes and issues to be addressed by the SEA

Indicate any key themes, issue, existing projects, activities and developments underway and planned in the area covered by the PPP. These may have been identified during preliminary scoping and the SEA will need to focus on these. During scoping, the SEA team should verify these (through interactions with stakeholders) and identify any other issues that may need to be added, e.g.

- ***Protection and conservation of critical and sensitive areas, and fragmentation of habitats and resources***
- ***Demand on natural resources*** (current and future; legal and illegal) – forests, land, water, wildlife, minerals, etc.
- ***Land tenure, land-use (current and forecast) and land-take*** (arising from developments and infrastructure)

- ***Hydrology and drainage patterns***
-
- ***Visual impacts*** and deterioration of sense of place – as rural and urban development changes the character of NCR and its municipalities.

- ***Pollution of land, air and water*** due to effluent and waste discharges from industrial developments, pollution from accidents, other land-based pollution and physical changes as a result of the new infrastructure and new companies/industries

- ***Loss of aquatic life and altered ecological functioning*** due to pollution or other factors.

- ***Accident risks***, especially from transport trucks, chemical spillages and road traffic accidents.

- ***Biodiversity loss***, both from physical disturbance (habitat alteration) and pollutants.

- ***Strain on municipalities and communities***, eg if the PPP may stimulate an influx of job-seekers. In this case, there will be both positive and negative impacts. Specific issues of concern may be increased crime, overcrowding (with social and health consequences), and strain on physical and social infrastructure.

- ***Health risks***, because of pollution from industrial developments reaching nearby communities from all possible pathways, but especially air. Also, issues such as light pollution, noise and increased electromagnetic radiation need to be addressed.

- ***Other social issues*** such as education, skills, livelihoods, poverty, gender concerns, access to resources, migration, population change, cultural dilution, etc.

- ***Protection of cultural/religious assets and heritage sites***

- ***Settlements and settlement patterns, and urban expansion***

- ***Trans-boundary issues*** (trade, transport, tourism, management of critical resources such as water, etc.)

- ***Economic issues*****,** especially the benefits of the PPP and projects arising during implementation in terms of direct and indirect jobs, import substitution, taxes and likely spin-offs.

8.9 Key elements when assessing impacts

Indicate that positive and negative impacts should be evaluated in terms of their importance at local, regional, national or inter-national level, and also with regard to their magnitude, significance, frequency of occurrence, duration and probability.

The SEA should distinguish between primary, secondary, synergistic and cumulative effects where relevant and should consider at least a 30 year time frame.

It should be indicated when impacts are likely to be irreversible or unavoidable and which ones can be mitigated – and the degree of confidence that the consultants attach to their assessment of each impact and the likelihood of avoidance/mitigation being successful.

Indicate that if the SEA team identifies any fatal flaws in relation to the PPP that require application of the precautionary principle, this should be clearly indicated and justified in the report (and communicated to the NECS and PPP proponent immediately).

The impact assessment process must include a combination of literature review, specialist studies (where needed – to be identified and budgeted for by prospective consultants in their proposals, and confirmed during scoping), expert opinion, stakeholder opinion and rigorous analysis. It is a requirement that a comprehensive public participation and disclosure process be followed.

8.10 SEA report requirements (basic contents)

Indicate that the SEA team should prepare a SEA report that is concise and focused on the significant environmental and social issues. The main text should include findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references used in interpreting those data. Detailed or un-interpreted data are not appropriate in the main text and should be presented in appendices or a separate volume. Unpublished documents used in the assessment may not be readily available and should also be assembled in an appendix. Wherever possible, data should be summarised in tables and, where relevant and appropriate, the text should be supported by figures and photographs.

The SEA report should be presented according to the outline in Annex 7 of the SEA guidelines.

8.11 Strategic Environmental (and Social) Management Plan (SESMP) (basic contents)

If required, indicate that the SEA team should prepare a Strategic Environmental and Social Management Plan (SEMP) for the PPP, setting out:

30. ***Strategies and procedures*** to implement the SESMP so as to enhance positive, and prevent, minimise or mitigate adverse environmental and social impacts associated with the PPP and projects or activities likely to arise during its implementation.
31. These procedures should include measures to ensure ***compliance with relevant safeguards*** during both preparation and implementation of the PPP and projects/initiatives that may arise during its implementation. Bhutanese safeguards should take precedence. Where Bhutanese safeguards do not exist, then reference should be made to other safeguards (eg World Bank safeguards).
32. ***Environmental and social Objectives***
33. The ***roles and responsibilities*** of different jurisdictions, authorities and actors in implementing the SESMP. As far as possible, recommendations should be institution-specific (who should do what).
34. A ***simple performance monitoring and evaluation mechanism*** for the environmental and social impacts of the PPP and development projects/initiatives likely to be implementing during its implementation, with monitoring indicators and a corresponding evaluation procedure and methodology. It should aim to signal when steps are required to enhance benefits or to remove or reduce risks and negative impacts. The proposed mechanism should take into account existing national legislation and provisions regarding EIA. The objectives monitoring are to ensure that:
35. Mitigation measures are implemented;
36. Mitigation measures are effective, i.e., have the intended result;
37. Remedial measures are undertaken where mitigation measures are inadequate or where the impacts were underestimated in the SEA study;
38. Compliance with national (and international) standards is assessed.
39. A ***stakeholder consultation procedure*** for the monitoring and evaluation mechanism.
40. ***Guidance and recommendations for project level EIAs***.

See Annex 8 of the SEA guidelines for recommended issues that should be in a SESMP.

8.12 Monitoring and review of SEA and SESMP

Indicate what monitoring, evaluation and review procedures will apply to the SEA and SESMP.

8.13 Work schedule

Indicate the time period within which the SEA and SESMP (if required) should be completed and the requirement for the SEA team to submit a detailed work plan and schedule of activities in the inception report.

8.14 Deliverables

Indicate the deliverables required, e.g.:

1. Inception report, including work plan
2. Stakeholder analysis and stakeholder engagement plan
3. Scoping report
4. Quarterly progress reports
5. Interim SEA report
6. Draft and final reports on any special studies conducted
7. Draft and final SEA report
8. Draft and final SEMP (if required separately).

Annex 3:

SEA Screening Form

Proponents reference Number: ……..……..**Submission date**:……

Proponent's Address:
……
……

PPP Title:
……
……

PPP Sector
……
……

PPP area of implementation (National, Region, District, Town, trans-national)

……
……

PPP SCREENING COMMENTS:

The following comments should provide a summary – to draw the attention of the competent authority to key points in the SEA report.

A. Characteristics of the PPP itself:

- To what extent will the PPP set a framework for downstream projects and other activities (eg concerning their location, nature, size and operating conditions or by allocating resources)?
  ……
  ……
- Is the PPP likely to influence other PPPs – at national to local levels?
  ……
  ……..
- To what extent will the PPP enable the integration of environmental and social considerations (and their relationship with economic concerns and drivers) and promote sustainable development?

  ……
  ……
- What are the main environmental and social problems associated with the PPP?
  ……
  ……
- How might the PPP provide a means to implement national legislation on the environment (for example, PPPs linked to waste management or water protection) or social conditions?
  ……
  ……
- To what extent is the proposed PPP likely to be politically or publicly contentious?
  ……
  ……
- Is the PPP is unprecedented (e.g. pioneering, address new issues)?
  ……
  ……

B. CHARACTERISTICS OF THE EFFECTS AND OF THE AREA LIKELY TO BE AFFECTED:

41. Regarding the impacts – what is their probability, magnitude, duration, spatial extent (geographical area and size of the population likely to be affected), frequency and reversibility ?
    ……
    ……

42. Are there any inherent uncertainties and what is the level of confidence in predicting the effects of the proposed PPP?
    ……
    ……

43. Are there any important information gaps, that have made it difficult to predict impacts?
    ……
    ……

44. What is the nature of the cumulative?, and are they likely to be significant (both additive and synergistic effects)?
    ……
    ……

45. Are there likely to be any trans-boundary effects (i.e., the PPP is likely to affect other municipalities, Dzongkhags, regions or countries)?
    ……
    ……

13. Are there any high risks to the environment, social conditions or human health (eg due to accidents), safety and/or the integrity of social or ecological systems?

    ……
    ……

- What social and/or ecological systems in the PPP area of influence have low resilience and high vulnerability to disturbance or impact (e.g., poor communities or sensitive ecosystems)?
  ……
  ……

- What areas in the influence of the PPP have high value or are vulnerable and are likely to be affected by the PPP due to:
  - having unique, special, or highly valued natural or cultural elements (e.g., threatened biodiversity or sacred areas);
  - being protected areas (e.g., national parks, nature reserves, biological corridors, heritage sites, Ramsar sites) or areas of recognized local, district, national, or international importance for conservation;
  - having existing levels of environmental quality that are close to defined limits of acceptable change (i.e., there is a definite risk that limits of acceptable change will be exceeded); or environmental quality standards have been exceeded; or
  - intensive land-use.
    ……
    ……

- What impacts will the PPP have on areas or landscapes that have a recognised national or international protection status?
  ……
  ……

- Will the PPP be likely to result in major changes in actions, behaviours, or decisions by individuals, businesses, NGOs, or government that could lead to:

- The stimulation of development of infrastructure or other changes in urban or rural land use;
- An increase in the transformation and development of natural habitat or of areas important to nature conservation;
- Major changes in the pattern of settlement, land occupation, and/or demographics in an area;
- Major changes in the development or use of technology that could have negative implications for health and/or safety;
- The introduction of alien and potentially invasive organisms;

- Changes in society's consumption of energy and in particular fossil fuels, and therefore, in emissions of carbon dioxide and other greenhouse gases;
- Changes in the rate of society's consumption of and/or demand on natural resources, including water.

……
……

Record of Decision: (tick where applicable)

1. Recommended/Not recommended for SEA …….....

2. Recommended for EIA Study ……

Names of Reviewers:

1……..... Signature……Date ……..

2……..... Signature ……..Date ……

Annex 4:

List of issues to be covered by SEA Report

The list below includes issues that should be covered in an SEA report. It does not necessarily represent chapter or section headings, nor the order in which information should be provided. The contents of an individual SEA report will also need to be guided by the TOR for the SEA, the context, focus of study, and requirements set by the proponent of the PPP.

- Title of report
- Table of contents.
- Acknowledgements.
- List of acronyms and abbreviations.
- Executive Summary.
- Introduction and background (including scope of SEA).
- Brief description of policy, plan or programme
    - Objective, purpose, and rationale of the PPP;
    - Other development initiatives likely to arise during implementation; and of other project or initiatives (including at a broader scale - national or international– where these will likely influence or impact on PPP or its area.
    - Alternative policy or plan options, and strategies;
    - Areas and sectors affected;
    - Proposed activities for PPP;
    - Implementation plan and time scale of PPP.
- Methodology of SEA.
- Baseline profile and trends.
    - Baseline environmental and social conditions, especially areas potentially affected;
- Description of authorities, jurisdictions and key institutions – their roles and responsibilities.
- Policy, legal and administrative framework.
- Related PPPs
- Future development scenarios (meta alternatives) and other development alternatives.
- Assessment of significant environmental and social impacts.
- Prediction and evaluation of impacts of the PPP, including cumulative effects, compared against indicators;
- Prediction and evaluation of impacts of alternative PPP options and compared against environmental indicators;
    - A justification for the preferred alternative
- Recommended avoidance/mitigation of negative impacts and enhancement of synergies and positive impacts.
- Linkages with ongoing projects and how they fit in the proposed PPP.
- Overview of public/stakeholder engagement activities undertaken
- Summary of stakeholder concerns and expectations, and how these have been addressed (details to be provided in appendix).
- Impacts on sustainable development objectives (local, regional, national).
- Conclusion and recommendations (including recommended PPP changes and need for subsequent EIAs).
- References.
- Appendices - including:
    - List of SEA team members (with brief outline of experience).
    - Record of consultation meetings, stakeholders consulted and stakeholder opinions (an issues-response form should be used to show how stakeholder issues have been addressed in the report).
    - Relevant technical appendices

Supplementary reports should be prepared for specialist studies conducted.

Annex 5

Example review of PPPs relevant to the Preliminary SEA of Bhutan's Road Sector Master Plan (2007-2027) [Can we find an example relevant to energy/RE?]

POLICY/PLAN	KEY AIMS	ENVIRONMENTAL / SOCIAL ISSUES
POLICIES AND STRATEGIES		
Water Policy, 2007	*Vision*: Water is the most important natural, economic and life-sustaining resource and we must ensure that it is available in abundance to meet the increasing demands. Present and future generations will have assured access to adequate, safe and affordable water to maintain and enhance the quality of their lives and the integrity of natural ecosystems. Emphasis on water resources management within river basins and aquifers, including both upstream and downstream water users	• localized and seasonal water shortages for drinking and agricultural purposes • increasing sediment load in rivers is decreasing the expected output and economic life of hydropower plants • Pressure on water resources is mounting due to competing demands from different users • New demands from other sub-sectors such as hydropower and industries • Rapid urbanisation has serious impacts both on water demand & associated pollution • Increasing demand for timber, firewood and non-timber forest produce is starting to have negative impacts on watersheds • Climate change will reduce the natural river flow-regulating capacity of glaciers
Sustainable Hydropower Development Policy, 2008	• Develop hydropower projects in accelerated manner to reach installed capacity of 10,000 MW by 2020 • Projects to cover: micro/mini, small. medium, large & mega.	• Project developers required to carry out comprehensive EIAs; make suitable provisions for mitigation of adverse impacts; and implement an Environmental Management Plan and other risk management measures. • Need to protect water catchment areas by promoting sustainable agricultural/land use practices and nature conservation works; • Need for sustainable water resources management • Annual rental paid for private land acquired • Free 10,000 KWh/yr provided for every acre of private land acquired (or cash-in lieu) to the owner. • Developer must provide up to 1% of project costs to cover rehabilitation/resettlement of displaced persons; and provide employment to at least one member of every displaced family.
Cottage, Small and Medium Industry (CSMI) Policy, 2012	Provides direction for development of CSMI; preparing them for the opportunities & challenges of globalisation; ensuring they play an increasing role in fostering economic development; to generate employment & support equitable distribution of income and bring about balanced regional development	• CSMI account for 98% of all industries in Bhutan • Policy fosters job creation
Irrigation Policy, revised 2011 (draft)	Provides direction on measures to increase the irrigated area and improve irrigation water management and	• A significant proportion of arable land remains under rain-fed conditions, while c. 10% of irrigation systems is non-functional. • Irrigation technology and on-farm water management remains rudimentary.

POLICY/PLAN	KEY AIMS	ENVIRONMENTAL / SOCIAL ISSUES
	optimal utilization of national water resources for crop production.	• Decentralisation has impeded planning & design of irrigation projects. • Lack of water storage systems • Poor quality irrigation schemes that are highly prone to damage during peak monsoons and high water demand periods; and often washed away during natural calamities. • Conflicts among conjunctive water users/uses from a common source • Pollution of water by agro-chemicals not yet assessed. • Channel & on-farm water are not managed efficiently resulting in land degradation and water wastage.
Land Policy, final draft 2010	Goal: to strive for sustainable use of land through efficient and effective land management and prudent land administration for socio-economic development and conservation of the natural environment in the country. *Objectives* - to: • Coordinate and harmonize the use of land by different users; • Provide access to land for all Bhutanese citizens and juristic persons • provide secured land tenure and rights to title holders; • Generate land revenue and control land speculation; • Undertake broad zoning based on land use capability to fulfil land needs for different purposes; • Enhance equitable, sustainable and efficient use of land resources; • Ensure protection and conservation of ecology	See objectives

National Urbanisation Strategy, 2008	*Objectives:*
	Develop a pro-active approach to the country's urban growth in a sustainable and environmentally sound way that minimizes the negative effects of urbanization;
	• Ensure balanced regional growth;
	• Develop a strategy for improving the quality of life of the growing urban population in a way that embraces rather than undermines the local culture and values;
	• Develop a set of recommendations to improve local government systems in
		• Very rapid rates of urbanization
		• Limited availability of serviced land
		• In general urban centres consume prime agricultural lands in the valleys and encroach on forested hill slopes.
		• Lack of proper infrastructure and facilities for drainage, sanitation and waste disposal have cumulative adverse impacts on the environment.
		• Increased timber logging and conversion of slopes into urban uses
		• Primary environmental pressures on the urban environment arise from:
		  ○ Water supply
		  ○ Waste water collection and treatment
		  ○ Drainage and flooding

POLICY/PLAN	KEY AIMS	ENVIRONMENTAL / SOCIAL ISSUES
	• Bhutan, including municipal finance and institutional aspects.	○ Solid waste collection and disposal ○ Hill cutting and erosion • Secondary environmental issues are: ○ Electrification and street lighting ○ Noise ○ Traffic congestion ○ Air pollution ○ Pedestrian areas ○ Household fuel supply • Concerns of the poor (most of them migrants who do not own land in the town): ○ Unaffordable rentals that seem to be responsible for squatting. Housing for poor is critical ○ Housing with access to quality /effective basic and social services. ○ Livelihoods and local economic development, youth unemployment ○ Transport • Urban development related activities have the potential to negatively impact the cultural heritage structures and systems • Loss of the traditional extended family as the proportion of migrants in the urban areas increase • Household will be the major social loss. • Culture and heritage consist of a number of intangible and tangible aspects of which the traditional built environment, community spaces and places form the most important as they are mostly home to and imbibe within themselves traditional rituals, ceremonies and festivals; arts, crafts and textiles including dances, poetry/literature (folklore, myths, legends), music and religion; values and relationships; dressing and etiquette; social setup and structures.
Economic Development Policy, 2010	• *Vision* - to promote a green and self-reliant economy sustained by an IT enabled knowledge society guided by the philosophy of Gross National Happiness • Work towards achieving a minimum economic growth rate of 9% annually and strive to be a middle-income nation with economic self-reliance by 2020. • Achieve full employment (97.5%). *Strategies:*	• Economic development should take into account environment mainstreaming in a phased manner that allows for industries to grow as well as engage in cleaner production • Government to provide incentives for the promotion of green technology, micro-hydro projects, solar, wind, biomass and energy efficiency and conservation programmes. • Conservation efforts to be one of the main drivers for developing the “Brand Bhutan” theme. • Aims to protect biodiversity and genetic resources, and promote indigenous knowledge.

POLICY/PLAN	KEY AIMS	ENVIRONMENTAL / SOCIAL ISSUES
	• Diversify the economic base with minimal ecological footprint. • Harness and add value to natural resources in a sustainable manner. • Increase and diversify exports. • Promote Bhutan as an organic brand - in natural resources, tourism, culture, handicrafts, textiles and agro produce. • Promote industries that build the Brand Bhutan image. • Reduce dependency on fossil fuel especially in respect to transportation.	• Commits to use non-renewable resources (ie minerals) in a sustainable manner to diversify the economy while at the same time ensuring due environmental considerations. • Commits to pursue corporate social responsibility in the construction industry. • Organic farming will be a major focus area. • Commits to phasing out use of harmful chemical fertilizers and pesticides • Encourages bio-exploration and bio-prospecting. • Concludes that the "sensitive mountain ecology and the difficulties of building multi lane highways make tunnelling the most viable option to reduce travel time as well as increase connectivity throughout the country. The development of the road sector especially tunnels shall be in sync with the hydropower development".
Mineral Development Policy, 2011 (draft)	Objectives - to: 46. Develop the scarce mineral resources for optimum value addition so that maximum benefit accrues to the nation; 47. Allow selective & cautious development of minerals for socio-economic development while ensuring environmental sustainability & inter-generational equity in the larger interest of the country; 48. Ensure the availability of construction materials at affordable prices to all the citizens; 49. Increasingly contribute to the national economic development by enhancing generation of revenue & employment; 50. Promote human resource development & ensure that mineral development is carried out by technically qualified professionals; 51. Promote investment in the mineral sector by technically & financially competent entities; 52. Develop an integrated mineral information system in the country; 53. Ensure effective regulation, administration, management & monitoring of the mineral sector.	54. Mining sector is important catalyst to economic growth in terms of revenue and employment generation. 55. Mine reclamation & restoration. 56. Impacts on communities surrounding mines. 57. Mining companies must contribute to a community development fund to be used specifically for drinking water schemes, water source protection, social forestry schemes and renovation of religious sites belonging to the community and other schemes as may be prioritized by the community - managed by a Tshogpa appointed by the affected communities, 58. Priority for employment accorded to the local affected community.
Forestry Policy, 2010	59. *Objectives* – to:	68. Loss of forest cover due to establishment of development projects. 69. Forest fires.

POLICY/PLAN	KEY AIMS	ENVIRONMENTAL / SOCIAL ISSUES
	60. Manage Bhutan's forests for sustainable production of economic and environmental goods and services and to meet the long term needs of society 61. Manage Bhutan's production forests for sustainable supply of timber, other forest products and environmental goods and services and to meet the long term needs of society; 62. Maintain species persistence and ensure long term sustainability of Bhutan's biodiversity, ecosystem services, natural habitats and cultural heritage through a network of Protected Areas, biological corridors and management of other parts of the forest landscape for positive environmental outcomes; 63. Provide for effective and integrated watershed management, maintain and improve water and watershed conditions and contribute to sustainable livelihoods through provision of watershed services; 64. Empower rural communities manage forests sustainably for socio-economic benefits, poverty reduction and to contribute to overall sustainable forest management at national level; 65. Facilitate raising forestry crop on registered land of individuals or institutions and accrue ecological, social and economic benefits; 66. Enable an economically viable and efficient forest based industry aimed at adding value to forest products and build capacity of private sector and rural communities to utilise, process and market forest products; 67. Establish a dynamic organisational set up through institutional reforms for appropriate managerial and technical capacity to implement all policy objectives.	70. Watershed services. 71. Biodiversity. 72. Appropriate vegetation composition 73. Sustainable timber supply. 74. Illegal logging, poaching, illegal trade of wild flora and fauna 75. Human-wildlife conflict. 76. Conservation of scared/heritage sites. 77. Local community access to forest resources (timber, firewood, medicinal plants & herbs, non-wood forest products, etc.)
Renewable Energy Policy, 2011	a) Long-term objectives: • Enhance energy security and broaden the energy portfolio;	• Land acquisition for projects, and compensation

POLICY/PLAN	KEY AIMS	ENVIRONMENTAL / SOCIAL ISSUES
	• Conserve the environment and reduce greenhouse gas (GHG) emissions; • Enhance socio-economic development. b) Short-term objectives: • Support and promote research & development in renewable energy (RE) technologies (solar, wind, biomass, other) with long term objective of a viable energy resource, harness the potential of RE resources and adoption of RE technologies in the country; • Develop RE roadmap for each of the RE technologies by mapping capacity, generation potential and cost of generation by location across the Kingdom. • Design appropriate tariff for various RE technologies to offer secure and stable market to investors and project developers with guaranteed incentives provided by the Government; • Enable, encourage and facilitate both public and private sector participation for the development RE; • Enable to set realistic target for RE for the energy-mix in line with the principles of GNH; institutionalize development of national and local capacities and capabilities for enhanced and optimum utilization of RE systems; • Promote efficient and cost-effective RE systems by providing time-bound incentives; and • Establish the necessary administrative, basic physical infrastructure and institutional mechanisms to implement the provisions of this Policy. • Strengthen regulatory functions in RE sector	
(b) PLANS		
11th Five Year Plan	Introduced "green" concept – prioritises environmental management and reduction of GHG & pollution based on pro-poor, low carbon, eco-friendly, energy- & cost-efficient modalities & strategies	
Phibsoo Wildlife Sanctuary: Conservation	Main objectives:	82. Human-wildlife conflicts 83. Poaching 84. Free-range grazing in forest habitats (large numbers of cattle)

POLICY/PLAN	KEY AIMS	ENVIRONMENTAL / SOCIAL ISSUES
Management Plan (2012-2017)	79. Reduce conservation threats posed by human-wildlife conflicts, poaching, and free-range grazing; 80. Strengthen the infrastructure for effective management of PWS and implementation of planned management interventions; 81. Enhance professional and public knowledge for local biodiversity conservation and related community development.	85. Loss of cereal crops to wildlife 86. Indirect costs - loss of time, added cost of production, expenditure torches, batteries and kerosene, and construction of elevated guard shelters (machans). 87. Wildlife predation on livestock (lower scale than crop damage) 88. Proximity to regional wildlife trafficking routes 89. Spread of animal diseases – where wild and domestic animals overlap. 90. Lack of research & information 91. Limited conservation management infrastructure 92. High security risks due to insurgency in bordering India

Annex 6

Overview of selected analytical and decision-making tools for SEA

Source: OECD/DAC (2006)

1. TOOLS FOR PREDICTING ENVIRONMENTAL AND SOCIO-ECONOMIC EFFECTS

1.1 Carrying capacity analysis (CCA) determines the human population that can be 'carried' by a particular area on given consumption levels, i.e. it identifies the limits to growth. The 'capacity' concept is controversial with continued debate on what exactly it is, and how land can be managed to increase capacity. Ecological carrying capacity usually refers to the maximum population size of a species that an area can support without reducing its ability to support the same species in the future. More information at www.ilea.org/leaf/richard2002.html.

1.2 Network analysis (also called cause-effect analysis, consequence analysis, or causal chain analysis) explicitly recognises that environmental systems consist of a complex web of relationships, and that many activities' impacts occur at several stages removed from the activity itself. It aims to identify the key cause-effect links describing the causal pathway from initial action to ultimate environmental outcome. It doing so, it can also identify assumptions made in impact predictions, unintended consequences of the strategic action, and possible measures to ensure effective implementation. It is useful for identifying cumulative impacts. The technique involves, through expert judgement, drawing the direct and indirect impacts of an action as a network of boxes (activities, outcomes) and arrows (interactions). (Source: Therivel, 2004). For more information, see European Commission (1999).

1.3 Ecological (environmental) footprint analysis addresses the human impact on the Earth's ecosystems, measuring and visualising the resources required to sustain households, communities, regions and nations, converting the seemingly complex concepts of carrying capacity, resource use, waste disposal, etc. into an understandable and usable graphic form. An excellent handbook is Wackernagel and Rees (1996).

1.4 Social and economic analysis/surveys. Information on many of the key tools available for social analytical and survey work are described in the *PSIA User's Guide* for practitioners in developing countries. DFID has funded work on Tools for Institutional, Political and Social analysis of PSIA (TIPS Sourcebook) (soon to be available on the World Bank website). Most are available on the World Bank PSIA website:

http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPSIA/0,,menuPK:490139~pagePK:149018~piPK:149093~theSitePK:490130,00.html

Ministries of finance and other governmental bodies usually use general and partial equilibrium models for planning purposes. These predict how changes in the economy, due to for example fiscal reforms or exchange rate reforms, will affect demand, supply and relative prices. In general, these models can indicate changes in the use of different natural resources, such as energy use and agricultural output. In some cases, models also include effects on different forms of pollution. For more information see http://siteresources.worldbank.org/INTEEI/214584-1115794388939/20486164/ToolkitForAnalyzingEnvironmentalAspectsofPolicyLending.pdf

1.5 Expert judgement of direct and indirect impacts: relatively quick and cheap, and can be used for applications including collecting data, developing alternatives from the strategic policy level to the detailed site level, analysing and ranking them, predicting impacts, and suggesting mitigation measures. One or preferably several experts with specialist knowledge covering the range of impacts of the strategic action brainstorm/discuss/consider the relevant issue. This is sometimes formalised, e.g. through the Delphi Technique which uses consecutive cycles of questionnaires of expert participants until agreement on a subject is reached (Source: Therivel 2004).

1.6 Geographical information system (GIS): a tool to organize and present information. It combines a computerised cartography system that stores map data, and a database management system that stores attribute data. This allows links between the two data sets to be displayed. GISs are often only used to map data. However, they are also valuable analytical tools, e.g. for calculating areas and distances, identifying viewing areas from a point, constructing buffer zones around features, drawing contour lines using interpolated values between points, and superimposing maps of the above. For more information, see European Environment Agency (1998).

1.7 ***Land use partitioning analysis:*** assesses the fragmentation of land into smaller parcels that might result from linear infrastructure development. It involves comparing before and after scenarios. For more information, see European Environment Agency (1998).

1.8 ***Mapping of transmission channels:*** a component of Poverty and Social Impact Assessment that identifies the channels through which a particular policy change or other major intervention is expected to affect stakeholders. There are six main transmission channels: employment, prices - production, consumption, and wages; access to goods and services; assets - physical, natural, social, human, financial; transfers and taxes; and authority. Impacts may be direct (from changes in the policy levers altered by the reform) or indirect (from reform through other channels). The nature of impacts may also vary over time, and so will net impacts on various stakeholders. More information at

http://lnweb18.worldbank.org/ESSD/sdvext.nsf/81ByDocName/Approach3Understandingtransmissionchannels

1.9 ***Modelling (also called forecasting):*** techniques predict likely future environmental conditions with and without the strategic action. Modelling involves making a series of assumptions about future conditions under various scenarios, and calculating the resulting impacts. Models typically deal with quantifiable impacts: air pollution, noise, traffic, etc. Most models used in SEA have evolved from EIA techniques. Many are computerised. (Source: Therivel, 2004). The June 1998 issue of *Impact Assessment and Project Appraisal* (Vol 16, No.2) is devoted to modelling, though mainly in the context of EIA. See also European Commission (1999).

1.10 ***Overlay maps:*** obtained by superimposing maps of areas of constraint using transparencies (e.g. overlaying areas of importance for landscape, wildlife and groundwater protection). The overlay maps can identify areas that would be appropriate/inappropriate for development, and produce easily understandable results that can be used in public participation exercises. For more information, see European Commission (1999).

1.11 ***Participatory techniques for assessment:*** available for work with stakeholders and those likely to be directly or indirectly affected by a strategic action, so they can engage in the process of assessing impacts. They include, for example: participatory learning and action (PLA); participatory dialogues; focus groups and round tables; consensus-building, negotiations and conflict resolution. A useful guide to such techniques is Pretty *et al.* (1995). A participatory poverty assessment (PPA) collects poor people's views regarding their own analysis of poverty and the survival strategies. PPAs focus on poor people's capacity to analyse their situations and to express their priorities themselves. PPAs are an effective tool for obtaining direct feedback from the poor on a country's poverty profile and the impacts of policy reform. Guidance materials on PPA are available at www.worldbank.org/poverty).

1.12 ***Quality of life assessment (QoLA):*** aims to identify what matters and why in an area, so that the good and bad quality of life consequences (environmental, societal and economic) of strategic actions can be better considered. The technique involves identifying benefits/disbenefits that an area offers present and future generations, assessing:

- The importance of each, to whom, and why?
- Whether there will be enough of them;

93. What (if anything) could substitute for the benefits?

The answers lead to a series of management implications from which a 'shopping list' of things that any development/management of the area should achieve, and their relative importance. (Source: Therivel, 2004). For more information, see Countryside Agency *et al.* (2002) www.qualityoflifecapital.org.uk.

2 TOOLS FOR ANALYSING AND COMPARING OPTIONS

2.1 ***Compatibility appraisal:*** ensures that a strategic action is internally coherent and consistent with other strategic actions. This is not strictly an SEA function, more one associated with good planning. Normally two types of matrices are used:

- An internal compatibility matrix plots different components/statements of the strategic action on both axes, with compatibility/incompatibility between the actions marked in the cells with a tick or cross. It is usual to undertake a compatibility analysis between the objectives of the PPP and the SEA objectives;
- An external compatibility matrix plots the strategic actions (as a whole) against other relevant (normally higher- and equal-level) strategic actions. Matrix cells are filled by listing those statements of the strategic action that fulfil the requirements of the other strategic actions, or explaining how the evolving strategic action should take the requirements into account. When no statements in the strategic action fulfil the other's requirements, or where they conflict, this may need to be addressed. (Source: Therivel, 2004).

2.2 Cost-benefit analysis, scenario analysis and multi-criteria analysis to identify priorities and viable alternatives:

Cost-benefit analysis (CBA): A relatively simple and widely used technique for deciding whether to make a change. The technique adds up the value of the benefits of a course of action, and subtracts the costs associated with it. Costs are either one-off, or may be ongoing. Benefits are most often received over time. The effect of time is built into the analysis by calculating a payback period - the time it takes for the benefits of a change to repay its costs. In its simple form, CBA is carried out using only financial costs and financial benefits e.g. a simple cost/benefit analysis of a road scheme would measure the cost of building the road, and subtract this from the economic benefit of improving transport links. It would not measure either the cost of environmental damage or the benefit of quicker and easier travel to work. A more sophisticated approach to CBA is to try to put a financial value on these intangible costs and benefits. Guidance on the use of CBA is available at http://www.mindtools.com/pages/article/newTED_08.htm.

Scenario analysis/sensitivity analysis: can be used to describe a range of future conditions. The impact of a strategic action can be forecast and compared for different scenarios – sensitivity analysis – to test the robustness of the strategic action to different possible futures. Forecasts based on current trends and/or scenarios representing trends outside the decision makers' control are generated and the strategic action's impacts are predicted based on these forecasts/scenarios. Sensitivity analysis measures the effect on predictions of changing one or more key input values about which there is uncertainty. The Stockholm Environment Institute has developed the Polestar Manual for scenarios http://sei.se.master.com/texis/master/search/?q=scenarios&xsubmit=Search%3A&s=SS.
Scenario planning is an example of a number of tools developed within the private sector (see e.g. Shell International 2000). It is used to evaluate future, long-term, business environments and develop strategies that serve the traditional business goals of survival, maintenance and growth in competitive markets. The intention is to develop strategies that are robust enough to be able to adapt the company to shocks and surprises in the business environment. It does this through a systematic process, usually engaging external stakeholders, to consider the nature and impact of uncertain futures and important drivers/influences on changes in technological, societal, environmental, economic, political, commercial, cultural, etc., environments.

The goal of scenario planning is to assist strategic planners and policy analysts to make more resilient choices through understanding a wide range of possible futures and designing pathways to arrive at desired positions.

Key stages in this process include:

- Agree the wide range of issues to address.
- Identify participants (lateral thinkers).
- Workshops and interviews of a 'brain storming' nature.
- Identify uncertainties and drivers of change.
- Develop matrices to describe possible combinations of critical uncertainties.
- Elaborate scenarios for each of the above combinations- again through group discussion.
- Describe requirements (PPPs) to move towards a preferred vision and constraints to be overcome in getting there.

Multi-criteria analysis (MCA): techniques can assess a variety of options according to a variety of criteria that have different units (e.g. $, tonne, km, etc). This is a significant advantage over traditional decision-aiding methods (e.g. cost-benefit analysis) where all criteria need to be converted to the same unit (e.g. dollars only). They also have the capacity to analyse both quantitative and qualitative evaluation criteria (e.g., yes/no, pluses and minuses). MCA techniques have three common components: a given set of alternatives; a set of criteria for comparing the alternatives; and a method for ranking the alternatives based on how well they satisfy the criteria. An MCA manual is available at www.cifor.cgiar.org/acm/methods/mca.html.

- ***Opinion surveys to identify priorities*:** for methods go to http://gsociology.icaap.org/methods/surveys.htm

2.4 Risk analysis or assessment: established itself as an essential tool for the management of environmental risk. An issue for environmental risk assessment is the lack of an easily defined measure of what constitutes *harm* to the environment. In some cases definitions of environmental damage are laid down in statute, but in others appropriate criteria will need to be selected on the basis of scientific and social judgements. For a comprehensive treatment of the basic principles of environmental risk assessment and management, see Calow (1998). Many sources provide guidelines for environmental risk assessment, e.g. http://www.defra.gov.uk/environment/risk/eramguide/index.htm.

2.5 Vulnerability analysis: assesses the impacts of a planned activity or different development scenarios on the vulnerability of an area. Vulnerability maps are produced showing degree of vulnerability for selected targets

(e.g. people, flora and fauna, landscape). These are overlaid and 'weighted' (using GIS and multi-criteria analysis) to indicate areas of high vulnerability and then related to expected levels of impact associated with different development options (e.g. noise increase, groundwater decline) - revealing the locations of negative impacts regarding different targets, and the alternatives with the least impacts. For further information, see van Straaten (1999).

3 TOOLS FOR ENSURING FULL STAKEHOLDER ENGAGEMENT

3.1 General information, techniques, etc: many guidelines are available for effective community involvement and consultation, e.g., www.rtpi.org.uk/resources/publications/ConsultationGuidelines_web.pdf www.iap2.org/associations/4748/files/toolbox.pdf; www.unece.org/env/eia/publicpart.html.

3.2 Consensus building processes: a conflict-resolution process used mainly to settle complex, multiparty disputes. Since the 1980s, it has become widely used in the environmental and public policy arena but is useful whenever multiple parties are involved in a complex dispute or conflict. It allows them to work together to develop a mutually acceptable solution. More information is at www.beyondintractability.org/m/consensus_building.jsp.

A short guide to consensus building is available at http://web.mit.edu/publicdisputes/practice/cbh_ch1.html.

3.3 Stakeholder analysis to identify those affected and involved in the PPP decision: incorporates economics, political science, game and decision theory, and environmental sciences. Current models apply a variety of tools on both qualitative and quantitative data to understand stakeholders, their positions, influence with other groups, and their interest in a particular PPP. In addition, it provides an idea of the impact of the PPP on political and social forces, illuminates the divergent viewpoints towards proposed PPPs and the potential power struggles among groups and individuals, and helps identify potential strategies for negotiating with opposing stakeholders.
Go to http://www1.worldbank.org/publicsector/anticorrupt/PoliticalEconomy/stakeholderanalysis.htm.

SOURCES OF FURTHER INFORMATION ON SEA TOOLS

- A modular Capacity Development Manual for the Implementation of the UNECE Protocol on Strategic Environmental Assessment is being developed by UNECE. It will be available at www.unece.org.

- Therivel, R (2004) *Strategic Environmental Assessment in Action*, Earthscan: London contains an Appendix with SEA prediction and evaluation techniques. It covers expert judgement, quality of life assessment, overlay maps, land use partitioning analysis, geographical information systems, network analysis, modelling, scenario/sensitivity analysis, cost-benefit analysis, multi-criteria analysis, life cycle analysis, vulnerability analysis, carrying capacity, ecological footprint, risk assessment, and compatibility appraisal.

- Rauschmayer F. and Risse N. (2005) A Framework for the Selection of Participatory Approaches for SEA, *Environmental Impact Assessment Review*, 25(6): 650-666, covers: mediation, mediated modelling, consensus conference, citizens' juries and co-operative discourse.

- Finnveden G., Nilsson M., Johansson J., Persson A., Moberg A. and Carlsson T. (2005) Strategic Environmental Assessment methodologies - Applications within the Energy Sector. Environmental *Impact Assessment Review*, 23(1): 91-123. This paper covers: future studies, LCA, environmentally extended input/output analysis, risk assessment of chemicals and accidents, impact pathway approach, ecological impact assessment, multiple attribute analysis, environmental objectives, economic valuation, surveys, and valuation methods based on mass, energy and area.

Annex 7

Example of objectives compatibility analysis: compatibility of objectives for Poole Port Masterplan (UK) against environmental and social quality objectives

(Source: Ramboll (2012)

√ Likely compatibility
- Relationship complex (or there is more than one potential outcome, depending on the interpretation of the Masterplan objective and the way that it is met
X Likely incompatibility

Port of Poole Masterplan objectives	**To continue to operate a commercially viable port with a diversity of activities**	**To continue to promote safe use of the harbor for all**	**To continue to educate and promote amongst harbor users the sustainable use of the harbor for commerce, recreation and amenity**	**To continue to protect and maintain the special natural features of the harbour**	**To support the wider economy and community**
ESQOs					
1: To preserve, protect and enhance biodiversity on or in the vicinity of the port	-	-	√	√	-
2: To reduce accidents and incidents in the port and harbor and reduce risk/improve safety for the users of the harbour	√	√	√	-	-
3: To improve the strength of the region's economy, including through providing a diverse range of employment opportunities	√	-	-	-	√
4: To improve the accessibility of community amenities and facilities to local residents	-	-	√		-
5: To encourage the protection of water resources	-	-	-	√	-
6: To minimize the impact on soil and land resources including contamination and loss	-	-	-	√	-

7: To contribute towards improving local air quality	-	-	-	-	-
8: To contribute towards the reduction of greenhouse gas emissions	-	-	-	-	-
9: To contribute towards the protection and enhancement of sites, features and areas of historical and cultural value	-	-	-	√	-
10: To contribute towards the protection and enhancement of the landscape character of the area	-	-	-	√	-
11: To contribute towards the improvement of levels of congestion and reliability on the road networks in the vicinity of the port	-	-	-	-	√
12: To contribute towards the reduction of noise levels from activities on port land	-	-	-	-	-

Annex 8

Developing SEA environment and social objectives, indicators and targets

Environmental and social quality objectives (ESQOs) are widely used to ensure that the right level of consideration is achieved. An objective is a statement of what is intended, specifying a desired direction of change. For these Guidelines, a distinction needs to be made between three types of objectives:

- The ***objectives of the PPP*** in question: government policies and guidance increasingly require these to be based on sustainability considerations, and the development of ESQOs for a SEA may help to promote ideas for making them more environmentally friendly and sustainable.
- ***External objectives***: other objectives to which the PPP proponent needs to have regard independently from the SEA process. They may include environmental protection objectives (which, if binding, must be covered in the SEA report), but they can also be economic or social. They may also include obejecties of international conventions, treaties and regional accords to which a country is a signatory as well as the UN sustainable development goals (SDGs).
- ***SEA ESQOs***: devised to test the environmental and social effects of the PPP or to compare the effects of alternatives.

Objectives can be expressed so that they are measurable (e.g. an objective to reduce greenhouse gas emissions could be expressed as "reduce CO_2 emissions by 12.5% by 2010"). The achievement of objectives is normally measured by using indicators.

ESQOs can often be derived from environmental protection and social objectives identified in other PPPs or from a review of baseline information and environmental and social problems. Stakeholders may also suggest ESQOs for the SEA.

Some SEA ESQOs and indicators are shown in Table A8.1. They are derived froma much larger matrix of ESQOs and indicators developed during scoping for the ADB's Energy Transition Mechanism (ETM).

These objectives and indicators can be adapted (by addition, modification or deletion) to take account of national circumstances/contexts and concerns.

Table A8.1: SESA environmental and socio-economic quality objectives for key issues, suggested indicators, and related sustainable development goals and Just Transition principles

THEMES		OBJECTIVE	RELATED SDGS	MDB JT PRINCIPLES	POTENTIAL INDICATOR(S) (Affected areas = those affected by energy facilities and associated infrastructure under ETM)
Environmental					
Climate change	1	Reduce emissions of GHGs from energy generation	13	1,2	• Pre-closure emissions of CO_2 from stacks (tonnes/yr) (*to provide measure of reduction when CFPP is closed*) • CH_4 emissions (e.g. from uncapped abandoned mine shafts and dams) (tonnes/yr) in ETM-affected areas
	2	Increase resilience of the country's overall energy supply to climate change impacts	13	1, 2	• Vulnerability of energy supply to climate change impacts (low, medium, high)
Habitats, biodiversity and protected areas	3	Minimise loss of habitats, biodiversity and ecosystem(s) integrity and services	14,15		• Area of natural habitat and critical habitat (Ha) *[as per IFC PS6 definitions (IFC 2012)]* in ETM-affected areas • Population of key indicator species (to be determined at national level) in ETM affected areas (numbers) *(to measure change compared with baseline data)*
	4	Minimise deforestation	13,14		• Forest coverage in ETM affected areas (Ha)
	5	Reduce encroachment and degradation of protected and sensitive areas	15		• No of reported cases of illegal resource extraction (e.g. poaching, illegal fishing, illicit felling) in PAs • Volume of seized illegal timber (cubic m) taken from protected and sensitive areas
Air quality	6	Reduce all forms of air pollution	3,14,15		• Ambient concentration of $PM_{2.5}$ at selected sites (µg/m$^{3)}$, • Ambient concentration of NO_2, at selected sites (µg/m^3), • Direct emissions of SO_2, NOx, $PM_{2.5}$, CO, heavy metals and volatile organic compounds (VOCs) (g/ kWh) at selected sites
Surface water quality	7	Reduce all form of water pollution (surface and groundwater)	3,6,14,15		• Water quality at selected sites (heavy metals, nitrate, phosphate, BOD) (mg/L) • COD/TN/TPh/TSS/Temp/T bacteria Volume of discharge (m^3 / kWh)

THEMES		OBJECTIVE	RELATED SDGS	MDB JT PRINCIPLES	POTENTIAL INDICATOR(S) (Affected areas = those affected by energy facilities and associated infrastructure under ETM)
Solid waste	8	Reduce waste disposed to landfill (e.g. by increasing repurposing, recycling and reuse of assets)	3,15		• Volume waste disposed to dump sites by energy operators under ETM (tonnes) • Percentage of waste diverted from landfill by energy operators under ETM (%)
	9	Improve safe handling, storage and disposal of solid waste	3,15		• Capacity of recycling plants in country (tonnes/yr) • Number of hazardous waste treatment facilities • Capacity of hazardous waste treatment facilities
Materials use	10	Minimise use of non-renewable and toxic materials used in developing new assets	3,6,15		• % of non-renewable resources used in constructing new renewable energy assets
Land contamination	11	Maintain soil and groundwater quality and reduce land contamination	6,15		• Number of pollution incidents linked to the continuing operation of CFPPs/mines (in the period up to retirement) and after retirement/closure, and to ETM funded renewable energy projects
Noise and vibration	12	Minimise disturbance caused by noise and vibration	3		• No hrs. in which noise at selected sites exceed a set standard (to be determined) (dBA) during both operation (whilst awaiting retirement) of CFPPs/mines and during retirement/closure process; • No. hrs in which noise at selected sites excveed a set standard (to be determined) (dBA) during construction and operation of renewable energy projects
					• Average day time noise at boundary of selected projects (dBA)
Land degradation	13	Minimise soil, river bank and sea bed erosion, and sedimentation of surface water	14,15		• Extent of degraded land or impacted surface waters (Ha) in ETM-affected areas
Land use change	14	Minimise loss and degradation of productive agricultural land, forests, grazing land, and fisheries	15		• Extent of such lands lost/degraded (Ha) in ETM-affected areas
Water use	15	Minimise use of local water resources and ensure efficient use/reuse of water	3,6,11		• Net volume of water used (m^3/yr)

THEMES		OBJECTIVE	RELATED SDGS	MDB JT PRINCIPLES	POTENTIAL INDICATOR(S) (Affected areas = those affected by energy facilities and associated infrastructure under ETM)
Visual impacts	16	Minimise extent of visual change to landscape and loss of aesthetic value	3		• Number of complaints regarding a negative aesthetic impact • Area subjected to a change in view (size of viewshed) (Ha)
Health and safety	17	Ensure population health, and safety of communities and workers	3,6,8		• Life expectancy (yrs) • Incidence of specific diseases in affected areas (number of cases reported to clinics/hospitals) (*if such data is available/accessible*) in affected areas • Number of accidents related to CFPPs/mines whilst awaiting retirement under ETM, and during retirement/closure process • Number of accident related to construction and operation of renewable energy projects under ETM
Socio-economic					
Economic growth	18	Enhance economic development and diversification, and increase in economic growth (regionally & nationally)	8	1,3	• Per capita GDP • Volume of coal exports (national) (metric tons) • Inflation rate (%) • Contribution of coal and renewable energy to GDP (%)
Employment and skills	19	Enhance and maintain opportunities for employment and decent work for all, and maintain income levels	1,8,9	1,4	• Number of people employed long-term (more than 1 year) in each type of energy project under ETM (coal power plants, mines, renewable energy projects) • Number of workers losing income from ETM projects
	20	Minimise loss of skilled workers	1,8,9	1,4	• Number of skilled jobs lost • Number of workers retrained/re-skilled
Local economy and livelihoods	21	Minimise loss of livelihoods including for vulnerable groups and indigenous peoples	1,2,10	1,4	• Number of small businesses closing due to implementation of ETM • Number of people having reduced income due to ETM implementation

THEMES		OBJECTIVE	RELATED SDGS	MDB JT PRINCIPLES	POTENTIAL INDICATOR(S) (Affected areas = those affected by energy facilities and associated infrastructure under ETM)
	22	Enhance equitable opportunities for new/improved and diversified and sustainable livelihoods	1,2,10	1,4	• Number of new jobs available in non-ETM businesses in ETM affected areas
	23	Improve access to affordable and quality housing	3,11	1,4	• Average price of land and housing (rental and for sale)
	24	Minimise gender inequality and minimise vulnerable groups being disadvantaged	4,8,10	1,5	• Number of social security entitlements, benefits and / or (financial) support packages claimed under ETM, by sex, age, disability and indigenous status
					• Percentage of all job advertisements for ETM projects targeting women and vulnerable groups via positive / affirmative action (%)
					• Number employed in non-ETM businesses in ETM affected areas by sex, age, disability and indigenous status
					• Percentage of females employed in ETM facilities (%)
					• Number of females retrained/reskilled for other jobs following CFPP/mine closure under ETM
					• Number of people from indigenous communities employed in ETM facilities
					• Number of people from indgenous communities retrained/re-skilled following CFPP/mine closure under ETM ?
	25	Minimise competetition by men for jobs in sectors dominated by women	4.8,10	1,5	• Number of men in ETM affected areas employed in women-dominated sectors
Food security and price	26	Improve food security for all	2,3	1,4	• Status of food security - as measured by availability of selected communities (e.g. in shops/markets) (plentiful/moderate/scarce)
					• Price of rice, corn, meat and vegetables in selected communities
					• Food quality in selected communities (good/moderate/poor)
					• Rice production in selected communities (tons/yr)

THEMES		OBJECTIVE	RELATED SDGS	MDB JT PRINCIPLES	POTENTIAL INDICATOR(S) (Affected areas = those affected by energy facilities and associated infrastructure under ETM)
					• Nutritional level in selected communities (Average Kcal/person/meal)
Physical and economic displacement	27	Minimise physical and economic displacement	3,16	1,4	• Number of housholds relocated due to ETM projects • Number of housholds suffering lost land due to land acquisition for ETM projects
Conflicts	28	Reduce conflicts (e,g, over use of and access to land, between migrant workers and local population, between developers and local communities)	16	1,4	• Number of reported disputes
Community cohesion and engagement	29	Minimise disruption to household relationships	11	1,4	• Number of reported cases of domestic violence linked to CFPP/mine closure or development of renewable energy projects under ETM • Number of divorces linked to CFPP/mine closure or development of renewable energy projects under ETM
	30	Enhance inclusive and transparent engagement by communities, interested and affected parties (CIAPs) in planning and implementation of ETM initiatives	8,16	1,5	• Number of public and private consultation events organized for ETM (overall and for individual projects?) • Number of submissions/comments received for ETM (overall and for individual projects) • Percentage of representatives from vulnerable groups attending meetings (overall and for individual projects)(%) • Percentage of consultation events that provide for representation by NGOs/CSOs/trade unions
Public services and infrastructure	31	Maintain and improve local public facilities and services	9	1,4	• Number of facilities by type in each ETM affected area • Number of grievances (made through designated grievance mechanism) about adequacy of particular public services and infrastructure per month/year • Number of doctors per 1000 head population in each ETM affected area
Human rights	32		10,16		• Reported cases of complaints about infringements of human rights linked to CFPP/mine closure under ETM

THEMES		OBJECTIVE	RELATED SDGS	MDB JT PRINCIPLES	POTENTIAL INDICATOR(S) (Affected areas = those affected by energy facilities and associated infrastructure under ETM)
		Avoid infringement of human rights of workers, communities and vulnerable groups (including in supply chains)		1,4 5	• Reported cases of complaints about infringements of human rights linked to renewable energy projects under ETM
					• Number of children reported to be working on ETM projects falling into the category of child labour
					• Number of reported cases of bonded labourers in renewable energy projects under ETM
					• Number of workers recorded to be underpaid (less than legal minimum wage for normal working hours, less than statutory overtime pay for overtime hours) in renewable energy projects under ETM
					• Number of persons reporting infringements to freedom of movement (passports withheld by renewable energy projects)
					• Number of substandard contracts identified on ETM projects
Migration	33	Minimise outmigration			• Rate of migration out of communities where CDFPP/mines closed under ETM (%)
	34	Minimise the number of unskilled immigrants competinglocal people for employment in ETM facilities		1,4	• Number and % of unskilled, semi-skilled and skilled workers by gender and origin (international, national, local and project affected persons) per ETM facility
Cultural heritage	35	Preserve heritage sites (historic buildings, archaeological and cultural sites)	3		• Number of cultural heritage sites impacted per ETM facility (including associated infrastructure)

List of Sustainable Development Goals

- ***No poverty***: End poverty in all its forms everywhere
- ***Zero hunger***: End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- ***Good health and well-being:*** Ensure healthy lives and promote well-being for all at all ages
- ***Quality education****:* Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- ***Gender equality****:* Achieve gender equality and empower all women and girls

THEMES		OBJECTIVE	RELATED SDGS	MDB JT PRINCIPLES	POTENTIAL INDICATOR(S) (Affected areas = those affected by energy facilities and associated infrastructure under ETM)
• ***Clean water and sanitation***: Ensure availability and sustainable management of water and sanitation for all • ***Affordable and clean energy****:* Ensure access to affordable, reliable, sustainable and modern energy for all • ***Decent work and economic growth****:* Promote sustained and inclusive and sustainable economic growth, full and productive employment and decent work for all • ***Industry, innovation and infrastructure***: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation • ***Reduced inequalities***: Reduce inequality within and among countries • ***Sustainable cities and communities*****:** Make cities and human settlements inclusive, safe, resilient and sustainable • ***Responsible consumption and production***: Ensure sustainable production and consumption patterns • ***Climate action***: Take urgent action to combat climate change and its impacts • ***Life below water***: Conserve and sustainably use the oceans, seas and marine resources for sustainable development • ***Life on the Land:*** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss • ***Peace, justice and strong institutions***: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels • ***Partnerships for the goals***: Strengthen the means of implementation and revitalise the global partnership for sustainable development.					
MDB Just Transition Principles					
• MDB support for a just transition aims to deliver climate objectives while enabling socio-economic outcomes, accelerating progress towards both the Paris Agreement and the SDG • MDB support for a just transition focuses on ***moving away from GHG emissions intensive economic activities*** through financing, policy engagement, technical advice and knowledge sharing, in line with MDB mandates and strategies, and country priorities including NDCs and long-term strategies. • MDBs will encourage support for a just transition by building on existing MDB policies and activities, mobilising other sources of public and private finance, and enhancing coordination through strategic plans that aim to deliver ***long-term, structural economic transformation***. • MDB support for a just transition seeks to mitigate negative socio-economic impacts and increase opportunities associated with the transition to a net zero economy, ***supporting affected workers and communitie***s, and enhancing access to ***sustainable, inclusive and resilient livelihoods*** for all. • MDB support for a just transition encourages transparent and inclusive planning, implementation and monitoring processes that ***involve all relevant stakeholders and affected groups***, and that further ***inclusion and gender equality***.					

Annex 9

Developing scenarios

Scenarios are a technique for presenting alternative views of the future. They identify some significant events, the main actors and their motivations, and they convey how the world functions. Scenario development allows us to think systematically about and understand the nature and impact of the most uncertain and important driving forces affecting our future.

The purpose of scenario development is not to imminently decide which scenario is correct; rather it is to look at each plausible future scenario and examine how prepared a country or organisation is or how robust a PPP is, for the potential change and consequences.

Scenario development helps policy-makers to anticipate hidden weaknesses and inflexibilities in organizations, methods and PPPs. Most development PPPs are fixed in that they tend to assume a self-validating future – one usually based on extrapolation or prediction that dominates decision-making (and usually termed the ***default scenario***). However, we live in world in which there are sudden changes and ***uncertainties*** (no-one predicted the COVID pandemic!) – so PPPs fail to hold up under the stream of real events – and lead us into ***shocks and surprises.***

Scenario development deals with "what if?" questions and helps clarify a vision of the way ahead, capable of modification but allowing progress.

Thus, constructing scenarios enable the feasibility and effectiveness of a proposed PPP or its alternatives to be evaluated in different future conditions. There are four main steps involved in constructing scenarios. These are:

- Identifying the strategic issues associated with the PPP (i.e. what are the critical success factors and key concerns);
- Analysing the present conditions and levels of environmental quality and social well-being;
- Identifying the most important and relatively predictable factors, or 'key drivers of change' and the uncertainties that will determine the nature of the future environment in which the proposed PPP or its alternatives will operate and link them together into a framework; and
- Deriving two to four realistic scenarios associated with the effects of these most important factors on present conditions, and determining which critical outcomes have most potential to affect the proposed PPP and particularly components of the PPP.

Table A9.1: indicates a typical scenario building process.

Table A9,1: Scenario building process

Scenario building steps & tasks	Comments
Identify scenario setting	• Identify key factors and keep focus – avoid drifting or going too broad; • Consider the appropriate time horizon for the scenario.
Identify & analyse key drivers of change	• Select macro/broad drivers, possibly global; • Drivers include social, technological, political, economic, environmental forces; • Understand forces and dynamics; • Undertake initial research and analysis; • Organise multi-stakeholder workshop and seek expert option.
Ranks drivers according to importance and uncertainty	• Identify 2/3 most important factors/trends and the most uncertain ones;

Scenario building steps & tasks	Comments
	• Focus attention on selection of the scenario logics – eg high importance/low uncertainty forces (these are the potential shapers of different futures for which longer-term planning should prepare).
Select scenario logics	• Plot selected drivers on axes (eg high- low, improving-declining) along which the scenarios can be constructed (see example in Figure A9.1); • From the different plots, select a manageable number of scenarios (about 3) that are most worthy of articulation; • Eliminate those whose combinations of logics are implausible/inconsistent.
Flesh out the scenarios	• Prepare a written description of the selected logical scenarios.
Assess the impacts of the PPP or alternative under each scenario	• Assess the environmental & social impacts of the PPP or its alternatives under each scenario and compare.

Figure A9.1: Example scenario plot for global growth

(Source: McKinsey https://www.google.co.uk/search?q=scenario+diagram&espv=2&biw=1366&bih=667&source=lnms&tbm=isch&sa=X&ved=0ahUKEwii5pzP04nOAhWkKsAKHXGBCPwQ_AUIBigB#tbm=isch&q=development+plan+scenarios+axes&imgrc=VqwJBKwkEfDjfM%3A)

The process of scenario building should raise awareness of uncertainties, risks and constraints which could be encountered in the future

In developing and assessing scenarios, the 'worst case' scenario should be identified. The issues and consequences of the 'do-nothing' (or 'business-as-usual') scenario should also be identified, as these two scenarios can serve as a benchmark for the evaluation.

It can also be very helpful for the SEA to examine basic ***meta scenarios*** in relation to economic growth, eg

- *Baseline scenario* (the current situation) – drawing from the baseline profile;
- *Business as usual scenario* – essentially organic growth extrapolating current plans and trends (i.e. current trends continue, developments in the pipeline are realized, but there is not much stimulation for added growth and there is little significant change to the current situation);
- *Low growth scenario* - as with business-as-usual but with a low level of stimulation to growth with some new developments (e.g. new infrastructure);
- *Moderate growth scenario* - a moderate level of stimulus for growth is provided by government, with planned expansion/improvement of infrastructure and improved production – consistent with Bhutan's objective to achieve balanced regional growth.
- *High growth scenario* –- a high level of stimulation is provided to achieve significant and rapid development.

Such scenarios can also be used as alternatives to ve assessed.

Annex 10:

CONSOLIDATED CHECKLIST FOR THE QUALITY ASSURANCE, REVIEW, AND PERFORMANCE EVALUATION OF A COMPREHENSIVE SEA

There are a number of SEA quality assurance, review, and evaluation checklists available on the internet. This *Consolidated Checklist* combines the following resources:

- EU SEA Directive-based environmental report quality review table; quoted in Fischer (2007).
- IAIA (2002)
- NEMA (2012)
- Report Review Sheet. In NEMA (2012)
- ODPM (2005).
- Therivel R. (2006).
- Therivel R. (2010).

The Consolidated Checklist provides a relatively complete and robust system to quality-assure, review, and evaluate a ***comprehensive*** SEA from start-to-end (i.e., from scoping process to development outcomes), focusing different sections of the consolidated checklist on:

- Scoping Process and TORs;
- Draft SEA Report:
- Internal/ Administrative Review
- Detailed Content Review
- SEA Outcomes.

It goes without saying that quality assurance, review, and evaluation procedures have to be modified for ***SEAs that are quick appraisals or semi-detailed.***

INTRODUCTION

Note: The checklist cannot be used in a 'cookbook' fashion. Each SEA is unique; each SEA is tied to its TORs (including any limitations imposed on it by budget, available resources, data gaps, and context). The reviewer will NOT be able to answer all the listed questions in all cases; some questions may not be relevant to a specific SEA exercise. The 'checklists' are meant to ***guide reviewers*** (and to guide those responsible for conducting SEAs and writing SEA reports)! The checklists are not a prescription and they cannot replace (context-specific) good judgment!

The checklists comprise 11 sections that will provide reviewers and practitioners some insights into what to include in a comprehensive SEA and what to look for during review. Please always bear in mind the context specific-ness of the actual SEA exercise, the SEA's tier (policy vs. program level), the SEA's administrative level (national vs. local), and the SEA TORs (especially budget and allocated resources).

Section 1 can be used to conduct quality assurance on a scoping report.

Section 2, *'General Review'* mainly reviews the Report Presentation. NECS should complete this review before the report is sent to other stakeholders for review.

Sections 3 to 8 cover a '*Detailed Content Review*', which can be used by internal and external reviewers to systematically review these important SEA report chapters:

- Section 3: PPP description;
- Section 4: Policy and legal framework and links;
- Section 5: Description of the environmental baseline;
- Section 6: Determination of impact significance and evaluation of alternatives;
- Section 7: Mitigation and Environmental Management and Monitoring Plan (EMMP);
- Section 8: Consultation process.
- ***Sections 9–11*** can be used to monitor and evaluate SEA outcomes:
- Section 9 reviews aspects of the decision-making process;
- Section 10 reviews the SEA process overall.
- Section 11 looks at certain aspects related to SEA performance.

The review of scoping, the review of the SEA report in general and in detail, and review of the SEA outcomes will occur at different times in the PPP/SEA timeline. Table A10.1 summarizes the review system.

Table A10.1: The review systems at a glance

Type of review	Topic / review section	Main (Responsible) entity
Review of SEA Scoping	1. Scoping procedure	PPP proponent / SEA consultant / & competent authority
Review of the SEA Report:		
General Review	2. General Review of the SEA Report	Mainly comptent authority
Detailed Content Review	3. PPP description 4. Policy & legal framework and links 5. Description of the environmental baseline 6. Determination of impact significance & evaluation of alternatives 7. Strategic Environmental Management Plan (SEMP) 8. Consultation process	Reviews conducted by: • Lead agencies; • Public review; • Independent Committees [Technical Advisory Committee, or Independent Expert Commission). All review comments consolidated and considered by competent authority
Review of Outcomes: SEA Implementation	9. Decision making 10. IAIA SEA process review 11. SEA performance monitoring & evaluation	Competent authority

PROPOSED REVIEW PROCEDURE

- Within a given review exercise, each reviewer would be expected to summarize his/her review comments by topic/review section (and in the case of Lead Agencies, also by mandate, e.g., energy).
- Each entity could then summarize all the comments of its reviewers by topic. For instance, in the case where external reviewers are participating (e.g., during the technical review of the SEA document), each Lead Agency could summarize the comments of all of its reviewers by topic (e.g., Environmental Baseline).
- The competent authority is the entity that would have to consolidate the review comments from all the entities involved in the review process, for its deliberations and final decision /recommendations.

1. REVIEW OF SCOPING

Was the methodology used to conduct scoping described? Was it adequate? (i.e., Did it lead to a correct identification of key issues, objectives, stakeholders, & alternatives?)

Is there a clear description of the PPP & the PPP's objectives, the scope of the strategic action, and what the PPP can and cannot do?

- Were the objectives of the PPP confirmed and clarified and are they in line with existing (environmental, social or other) objectives?
- Were the PPP objectives & targets reviewed against the national, regional, or local environmental and social action plan(s)?
- Were the links between the PPP and higher- and lower-tier strategic actions considered?

Did the scoping process describe enough baseline to identify key problems? Did the scoping process identify key sustainability issues? Does the scoping report:

- List the environmental / social/sustainability issues considered in the assessment?
- Describe how key environmental/social/sustainability issues were identified?
- Highlight what matters are more appropriately assessed at other levels or layers of decision-making?
- Provide information on existing environmental/social/sustainability problems that are relevant to the PPP, including those relating to any areas of particular importance to sustainability?
- Outline the significant issues that need to be studied during the SEA?
- Provide valid reasons for eliminating some issues from further consideration (i.e., explain why were certain issues 'scoped' out?)
- Regarding studies to be conducted during the SEA, are the baseline-data-collection requirements related to the SEA objectives?

Did the scoping process identify adequate SEA Objectives?

- Does the scoping report provide information on relevant international & national environmental protection and social objectives?
- Were the international & national environmental protection, social & sustainability issues adequately considered in selecting & developing the SEA objectives, indicators, & targets?
- Was the national policy and institutional framework adequately considered in selecting and developing SEA objectives, indicators, and targets (e.g. other development, sectoral, or poverty alleviation objectives)?
- Were the SEA objectives described & clearly defined, quantitatively where appropriate?
- Do the SEA objectives & indicators cover an appropriate range of environmental, social & sustainability topics, including relevant objectives for the biological (e.g., for biodiversity & ecosystems), physical (e.g., for soil, water, air, landscape, climate change), & socio-cultural & economic components (e.g., for health, equity, poverty, heritage, or economy)?
- Were adequate decision criteria identified for the assessment (e.g., the use of relevant standards).?
- Were the technical, procedural, & other difficulties discussed (e.g., technical deficiencies, data gaps, or lack of know-how)? Were the assumptions & uncertainties made explicit?

Did the scoping process identify reasonable / adequate alternatives? Does the scoping report:
- Consider & describe how reasonable alternatives were identified & selected for further assessment?
- Were the alternatives that were selected for further assessment appropriate to the scale (national vs. local) and level (policy, plan, or programme) of decision-making?
- Do the alternatives deal with the key issues identified in the issues analysis?
- Do the alternatives include (among others) the 'do nothing'/'do minimum'/'business as usual' alternative & the 'most environmentally beneficial' alternative?
- Are the alternatives in the PPP proponent's remit (i.e., in terms of geographical scope, objectives, and legal competence)?
- Are the alternatives feasible (i.e., are the relevant resources and technology available? are the alternatives implementable)?
- Are the alternatives relevant to the decision-making process (i.e., are the alternatives for 'real', as opposed to made-up for the SEA exercise)?
- Were reasons given for eliminating some alternatives? (Also see: 6b: *Evaluation of alternatives & selection of preferred alternative*).

Was the stakeholder consultation process conducted during scoping relevant and adequate? (i.e., were key stakeholders identified? was the stakeholder consultation process culturally appropriate)?

Was a careful stakeholder analysis carried out to identify and characterize stakeholders?
- Was the start of the PPP planning process announced and were key stakeholders brought together to agree on the problem, objectives, and alternatives?
- Were appropriate consultation bodies (including NGOs) & relevant authorities (including environmental and health authorities) consulted in appropriate ways and at appropriate times on the content, scope, alternatives, SEA objectives, and level of information to include in the SEA report?
- Was an appropriate communication plan / stakeholder engagement plan developed for the full SEA?
- Did the scoping process identify adequate spatial & temporal boundaries for the SEA?

Terms of References for the SEA study:
- Do the SEA TORs focus on significant issues?
- Does the SEA work plan to implement the SEA study seem appropriate?
- Does the SEA budget to implement the SEA study seem appropriate?
- Is the budget sufficient to implement the work plan?
- Was a management team and a SEA coordinator appointed?
- Is the list of experts (with supporting accreditation) adequate to conduct the study?
- Are the methods of data analysis & sources of relevant information listed?

2. GENERAL REVIEW OF THE SEA REPORT

*** The reviewer may need to interview some stakeholders.*

Is the SEA report complete, acceptable, and adequate (as defined below)?
- Does the SEA contain these chapters: non-technical summary, introduction, PPP description, environmental and social analysis (baseline description, evaluation of alternatives &risks, mitigation measures, consultation), recommendations, accompanying SESMP & appendices?
- Does the ***non-technical summary*** explain the overall approach to the SEA, the objectives of the strategic action, the objectives of the SEA, the main alternatives considered, the proposed mitigation & monitoring plan, & how the SEA changed the strategic action?
- Specifically, does the ***non-technical summary*** provide a statement summarizing:

- How environmental/social/sustainability considerations (and their relationship with economic concerns and drivers) were integrated into the PPP?
- How the SEA report and the results of the consultations were taken into account?
- The reasons for choosing the selected PPP over other reasonable alternatives?

Is the SEA report:
- Clear and concise in its layout and presentation? Does it use simple, clear language?
- Adequate in scope? (i.e., Has it adopted a good time horizon? An adequate spatial scale)?
- Practical in focus? (i.e., Does it focuses on a limited number of key issues, targets, indicators)?
- Presented as an integrated whole? (e.g., Are the chapters harmonized)?
- Carried out in a professional manner? (i.e., Does it provide an impartial/balanced analysis)?
- Presented in an open manner? (i.e., Are the methods & data accessible? Are assumptions explicit)?

Does the SEA report:
- Define necessary technical terms? Does the report avoid technical jargon?
- Identify the decision-maker?
- Identify who carried out the SEA and their competences?
- Provide a declaration jointly signed by the SEA consultant and the PPP owner?
- Use maps, other illustrations, and summary tables where appropriate?
- Describe the methodology used in the SEA (i.e., methodology for scoping, impact identification, prediction, evaluation, comparison of alternatives, & stakeholder identification & analysis)?
- Were the methods used appropriate to the size and complexity of the assessment tasks?
- Were difficulties explained (e.g., technical deficiencies or lack of know-how; data uncertainties or data quality issues)?

Was the draft PPP and draft SEA made available for public consultation and review by relevant authorities in a timely manner? Does the SEA report:
- Explain who was consulted and what consultation methods were used?
- Provide proof that various stakeholders were consulted (e.g., signed statements and/or minutes) and summarize the comments received and how each comment was addressed?
- Focus on the big issues / relevant strategic issues?
- Discuss the scope of the SEA? (i.e., Is the scoping report attached?)
- Comply with the policy, legal, and administrative framework for conducting a SEA (including being in compliance with existing procedural and substantive guidelines)?
- Comply with the TORs?
- Identify all sources of information, including expert judgment& matters of opinion?
- Provide adequate information (i.e. comprehensive, rigorous, understandable, & in compliance with the TORs) from the point of view of the PPP owner? What is missing? **
- Provide adequate information from the point of view of the key stakeholders & the TORs? What is missing?

3. DESCRIPTION OF THE PROPOSAL (+ LINKS)

Does the SEA report:
- Clearly highlight the strategic action's purpose and objective(s)?
- If the SEA procedure was simultaneous with the PPP-making process, does the SEA describe how the SEA and the PPP-making processes were integrated:
    - ***Simultaneous with integrated SEA process*** (i.e., one team): Does the report describe what inputs & how the SEA inputs were integrated? Is this well documented?
    - ***Simultaneous with parallel SEA process*** (i.e., two teams): Does the SEA report describe what inputs/how/when the SEA inputs were integrated into the various decision-making windows / opportunities)?
- Identify the degree to which the PPP sets a framework for other projects/other activities (e.g., in terms of location, size, nature and operating conditions, or resource allocation and future projects that will require EIAs)?
    - Explicitly highlight the links to project-level EIA (i.e., Does it explain what type of projects requiring EIA will follow from implementing the PPP)?
- Clearly outline the (expected) content of the PPP, including the area covered and the implementation timeframe?
    - Identify (&describe to extent possible) PPP implementation activities that could influence:
- Important ecosystem services / important ecosystem diversity;
- Areas with legal and/or international status?
    - Identify (&describe to extent possible) PPP implementation activities that could influence:
- Changes in land use or lead to the depletion of natural resources;
- The production of raw materials, chemicals, and other hazardous products;
- The generation of pollutants and wastes?

    - Identify (and describe to extent possible) PPP implementation activities that could lead to these *direct drivers of change:* (also see Section 'Baseline'):
- Land conversion;
- Fragmentation (and isolation of important habitats);
- Extraction / use of natural resources;
- Wastes (all types);
- Disturbance of ecosystem composition, structure, or key processes;
- Introduction of alien species;
- Restoration;
- Population changes;
- Conversion or diversification of economy or land use;
- Enhanced transport, services, or access;
- Marginalization and exclusion?
    - Identify (and describe to extent possible) PPP implementation activities that could lead to *indirect drivers of change*:
- Societal changes (demographic, economic, socio-political, scientific, or changes in social values) (e.g., a new technology could result in more intensive use of a resource in the future)?
- Are the ***assumptions about what the strategic action will 'look' like*** when implemented clearly stated or, if implicit, do they make sense? (This query is repeated in Section 6)

4. POLICY AND LEGAL FRAMEWORK AND RELATIONSHIP TO OTHER PPPS

Does the SEA report:
- Clearly explain the PPP's links to other related PPPs, including links between the strategic action and related higher- and lower-tier strategic actions?

Consistency and Compatibility Analyses:
- Does the SEA identify & describe any conflicts that exist between the SEA objectives (e.g., an internal consistency analysis on the SEA objectives)?
- Does the SEA identify & describe any conflicts that exist between the PPP's objectives (i.e., internal consistency analysis of the PPP objectives)?
- Does the SEA identify & describe any conflicts that exist between the SEA objectives & the PPP's objectives (compatibility analysis)?
- Does the SEA identify and describe any conflicts that exist between the PPP's objectives & the objectives of other PPPs (compatibility analysis)?
- Where the proposed PPP, other strategic actions, or other objectives are in conflict, does the report clearly document the reasons for the conflict and does it make recommendations on how to reconcile the PPP [or how to reconcile the other PPP(s)] to promote sustainability?
    - Where identified conflicts are not reconcilable, does the SEA explicitly state which PPP, action, or objective will dominate?
- Does the report succinctly summarize all of above, highlighting the most relevant to the PPP (relevant in terms of important problems and/or tier of assessment)?

5. ENVIRONMENTAL BASELINE DESCRIPTION

Bearing in mind the likely PPP activities (identified in section 3), does the SEA report:
- Describe the relevant aspects of the current biological, physical, social-cultural, and socio-economic environment, as per TOR requirements?
- Provide a 'trend' analysis of relevant, important aspects (i.e., does it describe/predict the future environment *without* the PPP)?
- Describe *in detail* the environmental and social characteristics of the area likely to be significantly affected, including areas beyond the physical boundary of the PPP that are likely to be affected?
- *Specifically,* does the SEA provide sufficient information / baseline information on the likely significant effects of the different options on (where relevant):

Biological component:
- Biodiversity & ecosystem services;
- Protected areas;

Physical component:
- Soil
- Water
- Air
- Climate & climate change

- Landscape

Social-cultural and socio-economic component:

- Population
- Human health
- Cultural heritage, including architecture and archaeology
- Material assets
- Resource use (e.g., water, land use)
- Economy

And, the (important / relevant) interrelationship between the above biological, physical, and social-cultural and socio-economic components?

- Does the baseline data cover more than just an inventory of species? Was there a focus on important ecological systems, their services, their resilience, and vulnerability, & the significance of the ecological services for human well being?

Does the report:

- Explain data sources, data gaps, and assumptions, where relevant?
- Describe the tools & methods used to complete the baseline description?

6. DETERMINATION OF IMPACT SIGNIFICANCE & EVALUATION OF ALTERNATIVES / OPTIONS

6.a Impact identification, prediction, & evaluation

- Are *assumptions about what the strategic action will 'look' like* when implemented clearly stated or, if implicit, do they make sense? (Same query seen in Section 3)
- Are *assumptions* about the likely *impacts* of the strategic action's implementation clearly stated, or if implicit, do they make sense?
- Is the area and time over which the predictions are made appropriate?
- Is an effort made to prioritize those effects that most affect sustainability?
- Is the level of detail of the predictions appropriate (is it proportional to the level of detail of the strategic action& the baseline data, and is it 'fit for purpose'? Are the predictions overly-detailed or insufficiently detailed?)
- Is the level of uncertainty regarding the predictions documented?
- For each alternative/option, are the likely significant impacts on the environment identified, described/predicted, and evaluated?
- For *each alternative*, does the SEA:
    - Identify both positive and negative effects?
    - Identify the probability, duration (short-, medium-, or long-term, permanent or temporary), frequency, and reversibility of the effects?
    - Identify the magnitude and spatial extent of the effects (geographical area and size of population affected)?
    - Identify the secondary, cumulative, and synergistic effects?
    - Identify the trans-boundary effects?
    - Identify risks to human health and to the environment (e.g. due to the risk of accidents)?
    - Are the impacts on different groups of people identified and evaluated (e.g., on those stakeholders already negatively affected by environmental impacts and risks)?
- Has impact evaluation been carried against a clearly stated and reasonable basis? e.g., evaluated against the current situation, future situation, environmental standards, SEA objectives, or environmental limits?
- In evaluating '**significance**', is the 'importance' of environmental components considered using various ways of viewing importance e.g.:
    - ***Institutional recognition*** (i.e., the attribute is acknowledged in the policy and legal framework or has relevant accepted standards, regulations, and thresholds);
    - ***Public recognition*** (i.e., the public recognizes the feature as important);
    - ***Technical recognition*** (i.e., the feature is recognized as important based on scientific or technical knowledge)?
- Were the tools/methods used to identify and evaluate impacts adequate?

6.b Evaluation of alternatives/options & recommendations on the preferred alternative/option

- Was each alternative/option evaluated against the SEA objectives or relevant baseline?
- Were the environmental, social and sustainability effects (both adverse and beneficial) of each alternative/option compared to the other alternatives/options?
- Were the residual impacts (impacts remaining after mitigation) of each alternative/option evaluated and compared?

Does the SEA report:

- Outline how the alternatives were assessed & the reasons for selecting the preferred alternative(s)?
    - Did the assessment & the procedure for comparison use credible tools/methodology?
    - Did the evaluation/comparison of alternatives involve appropriate stakeholders?
- Are credible reasons given for eliminating certain alternatives?
- Are 'trade-offs' explained and justified?
- If 'trade-offs' are necessary:
    - Are irreversible impacts avoided?
    - Are impacts that would exceed environmental thresholds or limits avoided?
    - Are sensitive areas avoided?
    - Are areas that have already been cumulatively affected avoided?
    - Is greater weight given to longer-term impacts?

7. MITIGATION AND STRATEGIC ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (SESMP)

7.a Mitigation: ***Does the SEA report:***

- Document that the mitigation hierarchy of first avoidance, then mitigation, and then compensation was followed?
- Identify measures to avoid, reduce, repair, or compensate for any significant adverse effects of implementing the PPP?
- (Mainly) propose mitigation measures that are within the PPP proponent's remit or control?
- Identify measures that are likely to be effective (i.e. measures that will manage a good share of the impacts caused by the strategic action)?
- Clearly commit to measures to avoid, reduce, repair, or compensate for any significant adverse effects of implementing the PPP (e.g., is there a budget and an organizational framework for implementing impact mitigation & monitoring)?
- Identify & commit to measures to enhance positive effects of implementing the PPP?
- Where relevant, identify mitigation measures that need to be taken into account in follow-on project consents (e.g., does it identify subsequent EIAs? or the need to conduct specific types of assessments e.g., poverty impact assessment or gender impact assessment)?

7.b SESMP: ***Does the SESMP:***

- Summarize the impacts related to the PPP?
- Describe the mitigation measures envisaged to prevent, reduce, or compensate for any significant adverse effects on the environment or social conditions related to the PPP [including the need for subsequent EIAs or the need for specific designs, equipment, or operating procedures]?
- Summarize the enhancement measures related to the PPP?
- Describe the SESMP implementation framework:
    - Explain how existing monitoring arrangements may be used, where appropriate?
    - Propose monitoring measures that are clear and practicable?
    - Provide clearly defined indicators based on the baseline information and on the objectives of the PPP and the SEA?
    - Describe the measures envisaged to monitor the significant environmental and social effects of the PPP implementation?
    - Describe how monitoring will identify & manage unforeseen adverse effects in a timely manner, e.g., in the case where SEA predictions prove to be inaccurate?
    - Provide thresholds that signal the need for corrective actions?
    - Propose adequate action in response to significant adverse effects?
    - Ensure that the collected monitoring data addresses deficiencies in the SEA's baseline information?
    - Describe the institutional arrangements (responsibilities for mitigation and monitoring, &any coordination arrangements)?
    - Describe the implementation schedule (e.g., methods, sampling locations, detection limits, timing, and frequency of measurements & duration of mitigation measures)?
    - Describe reporting procedures?
    - Provide cost estimates (initial investment and recurring expenses)?
    - Provide for institutional strengthening and capacity building requirements (equipment requirements & training requirements)?
- Describe how stakeholders provided input to the mitigation and monitoring plan?
- Describe the role of the various stakeholders (including the public) during the SESMP implementation?
- Define outcome indicators?
- Provide an evaluation plan (with adequate budget and clear responsibilities)?

8. CONSULTATION PROCESS (DURING SCOPING, THE SEA STUDY, THE SEA REVIEW, AND DURING IMPLEMENTATION AND MONITORING)

- Was there an effective co-operation between the SEA team and the PPP proponent? If not, how could this be improved in the future? ***(May require interviews)***
- Was SEA consultation an integral part of the PPP-making process [in the case of a simultaneous (parallel or integrated) SEA model]?
- Was SEA consultation integrated into the SEA design and implementation (e.g., were stakeholders consulted on the SEA TORs, the baseline, the evaluation of alternatives, the identification of mitigation and monitoring measures, and the SEA review)? (Relevant to the 'separate' and the 'simultaneous' SEA model.)
- Overall, was the consultation process adequate and effective? How could it be improved in the future?
- Was there broad participation in the SEA, that is:
- Were relevant professional, technical, social, and NGOs groups represented?
- Did the decision-makers participate (to ensure adoption and endorsement)?
- Were the communication methods effective, i.e., tailor-made to the needs of the different audiences?
- Did the SEA process promote collective learning and feedback? Did the SEA process support the development of local assessment capacity?

Does the SEA report:

- Describe ***how/when*** the relevant stakeholders were ***identified*** and how their interests were ***analyzed*** (i.e., during scoping, SEA preparation, and SEA review)?
- Describe ***how/when*** the relevant authorities (including environment and health authorities), lead agencies, and the public were ***consulted*** (i.e., during scoping, SEA preparation, and SEA review)?
- Specifically, describe ***how/when*** the ***draft PPP*** and the ***draft SEA report*** were made ***available*** to relevant authorities, lead agencies, and the public and ***how/when*** they were allowed to ***express their opinions*** on the documents?
- Was an appropriate range of stakeholders consulted (i.e., was the stakeholder analysis sufficient)?
- Were these stakeholders consulted in ways and at times that gave them an early and effective opportunity with appropriate timeframes to express their opinion on the draft PPP and draft SEA report:
    - *Lead agencies and other authorities?*
    - *Environmental and health authorities*?
    - *Expert committee* (TAC, SERC, or IEC)?
    - The *public* (or more likely, the designated public representatives likely to be
    - affected by, or having an interest in the PPP)?
    - Was there an effort to *involve vulnerable stakeholders* (e.g., very poor) in the consultation? If so, was it successful? How could this be improved in the future?

Does the SEA report:

- Summarize & address all stakeholder views?
- Highlight how the consultation results were considered in decision-making?
- Provide adequate documented evidence of the consultation events?
- Outline a grievance mechanism if stakeholders feel that their opinions have not been sufficiently addressed?

OUTCOME REVIEW

9. DECISION-MAKING

- Was the SEA conducted as an integral part of the decision-making process? [i.e., In the case of a simultaneous SEA model (integrated or parallel), were SEA inputs considered during decision windows? In the case of a separate or a reactive (ex-post) SEA, were SEA inputs considered when approving, revising, or amending the strategic action]?
- Does the Final SEA Report explain how the SEA findings & stakeholder inputs were considered during decision-making?
- Was the Final SEA Report and the opinions of those consulted taken into account in finalizing and adopting the PPP?

What was the influence of the SEA on the PPP process?

- Was the SEA proactive? i.e., Did the SEA provide assessment results early enough to influence decision-making?
- Did the SEA provide useful information for those responsible for developing the PPP?
- Did the SEA identify the issues most important to *sustainable outcomes*, rather than dealing with all environmental issues?
- Did the SEA address questions & concerns not initially included in the PPP? What was appreciated most? What proved irrelevant?
- Could the SEA findings be effectively conveyed to the decision makers?
- Were decision makers willing to consider the SEA inputs and willing to integrate the findings into decision-making?

- Did the SEA actually make the PPP more environmentally sound?
- Did the PPP process make sufficient reference to the findings of the SEA?

Did the SEA build capacity and improve accountability/transparency?
- Did SEA empower weak and vulnerable stakeholders?
- Did the SEA help build capacity by training decision makers on implementation?
- Did the SEA build capacity to collect data and provide documentation?
- Did the SEA enhance the transparency of the decision–making processes and accountability of decision makers on the environmental implications of the PPP?
- Did decision makers justify/correct their decisions based on SEA findings & SEA monitoring?
- Did the SEA exercise lead to a better understanding of the potential of this approach? Did the SEA exercise encourage subsequent SEA applications (did the SEA results identify other PPPs requiring SEA? Was the SEA process fruitful and/or a positive experience, making the participants more willing to participate in the next SEA)?

** Some of the above questions may require interviews.

10. IAIA SEA PROCESS REVIEW

Was the SEA Integrated?

Did it:
- Ensure an environmental assessment/sustainability appraisal of all the PPP's strategic decisions?
- Address the interrelationships of biophysical, social, and economic aspects?

Was it:
- Tiered to policies in relevant sectors & transboundary regions and, where appropriate, to project EIA and decision-making?

Sustainability-led? Did it:
- Facilitate identification of more sustainable development options & alternatives?

Focused? Did it:
- Provide sufficient, reliable, usable information for planning & decision-making?
- Concentrate on key issues of sustainable development?
- Was it customized to the characteristics of the decision-making process?
- Was it cost- and time-effective?

Accountable? Was it:
- The responsibility of the strategic decision's lead agencies?
- Carried out with professionalism, rigor, fairness, impartiality, and balance?
- Subject to independent checks and verification?

Did it:
- Document & justify how sustainability issues were considered in decision making?

Participatory? Did it:
- Inform & involve interested and affected public and government bodies throughout the decision-making process?
- Explicitly address stakeholders' inputs & concerns in the report & in decision-making?
- Provide clear, easy-to-understand, necessary information?
- Ensure sufficient access to all relevant information?

Iterative? Did it:
- Make available the assessment results early enough to influence the decision-making process and inspire future planning?
- Provide sufficient information on a strategic decision's actual implementation impacts to judge whether the decision should be amended?

Overall comments on the SEA process:
- What is/what was the view of key stakeholders (particularly the more vulnerable) and those responsible for developing the PPP on the SEA procedure and results?
- How could it be improved in future?
- What were the most significant constraints to achieving an effective SEA?

- What were the most significant positive factors ensuring success of the SEA?
- Did the SEA address equity, social acceptability, and incorporate the precautionary principle?

** Some of the above questions may require interviews.

11. SEA PERFORMANCE REVIEW: IMPLEMENTATION, MONITORING, & EVALUATION

Did the SEA predict future outcomes correctly?

- Were the assumptions made during the SEA for modelling impacts and/or institutional and governance requirements correct?
- Were there any PPP-related unforeseen impacts? Explain.

What was the influence on the implementation process?

- Did the SEA improve the strategic action (i.e., did the SEA result in relevant amendments / modifications to the PPP? Did it identify more sustainable alternatives?)
- Did the SEA lead to more effective implementation? (e.g., Did it inform subsequent lower-tier decision-making? Did it improve monitoring and follow-up?)
- Did the SEA succeed in actually changing the PPP implementation or budget plans, or other subsequent measures, making the PPP more environmentally sound?
- Did the PPP implement measures that better reflect the goals of sustainable development?
- Were the options implemented in a more environmentally-sound manner?
- Did the recommendations of the SEA lead to:
- Institutional development (e.g., an advisory group on environment or better inter-sectoral coordination)?
- Subsequent EIA requirements?
- Improved governance (e.g., empowerment of vulnerable stakeholders)?
- More sustainable implementation / more sustainable resource use by the PPP?
- Did the different stakeholders implement their relevant SEA recommendations?
- How do the stakeholders view the SEA process and its outcomes now?

What was the influence on direct & indirect goals of sustainable development?

- Are there any indications that the SEA contributed to:
    - Achieving SDGs and /or other goals of relevance in the particular case?
    - Environmental protection and sustainability?
    - Improving conditions of environment and natural resources in the relevant
    - area?
    - Enhancing transparency, accountability, and good governance?
    - Improvements to future PPP making? (e.g. Were key environmental issues
    - identified? Were lessons learnt? Do planners have a better understanding of
    - sustainability issues?)
- Did the sustainable development benefits of the SEA outweigh the costs of conducting the SEA?

Annex 11

Trend analysis

For conducting many SEAs, trend analysis is likely to one of the most useful approaches. Trend analysis can be defined as an interpretation of changes over time without and with the proposed/revised PPP. It has several advantages:

- It can help to describe the past trends and current situation by tracing any trends or patterns in the relevant territories in time periods covered by the SEA.
- It can also help in predicting future 'baseline' trends without the proposed PPP being implemented (the so-called 'zero alternative') since some trends can be safely extrapolated based on the information about their future drivers[2]. Such analyses can open many new insights and can be useful not just for the SEA process but also for the development of the PPP as such.
- Lastly, the trend analysis can facilitate the assessment of cumulative impacts of proposed developments (including downstream projects) in the PPP on the identified future "baseline" trends.

Trend analysis can combine many different tools and it has the capacity of analyzing cause-effect relationship even in situations constrained by significant data gaps. The presentation of trends can be fairly simple, e.g.:

- Story-lines that describe the overall trends, their main drivers, their territorial dimensions and key concerns and opportunities arising from these trends;
- Maps showing spatial development patterns;
- Graphs: these can be (a) simple graphs that use available data sets to illustrate evolution of key issues and/or their drivers over time, of (b) complex graphs that provide a comprehensive overview of the correlation between the evolution of drivers over time and the corresponding (sometime delayed) changes in the issues addressed by the analysis.

Proper understanding of the current situation and trends and their likely evolution if the PPP is not implemented provides the basis for predicting environmental and social effects within the SEA. These trends may be influenced in various ways by e.g.:

- Market forces – e.g. higher prices for minerals can stimulate mining,
- Major development projects that have been already approved but not implemented yet,
- PPPs other than one being directly assessed by the SEA; and
- Changed climatic conditions

Impacts of these developments may not yet be visible or fully evident. The forward-looking analyses undertaken by an SEA should outline the expected future environmental and social trends since it is important to understand impacts of the PPP on the "future environment" in which the PPP will operate. Many environmental and social issues may improve and many may get worse in the future irrespective of the proposed PPP (e.g. some ecosystems will be lost anyway; many environmental features will become even more important; the population will grow anyway and place increased demand on land and natural resources). It is also important to consider that, in the near future, some environmental and social trends may be affected by climate changes - e.g. increasing temperatures, flash floods, landslides, forest fires, glacial retreat and glacial lake outburst floods (GLOF), water shortages, declining yields of some crops (e.g. maize and rice) and increases for others (e.g. potato), changes in pests and plant diseases as well as rainfall patterns, shifts of forest types to higher elevations, changes in the ranges of species, increased risk of water-borne diseases and spread of vector-borne diseases (e.g. malaria, dengue).

SEA requires consideration of long-term trends and the SEA team needs to present sound judgments on the ongoing environmental and social changes (which may be linked) which are relevant to the PPP. In this regard, it should be noted that the most common deficiencies in analyzing current situation and trends do not usually arise from the lack of data but rather from poorly targeted analyses that focus on irrelevant issues. This task therefore demands, especially in the case of large scale PPP, focused

[2] Oversimplified extrapolation that does not consider how the trend will evolve once it reaches a key breaking point (e.g. when carrying capacity of the surrounding environment has been reached or exceeded), or once the counter-trend becomes stronger, may be misleading.

analytical thinking, a strategic approach to data collection and qualified expert judgments.

In order to ensure that the assessment of the current situation stays focused, it is recommended to concentrate on the main environmental and social issues, objectives and guiding questions that have been identified in the preceding SEA scoping step. The SEA experts need to gather just enough information to answer the following questions:

- How good or bad is the current situation? How far is the current situation from any established thresholds or targets?
- Are particularly sensitive or important elements of the receiving environment affected, eg vulnerable social groups, non-renewable resources, protected areas, endangered species, rare habitats? Are the problems reversible or irreversible, permanent or temporary?
- What is driving these trends?
- What is the expected future continuation of these trends, if one considers impacts of other already agreed projects or PPPs and considering impacts of climate change?

Both qualitative and quantitative information can be used for this purpose. The description of the past and current trends can be made on the basis of data available from existing information sources (eg State of the Environment reports, data from other available PPPs, research projects, donor analyses), or through expert judgments (in cases where data are lacking). SEA experts should not embark on collecting raw data at this stage; unless very clear key issues are identified for which no data are available. They are required to accomplish this task while taking into account available studies and considering the key driving forces behind these trends. When maps are easily available, these analyses may be supplemented by maps showing spatial dimensions and linkages between the key environmental, social and economic issues in the study area.

The data on the current and future environmental and social trends serve not just to inform future SEA steps but may also strengthen the analysis of the overall development context during the elaboration of the PPP. In cases where the SEA process is carried out during the elaboration of the PPP, information gathered or generated during this step can be provided to the PPP planning team and may strengthen the analysis of the overall development context.

Analysis of environmental and social trends without the PPP can significantly benefit from inputs of key authorities, academia, business groups or NGOs that have the relevant information. Workshops, roundtables and formal meetings, etc. can be used for this purpose.

Tips for practice

Keep the focus when collecting information: Do not collect excessive details or use information just because it is there. Concentrate on environmental and social issues, objectives and guiding questions identified in the scoping phase and do not overburden evaluation of the situation with irrelevant information.
Set a time limit for information collection. Do not expect to be able to obtain all relevant information in the first SEA of a PPP, but make arrangements to fill any major gaps for future replacements or reviews of PPP.
Use the expertise within environmental and social authorities and key stakeholders to identify and interpret relevant data and predict trends.
When describing the past trends, try to determine the main economic or social factors that drive these trends. This information may later help you to analyze whether the PPP positively or negatively influence these driving forces.
Consider impacts of other relevant PPP and outline the likely expected evolution of environmental trends, if the proposed PPP were not to be implemented.
Consider the impacts of the expected climate changes on the future environmental and social trends as increased risk of hazards may increase vulnerability..
Where possible, supplement these analyses by maps showing spatial dimensions and linkages between the key environmental, social and economic issues.
Share and double-check this information with the planning team.

Tables A11.1 and A11.2 provide fictional examples of a trends analysis for past trends and future trends, respectively.

Table A11.1: Fictional example of past trends analysis for terrestrial biodiversity

Analysis of past trends and current situation	
Theme:	**Terrestrial biodiversity**
Issues:	Condition and extent of natural areas and connectivity of important ecosystems

Please describe:

- An overall context of the theme addressed (i.e. original/natural potentials & constrains, etc. - basic facts such as volumes, acreage, etc. accompanied by a short commentary on their importance – international, national, provincial, local)
- List issues that you have chosen to focus on within this theme and justify in 1-5 sentences for each issue why it is important – wherever possible relate it to official documents that also recognize these issues as important
- For each issue, analyze its past trend (e.g. how has the situation evolved so far, whether the trend is improving or worsening, whether it reaches any critical bottom-lines or turning points, etc.)
- Factors (drivers) that positively or negatively affect this trend or that limit the trend (counter-trends). When doing so, you may wish to cross-refer to any relevant national/provincial/local SPPs or major projects.
- The key problems and/or the key geographic areas of specific concern (of national, provincial and local importance)
- Always quote sources of data (e.g. full references in footnotes) and when necessary provide commentary on their quality and uncertainties – if you found that some critical pieces of information are missing or may be doubtful (contradictory, incomplete, etc.), state it clearly.

E.g.

- In 1990, the province had extensive population of XX critically endangered species (out of which XX species are endemic) and of XX endangered species (out of which XX species are endemic). Further to this, the province hosts a small population of XX species which are not protected but they play a significant role in the lifestyles of the local ethnic groups.
- Valuable natural ecosystems in areas (see attached map) accounted for ZZ ha (25% of the territory of the province) in 1995. They were connected by bio-corridors KVD and HWD which played an important role for migration of XX critically endangered or endangered species. The Biodiversity Conservation Action SPP of the province (elaborated in 1994 by SWA but not yet awaiting formal approval by Provincial People's Committee) has suggested ensuring that at least 15% of the territory becomes protected to halt biodiversity decline.
- Until 2006, 9% of territory of the province has received various degrees of protection. ZZZ ha in location XYZ that hosts species SSS has been declared as national park which is also classified as habitat of international importance (see ministerial meeting XSW and resolution by KWC). ZZZ ha in location UBF serves as a breeding ground for species GDE has been declared protected area, etc. Areas GBH 1-3 have been proposed as special use forests.
- At the same time, ZZ ha (5% of valuable important ecosystems found in the province) have been irreversibly damaged by conversion of these natural ecosystems to mining and agriculture. The remaining valuable ecosystems that are endangered by forestry practices FFF. As overall degradation of the ecosystems regards, it should be noted that the status of existing protected areas does not entirely prevent degradation of already protected ecosystems (e.g. forestry practices GHJ cause impacts YUZ in locations DRT).
- A study by FAO found out that a most important driving force for deforestation in rural areas is development of paved roads in rural areas. The pavement of new roads contributes to 85% of forest loss. Corridors along the newly paved roads (5-10 km on each side of the road) quickly become deforested due to illegal logging and subsequent small-scale illegal agricultural activities and informal settlements. So far, all government measures to tackle this problem were ineffective due to lack of enforcement.
- The bio-corridor KVD has been irreversibly damaged by road developments in AA1. Migration of critically endangered species XX has stopped with the fragmentation of this bio-corridor; however some migration reportedly takes place through the bio-corridor HDW. The bio-corridor HDW thus serves as the only migration route for species XX and plays the key role the viability of these populations of these migratory species in the province, and in the country generally.

+ supplemented by any graphic aids to illustrate the trend - graphs, maps, pictures or boxes with local stories that provide representative examples the trend.

Future trends without the proposed SPP	
Theme:	**Terrestrial biodiversity**
Issues:	Condition and extent of natural areas and connectivity of important ecosystems

Key factors that will influence these trends	Likely expected positive or negative impacts of these factors on the given trend
Outline key factors that may positively or negatively influence the future trend in this issue without the SPP. These may include: • market drivers; • new policies, laws and regulations and economic incentives, • other agreed SPPs; • major projects; and • climate change!	Explain in detail: • Character of impact (what exactly causes this impact or assumptions that form the basis for your prediction) • Probability and key uncertainties • Geographic scale - directly and indirectly affected territories • The key concerns associated with this impact All these statements need to be substantiated (calculations, examples, references to international and national literature, maps, graphs) which can be annexed to illustrate the impact.
Spatially-focused plans (Ps) for Development of Tourism for 2007-2013 (Ministry of Tourism, 2006)	10 ha of coastal ecosystems that are part of the planned protected area ZDT may be lost in next 6 years because of planned tourism projects in LKT, HWT, CZD. The scale of impact depends on the outcomes of detailed design of these Planned projects that will be also subject to EIAs.
Forestry Ps (MARD, 2005)	Natural ecosystems that could be declared protected areas are likely to decrease by approximately 5% in the next 6 years, mainly because of recently adopted changes in the forest classification and approval of logging projects at QSW and GRF.
Aquaculture projects in XYZ & ZSY (approved by the District People's Committee in 2006)	Both projects have damaged bio-corridor GJY. No plans for rehabilitation of these bio-corridors exist.

Summary of key trends in the relevant environmental issue without the implementation of the SPP

Please use the above information to outline:

- How good or bad is the current situation? Do trends show that it is getting better or worse?
- How far is the current situation from any established thresholds or targets?
- Are particularly sensitive or important elements of the receiving environment affected, e.g. vulnerable social groups, non-renewable resources, endangered species, rare habitats?
- Are these problems reversible or irreversible, permanent or temporary?
- How difficult would it be to offset or remedy any damage?

E.g.

- Valuable natural ecosystems that could be declared as protected amount for 25% of the territory. Until now 9% of these ecosystems have been declared protected areas but the most important bio-corridors that connect them have been damaged.
- Valuable natural areas are likely to decrease by approximately 5% in the next 6 years, mainly because of recently adopted Transport Development SPP and approved future projects for aquaculture and tourism. No plan for rehabilitation of bio-corridors exist.

Table A11.2: A fictional example of assessment of impacts of future environmental and social trends as influenced by the actions proposed in a PPP - for terrestrial biodiversity

Analysis of future trends with the SPP	
Theme: Issues:	**Terrestrial biodiversity** Condition and extent of natural areas and connectivity of important ecosystems

Summary of the past and future trends without the SPP

Summarize the past and future trends without the SPP – e.g. through 5-10 sentences that remind the reader of the past trends, current situation and future trends without the SPP

E.g.

Valuable natural ecosystems that could be declared as protected cover 25% of the territory. Until now 9% of these ecosystems have been declared protected areas but the most important bio-corridors that connect them have been damaged.

These areas will decrease by approximately 5% in the next 6 years, mainly because of recently adopted Forestry Policy and approved future projects for wind-farming, aquaculture and tourism. No SPPs for rehabilitation of bio-corridors exist.

Expected direct effects of the proposed SPP on the future trend in this issues

Components of the SPP	Expected environmental risks (negative impacts) and environmental opportunities (positive impacts)	Proposed mitigation and enhancement measures
Feature or component of the SPP which cause these impacts (these may be the overall development direction pursued by the SPP, clusters of projects or individual projects proposed in the SPP).	Explain in detail: • Character of risk/impact (what exactly causes this risk/impact or assumptions for this prediction) • Probability and key uncertainties • Geographic scale -directly and indirectly affected geographic areas that will become of specific concern • Duration and reversibility • Key concerns associated with this impact When doing so, make sure that you judge these impacts on the basis of future trends without SPP (e.g. some important ecosystems or development opportunities may be lost as result of development trends without the SPP or some ecosystems or development opportunities may become even more important since they will provide the only remaining assets in the study area). All these statements can be substantiated by detailed calculations, examples, and references to international and national literature and supplemented by graphic aids (maps, graphs) to illustrate the impact.	Provide your recommendations for possible changes in this proposed strategic orientation of the RDP. You may also suggest additional 'flanking' measures for future management of environmental issues that you've identified.
Project 1.1.1.	The construction will most probably lead to fragmentation of ecosystem AXT that will form an integral part of the only remaining regional bio-corridor. This impact can be either short-term or permanent depending on the effectiveness of mitigation.	This loss of bio-corridor can be compensated by restoration of damaged ecosystems AXT after the construction.
Projects 1.2.3. and 4.4.2	….	….

Expected future cumulative effects of the SPP on the trends for the issue

Summarize the worst-case scenario & the best-case scenario for the future evolution of this trend if all direct and indirect impacts of relevant components of the SPP on the trend would happen.

E.g.

<u>Worst-case scenario</u>

If SPP proceeds as planned, 250 ha of natural ecosystems in location CDR, etc will be lost and 4 bio-corridors DWS, etc. of international importance will be permanently damaged. This trend will most likely lead to extinction of species FRD, GWS, etc.

<u>Best-case scenario</u>

If all recommended changes to SPP are adopted, only 50 ha of natural ecosystems in location DRT, etc. will be lost and only 2 important bio-corridors will be temporarily damaged. This damage - which will occur in any case - can be compensated by establishment of new protected areas in XXX. Species FRD, GWS will remain critically endangered and greater attention needs to be given to their protection.

Annex 12

Analytical methods that can be used in SEA

Source: UNECE and REC (2006)

This annex provides a menu of selected analytical tools and techniques that can be used in SEA and offers an overview of each method. In practice, the SEA experts may find it appropriate to vary their approach, for instance in combining qualitative and quantitative assessment. The following methods are described:

- Expert judgments
- SWOT
- Checklists
- Matrices
- Spatial analyses: Overlay maps and GIS
- Trends analysis/extrapolation
- Networks and flow diagrams
- Delphi technique
- Modelling
- Multi-criteria analysis

The key features of these tools can be summarized as follows:

Tools	**Application within the SEA process**				
	Identification of issues and impacts	**Analysis context and baseline**	**Contributing to development of alternatives**	**Assessment of impacts**	**Comparing key options for decision-making**
Expert judgment	✓	✓	✓	✓	✓
Checklists	✓				
SWOT	✓	✓			✓
Matrices	✓		✓	✓	✓
Networks and flow diagrams	✓	✓		✓	
Spatial analyses: Overlay maps and GIS	✓	✓	✓	✓	✓
Trends analysis/extrapolation	✓	✓	✓	✓	✓
Delphi technique	✓	✓	✓	✓	✓
Modelling	✓	✓	✓	✓	
Multi-criteria analysis			✓	✓	✓

Tool: Expert judgment	
Linkages to other tools	Matrices Delphi technique Modelling Multi-criteria analyses
Purpose	Expert judgment is a process for obtaining data directly from experts in response to a technical problem.
Description	Expert judgments are part of any SEA process. This is inevitable because SEA is an analytical process which examines the relevant trends and risks through: • identification of key strategic issues relevant for the plan (and its position in the decision-making process); • determination of spatial and temporal scale of the relevant issues; and • selection of appropriate indicators (or proxy-indicators) that simplify the evaluation and turn it into manageable assessment. Use of all analytical approaches and tools in the SEA is therefore always influenced by expert judgements. The SEA tools that most rely on the expert judgements include: Matrices - experts need to use their own judgement determine the key impacts or synergies/conflicts addressed by the matrix; • Modelling - experts need to use their own judgement to identify the specific issues and interactions that needs to be modeled; determine key assumptions and boundaries of the modeling; select suitable model and verify it, calibrate it and fine-tune it to fit the local situation and data availability; and • Multi-criteria analyses - experts need to use their own judgement to determine the assessment criteria, their relative importance (weights) and performance (scoring) of each proposed option. This summary deals with one specific form of expert judgment when the recognized 'experts' in the relevant fields directly formulate explicit and quantitative views on the probability and magnitude of the expected impacts and explain uncertainties in these predictions. Well organised expert judgments does not mean 'guessing' since the participating experts need to usually clearly explain: • Assumptions on which the judgment is based (when would the risk/impact occur and what it is caused by); • Character of the predicted risk/impact (e.g. probability of the risk/impacts, its nature and scale; and duration and reversibility) • Directly and indirectly affected geographic areas, ecosystems or persons (e.g. particularly sensitive or important elements of the receiving environment, vulnerable social groups, non-renewable resources, endangered species, etc.); • Baseline situation (e.g. the past, present and future actions which should be considered when judging this risk/impact and the relative importance of the expected risk/impact when compared with the baseline situation); • Key concerns associated with the predicted risk/impact (e.g. how far is the predicted impact from any established thresholds or targets); and • Magnitude of key uncertainties in this judgment. When these rules of good practice are expected, expert judgment can reflect a life-long experience and expertise of participating experts. Such judgments can be - especially in situations of significant data gaps - more precise than quantitative predictions based on incomplete data. Such expert judgments are best obtained through canvassing of opinions from a representative set of recognized experts in a given field and their iterative discussion. Expert judgments can be formulated through simple participatory tools such as: workshops, interviews or questionnaires with a problem-solving focus (these tools are described in the Annex 2 to this guidance) The most sophisticated means of collective expert judgement is the Delphi technique which is separately described in the annexes) The Chinese Provisional Measures for Public Involvement in EIA[3] for instance allow for the use of expert judgements through consulting expert opinions in written or other forms (Article 20) or through organising evaluation meetings with relevant experts (Articles 21-23).

[3] Document No. 2006 [28] issued by the State Administration of Environmental Protection on February 14, 2006

	Consulting expert opinions in written or other forms requires that the individual experts and organizations that accept such consulting arrangements provide clear opinions on consulting matters, and reply in writing. Any written opinion should be signed by individual experts and affixed with the employer's seal. Any different opinions in collective expert consulting shall be described by the consulting organization in consulting replies. Evaluation meetings with relevant experts require determination of the major topics for review according to the scope and extent of environmental impact and the assessment factors, notification of the related organizations and individuals of the time, venue and major topics of the meeting and elaboration of the meeting record. The meeting record summarizes the different opinions based on presented facts and can be prepared in the form of the meeting minutes or the meeting conclusions. The basic rules for the use of expert judgements formulated by the US Environmental Protection Agency[4] may be also of interest. These can be summarised as follows: • At least five individuals need to be used in any expert judgment process, unless there is a lack or unavailability of experts. • The individuals involved in expert judgment have appropriate level of knowledge and experience for the questions or issues addressed. • At least two-thirds of the experts involved in expert judgment are not directly employed by the proponent. • The public and relevant authorities are provided with a reasonable opportunity to comment on the scientific and technical validity of these expert judgements.
Usual application within SEA	The expert judgment can be used at any stage of the SEA process. It is usually used when: • the key issues of concern are being identified; • periodical result or final results are prepared -- to check the results achieved; and • difficulties arise in the use of qualitative tools or when there are problems without solutions -- to collect opinions on the specific issue or to identify the solution.
Inputs and data demands	Basic information on the proposed development and affected environment, possibly complemented by a series of questions on the specific issue.
Outputs	Direct response from experts to a technical problem.
Advantages	• Expert judgment is a tool which provides quick and effective advice • It can operate in situations of significant data gaps
Disadvantages	• Quality of the outcome depends on the knowledge and competence of participating experts • The judgment will be also affected by the comprehension of the background/briefing material. If the material is not complete or include deficit, it will affect the conclusions • The outcome can be also influenced by the quality chairing of the entire process

[4] http://www.epa.gov/rpdweb00/docs/wipp/card26.pdf

<table>
<tr><th colspan="2">Tool: Analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT analysis)</th></tr>
<tr><td>Description</td><td>SWOT is used as part of diagnosis of the current situation. It highlights the key internal issues (strength and weaknesses) and the key external issues (opportunities and threats) that should be considered in the planning or in the assessment process. The following table shows logic of a SWOT analysis.
<table>
<tr><th></th><th>Positive</th><th>Negative</th></tr>
<tr><td>Internal</td><td>Strengths</td><td>Weaknesses</td></tr>
<tr><td>External</td><td>Opportunities</td><td>Threats</td></tr>
</table>
SWOT was originally developed in business management but it is increasingly used in elaboration of SPPs. Regardless of its specific application, the SWOT analysis applies the following simple sequence of tasks.

Step 1. List internal factors (what is here and now): List all strengths that exist now. Then in turn, list all weaknesses that exist now. Be realistic but avoid modesty.

Step 2 – List external factors (what is relevant for the future developments): List all opportunities that exist in the future. Then in turn, list all threats that exist in the future.

Step 3 – Review the SWOT analysis: When the analysis has been completed, a SWOT profile can be generated and used as the basis of goal setting, strategy formulation, and implementation. The completed SWOT profile is usually arranged as follows:
<table>
<tr><th>Strengths</th><th>Weaknesses</th></tr>
<tr><td>1.
2.
3.
…..</td><td>1.
2.
3.
…..</td></tr>
<tr><th>Opportunities</th><th>Threats</th></tr>
<tr><td>1.
2.
3.
…..</td><td>1.
2.
3.
…..</td></tr>
</table>
These tasks can be performed by planning teams as well as assessment teams. However, SWOT analysis offers a useful tool in participatory discussions and is generally more effective if it engages stakeholders with different viewpoints.</td></tr>
<tr><td>Usual application within SEA</td><td>• Analysis context and baseline
• Identification of constrains (risks) and opportunities (benefits)</td></tr>
<tr><td>Advantages</td><td>• SWOT reduces a large quantity into simple overview of key issues that could be considered in the planning.
• SWOT is a useful tool for obtaining various viewpoints on the current situation and can be very well used in participatory processes.
• Demand for data: Small – undertaking SWOT largely depends only on personal knowledge and insights of participants in the SWOT process.
• Cost and time requirements: Small - SWOT can be done as a quick exercise by single person or as a rapid appraisal process of current situation that involves a large number of stakeholders.
• Ability to deal with uncertainties: Medium to High. By examining future opportunities and threats SWOT highlights key future uncertainties.
• Transparency: High – SWOT is a very transparent technique.</td></tr>
<tr><td>Disadvantages</td><td>• SWOT has a tendency to oversimplify the situation.
• Analysis of current internal situation through simple presentation of strengths and weaknesses does not explain why these strengths and weaknesses occur (their root causes) and whether there are any linkages between them.
• Classification of external factors as opportunities or threats is somewhat arbitrary - the same point may feature both as a strength and as a weakness. For example, ‘increased exports’ may be presented as a strength and ‘reliance on exports’ as a weakness.</td></tr>
<tr><td>Examples of practical</td><td>Community Tool Box, a website from the United States, has an easy to follow description of</td></tr>
</table>

application or key sources of further information	how to do a SWOT analysis (http://ctb.ku.edu/tools/en/sub_section_main_1049.htm) An example of an interesting SWOT analysis that examined key trade, poverty and environmental issues and linkages in rural development programs of the European Commission DG Development can be found at: http://europa.eu.int/comm/development/body/theme/rurpol/outputs/diagnostic/html/5.htm

Tool: Formal and informal checklists	
Description	A checklist presents a catalogue of issues that might beconsidered when assessing particular types of plan or programme. Checklists may list: • Environmental, including health, concerns usually associated with certain plans and programmes • Relevant environmental, including health, objectives for various development activities • Indicators or specific guiding questions that can be asked when evaluating a plan or programme in certain fields
Usual application within SEA	• Analysis context and baseline • Identification of issues and impacts
Advantages	• Help remember all the information relevant to a task • Provide a simple way of identifying whether certain issues are relevant to a proposal and help to avoid overlooking potential issues
Disadvantages	• Do not offer a very analytical approach to analysis • Encourage neglect of any important effects that are not present in the checklist • May cloud judgement with irrelevant information • Do not specify the nature of cause-and-effect relationships – are prone to pigeon-holing impacts into certain categories whereas, in reality, an impact may be part of a complex system.

Tool: Matrices	
Linkages to other tools	Expert judgments
Purpose	Matrices enable identification or presentation of: • impacts of proposed development on various elements of the environment (matrices of impacts), or • synergies or conflicts between proposed development and the relevant environmental objectives (matrices of conflicts or synergies). Matrices visually summarize these effects in user-friendly way. As such can be used to quickly compare pros and cons of proposed development options.
Description	A simple matrix can help to identify various effects of a single intervention. More complex matrices can show cumulative effects of numerous projects on various environmental issues or objectives. Basic matrices can mark the existence of impacts or conflict/synergy using simple symbols (e.g. X, XX). More elaborate matrices use various characters, numerical scores, colours or even textual descriptions to outline the nature, scale, importance and duration or reversibility of each effect. Presented information should be easy to verify - matrices thus needs to be accompanied by a text explaining the nature of specific effects.
Usual application within SEA	Matrices belong along the most commonly used tools in SEAs in the European countries. They can be very easily used for: • Identification of effects • Presentation of effects • Comparison of alternatives
Inputs and data demands	Basic information on the proposed development - a simple list of proposed development objectives or development activities. Basic information on the local environment - a simple list of relevant environmental issues or relevant environmental objectives in the study area.
Outputs	Visual summary of impacts or conflicts/synergies
Advantages and	• Matrices help to systematically identify impacts or conflicts/synergies

disadvantages	• They can easily present outcomes of qualitative or quantitative assessments • They generally do not consider spatial issues and local territorial issues • They force users to consider many potential interactions – this may divert attention to minor impacts.
Further reading	Further information on the various uses of matrices can be found at: http://en.wikipedia.org/wiki/Matrix_methods

Tool: Spatial analyses: Overlay Mapping and Geographical Information Systems (GIS)	
Linkages to other tools	-
Purpose	To illustrate the spatial distribution of relevant issues and impacts.
Description	Spatial analyses are undertaken through a preparation of maps with different information which is relevant to the SEA. When these maps are laid over each other, they can: • Provide a composite picture of the receiving environment (e.g. sensitive areas or resources, current pressures, etc.) and resulting development opportunities and constraints • Present impacts of previous developments and show linkages between different issues (e.g. correlation between air pollution concentrations and development of transport network, correlation between water pollution and sitting of industrial facilities, etc.) • Identify potential impacts of future activities. Outline cumulative impacts of different activities on one issue (e.g. impacts of agricultural developments, new housing and new industrial zones on water quality) • Indicate spatial concentrations of different environmental impacts (e.g. map showing specific areas that will be subject to excessive air pollution, water pollution and noise pollution). Spatial analyses can be based on manual elaboration of transparent maps (overlay mapping) or elaboration and processing of electronic maps (Geographical Information Systems, GIS). While overlay mapping may be a simpler form of the analysis, it delivers only one series of maps and overlays. Elaboration of base maps for GIS is more demanding, however, once these maps have been prepared, GIS allows users to easily add further information or to flexibly amend existing maps within the GIS.
Usual application within SEA	• Analysis of context and baseline • Identification of issues and impacts, including cumulative and synergistic impacts • Development and comparison of alternatives
Inputs and data demands	• Base maps of appropriate scale (e.g. topography, land uses, etc.) • Maps indicating location of key development initiatives or spatial distribution of relevant environmental issues (e.g. air quality, water quality).
Outputs	• Maps showing spatial distribution of key issues or impacts. • These maps can be developed to visualise past, present and future situations.
Advantages and disadvantages	• Spatial analyses can consider topography and local territorial issues • If the relevant maps are not readily available, spatial analyses can be expensive and time consuming.
Further reading	British Geological Survey report (2004) on Strategic environmental assessment (SEA) and future aggregates extraction in the East Midlands Region presents a number of GIS usage methods and approaches: http://www.mineralsuk.com/britmin/CR_04_003N.pdf

Tool: Trend analysis and extrapolation	
Description	Accurate trend analysis is one of the most important aspects of any strategic assessment. In the context of SEA, it can be defined as an interpretation of environmental pressures and changes in the state of the environment, including health, over time. Trend analysis uses data sets and helps to trace any trends or patterns. Trends can be linear, exponential or cyclical and they should, where possible, be analyzed over a correct temporal scale. The presentation of trends can be fairly simple, e.g. a line graph, or quite complex, e.g. using three-dimensional graphics or video simulation. There are numerous computer programs that facilitate trend analysis (e.g. the simplest ones being computer spreadsheet software, more advanced ones including RATS, GAUSS, JMP, etc.). Trend analysis facilitates presentation of the main linkages between environmental pressures and corresponding (sometime delayed) changes in the state of the environment. As such, it can also assist predictions of future impacts. Some trends can be safely extrapolated on the assumption that the trend is going to continue in the same dynamic. When doing so, it is important to realize that virtually every trend has a corresponding counter-trend. Oversimplified extrapolation that does not consider how the trend will evolve once it reaches a key breaking point (e.g. when carrying capacity of the surrounding environment has been reached or exceeded), or once the counter-trend becomes stronger, may be misleading. Trend extrapolation can thus play an important role in medium-to-short term forecasts when no major counter-trends or breaking points are expected. Long-term trends can be precisely determined only through modelling, if at all.
Usual application within SEA	• Analysis of context and baseline • Assessment of impacts
Advantages	• Can greatly assist in the quantification of cumulative impacts in cases where environmental data are available over long periods of time
Disadvantages	• There are often situations where it is not possible to obtain relevant or sufficient data on specific environmental pressures. • In cases where there are gaps in data, it becomes important to use appropriate statistical methods to ensure the proper interpretation of trends. Such analysis may be quite cumbersome.
Examples of practical application or key sources of further information	Different examples of trend analysis are presented in the Transport Analysis Guidance on *SEA for Transport Plans and Programmes* (2004) by UK Department for Transport, available at http://www.webtag.org.uk/webdocuments/2_Project_Manager/11_SEA/2.11.pdf

Tool: Networks and Flow diagrams	
Linkages to other tools	Modelling
Purpose	Networks and flow diagrams[5] can be in SEA used to illustrate: • implications of the proposed decisions on the subsequent decisions and their knock-on effects on other developments (decision-trees); or • a gradual progression from direct immediate effects to indirect or longer-term or delayed effects (effect networks).
Description	Steps for constructing a decision tree might comprise: • List the proposed developments; • Identify effects of these proposals on other decisions or developments; • Identify secondary knock-on effects of these decisions or developments – thus illustrating their wider indirect implications. Steps for constructing an effect network might comprise: • List the proposed developments; • Identify effects of these proposed developments on the directly affected elements of the environment; • Identify secondary knock-on effects on other elements of the environment, including health – thus illustrating pathways from direct effects to indirect effects; • When doing so, determine whether any cumulative effects on the same element of

[5] sometimes also called system diagrams

	environment, including health, occur; • If appropriate consider a loop to show any feedback; • If appropriate use quantitative techniques as a simple form of modelling to evaluate the effects. This approach constitutes a simple form of modelling and allows the evaluation of effects (see more on modelling).
Usual application within SEA	• Identification of issues and effects • Assessment of effects • Development & comparison of alternatives
Inputs and data demands	• Basic information on the proposed developments. • Basic information on the local environment - a simple list of relevant elements of environment in the study area.
Outputs	• Illustration of the cause-effect relationships
Advantages	• Flow diagrams help identifying indirect and delayed effects • They clearly illustrate the interaction pathways – the mechanism of cause and effect is made explicit • Flow diagrams provide a good basis for choosing which processes could be quantified or modelled in further detail
Disadvantages	• Flow diagrams do not illustrate spatial or temporal scales of impacts • They uses a holistic approach to impact assessment, so it may require a considerable effort to complete • They can become too complex

Tool: Delphi Technique	
Linkages to other tools	Expert judgments
Purpose	Delphi Technique enables identification of prevailing judgment within a large group of experts who do not directly interact with each other.
Description	The Delphi technique represents the systematic and powerful tool for formulation of collective expert judgements. It is based on the following principles: • there is no face-to-face interaction; • each participant is given time for thought and an equal opportunity to contribute; and • in particular, disagreements are recorded used to examine different points of view and to increase understanding. The Delphi technique is based on the following key steps: • Clarify what information is needed, design the questions and determine the time line of the process. • Identify the appropriate number of experts to serve on the Delphi panel and explain the tasks. • Prepare and distribute the initial set of open-ended or closed-ended questions. • Collect and analyze the first responses and compile the responses. If open-ended questions were used extensively, analyze and present the first set of responses within an appropriate theoretical framework. • Send the same question out to the same panellists a second and third time. The process may be repeated with additional waves, if necessary. Include the responses with the question so that panellists can read the other opinions and adjust their own opinions. Respondents will read each other's ideas and answer the question again. As information is exchanged, people incorporate each others' perspectives and information into their thinking and arrive at a fairly accurate understanding of the critical issues to consider in their decision-making process. • Always prepare and distribute a final report to panellists. One of the motivations for participating in a Delphi panel, particularly for specialists, is to learn first hand, before others, what the results of the Delphi study are. It process identification of prevailing judgment within a large group of experts who do not meet and who may not even know each other's identity in order to minimize personal influences. It thus enables participation of experts from geographically dispersed locations. The approach used in the Delphi technique also defines some useful principles and steps for the formulation of expert judgement through other less time-consuming techniques (e.g. workshops, conferences, etc.).
Usual application within SEA	• Identification of effects • Assessment of effects

	• Comparison of alternatives
Inputs and data demands	• Basic information on the proposed development. • Basic information on the receiving environment.
Outputs	• Prevailing professional judgment from a large group of experts.
Advantages	• Delphi technique can deal with quite technical or complex issues. • It allows sharing of ideas and consensus in decision-making by a large number of stakeholders who do not know each other's identity and can be even geographically distanced • It is convenient to participants, as they can contribute from their own office or home.
Disadvantages	• It takes time for the organizers (can run for several months) • Participant commitment may falter if the process takes too long or they have other commitments • Large amounts of data need to be carefully assessed and distributed, so the process can be expensive to manage
Further reading	Nehiley, J. M. (2001) *How to Conduct a Delphi Study* Dick, B. (2000), *Delphi face to face*, available at http://www.uq.net.au/action_research/arp/delphi.html

Tool: Modelling	
Linkages to other tools	• Networks and flow diagrams • Spatial analyses
Purpose	Models facilitate simulation of environmental impacts.
Description	Modelling generally tends to be used in SEA only when other analytical tools would provide insufficient predictions. Models of relevance to SEA are mainly those developed to simulate specific environmental impacts. Environmental modeling typically includes the following basic steps: • define the very specific issues and interactions that need to be modeled; • define key assumptions and boundaries of the modelling; • identify the suitable model and fine-tune it to fit the local situation and data availability; • collect the basic data on the local environment (e.g. topography, wind speed & direction, flow regimes, etc.) • collect the input data for the past and current situations (e.g. emission levels) and run the model to enable its verification and calibration; • run the model for the different scenarios that are considered in the assessment (e.g. emissions from the different proposed project and from other actions which are considered during the assessment). Developing a new model is generally very costly. Established and accepted models can be used if they are carefully calibrated to ensure that the simulation fits the specific features of the study area. The most common models include: Air Quality Models can simulate the cumulative impacts of a number of projects on the local air quality. They typically consider factors such as the wind direction and speed, air quality & humidity, details of the topography of an area and location of developments that emit air pollutants. Water Quality Models can simulate dispersion of various pollutants under different flow or tidal conditions. They require data on flow regimes (and/or tidal conditions) and can typically predict changes in the dissolved oxygen, coliform bacteria, sediment or chemical concentrations. Other water quality models can simulate the behaviour of pollutants in a lake environment. These models normally consider various inputs of chemicals (e.g. discharge, inflow in rivers, and deposition from the atmosphere) and their removal factors (e.g. irreversible reaction in the water and sediment, outflow in the water, and sediment burial). They typically yield mass balance equations for the water columns and the bottom sediments, but they may also consider pollutant transfer through sediment-water exchanges (e.g. by diffusion and deposition). Soil Quality Models can calculate soil degradation (e.g. erosion, degradation of the organic matter, etc.) or leaching and accumulation of chemicals (fertilisers, pesticides, heavy

	metals) applied to soil. They typically consider physical-chemical properties of the soil and chemical's behaviour of the applied chemicals in a soil environment. Noise Models can consider the cumulative noise levels from more than one source. They typically consider details of the topography of an area and locations of noise emitters.
Usual application within SEA	• Assessment of impacts • Development and compassion of alternatives
Inputs and data demands	Use of models typically requires the following inputs data: • specific impact that needs to be modeled; • key assumptions and boundaries of the assessment; • data on the local environment (e.g. topography, wind speed & direction, flow regimes, etc.); • input data on relevant emissions from the proposed project and from other actions which are considered during the assessment.
Outputs	• Simulation that quantifies the expected impacts.
Advantages	• Model can be relatively easily manipulated through assumptions made in its design or adaptation • Model, once constructed, can simulate effects over time and in space • It can facilitate numerous simulations based on different assumptions and input data • Modelling results can be effectively combined with GIS
Disadvantages	• No model can realistically address every intricacy of the natural system. • The accuracy of a model totally relies on the quality of baseline data. • Construction or calibration and running model is usually very demanding in terms of cost, expertise and time.
Further reading	The Canadian Environmental Modelling Centre at Trent University develops, validates and disseminates mass balance models, which describe the fate of various chemicals in the environment. Their site www.trentu.ca/academic/aminss/envmodel/models/models.html offered (as of 2007) fifteen freeware models that can be freely used for basic modelling of air, water and soil quality. International Environmental Modelling and Software Society is a global not-for-profit association of persons and organizations dealing with environmental modelling. It operates a site http://www.iemss.org that offers a comprehensive information various aspects of environmental modelling, software and related topics.

Tool: Multi-criteria analysis	
Linkages to other tools	Expert judgements
Purpose	• Multi-criteria analysis numerically evaluates all alternative options against several criteria, and combines these separate evaluations into one overall evaluation. • It can be used to identify a single most preferred option, to rank options, or simply to distinguish acceptable and unacceptable options so that a limited number of options can be short-listed for a detailed appraisal.
Description	Multi-criteria analysis (MCA) helps to manage complexity in decision-making by converting the evaluation to a numerical score. All MCA approaches incorporate judgments that are expressed in weights of criteria and in performance evaluations of each option. Usual steps in a multi-criteria analysis are as follow: *1. Identify assessment criteria*, so that they can measure key consequences of proposed alternative options. The proposed set of criteria should be carefully examined to ensure that: • The set of criteria is complete (no significant criteria is missing) • There are no redundant criteria (these may include insignificant criteria or criteria where all options perform equally) • Criteria are measurable (it must be possible to assess - at least qualitatively - how well each option performs in relation to the criterion) • Criteria are mutually independent (there is no double counting) *2. Analyze relative importance of criteria (weighting).* Most MCA techniques determine relative weights of each criteria in the decision -making. Methods of weighting vary from simple techniques (e.g. comparing criteria against each other to determine their relative weight) to complex methods (e.g. sociological surveys to determine importance of each criterion in the affected community).

	3. Analyze performance (scoring). Determine what constitutes the best and the worst performance in the given context. Then, score performance of each option with regard to each assessment criteria. Scoring can be basically done through three means: • Expert judgments that assign scores to show performance of each option when it comes to each assessment criteria (e.g. 0-100 point scale) • Compare options against each other. These methods vary – from simple mutual comparison of options (e.g. on criterion 1 the option A scores best, C second and B third) to more complex comparisons (e.g. programs based on fuzzy sets that turn linguistic evaluations into numerical scores) • Performance is determined on the basis of criterion-specific curve that defines gradual progression from the worst to the best performance *4. Multiply weights and scores for each of the options and derivation of their overall scores.* Each option's performance on a criterion is multiplied by the weight of the respective criterion – this done for all the criteria. The sum yields the overall relative score for the given option. The results for all options are compared and discussed. *5. Analyze sensitivity to changes in scores or weights.* Sensitivity shows how changes in the scores or weight affect the results of MCA. Such analysis may be essential if: • There are serious uncertainties about performance of some options against selected criteria, or • If decision-makers or stakeholders argue about the relative weights of criteria used in MCA.
Usual application within SEA	• Determination of relative importance of impacts • Assessment of impacts • Comparison of alternatives
Inputs and data demands	• Carefully identified assessment criteria reflecting the key environmental consequences of all proposed alternative options • Judgments on relative importance/weights of these criteria • Judgments on performance of each option with regard to all criteria
Outputs	• Conversion of assessment into numerical scoring
Advantages	• MCA takes into account different criteria at the same time (i.e. they avoid decision-making process based on a single criterion); • MCA may be used to bring together the view of the different stakeholders in the evaluation; • MCA is transparent and explicit (the scores and weights are recorded and easy to audit); • MCA may facilitate communication with decision maker and sometimes with the wider community. • MCA reduces rational debate about various pros and cons of proposed alternative options into discussion about abstract numbers (scores and weights)
Disadvantages	• MCA cannot facilitate consensus on very controversial decisions; • By presenting quantitative information (aggregated scores) MCA may create a false impression of accuracy. This sometimes hides the fact that all MCAs heavily depend on a value judgment; • MCA may be easily manipulated by those who perform it (i.e. simple sensitivity analyses that are normally performed within MCA show criteria that best influence outcomes - this knowledge can be used to manipulate the entire analysis).
Further reading	Multi-criteria Analysis Manual of the UK Government, available at http://www.odpm.gov.uk/index.asp?id=1142251 The Journal of Multi-Criteria Decision Analysis (ISSN: 1099-1360). By subscription only. More information can be obtained from the editor val@mansci.strath.ac.uk or at http://www.interscience.wiley.com/jpages/1057-9214/ Department of the Environment, Transport and the Regions, *Review of Technical Guidance on Environmental Appraisal:* A Report by EFTEC (Economics for the Environment Consultancy) http://www.defra.gov.uk/environment/economics/rtgea/1.htm

Annex 13

20. Compartive assessment of growth scenarios assessments in Bangladesh (rated with and without mitigation measures)
21.

Source: CEGIS/Integra, 2021)

A: Without mitigation

R: Risk score: where existing environmental and social safeguard policies, regulations and guidelines are not fully or effectively implemented or enforced, and/or where no or ineffective mitigatory action is taken to avoid, minimise, restore, mitigate or offset potential impacts of development, and/or the use of clean and sustainable technologies is not compulsory.

			Low growth	Medium growth	High growth
Environmental Objectives					
Forest, Protected areas and biodiversity	1	Reduce over-exploitation/degradation of habitats, loss of biodiversity and ecosystem(s) integrity and services	-3	-2	-4
	2	Reduce illegal activities related to protected areas and biodiversity	-3	-2	-3
	3	Reduce introduction and spread of Invasive Alien Species	-3	-2	-3
Waste and pollution	4	Reduce poor management and unsafe disposal of solid and liquid waste (urban & industrial)	-4	-2	-3
	5	Reduce all forms of pollution (air, land, water, noise, light, etc.)	-4	-2	-3
	6	Minimise emissions of greenhouse gases	-3	-3	-3
Climate change and disasters	7	Reduce vulnerability to climate change and natural disasters (salinity intrusion, floods, storm surges, etc.)	-4	-3	-4
Water	8	Increase dry season freshwater flow in rivers	-3	-2	-3
	9	Reduce high/peak flows in rivers during monsoon season	0	0	-2
Land degradation	10	Minimise loss of land due to degradation (e.g erosion of river banks/water channels, soil salinity, soil erosion, etc)	-3	-2	-3
Land use change	11	Minimise conversion of agricultural land (e.g. conversion to shrimp ponds)	-2	-3	-3
Socio-Economic					
Economic growth	12	Ensure significant economic development and diversification, and increase in economic growth	-2	-2	-3
Employment	13	Enhance opportunities for employment and new/improved livelihoods (particularly for fisheries, agriculture, eco-tourism)	-2	-2	-3
Health and sanitation	14	Improve health services and health of society (eg. by reducing vulnerability to diseases)	-2	-1	-1
	15	Improve and extend water supply and sanitation services	-2	-3	-3
Education. skills and training	16	Improve access to education for all, increase attendance (by reducing drop-out rates), and improve skills development and training	-2	-1	-1

			Low growth	Medium growth	High growth
Migration	17	Reduce migration from rural (including disaster-prone and risk-prone) areas to urban areas	-2	-2	-2
Women and children	18	Improve gender equality and empowerment of women	-1	0	0
Social inclusion	19	Increase the inclusion of landless and marginal land holders in development activities in SW region	-3	-2	-2
Conflicts and security	20	Reduce conflicts over use of land	-3	-2	-3
Cultural and natural heritage sites	21	Preserve heritage sites (historic buildings, archaeological and cultural sites and enhance cultural diversity (eg language, arts, etc.) and also Sundarbans 0natural heritage sites	-3	-1	-2
Food	22	Improve food security	-2	0	0
Ag+1riculture and fisheries	23	Increase agricultural and fish production	-1	0	0
Power and energy	24	Increase uptake of renewable energy	-2	-1	-1
	25	Increase efficiency in production and consumption of energy	-2	0	0
	26	Increase access to affordable energy	-1	0	0
Tourism	27	Improve tourism management and behaviour to limit noise, pollution and other negative impacts; and to remain within the carrying capacity of the Sundarbans for tourism.	-2	-1	-1
Infrastructure, transportation and communications	28	Improve connection of communities, and improve access to infrastructure, services and facilities	-2	-1	-1
	29	Optimise the existing and future physical footprint of transport services (rail, road, waterways)	-2	-1	-1

22.

B: With Mitigation

23.

M: Mitigated score: where existing environmental and social safeguard policies, regulations and guidelines are fully and effectively implemented and enforced, and the government implements effective measures to avoid, mitigate, minimise, restore or offset potential impacts of development, and ensures the use of clean and sustainable technologies.

ENVIRONMENTAL OBJECTIVES			Low growth	Medium growth	High growth
Forest, Protected areas and biodiversity	1	Reduce over-exploitation/degradation of habitats, loss of biodiversity and ecosystem(s) integrity and services	0	+2	+4
	2	Reduce illegal activities related to protected areas and biodiversity	0	+2	+4
	3	Reduce introduction and spread of Invasive Alien Species	0	+2	+4
Waste and pollution	4	Reduce poor management and unsafe disposal of solid and liquid waste (urban & industrial)	0	+2	+4
	5	Reduce all forms of pollution (air, land, water, noise, light, etc.)	+1	+3	+4
	6	Minimise emissions of greenhouse gases	0	+2	+1
Climate change and disasters	7	Reduce vulnerability to climate change and natural disasters (salinity intrusion, floods, storm surges, etc.)	+1	+2	+4

Water	8	Increase dry season freshwater flow in rivers	0	+2	+4
	9	Reduce high/peak flows in rivers during monsoon season	0	0	+2
Land degradation	10	Minimise loss of land due to degradation (e.g erosion of river banks/water channels, soil salinity, soil erosion, etc)	0	+2	+3
Land use change	11	Minimise conversion of agricultural land (e.g. conversion to shrimp ponds)	0	0	0
SOCIO-ECONOMIC			**Low growth**	**Medium growth**	**High growth**
Economic growth	12	Ensure significant economic development and diversification, and increase in economic growth	+1	+3	+4
Employment	13	Enhance opportunities for employment and new/improved livelihoods (particularly for fisheries, agriculture, eco-tourism)	0	+2	+3
Health and sanitation	14	Improve health services and health of society (eg. by reducing vulnerability to diseases)	0	+2	+3
	15	Improve and extend water supply and sanitation services	0	+2	+4
Education. skills and training	16	Improve access to education for all, increase attendance (by reducing drop-out rates), and improve skills development and training	0	+2	+4
Migration	17	Reduce migration from rural (including disaster-prone and risk-prone) areas to urban areas	+1	+2	+4
Women and children	18	Improve gender equality and empowerment of women	+1	+2	+4
Social inclusion	19	Increase the inclusion of landless and marginal land holders in development activities in SW region	+1	+2	+3
Conflicts and security	20	Reduce conflicts over use of land	0	+2	+2
Cultural and natural heritage sites	21	Preserve heritage sites (historic buildings, archaeological and cultural sites and enhance cultural diversity (eg language, arts, etc.) and also Sundarbans natural heritage sites	0	+1	+3
Food	22	Improve food security	0	+3	+4
Agriculture and fisheries	23	Increase agricultural and fish production	+1	+2	+4
Power and energy	24	Increase uptake of renewable energy	0	+2	+3
	25	Increase efficiency in production and consumption of energy	+1	+3	+4
	26	Increase access to affordable energy	+1	+3	+4
Tourism	27	Improve tourism management and behaviour to limit noise, pollution and other negative impacts; and to remain within the carrying capacity of the Sundarbans for tourism.	0	+1	+3
Infrastructure, transportation and communications	28	Improve connection of communities, and improve access to infrastructure, services and facilities	+1	+2	+3
	29	Optimise the existing and future physical footprint of transport services (rail, road, waterways)	+1	+2	+4

Annex 14

Checklist questions for assessing significance of impacts

1. What are the likely impacts (negative and positive) of the policy option on the environment and social conditions (ESC)
2. Is the PPP in line with national strategic environmental and social goal?
3. What is the public response regarding exploitation of the environment and changes to social conditions?
4. What is the impact on ownership of natural resources?
5. What are the costs and financial benefits regarding natural resources, the environment and social conditions?
6. How will the financial benefits be used for improved livelihoods, environment conservation and management?
7. Are the production processes environmentally sustainable and socially acceptable?
8. What are the costs of the economic gains in terms of damage to environment and natural resources or negative impact on social conditions?
9. Do the economic gains promote further damage to the environment or deterioration of social conditions ?
10. Will the PPP require the movement of people that will cause concentration in other areas and need for other facilities such as waste management facilities?
11. Will the PPP cause the relocation of human and financial resources away from environmental management or provision of social services?
12. What are the trans-boundary environmental and social implications?
13. Which Multilateral Environmental Agreements (MEAs) / Protocols will be affected by the PPP?
14. Will national obligations under MEAs not be met because of implementing the PPP?
15. Will the PPP affect national or international heritage sites?
16. Will different social groups be affected in a way that will result in them causing negative impacts on the environment?
17. Will the PPP affect gender balance in terms of access, ownership and control over natural resources and benefits realized from them?
18. Is the PPP consistent with the Constitution and provisions of the relevant legislation and regulations in Bhutan?
19. Will the PPP require the enactment of new legislation on environment?
20. Does the PPP unnecessarily expose the environment to abuse or the public to risk and therefore the need for more controls and enforcement?
21. Does the PPP affect the roles and mandates of environment or social sector institutions?
22. Does the PPP have the potential to cause overlap of responsibilities and mandates?

Annex 15

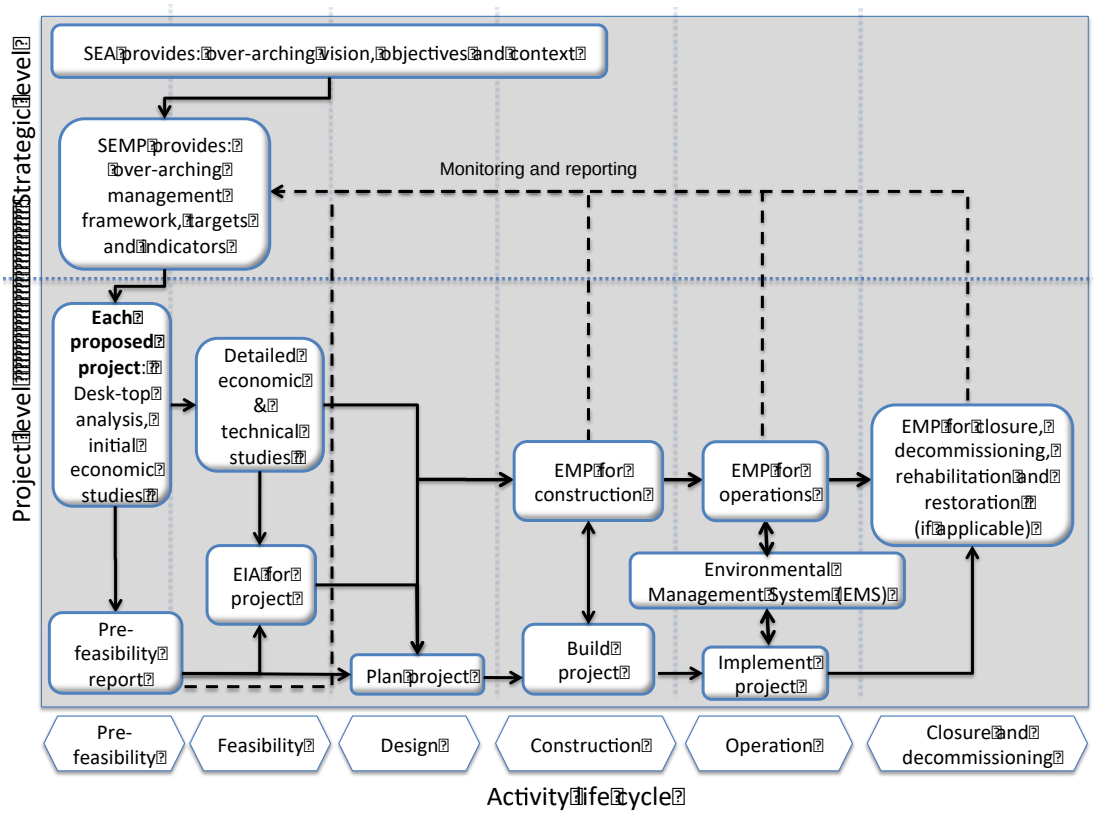
The role of a Strategic Environmental Management Plan

An SEMP should be an integral part of a PPP and act as an ***over-arching framework*** and roadmap for addressing the cumulative impacts of projects, development initiatives and activities planned to be implemented under the PPP (see Box A15.1). To fulfil this role, the SEMP should set limits of environmental and social quality (i.e. performance targets) that need to be achieved as a whole (by the concerted, collaborative oversight of relevant authorities), and, at a lower level, by the proponents of individual projects. Guided by the overall SEMP, individual Environmental Management Plans (EMPs) prepared for each individual project, will need to incorporate all relevant environmental and social management specifications. Thus, the SEMP does not remove the obligation from a developer for conducting a project-specific EIA and EMP where required by national legislations or regulations; or the need to secure required permits for development activities/projects.

Box A23.1: Relations between SEA, SESMP, ESMP AND EMS

The undertaking of the SEA will not rule out the need for subsequent project-level EIAs. Even though the SEA might set development parameters (e.g. good practice for particular development activities), individual projects with potential to cause significant environmental and social impacts will still require an EIA to address site-specific concerns and circumstances. This tiered approach means that the major, consolidated and integrated efforts made to conduct the SEA will result in the subsequent EIAs (which could be many in number) needing relatively less effort, cost and time (Figure A15.1).

Figure A15.1: The continuum between SEA, SESMP, EMP and EMS
Source: Unpublished training materials developed by the Southern Africa Institute for Environmental Assessment, 2012

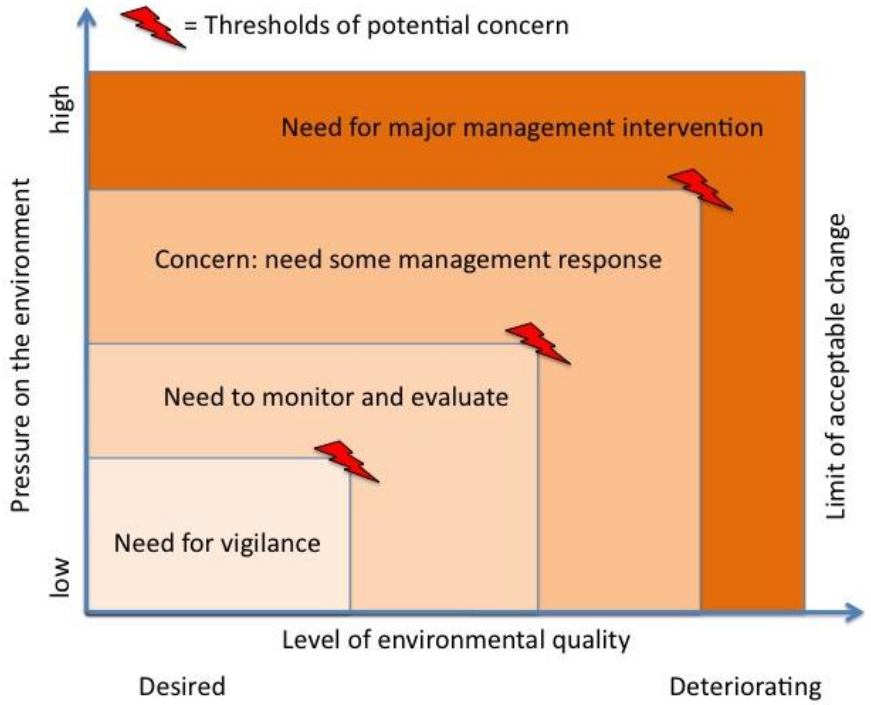


Developing environmental and social quality objectives (ESQOs) (see section 3.3.4 of these guidleines) will require a combination of public and expert opinion, scientific research and an examination of policy, ethical and legal requirements. These informants constitute the ***'input'*** into the objectives. The objectives must each articulate a specific goal, provide a context, set standards and elaborate on a small number of key indicators that need to be monitored. These will collectively make up the SEMP, which is the framework within which individual projects need to be planned and implemented and within which a number of institutions need to undertake certain actions.

The objectives must specify targets that are outcomes-based, practical, achievable, measurable and enforceable. Wherever possible, they should be acceptable to all key stakeholders.

Implicit within all environmental and social quality objectives is a minimum management objective that any changes to the environment or social conditions must be within acceptable limits (following the precautionary principle) and that pro-active intervention will be triggered by the responsible party to avoid unwanted changes that breach a specified threshold (Figure A15.2).

Figure A15.2: Environment pressure and quality, and trigger points for a management response
(Source: adapted from Binedel and Brownlie, 2007).



Through the SEMP, the information obtained during monitoring will enable the PPP proponent to prepare an annual SEMP report for the PPP.

Institutional and procedural arrangements will need to be established for the above purposes (through discussion and consensus amongst key authorities and actors) and maintained to ensure that the monitoring system runs effectively and that data from year to year are replicable, comparable and auditable.

The SEMP should also indicate any capacity-building required to ensure that the SESMP can be effectively implemented, including any institutional adjustments or procedures, recruitments or new assignments and training for national and local officials and civil society organizations.

It will be necessary to ensure that proposed implementation measures are workable. In this regard, the SEA team should review the implementation of previous SEMPs.

Annex 16

List of issues to be covered by a Strategic Environmental Management Plan (SEMP)

In some situations a stand-alone SESP may be required by the PPP proponent. The SEMP should outline the measures to be taken during PPP implementation and operation to enhance positive, and prevent, minimise or mitigate adverse environmental and social impacts associated with the PPP and projects or activities likely to arise during its implementation.

The SESMP should include:

- ***Summary of impacts***
    - The predicted negative environmental and social impacts for which mitigation is required and the positive impacts which can be enhanced, should be identified and briefly summarized. Cross-referencing to the SEA report or other documentation is recommended – so that additional detail can be readily referenced.

- ***Mitigation measures***
    - Identify feasible and cost effective measures to reduce potentially significant adverse environmental and social impacts to acceptable levels;
    - Each mitigation measure should be briefly described with reference to the impact to which it relates and the conditions under which it is required (e.g., continuously);
    - The mitigation measures should be accompanied by, or referenced to, designs, equipment descriptions, and operating procedures that elaborate on the technical aspects of implementing the various measures;
    - Where mitigation measures may result in secondary impacts, their significance should be evaluated;
    - Need for a subsequent EIA(s).

- ***Environmental and Social Quality Objectives*** (ESQOs)

- ***Environmental and Social Performance Monitoring Programme/Mechanism***

    - Provide details for a monitoring and evaluation mechanism for the environmental and social impacts of the PPP and development projects/initiatives likely to be implementing during its implementation, with monitoring indicators and a corresponding evaluation procedure and methodology. It should aim to signal when steps are required to enhance benefits or to remove or reduce risks and negative impacts. The proposed mechanism should take into account existing national legislation and provisions regarding EIA. The monitoring programme should clearly indicate:
        - The linkages between impacts identified in the SEA study;
        - Indicators to be measured;
        - Methods to be used;
        - Sampling locations;
        - Frequency of measurements;
        - Detection limits (where appropriate);
        - Definition of thresholds that will signal the need for corrective actions.

- ***Compliance:***
    - Indicate measures to ensure ***compliance with relevant safeguards*** during both preparation and implementation of the PPP and projects/initiatives that may arise during its implementation. Bhutanese safeguards should take precedence. Where Bhutanese safeguards do not exist, then reference may be made to other safeguards (World Bank safeguards).

- ***Institutional arrangements***
    - Roles and responsibilities of different jurisdictions, authorities and actors in implementing the SESMP (particularly coordination, mitigation and monitoring). As far as possible, recommendations should be institution-specific (who should do what).

- ***Implementation schedule and reporting procedures***
    - Timing, frequency, and duration of the mitigation measures;
    - Procedures to report the progress and results of mitigation and monitoring measures.

- ***Cost estimates***
    - Initial investment and recurring expenses for implementing all measures contained in the SESMP;
    - Where practicable, decisions regarding appropriate mitigation measures should be justified by an economic evaluation of potential environmental and social impacts.

- ***Institutional Strengthening/ Capacity Building***
    - Equipment requirements: Indicate type of equipment and number of units;
    - Training/study tours: Information should be provided regarding type of training, number to be trained, duration of the training, the organization providing the training and costs.

- A ***stakeholder consultation procedure*** for the monitoring and evaluation mechanism.

- ***Guidance and recommendations for project level EIAs***.

Annex 17

International and regional organisations concerned with renewable energy

Bioenergy Europe

Bioenergy Europe (https://bioenergyeurope.org/) is a non-profit, Brussels-based international organisation bringing together 40 associations and 157 companies, as well as 11 academia and research institutes from across Europe. It aims to develop a sustainable bioenergy market based on fair business conditions. Founded in 1990, Bioenergy Europe is a non-profit, Brussels-based international organisation bringing together 40 associations and 157 companies, as well as 11 academia and research institutes from across Europe.

Global Bioenergy Partnership

The Global Bioenergy Partnership (GBEP) (www.globalbioenergy.org) was founded in 2006, and now has more than 80 members. It brings together public, private and civil society stakeholders in a joint commitment to promote bioenergy for sustainable development. The Partnership focuses its activities in three strategic areas: sustainable development, climate change, and food and energy security.

Global Solar Council

The Global Solar Council (GSC) (www.globalsolarcouncil.org), founded in 2015 and based in the USA, is an international non-profit association of the national, regional, and international associations in solar energy and the world's leading corporations. With a primary goal of enabling solar energy, it offers programs in regulatory policy, trade policy, new market opening, and jobs and skills training.

Global Wind Energy Council

The Global Wind Energy Council (www.gwec.net) is the international trade association for the wind power industry. Its mandate is to communicate the benefits of wind power – to national governments, policy makers and international institutions. It provides authoritative research and analysis on the wind power industry in more than 80 countries around the world, and transparent information to governments about the benefits and potential of wind power. GWEC supports collaboration between policy-makers in different countries to help them share best practices and experiences in adding clean power to their energy mix.

Global Wind Organisation

The Global Wind Organisation (GWO) (https://www.globalwindsafety.org/) is a non-profit body founded and owned by its members - all of whom are globally leading wind turbine manufacturers and owners/operators. It promotes an injury free work environment in the wind turbine industry, setting common international standards for safety training and emergency procedures.

Hydropower Sustainability Council

The Hydropower Sustainability Council (HSC) (www.hydrosustainability.org/) is the multistakeholder governing body of the Hydropower Sustainability Standard and Tools. Its membership is open to all stakeholders involved in the development of hydropower

International Energy Agency

The International Energy Agency (IEA) (www.iea.org) was created in 1974 to help co-ordinate a collective response to major disruptions in the supply of oil. While oil security remains a key aspect of its work, the IEA has evolved and expanded significantly since its foundation to focus on all fuels and technologies, The IEA recommends policies that enhance the reliability, affordability and sustainability of energy. It examines the full spectrum issues including renewables, oil, gas and coal supply and demand, energy efficiency, clean energy technologies, electricity systems and markets, access to energy, demand-side management, and much more. Since 2015, the IEA has opened its doors to major emerging countries to expand its global impact, and deepen cooperation in energy security, data and statistics, energy policy analysis, energy efficiency, and the growing use of clean energy technologies.

International Hydropower Association

The International Hydropower Association (www.hydropower.org) is a non-profit organisation representing organisations committed to the responsible and sustainable development and operation of hydropower,

and operating in over 120 countries. IHA members include leading hydropower owners and operators, developers, designers, suppliers and consultants. Around a third (450 GW) of global installed hydropower capacity is directly managed and operated by IHA's membership.

International Geothermal Association

The International Geothermal Association (IGA) (www.lovegeothermal.org) is an international non-profit, non-political, non-governmental association representing the geothermal power sector worldwide. The organisation works for the promotion and worldwide deployment of geothermal energy technology and advocates a future energy system based on renewable energy. The IGA has consultative status to the UN and special observer status to the Green Climate Fund. With partners, the IGA sets standards such as the Geothermal Sustainability Assessment Protocol (GSAP) (2021). It also maintains the geothermal power database and organises regular conferences.

International Renewable Energy Agency

The International Renewable Energy Agency (IRENA) (www.irena.org) is an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international co-operation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy. IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy, in the pursuit of sustainable development, energy access, energy security and low-carbon economic growth and prosperity.

IRENA's role is to seek out, establish and develops new synergies, facilitate dialogue, share best practices, promote enabling policies, build capacity and foster co-operation at the global, regional and national levels. IRENA encourages investment flows and works to strengthen technology and innovation, with diverse stakeholders contributing to these shared goals.

International Solar Energy Society

The International Solar Energy Society (ISES) (www.ises.org) is a non-profit, UN-accredited membership NGO founded in 1954. It informs and connects its diverse membership of researchers, academics, professionals, practitioners, businesses, decision-makers, and advocacies in more than a hundred countries. It promotes solar research and development, provides authoritative advice on renewable energy issues worldwide, advocates for a sustainable global solar industry, and promotes energy education for everyone at all levels.

Ocean Energy Council

The Ocean Energy Council (OEC) (www.oceanenergy council.com), based in the USA, works to improve public knowledge and acceptance of ocean energy (tidal and wind) as a viable resource. It provides a forum for presenting the considered professional recommendations of the ocean energy community to the US Department of Energy and other government bodies as well as international energy organisations. It also fosters educational advancement and growth of its members in the field of ocean energy and works to educate the public on the potential and current status of development of ocean energy.

Ocean Energy Europe

Ocean Energy Europe (OEE) (www.oceanenergy-europe.eu). launched I 2013, is the largest network of ocean energy professionals in the world. It represents over 120 organisations, including Europe's leading utilities, industrialists and research institutes.

Solar Energy International

Solar Energy International (SEI) (www.solarenergy.org) is a nonprofit educational organization. Its primary mission is to provide industry-leading technical training and expertise in renewable energy to empower people, communities, and businesses worldwide. Through its training program (Renewable Energy Education Program, REEP), SEI offers hands-on workshops and online courses in solar PV, micro-hydro, and solar hot water. Additionally, it works cooperatively with grassroots and development organizations in the Americas, Africa, Micronesia, and the Caribbean.

Solar Foundation

The Solar Foundation (www.thesolarfoundation.org), based in the USA, is a non-profit, non-partisan organization that aims to advance the use of solar worldwide, through research products, educational outreach, and leadership.

Wind Europe

WindEurope (https://windeurope.org) - formerly the European Wind Energy Association (EWEA) - promotes wind energy across Europe. It has over 400 members from across the whole value chain of wind energy: wind turbine manufacturers, component suppliers, power utilities and wind farm developers, financial institutions, research institutes and national wind energy associations. WindEurope coordinates international policy, communications, research and analysis, and provides various services to support members' requirements and needs in order to further their development, offering the best networking and learning opportunities in the sector.

WindEurope analyses, formulates and establishes policy positions for the wind industry on key strategic sectoral issues, cooperating with industry and research institutions on a number of market development and technology research projects. It also produces a large variety of information tools and manages campaigns aimed at raising awareness about the benefits of wind and enhancing social acceptance, dispelling myths about wind energy and providing easy access to credible information.
WindEurope regularly organises numerous events, ranging from conferences, exhibitions, and launches to seminars and workshops.

World Bioenergy Association

World Bioenergy Association (WBA) (www.worldbioenergy.org), based in Sweden, represents a wide range of actors in the bioenergy sector, and supports the sustainable development of bioenergy globally.

World Coal Association

The World Coal Association (www.worldcoal.org) is a global association with members across the coal value chain, committed to a transition to clean coal. Its work encompasses government advocacy, policy, media and industry representation. The WCA calls for level playing field policy and greater collaboration between industry, government and investors to advance both global economic and climate aspirations. It is committed to building a sustainable future for global coal and playing an active role in achieving our worldwide economic and environmental aspirations. WCA's activities are focussed on those markets that continue to produce and/or use coal, as it actively supports their right to choose coal. It works with industry stakeholders across the globe and uses its voice to educate and raise awareness of coal and clean coal technologies.

World Solar Thermal Electricity Association

World Solar Thermal Electricity Association (STELAWorld) (www.stelaworld.org) was formed in 2011 to work with international agencies like IEA, IRENA, UNFCCC, UN Development Program, the World Bank, and many more. It assists policy-makers and energy investors to access information on solar thermal electricity development and the value and the rapidly reducing cost of solar thermal electricity production.

Annex 18

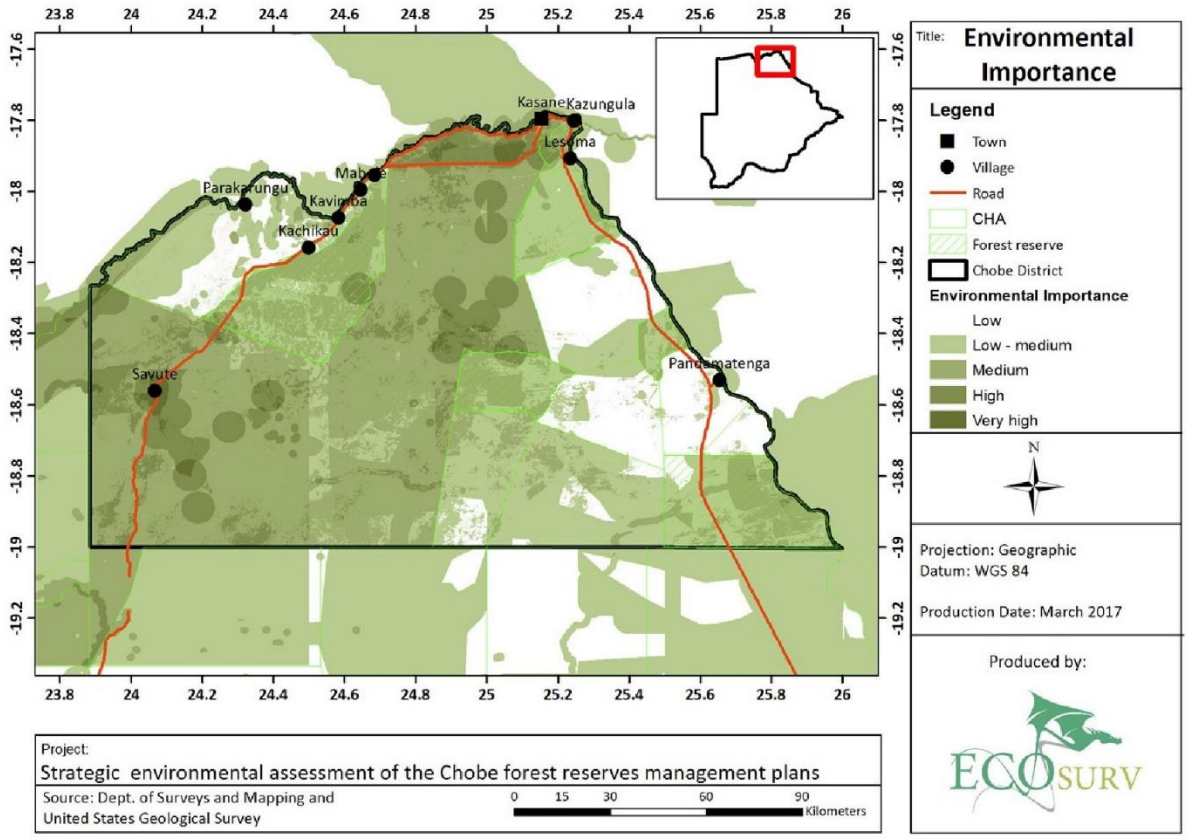
Sensitivity mapping for Chobe Forest Reserve, Botswana

Source: Ecosurv (2018)

An initial SWOT focussed an SEA of the Chobe Forest Reserve , Botswana, on the main cumulative impacts and opportunities. Each cumulative impact was placed within a resilience framework of domain (social, economic and biophysical), scale and time. This provided an understanding of where cumulative impacts were within the overall landscape and what was driving them.

GIS data was then used to generate a land use conflict matrix of the three domains. The layers were combined to provide an overview of areas of sensitivity for biophysical aspect and for socio-economic aspects, so that these can be evaluated separately. Figure A18.1 provides an example of the environmental importance of different areas of Chobe District.

Figure A8.1: Environmental importance of areas in Chobe District



Subsequently these layers were ranked to assign a standardised value, so that they could be analysed for potential land use conflicts using the LUCIS conflict management tool. The tool combined the different inputs to identify preferences and objectives, and allowed decisions to be made on factual evidence as to what types of land use should be selected for which locations.

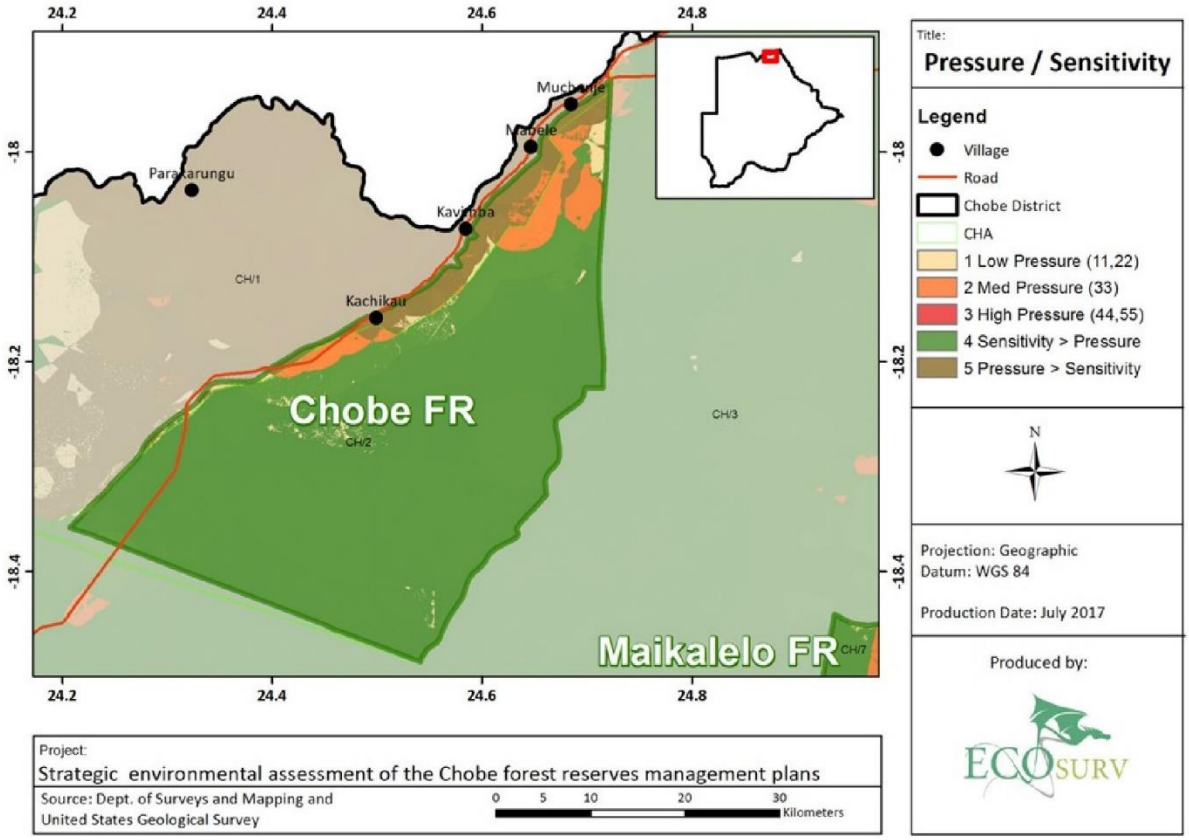
In the case of the SEA, the final raster GIS was a grid of cells each containing 25 possible combinations of socio-economic and biophysical values. Thus, where socio-economic values were high (as in arable agricultural areas) and biophysical were low, no conflict was identified. But where both were high, conflict occurred and required management to address.

The mapped raster values provided a framework for management planning of each forest area.

From stakeholder workshops, a number of data sets were identified that were used to prepare a description of the present state and the pressures and sensitivity maps An overlay of the two (pressure x sensitivity) was used to

spatially highlight the main areas of concern. Figure A18.2 is an example of combining environmental sensitivity with pressures to identify areas of existing and potential conflict.

Figure A18.2: Pressure-sensitivity map for Chobe Game Reserve

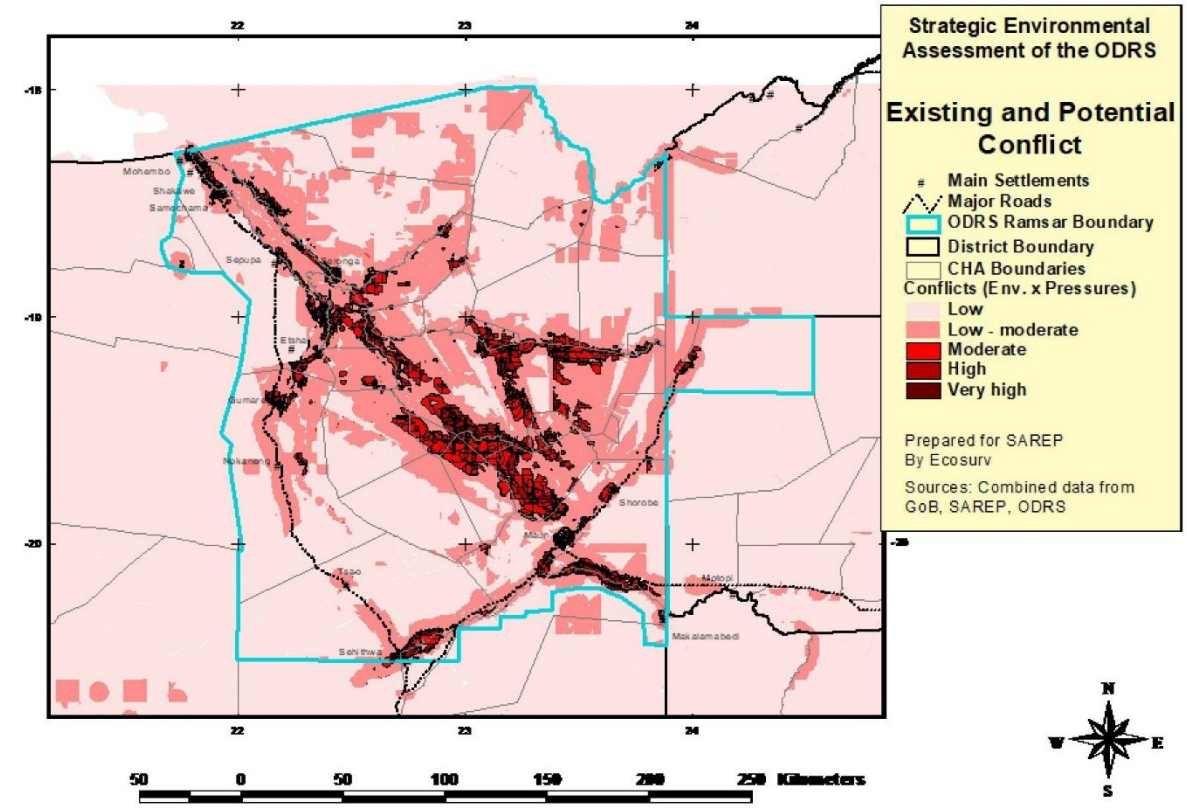


A hub type SEA was undertaken for the Okavango Delta Ramsar Site (ODRS) in 2010-2012, Because of its complexity and multiple land uses, the SEA included a wide range of specialists from different disciplines. The SEA was undertaken for the Tawana Land Board (as the owners of the ODRS and guided by the Department of Environmental Affairs (DEA) as the party responsible for the Ramsar treaty implementation.

Figure A18.3 is an example of combining environmental sensitivity with pressures to identify areas of existing and potential conflict.

The SEA influenced the review and updating of the Okavango Delta Ramsar Site (ODRS). it provided clear guidelines and targets for most of the development pressures faced by institutions such as the Tawana Land Board. Use of LUCIS (land use conflict information system) was adopted by The Land Board in planning on most conflict areas especially in the pan handle area of the Okavango Delta.

Figure A18.3: Map show areas of existing and potential conflict, Chobe Forest Reserve



Annex 19

DEFINITIONS OF TERMS

Rolling list - to be added to

Adaptive management: (Also known as adaptive resource management or adaptive environmental assessment and management). A a structured, iterative process of robust decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring.

Agenda 21: A comprehensive plan of action to be taken globally, nationally, and locally by organizations of the United Nations' system governments and major groups that was agreed at the United Nations Conference on Environment and Development (UNCED) in Rio de Janerio in 1992. It has effectively been replaced in the global policy sphere by subsequent international agreements such as the UN's 2030 Agenda for Sustainable Development (which includes the sustainable development goals), the Paris Agreement on Climate Change 2015, and the Sendai Framework

Alternatives: A key principle of SEA is to consider alternatives to a PPP, or elements of a PPP. This provides the opportunity to identify and explore different ways (different options, choices, or courses of action) to deliver a PPP's objectives while addressing environmental and socio-economic issues. The timely consideration of alternatives in SEA and the planning process provides an opportunity to identify and explore ways of accommodating the future development needs of an area or sector, taking into account the intrinsic environmental and socio-economic conditions[6]. Alternatives should be realistic, reasonable, viable and implementable alternatives that promote environmental and socio-economic benefits while fulfilling a PPP's objectives.

Examples of alternatives used in SEA include: PPP implementation under different economic growth regimes (e.g. high, moderate, low); use of different different technologies (e.g. hydropower power, versus solar versus wind, etc.); different geographic areas for implementation, etc.

Baseline data: Data that describe issues and conditions at the inception of the SEA. Serves as the starting point for measuring impacts, performance, etc., and is an important reference for evaluations.

Benchmark: A standard or point of reference against which things can be compared, assessed, measured or judged. Benchmarking is the process of comparing performance against that of others in an effort to identify areas of improvement.

Capacity assessment: A structured and analytical process whereby the various dimensions of capacity are assessed within a broader context of systems, as well as evaluated for specific entities and individuals within these systems.

Capacity development: The process by which individuals, groups and organisations, institutions and countries develop, enhance, and organise their systems, resources and knowledge - all reflected in their abilities, individually and collectively, to perform functions, solve problems and achieve objectives.

Civil society organisations: The multitude of associations around which society voluntarily organizes itself and which represent a wide range of interests and ties. These can include community-based organizations and non-government organisations. Sometimes indigenous peoples' organisations are erroneously lumped into CSOs. Indigenous Peoples form distinct societies, with their own laws, languages, epistemologies, ontologies, and methodologies, including in the area of Renewable Energy.

Competent authority: means the designated regulatory body charged with monitoring compliance with the national statutes and regulations regarding a country's SEA system.

Cross-boundary impacts – see Impacts

Cumulative effects/impacts – see Impacts

Decision-makers / decision-taker: Policy-making, planning and decision-making and decision-taking systems vary and the meaning depends greatly on national or agency circumstances and procedures. A decision maker or taker may be (i) an official responsible for broad-scale or sectoral development plans or (ii) an elected Councillor or Minister.

[6] Gonzalez *et al*. (2015)

Direct impacts – see Impacts

Environment: Mostly used in an ecological sense to cover natural resources and the relationships between them. But, social aspects (including human health) are also often considered part of "the environment". Issues relating to aesthetic properties as well as cultural and historical heritage (often in "built" environment) are frequently included.

Environmental assessment" (EA): The umbrella term for the process of examining the environmental risks and benefits of proposals prior to decisions on them being made. Interpretations of the scope of EA also vary, particularly regarding the social dimension. It is usual to consider the physical/biological impacts of development on directly affected groups (e.g., impacts on downstream water supply, displacement, and local communities or vulnerable groups). But many institutions routinely include consideration of social impacts that are mediated by the environment (such as the human impacts of water pollution). Some agencies undertake "environmental and social assessments" or separate "social assessments" to identify adverse social impacts and promote other social goals, such as social inclusion or poverty reduction. The relative importance of the different dimensions varies depending on the issue involved. In the case of a dam, for example, it is increasingly routine in EA to consider both physical/ecological and social impacts.

Environmental clearance means a decision, usually issued in writing by a competent authority, to authorise a project to proceed from an environmental and social perspective. It may include terms to ensure that the project is managed in an environmentally sound and sustainable way. Note that, 'environmental clearance' is a not as common in regulatory terms in UK/Europe compared to North America.

Environmental Impact Assessment (EIA or ESIA) was first introduced in the USA as a requirement of the National Environmental Protection Act (NEPA) in 1969. It is a process, applied mainly at project level, to improve decision-making and to ensure that development options under consideration are environmental and socially sound and sustainable. As a process, EIA identifies, predicts and evaluates foreseeable impacts, both beneficial and adverse, of public and private development activities, alternatives and mitigating measures, and aims to eliminate or minimise negative impacts and optimise positive impacts. In the early days of EIA application, the focus tended to be mainly on biophysical impacts. But nowadays, EIA also covers social impacts. The term Environmental and Social Impact Assessment (ESIA) is preferred by some organisations (particularly IFIs) as it specifically makes reference to 'social'. A subset of additional processes has emerged since EIA was introduced, including social impact assessment, cumulative effects assessment, environmental health impact assessment, risk assessment, and biodiversity impact assessment.

Environmental security: A condition in which a nation or region, through sound governance, capable management, and sustainable utilization of its natural resources and environment, takes effective steps toward creating social, economic, and political stability and ensuring the welfare of its population.

Environmental and Social Impact Assessment: see Environmental impact assessment

Environmental and social quality objectives (ESQOs): are specified targets/aims agreed during an SEA for environmental and social quality (e.g. prevention of loss of biodiversity, improved job opportunities) that should be met when implementing a policy, plan or programme. ESQOs and associated indicators form the core element of the monitoring component of a strategic environmental and social management plan (SESMP).

Environmental impact statement*:* means written documentation produced after evaluating the environmental consequences, including cumulative impacts, of a proposed policy, plan or programme. It may be a separate report or part of a proposal.

Ex ante assessment: An evaluation of the environmental and social impacts of a PPP undertaken during its formulation phase, by looking at the expected or intended results of the PPP and predicting and extrapolating its potential significant impacts. It is a way of assessing whether a proposed project is feasible and leaves the opportunity to consider alternatives and adjust the plan, programme, or policy to avoid or enhance the results.

Ex post assessment: An evaluation of the environmental and social impacts of a PPP undertaken after implementation has begun- effectively examining the results of PPP implementation. It provides an opportunity to adjust a PPP to avoid, minimise or enhance the results.

Good governance: Governance is the exercise of political, economic and administrative authority necessary to manage a nation's affairs. Good governance is characterized by participation, transparency, accountability, rule of law, effectiveness, equity, etc.

Impacts: (can be environmental and/or social)

> ***Direct impacts*** are caused as a direct consequence of the PPP or of a component of the PPP or of downstream projects during PPP implementation. For example, road building activities can give rise to land take, removal of vegetation, and severance of farmland. The removal of gravel material from a borrow

pit, for use in surfacing the road, is an obvious direct impact of road construction. In this case, the land area in which the pit site is located has been directly affected by activities associated with the road project.

Indirect impacts (also known as secondary, tertiary, and chain impacts) are usually linked closely with the PPP or with components of the PPP or downstream projects, They may have more profound consequences on the environment than direct impacts. Indirect impacts are more difficult to measure but can ultimately be more important. Over time they can affect larger geographical areas of the environment than anticipated. Examples include degradation of surface water quality by the erosion of land cleared because of a new road, and urban growth near a new road. Another common indirect impact associated with new roads is increased deforestation of an area, stemming from easier (more profitable) transportation of logs to market, or the influx of settlers. In areas where wild game is plentiful, new roads often lead to the rapid depletion of animals due to poaching.

Induced Impacts - Induced impacts (a type of indirect impacts) result from activities that occur in response to socio-economic opportunities associated with new development: e.g., as a result of: opening up access to previously remote areas and untapped resources; creating potential for employment and/or enterprises to service new settlements. Induced impacts may be attributable to a project's facilities and activities, or to "associated facilities" that are not funded by the project, but without which the project would not be viable. Induced activities are not part of the project scope, design or objectives and may not be essential for it to operate. In effect, they compound impacts from a project and associated activities and result in cumulative impacts (Source: IAIA).

Cumulative effects/impacts**:** the incremental impact of a project when added to impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location[7].

Synergistic impacts – another term for cumulative impacts

Cross- or trans-boundary impacts – impacts which caused as a result of a PPP or its component or downstream projects and occur beyond the boundary of the area in which the PPP is focused. Boundaries can be at different scales: administrative areas at local to national level, protected areas, national borders.

Indicator: A signal that reveals progress (or lack thereof) towards objectives: provides a means of measuring what actually happens against what has been planned in terms of quantity, quality and timeliness.

Indigenous peoples: are distinct social and cultural groups that share collective ancestral ties to the lands and natural resources where they live, occupy or from which they have been displaced. The land and natural resources on which they depend are inextricably linked to their identities, cultures, livelihoods, as well as their physical and spiritual well-being. They often subscribe to their customary leaders and organizations for representation that are distinct or separate from those of the mainstream society or culture. Many Indigenous Peoples (IPs) still maintain a language distinct from the official language or languages of the country or region in which they reside; however, many have also lost their languages or on the precipice of extinction due to eviction from their lands and/or relocation to other territories[8].

Indirect impacts: – see Impacts

Irreversible Negative Impact: An impact that cannot be undone in time using reasonable means.

Iterative: The act of repeating a process usually with the aim of approaching a desired goal or target or result. Each repetition of the process is called an "iteration" and the results of one iteration are used as the starting point for the next iteration.

Lead agency: means any Government Ministry, Institution, Department, Parastatal, State Corporation or Local Authority, in which any law vests functions of control or management of any element of the environment or natural resources or social service.

Limits of acceptable change (LAC): Extremes in environmental or social quality beyond which society would find further change unacceptable. LAC relates to a level of environmental quality (usually biophysical) or social quality that is either desired or would be tolerated by society (often a qualitative value).

Mainstreaming/Up-streaming: Integrating environment into development planning processes.

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[7] World Bank (2017b)

[8] Indigenous Peoples Overview (worldbank.org)

Marine spatial planning (MSP): A public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process. Ehler and Douvere (2009) provide a clear, straightforward step-by-step approach to setting up and applying MSP (see also: spatial planning).

Mitgation: Measures to avoid, reduce, restore, and - if necessary - offset significant adverse impacts on environmental or social receptors. The sequence of mitigation follows the mitigation hierarchy (see below).

Mitigation hierarchy:A framework, or sequence of actions implemented, for managing risks and potential impacts. The hierarchy usually encompasses: to anticipate and avoid, or where avoidance is not possible, minimize, and where residual impacts remain, compensate/offset risks and impacts. ~~to workers, Affected Communities, and the environment.~~ Once a project comes to the end of its useful life, then restoration/rehabilitation of the land/ecosystem at a site is usually required.

Monitoring: At a project level, monitoring means a programme of systematic, objective and quantitative measurements, observations and reporting of projects that may have environmental and social impacts. For SEA, monitoring recommendations should be broader and include, e.g., assessing environmental and social conditions and trends, observing PPP development and implementation, and developing information for reporting to national policy-makers, planners, international forums and the public.

Non-government organization (NGO): see CSO.

Plan: A purposeful, forward-looking strategy or design, often with coordinated priorities, options, and measures that elaborate and implement policy.

Policy: A broad statement of intent that reflects and focuses the political agenda of government and initiates a decision cycle. A general course of action or proposed overall direction that a government is pursuing or intends to follow; a policy guides ongoing decision-making.

Policies, plans and programmes (PPP): have different meanings in different countries according to the political and institutional context. Also, in a particular country/jurisdiction, there may be instruments that are not labelled as a policy, plan or programme but which have a similar meaning or intent, e.g., a strategy which may be similar to a plan. These should be treated as a PPP and be subjected to SEA (if the law/regulations required this).

Policy reform is a process in which changes are made to the formal 'rules of the game' - including laws, regulations and institutions - to address a problem or achieve a goal such as economic growth, environmental protection or poverty alleviation. Usually involves a complex political process, particularly when it is perceived that the reform redistributes economic, political, or social power.

Programme: A coherent, organized agenda or schedule of commitments, proposals, instruments, and/or activities that elaborate and implement policy.

Project: A project is a set of tasks that must be completed in order to arrive at a particular goal or outcome. In terms of environmental and social assessment, it refers to a development activity or initiative (including those that involve construction). For renewable energy developments, a project might encompass the following:

- Hydropower schemes (reservoir-based, run-of-river, micro schemes);
- Wind farms (onshore or offshore)
- Solar farms;
- Geothermal power plants
- Tidal power developments
- Bioenergy production (mainly growing bioenergy crops
- Associated infrastructure may also be included (e.g. transmission lines, access roads, electricity storage facilities, ports, harbours and terminals, etc.)..

Proponent: In SEA. the proponent is the authority or organisation (often a government ministry or department) that has lead responsibility for preparing or implementing a policy, plan or programme, In EIA, the proponent is the organisation, company or individual that is proposing and developing a project.

Receptor: A receptor is a component of the environment or social fabric that could be adversely affected by the implementation of a PPP, e.g., habitats, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape, communities, human health, rights, etc.

Responsible authority: The organisation which prepares and/or adopts a plan or programme subject to SEA.

Scenarios: Scenarios are a technique for presenting alternative views of the future. In SEA, simple scenarios are sometimes used (e.g., low economic growth, medium economic growth or high economic growth) to compare how the impacts of an individual PPP or, in some situations, a suite of PPPs, may differ in nature/extent/severity

under different possible circumstances. Modelling is sometimes used to predict how different scenarios might unfold.

For an SEA of a PPP concerned with the energy transition, it might be useful to develop scenarios of the nature of the transition (what energy resources will be developed and where) during different timeframes (e.g. near-term, medium-term or long-term).

The process of scenario planning is well developed and can involve various actors to identify significant events, drivers of change, and contrast have responses to change may differ according to actors' different motivations. Scenario development allows us to think systematically about and understand the nature and impact of the most uncertain and important driving forces affecting our future (see Annex 9).

Scoping: An early stage in SEA to review the context, extent (spatial and temporal boundaries of the SEA), identify key environmental and socio-economic issues, providing an opportunity to focus the report on the important issues to maximise its usefulness to the authorities, decision-makers and public. Scoping should identify baseline and other data requirements and initiate collection, identify any critical information gaps, and determine the relevant criteria for assessment. It should also determine the scope of the analyses needed, identify the stakeholders to be involved (and how). Furthermore, scoping should involve identifying alternatives (to the PPP or elements of the PPP) to be assessed, identifying relevant environmental and social quality objectives (ESQOs), targets, indicators. It may also involve a review of the policy, legal and institutional framework,

Sectoral guidelines: means all guidance documents, including codes of best practice, published by government ministries or agencies.

Sectoral strategy: A policy framework, for the long- and/ or medium-term, which has been adopted by a government as a plan of action for a particular area of the economy or society.

Spatial planning: Spatial planning systems refer to the methods and approaches used by the public and private sector to influence the distribution of people and activities in spaces of various scales. Spatial planning can be defined as the coordination of practices and policies affecting spatial organization[9]. Spatial planning is synonymous with the practices of urban planning in the United States but at larger scales and the term is often used in reference to planning efforts in European countries. Discrete professional disciplines which involve spatial planning include land use, urban, regional, transport and environmental planning. Other related areas are also important, including economic and community planning. Spatial planning takes place on local, regional, national and international levels and often results in the creation of a spatial plan (see also: marine spatial planning).

Stakeholder: Those who may be interested in, potentially affected by, or influence the implementation of a PPP. Stakeholders may include government (national and local), local communities, NGOs, civil society, the private sector and, in the context of development cooperation, donor agencies.

Steering committee: a broad-based, multi-stakeholder committee for the SEA to: provide oversight, advice, support and guidance; facilitate access to critical information; review reports; build ownership of the SEA process amongst key actors; and advocate for the uptake of its recommendations,

Strategic action – refers to an action taken to implement a policy, strategy, plan or programme.

Strategic environmental assessment (SEA): A systematic process for incorporating environmental and social considerations across different levels of strategic decision making – plan, program, and policy levels. It encompasses a family of approaches on a continuum from institutional assessment to impact analysis and spatial mapping. Some organisations prefer the term Strategic Environmental and Social Assessment' (SESA) (notably IFIs)

Strategic Environmental and Social Assessment (SESA): see Strategic Environmental Assessment

Strategic environmental and social management plan (SESMP) – sometimes called a Strategic Environmental Management Plan (SEMP**)**. A plan (either stand-alone or sometimes as a section of a SEA report) that presents strategies and procedures to enhance positive, and prevent, minimise, or mitigate adverse environmental and social impacts associated with a PPP and projects or activities likely to arise during implementation of a PPP. These procedures should include measures to ensure compliance with relevant safeguards. The SESMP should set out: (a) the roles and responsibilities of different jurisdictions, authorities and actors in implementing the SESMP; (b) a simple performance monitoring and evaluation mechanism for the environmental and social impacts of the PPP and subsequent development projects/initiatives, with monitoring indicators and a corresponding evaluation procedure and methodology; (c) steps required to enhance benefits or to remove or reduce risks and negative impacts; (d) a stakeholder consultation procedure for the monitoring and evaluation mechanism; and (e) guidance and recommendations for project level EIAs.

[9] spatial planning : definition of spatial planning and synonyms of spatial planning (English) (sensagent.com)

Sustainable development goals: An intergovernmental set of 17 aspiration Goals with 169 Targets - contained in UN Resolution A/RES/70/1 of 25 September 2015. They cover a broad range of sustainable development issues, including ending poverty and hunger, improving health and education, making cities more sustainable, combating climate change, and protecting oceans and forests. The SDGs replace the former Millennium Development Goals.

Synergistic impacts – see Impacts.

Target PPP: the particular policy, plan or programme that is the subject of the SEA.

Threshold: Levels that should not be exceeded; points at which irreversible or serious damage could occur, either to ecosystems and/or to social systems (health, safety, or wellbeing). The threshold concept is commonly invoked as a necessary component of environmental assessment and, more broadly, land-use decision making. Many consider thresholds as objective and finite stopping points at which a harmful activity or development trajectory should cease, because further activities will result in an unacceptable change or risk to the environment. Although ecological thresholds can play an important role in environmental assessment, they are not a simple solution to complex socio-ecological decisions, nor do they ensure objective decision-making. A threshold, even if precise, is only one component of the assessment process. In contrast to the often naive expectation of precise and definitive science-based thresholds, management or significance thresholds recognise a continuum of risk that can be weighed against socio-economic interests. That risk continuum can guide the incremental increase in monitoring and precaution that should accompany the review and implementation of individual projects or land-use change that results in cumulative effects across watersheds[10].

Tier: A layer or ranking in a hierarchy, as in policy, plan, or programme.

Tiering: addressing issues and impacts at appropriate decision-making levels (e.g. from the policy to project levels).

[10] Johnson and Ray (2021)