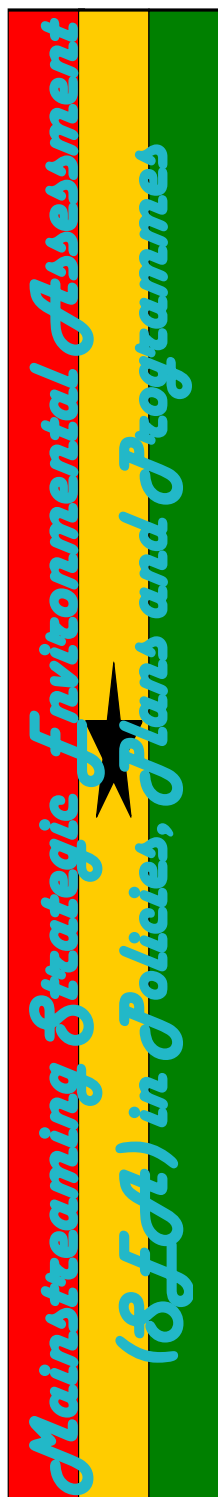


MINISTRY OF WATER
RESOURCES, WORKS AND
HOUSING



MINISTRY OF LOCAL GOVERNMENT,
RURAL DEVELOPMENT AND
ENVIRONMENT

REPUBLIC OF GHANA



SEA OF WATER AND ENVIRONMENTAL SANITATION

A PRACTICAL GUIDE



ENVIRONMENTAL PROTECTION AGENCY

JULY 2006

Foreword

We are pleased to commend this Guide as an important milestone in the process of introducing Strategic Environmental Assessment (SEA) in the Water and Environmental Sanitation (WES) sector in Ghana and particularly for continuing the process of capacity building and ultimately institutionalising SEA within the sector.

The SEA activities in WES were carried out under the Second Phase of Danida Water and Sanitation Sector Programme Support (WSSPS II). The Water Directorate of the then Ministry of Works and Housing took a bold decision, in 2004, to implement the recommendation of the SEA of the Ghana Poverty Reduction Strategy (GPRSI) which proposed sector-specific applications of SEA.

On the whole, the SEA activities involved a wide range of stakeholders from Ministries, Departments and Agencies (MDAs), District Assemblies, parliamentary representatives, civil society, NGOs, and the Private Sector. The practical tools contained in the Guide have been developed by these sector stakeholders through processes including *key person interviews, focus group discussions, roundtable meetings and consultative workshops*.

The SEA process has further reinforced the idea that *environment* is closely linked to social, cultural, natural resource, institutional and economic issues. Through the process, all the participants appreciate more of the wider impacts of policies, plans and programmes (PPPs) on the environment, economic growth and poverty reduction.

The process of consolidating and finalising the National Water Policy (NWP) benefited immensely from the application of SEA principles and processes, resulting in a broad stakeholder consultations and greater familiarisation with the policy actions.

Globally, SEA is still in the development stages and country-specific applications are evolving. It is therefore expected that this Guide will serve as a reliable reference on basic principles of SEA and more specifically relating to its application in Ghana. Accordingly, the Environmental Protection Agency (EPA) and the Ministry of Water Resources, Works and Housing (MWRWH), are committed to ensuring that the SEA methodologies and tools developed in this pilot phase will be effectively applied in the formulation and implementation of PPPs within the sector and allied sectors in order to promote sustainable development.

We cannot end without acknowledging the contributions by the Ministry of Local Government, Rural Development and Environment, Danida, as well as the Local and International consultants in making this Guide a reality.

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ABOUT THIS GUIDE

This Guide has been produced by the Water Directorate of the Ministry of Water Resources, Works and Housing (MWRWH) with support from the Policy Monitoring and Management Support (PMMS) component of Danida WSSPS II.

This is a result of the work of many individuals. The primary authors of the Guide are, Evans Darko-Mensah (Local Consultant), Lukman Y. Salifu (Local Consultant), Lis Alminde (International Consultant, Carl Bro), Loiuse Grenier (International Consultant, Carl Bro), Jesper Kjolholt (International Consultant, COWI) and Niels Palmvang (International Consultant, COWI).

The SEA in WES process was coordinated by Ole Kaaer Jensen (PEM Consult), the Sector Advisor to the Water Directorate (MWRWH) and in charge of the Policy Monitoring and Management Support (PMMS) component and Sven Jacobi, Manager of IWRM component of Danida WSSPSII.

The usefulness of this Guide is fully realised when it is used with hands-on training on the application of the various tools. The Training Section complete with modules will aid training of trainers, and as the tools are put into practice, revisions and additions would be made as new lessons and further understanding emerge.

It is intended that the Guide be further developed as new insights are derived from the field. The Water Directorate and the Environmental Protection Agency (EPA) shall endeavour to incorporate your recommendations and observations in future editions.

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Mainstreaming environment in WES policies, plans and programmes is supported as part of Danida Water and Sanitation Sector Programme Support, Phase II (WSSPSII). This is in response to recommendations of an SEA of the Ghana Poverty Reduction Strategy (GPRS1). Focus is initially on Water and Environmental Sanitation Policies, Plans and Programmes (PPPs) and on Integrated Water Resources Management (IWRM) plans and strategies (See Appendix 1). Capacity of staff of key institutions in applying SEA is expected to further improve as specific WES sector tools are applied.

The Water Directorate wishes to thank Morgens Mechta, the Water Sector Coordinator at the Royal Danish Embassy for supporting the Directorate's request for this support.

The role of the Water Sector Advisor (PMMS) in managing the entire process is worthy of mention as well as the rich experiences added through reviews and validation by the EPA/NDPC SEA Team members Christine Asare (Principal Programme Officer, EPA), Ebenezer Appah-Sampong (Principal Programme Officer, EPA), Kwabena Badu-Yeboah (Senior Programme Officer, EPA) and Kwaku Adjei-Fosu (Principal Planning Officer, NDPC).

The invaluable knowledge of the Executive Director (EPA) who also chairs the SEA Coordination Committee contributed a lot to the finalization of the Guide.

Many people contributed to the development of this Guide either by participating in focus group discussions and key person interviews or by carrying out practical exercises using the tools in workshops. Members of the Parliamentary Select Committees on Works and Housing and Local Government; staff of Ministry of Water Resources, Works and Housing, Ministry of Local Government, Rural Development and Environment; staff of Regional Environmental Health and Sanitation Units, and Environmental Health staff of Greater Accra and Eastern regions; staff of Community Water and Sanitation Agency (CWSA), WRC (Water Resources Commission), International Water Management Institute (IWMI), Irrigation Development Authority (IDA), Hydrological Services Division (HSD) and their contributions are greatly appreciated.

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Acronyms and Abbreviations

CWSA	-	Community Water and Sanitation Agency
CWS	-	Community Water and Sanitation
DA	-	District Assembly
DP	-	Development Partners
DPCU	-	District Planning and Coordinating Unit
DWSP	-	District Water and Sanitation Plan
DWST	-	District Water and Sanitation Team
EIA	-	Environmental Impact Assessment
EHSU	-	Environmental Health and Sanitation Unit
EPA	-	Environmental Protection Agency
FGD	-	Focus Group Discussion
GPRS	-	Ghana Poverty Reduction Strategy
GPRSII	-	Growth and Poverty Reduction Strategy
GoG	-	Government of Ghana
GWCL	-	Ghana Water Company Limited
HES	-	Hygiene Education and Sanitation
HIA	-	Health Impact Assessment
KPI	-	Key Person Interview
MDG	-	Millennium Development Goal
M & E	-	Monitoring & Evaluation
MLGRDE	-	Ministry of Local Government, Rural Development & Environment
MMDAs	-	Metropolitan, Municipal and District Assemblies
MWRWH	-	Ministry of Water Resources, Works and Housing
NDPC	-	National Development Planning Commission
NCWSP	-	National Community Water and Sanitation Programme
NGO	-	Non-Governmental Organisation
O&M	-	Operation and Maintenance
PPPs	-	Policies, Plans and Programmes
RCC	-	Regional Coordinating Council
REHU	-	Regional Environmental Health Unit
RPCU	-	Regional Planning Coordinating Unit
RWST	-	Regional Water and Sanitation Team
SEA	-	Strategic Environmental Assessment
SIP	-	Strategic Investment Plan
WATSAN	-	Water and Sanitation Committee
WD	-	Water Directorate
WES	-	Water and Environmental Sanitation
WRC	-	Water Resources Commission
WSS	-	Water and Sanitation Sector
WSDB	-	Water and Sanitation Development Board

Glossary of Terms

Advocacy	Creating awareness and getting the commitment of decision-makers for a social cause.
Community	Includes groups of individuals living in close proximity to each other and/or other social groups, grassroots entrepreneurs or associations able to identify a need and come together to access project funds. The size of the community varies depending on the type of project intervention and includes people from all areas that make direct use of the project
District Assembly (also Municipal or Metropolitan Assembly)	A local government or authority organized in accordance with the Constitution and laws of Ghana, and the Local Government Act, 1993 (Act 462), which is responsible for planning for and implementing all development projects within its jurisdiction and regulated by the appropriate act of parliament in the form of legislative instruments.
Degradation of water quality	A decrease in quality, which makes water unsuitable for specific uses.
Demand responsive approach	The provision of water and sanitation services to meet specific locality requirements based on effective demand by communities actively seeking to improve these services.
Domestic water use	The use of water for household purposes and personal hygiene
Domestic Wastewater	Wastewater principally derived from households, business buildings, institutions, etc., which may or may not contain surface runoff, groundwater or storm water.
Drinking water quality	A term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for drinking. The level of water quality is based upon the evaluation of measured quantities and parameters, which then are compared to water quality standards, objectives or criteria.
Effective Demand	The demand by communities for improved water and sanitation services based on their informed decisions on, levels of service, location of facilities, implications of participating in planning and implementation, capital costs, O&M and cost-recovery.
Effluent discharge	This is fluid such as municipal sewage and industrial liquid waste (untreated, partially treated, or completely treated), which flows out of a treatment plant, sewer, or industrial outlet or domestical outlets. Generally it refers to wastes discharged into surface waters.
Effluent standard	This is the maximum amount of specific pollutants allowable in wastewater discharged by an industrial facility or wastewater treatment plant. The standards are set for individual pollutants and apply across all industrial categories.
Environmental flow	Flows, or characteristics of the flow pattern, which are either

	protected or created for an environmental purpose and provided within a river, wetland or coastal zone to maintain ecosystems and their benefits where there are competing water uses and where flows are regulated.
Environmental Management	The processes and systems for dealing with the environmental effects of developments.
Environmental Impact Assessment	Detailed studies, which predict the effects of a development project on the environment and provide plans for mitigation of adverse impacts.
Environmental Sanitation	This is concerned with the on-going management, operation and maintenance of the removal and disposal of liquid and solid wastes from all premises and their surroundings and their disposal in a way that it does not cause harm to either people's health or the environment.
Environmental water use	The release of maintenance of certain level of flow of water for the purpose of maintaining specific environmental and recreational purposes.
Fisheries water use	The release or maintenance of a certain flow of water for the purpose of meeting the needs of aquaculture or fisheries activities.
Gender-sensitivity and mainstreaming	Is the process of ensuring that policy formulation, project development and monitoring are gender sensitive by integrating and institutionalizing gender issues in policies, plans and programmes.
Ground water	Subsurface water in a saturation zone below the surface of the earth often in naturally occurring reservoirs in permeable rock strata or aquifer; the source for wells and natural springs.
Good Governance	The adherence to subsidiarity for assuring transparent and accountable decision-making in planning of investments, implementation and management of water and sanitation services involving ALL stakeholders.
Ground-water recharge	Inflow of water to aquifer systems from the surface through infiltration of precipitation and its movement to the water table.
Guinea worm disease	This is an infestation contracted by drinking stagnant water contaminated with Guinea worm larvae that can mature inside a human's abdomen until the worm emerges through the person's skin.
Health Education	The teaching of ways of developing and teaching healthy practices as part of health promotion.
Hygiene education	The process of developing and teaching hygienic practices as part of health promotion including providing teaching and learning materials as well as supporting information, education and communication for awareness creation on the effects of poor hygiene. The aim is for behaviour change for maintaining personal hygiene and cleanliness of facilities and surroundings.

Integrated water resources management (IWRM)	Integrated water resources management is based on the perception of water as an integral part of the ecosystem and other natural resources, and a social and economic good, whose quantity and quality determine the nature of its utilization.
Level of Service	A specified type of water and sanitation service appropriate for meeting the health and welfare (including environmental considerations) needs of targeted communities. The services are provided relying on effective demand by communities.
Municipal water use	The diversion, treatment, and distribution of water by a water supply utility to satisfy a range of domestic and non-domestic demands within a given municipality.
Municipal Wastewater	A mixture of domestic wastewater, effluents from commercial and industrial establishments, and urban runoff.
Pollutant	This is generally any substance when introduced into the environment in excess quantities of the natural background concentrations, adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.
Pollution	In relation to a water resource, this means any direct or indirect alteration of the physical, thermal, chemical or biological properties of the water resource so as to make it less fit for any beneficial purpose for which it is or may reasonably be expected to be used; or harmful to the welfare, health or safety of human beings, any aquatic or non-aquatic property or the environment.
Potable Water	Water of specified quality standard meant for drinking purposes. Also safe water.
Raw water quality	A term used to describe the chemical, physical, and biological characteristics of untreated water, usually in respect to its suitability for a particular purpose.
Riparian habitat	The dynamic complex of plant, animal and micro-organism communities and their non-living environment adjacent to and associated with a watercourse.
River basin	The land area drained by a river and its tributaries or the land area surrounding one river from its headwaters to its mouth.
Strategic Environmental Assessment	Systematic evaluation of the environmental effects of policies, plans and programmes, considering alternatives to support transparent decision making.
Subsidiarity	This Principle deals with the management of water and sanitation services at the lowest appropriate level, with users involved in the planning and implementation of projects.
Surface water	Water that sits or flows above the earth, including lakes, oceans, rivers, streams, wetlands and in reservoirs constructed by man.
Triple-bottom line	Refers to the three main components for sustainability objectives which are natural resources, socio-cultural and economic

parameters. Sustainable development is based on achieving a balance among these three; in Ghana a fourth parameter, *institutional and regulatory*, has been included and gives us a *quadruple-bottom line*.

Water resources A general term encompassing the concepts of availability (the location, spatial distribution, or natural fluctuations of water); accessibility (given availability, whether consumers can have water or can afford water in adequate quantities); and quality (whether accessed water is free of contaminants and safe for consumption).

Wetlands Wetlands are seasonally or permanently waterlogged areas and generally include swamps, marshes, flood lands, estuaries, delta, mangroves, lagoons etc.

PREAMBLE

SEA in Water and Environmental Sanitation Sector

Applying Strategic Environmental Assessment (SEA) to Water and Environmental Sanitation (WES) policies, plans and programmes is a follow up from the recommendations of the SEA of the Ghana Poverty Reduction Strategy. SEA was first applied to the Ghana Poverty Reduction Strategy published in 2003.

The GPRS acknowledges the causal link which exists between the state of the environment and poverty and proposes Environmental Impact Assessment (EIA) and environmental audits to ensure that economic growth arising from the GPRS is sustainable. Successive reviews indicated that the strategy could be made much more sustainable by giving greater weight to cross-cutting environmental issues – rather than treating the environment as a separate topic or sector.

A key recommendation was for other sectors to use SEA as a tool in mainstreaming “environment” in development in Ghana.

An important consideration for applying SEA is to meet MDG 7 (Target 9) ‘*integrate the principles of sustainable development in country policies and programmes and reverse the loss of environmental resources*’. This cannot be achieved through one-off, short-term or a series of capacity building and training exercises but through routine application by users of SEA principles and related tools. The development of this Guide is to contribute towards achieving this.

The main challenge for institutionalising SEA is identifying everyday tasks to which SEA principles and the tools can be applied by stakeholders. It is through such use that SEA principles will become adopted. The guide therefore uses the participatory approach to developing skills, with emphasis on learning-by-doing of tasks normally carried out by staff.

Environment as applied in SEA in Ghana implies effectively balancing important issues of the following to achieve sustainability;

- *Natural resources*
- *Socio-cultural*
- *Economic*
- *Institutional and regulatory provisions*

USING THIS GUIDE

What is the Guide for?

This Guide is for assisting water and environmental sanitation sector practitioners adopt SEA principles in their everyday work relating to policies, plans and programmes. Issues of deteriorating environmental conditions confront us daily and are increasing. This guide builds on existing practices in the sector and aims to bring together the environmental, social-cultural, economic and increasingly the institutional dimensions of delivering services and how they impact on sustainable development.

The Guide illustrates how policies and plans can be improved through applying SEA principles and processes. It also introduces the broad concepts and principles of SEA.

Who should use this Guide?

The practical examples in the Guide are drawn mainly from the pilot work with policies and plans in the water and environmental sanitation sector in Ghana. The primary users of this guide are:

- Stakeholders at national level who deal with policy and programme formulation/analyses including ministries, departments and agencies, as well as development partners.
- Stakeholders at regional and district levels dealing with plans and who focus more on implementation and delivery of programmes and projects.

The Guide is also intended to be used as a general reference for those who want to learn about SEA.

When and how to use this Guide

The tools contained in this guide have been developed through participatory engagement with sector actors over a period of almost two years. The examples show how existing policies and plans may be improved using these tools.

However, the tools in this guide **should primarily be used** for drawing up **new** policies, plans and programmes, whenever the need arises as is applied for the River Basin planning.

While the Guide provides basic concepts and principles of SEA, it benefits mostly those who will apply the tools in their everyday work. To be able to this effectively requires that one is taken through the training modules in order to acquire a hands-on experience in a participatory manner so there is benefit of experience sharing with other practitioners.

Structure of the Guide

The guide is divided into four parts:

- Part 1: Basic concepts and Principles of SEA
- Part 2: SEA Tool-kit
- Part 3: Training Guide
- Part 4: Resources for Implementing SEA

PART 1

Part 1 introduces the basic concepts and principles of SEA and shows when and how the various processes are used.

Section 1 gives an overview of definitions and the working definition of SEA adopted for water and environmental sanitation sector. It also provides examples of how SEA has been applied in Ghana.

Section 2 covers the principles of SEA, the generic steps that must be followed in carrying out 'proper' SEA. This section concludes with the general benefits to be derived from carrying out SEA and related implications.

PART 2

Part 2 contains practical tools that have been developed through carrying out SEA of specific policies and plans. There are five sections in this part of the guide dealing with how to assess existing policies and plans and the steps for improving them.

Section 3 presents the tools for policy assessment, which are mainly criteria developed for assessing how policies respond to sustainability objectives.

Section 4 deals with two separate but related topics.

The first part of the section deals with Health Profiling and Planning intended for enhancing District Water and Environmental Sanitation Plans (DWESPs). This shows how to assess existing situations and their possible impacts and remedial actions that are needed to overcome negative impacts or improve positive ones.

The second part of the section covers tools for assessing and reporting on environmental conditions of a district. Steps for improving DWESPs with information gathered are given.

Section 5 presents tools for Monitoring and Evaluation (M&E). The tools are meant to help in assessing performance – where are we? , where do we want to go? , have we reached our objectives and targets?

The latter parts of the section consists of M&E tools that are related to environmental profiling and planning in a district (covered under section 4).

Section 6 consists covers how feasibility studies can be evaluated so that they meet requirements of sustainability including the usual financial and economic considerations.

Section 7 presents the tools used in developing River Basin plans with the aim of ensuring that they meet expectations of all stakeholders while assuring sustainability.

PART 3

Part 3 contains a set of modules that capture the processes employed in developing the tools of Part 2. This Part provides the process of carrying out hands-on training of trainers workshops.

Section 8 contains seven modules that cover the main areas of Parts 2 and 3:

- Module 1 Basic Concepts of SEA

- Module 2 SEA of Policies
- Module 3 SEA of Plans and Programmes
- Module 4 Monitoring & Evaluation of Health Impacts
- Module 5 Environmental Assessment and Profiling
- Module 6 Quality Assurance of Feasibility Studies
- Module 7 SEA in River Basin Planning

Each of the modules gives an overview of the exercises to be carried out, the resources (including time to be allocated and materials) required and step-by-step instructions to be followed to complete the module and how to apply lessons in everyday activity.

PART 4

The final Part of the Guide covers the resources that are required to implement SEA given the purpose and scope for a specific situation.

Section 9 gives the elements of implementing SEA and the resources that go with them. Examples of resources required for broad SEAs and those specific to the Water and Sanitation sector are provided. The section also gives examples of areas of work that stakeholders can apply SEA routinely so the principles can become immersed in the sector.

Table A Which Sections of the Guide are for you?

SECTION No.	TITLE	SECTOR STAKEHOLDERS				
		Policy makers and advisors	National-level departments and agencies	Regional/District coordinators, planners	Funding agencies and international NGOs	Local NGOs/CBOs and private service providers
1	Definitions and applications of SEA	■	■	■	■	■
2	Principles of SEA	■	■	■	■	■
3	Tools for policy assessment	■	■		■	
4	Tools for health and environmental assessment/profiling			■		■
5	Tools for monitoring and evaluation		■	■		■
6	Tools for quality assurance of feasibility studies	■	■		■	
7	Tools for River Basin Planning	■	■	■	■	■
8	Training Modules		■	■		■
9	Elements of implementing SEA and Resource Requirements	■	■	■	■	■

Legend

- Part 1
- Part 2
- Part 3
- Part 4

**PART 1: BASIC CONCEPTS AND
PRINCIPLES OF SEA**

SECTION 1 DEFINITIONS AND APPLICATION OF SEA

FORMAL DEFINITIONS

SEA is an evolving concept and there are a number of definitions emerging. The one adopted for the SEA of the GPRS in 2003 is:

‘SEA is the formalised, systematic and comprehensive process of evaluating the environmental effects of a policy, plan or programme (PPPs) and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision-making.’

(Therivel et al 1992)

Similarly, the term ‘Environment’ as used in the Ghanaian context and spelt out in the SEA of the GPRS *‘includes natural resources, social, cultural and economic conditions and the institutional environment in which decisions are made’*.

(Content Report, SEA of GPRS 2004)

WORKING DEFINITION OF SEA FOR WES IN GHANA

An SEA process “provides information in a systematic manner on the choices made to aid decision-making by proactively mainstreaming environmental issues and broadening stakeholder engagement in considering alternatives that enhances sustainability objectives during the formulation (and implementation) of policies, plans and programmes.

In applying SEA to WES policies, plans and programmes in Ghana, the working definition adopted is derived from the principle that *‘SEA facilitates consultation, broad stakeholder participation in the evaluation of environmental aspects of policies, plans and programmes’* with a view to strengthening the PPPs and enhancing its scope and final acceptance by stakeholders. This approach was used in applying SEA to the National Water Policy, Environmental Sanitation Policy and District Water and Sanitation Plans of three District Assemblies.

In River Basin planning SEA was used to strengthen the traditional IWRM procedures.

PREVIOUS APPLICATIONS OF SEA IN GHANA

Prior to the SEA of the GPRS (2002-2004), SEA had been applied to a number of projects for which the traditional EIA methodology was not feasible mainly because aspects of the projects were not defined or determined at the time. Some significant examples are:

1. The Village Infrastructure Project (VIP, 1996) – This was a project under the Ministry of Food And Agriculture (MOFA) funded by the World Bank, KfW, and other development partners to deliver various rural infrastructure such as water supply, feeder roads and post-

harvest management facilities in support of improved agriculture and poverty reduction. As part of the project preparation activities, the environmental assessment requirements for this multi-component, multi-location project were satisfied by carrying out a form of SEA as the specific sites for the implementation of the project components were not yet selected. The outputs of the SEA included:

- Guidelines for selecting appropriate sites for each VIP sub-component
- Guidelines for determining which components of the VIP required full scale EIA
- Guidelines for mitigating the negative effects of VIP sub-components

This early application of SEA helped to guide successful implementation of the VIP.

2. Tema Export Processing Zone (TEPZ, 1998) - As part of the Gateway Project funded by the World Bank, an area of about 2000 ha was acquired in Tema for the establishment of an industrial enclave. The aim was to provide the required infrastructure such as land, roads, electricity, communications and waste management facilities in one area to attract investors to set up various industrial processing activities targeted mainly at the export market. This was to be the basis for promoting Ghana as an industrial hub and the preferred Gateway to West Africa.

As part of the project preparation arrangements, the required environmental assessment was achieved by applying SEA as traditional EIA was limited. In this instance the specific industrial activities to be carried out in the enclave were the unknown elements. The SEA looked at the options for allocating sites to the potential industries in such a way as to minimise potential environmental conflicts and optimise land-use. The enclave is yet to be fully operationalised.

These two examples serve to show how flexible SEA can be in its application. Other examples of early SEA application in Ghana include:

- SEA of the Agricultural Sector Investment Programme (AgSIP)
- SEA of the Small Towns Water Project in six Regions of Ghana

SECTION 2

PRINCIPLES OF SEA

GENERAL PRINCIPLES AND PROCEDURES

SEA is part of the family of approaches used in environmental assessment. It aims specifically to address strategic level planning initiatives including policy-making and legislation. It is flexible in approach and is based on a number of sound principles that can be followed in a logical manner as outlined in the section below.

Another distinctive feature of SEA is the equal emphasis placed on “process” and “content”. While the *content* deals with the assessment of the policy, plan or program under consideration, the *process* emphasises broad stakeholder engagement which draws on various experiences and opinions so as to enrich decision-making. The principles relating to these two aspects are elaborated further in Table 2.1.

A PRE-SCREENING PROCEDURE FOR DETERMINING SEA REQUIREMENTS

The following questions can be used to make a quick judgment about SEA requirements;

What is the actual content of the proposal?

- Is it concerned only or primarily with broad general direction(s)?
- Does it address or specifically include operational measures (projects, activities, etc)?

What policy area or sector is targeted in the proposal?

- Is it one known to have or likely to cause environmental effects (e.g. energy, transportation, housing, agriculture)?
- Are there components which are likely to have cumulative or long-term consequences for the environment (e.g. trade, industrial diversification, technology development)?

What environmental considerations are raised by the proposal? Does it appear likely to:

- Initiate actions that will have direct or evident environmental impacts?
- Raise broad environmental implications and/or issues that should be addressed?
- Have marginal or no environmental consequences?

Source: Sadler and Verheem (1996)

(A) General – an SEA process should:

- Fit the purpose and be customized for application at the policy level or at the level of plans and programmes;
- Have integrity, so that it is applied in accordance with the objectives and provisions established for it; and be effective in meeting those objectives;
- Be focused on delivering information necessary to the decisions to be made, and address the significant and key issues;
- Be driven by sustainable development principles (taking into account environmental, social and economic considerations); and therefore;
- Be integrated with parallel analyses of economic and social dimensions and issues, and with other planning and assessment instruments and processes;
- Relate to project EIA where appropriate – perhaps through tiering mechanisms;

- Be transparent and open;
- Be practical, easy to implement, oriented to problem-solving and cost-effective;
- Introduce new perspectives and creativity (it should ‘provide bonuses, not be a burden’); and
- Be a learning process (thus it is essential to start ‘doing SEA’ to gain experience).

(B) SEA steps – an SEA process should ensure the following:

- Screening: Responsible agencies carry out appropriate assessment of all strategic decisions with significant environmental consequences.
- Timing: Results of the assessment are available sufficiently early for use in the preparation of the strategic decision.
- Environmental scoping: All relevant information is provided to judge whether: (i) an initiative should proceed; and (ii) objectives could be achieved in a more environmentally friendly way (i.e. through alternative initiatives or approaches).
- Other factors: Sufficient information is available on other factors, including socioeconomic considerations, either parallel to or integrated in the assessment.
- Review: The quality of the process and information is safeguarded by an effective review mechanism.
- Participation: Sufficient information on the views of all legitimate stakeholders (including the public affected) is available early enough to be used effectively in the preparation of the strategic decision.
- Documentation: results are identifiable, understandable and available to all parties affected by the decision.
- Decision-making and accountability: It is clear to all stakeholders and all parties affected how the results were taken in to account in decision-making.
- Post-decision: Sufficient information on the actual impacts of implementing the decision is gained to judge whether the decision should be amended.

Sources: Dalal-Clayton and Sadler (1998b), adapted from Sadler 1998 and Tonk and Verheem (1998)

(C) SEA Steps – as used in the SEA of the GPRS

This note describes the basic steps of the process used for the appraisal of district plans as part of the SEA of GPRS. The methodology for conducting SEA is evolving and there is no fixed formula. However, many of the analytical tools have already been developed for related EIA processes and there is a logical framework, which can be followed, which is outlined below and illustrated in Figure 2.1.

Step 1 Understanding the Context

The start up phase involves ‘Screening’ during which the terms of reference for the investigation and process are set. (For example, will the SEA concentrate exclusively on policies or involve plans and programmes as well?). This stage also involves describing the PPP.

Step 2 Determining Objectives and Targets

This part of the process involves determining the scope of the SEA, including the content and timescales for the work, the nature of key issues and the way in which these will be presented to decision-makers.

Step 3 Defining the baseline conditions

The purpose of this step is to describe the existing environmental (natural resource and socio-cultural) conditions against which the PPP's expected impacts can be measured. Where practical, this assessment should be based on quantitative as well as qualitative data.

Step 4 Evaluating the Existing PPP

In this step, the information outlined above is drawn together to evaluate the effectiveness of the existing policies, plans or programme. This is a critical step in SEA. We propose new policies, plans or programmes and then proceed to predict its effect considering the baseline (Step 2). Where PPPs already exist the process is mainly evaluating its effectiveness in relation to the baseline and then recommending improvements.

Step 5 Predicting Effects

This part of the SEA process will involve determining the type and magnitude of the potential effects of the PPP, including whether or not they are:

- Large or small (affecting national, regional or local areas),
- Positive or negative,
- Short term or long term (and reversible or irreversible),
- Cumulative,
- Directly or indirectly induced by the PPP,
- Likely or unlikely to occur,
- Distributed evenly or concentrated (in terms of area and target groups),
- Easy or difficult to mitigate.

Step 6 Developing Indicators

The SEA will develop a series of simple environmental, social and economic indicators that can be used to evaluate the performance of individual policies.

Step 7 Considering Alternatives

The SEA will need to explore whether there are other more efficient and less costly ways of achieving the same objectives and delivering the goals of the PPP.

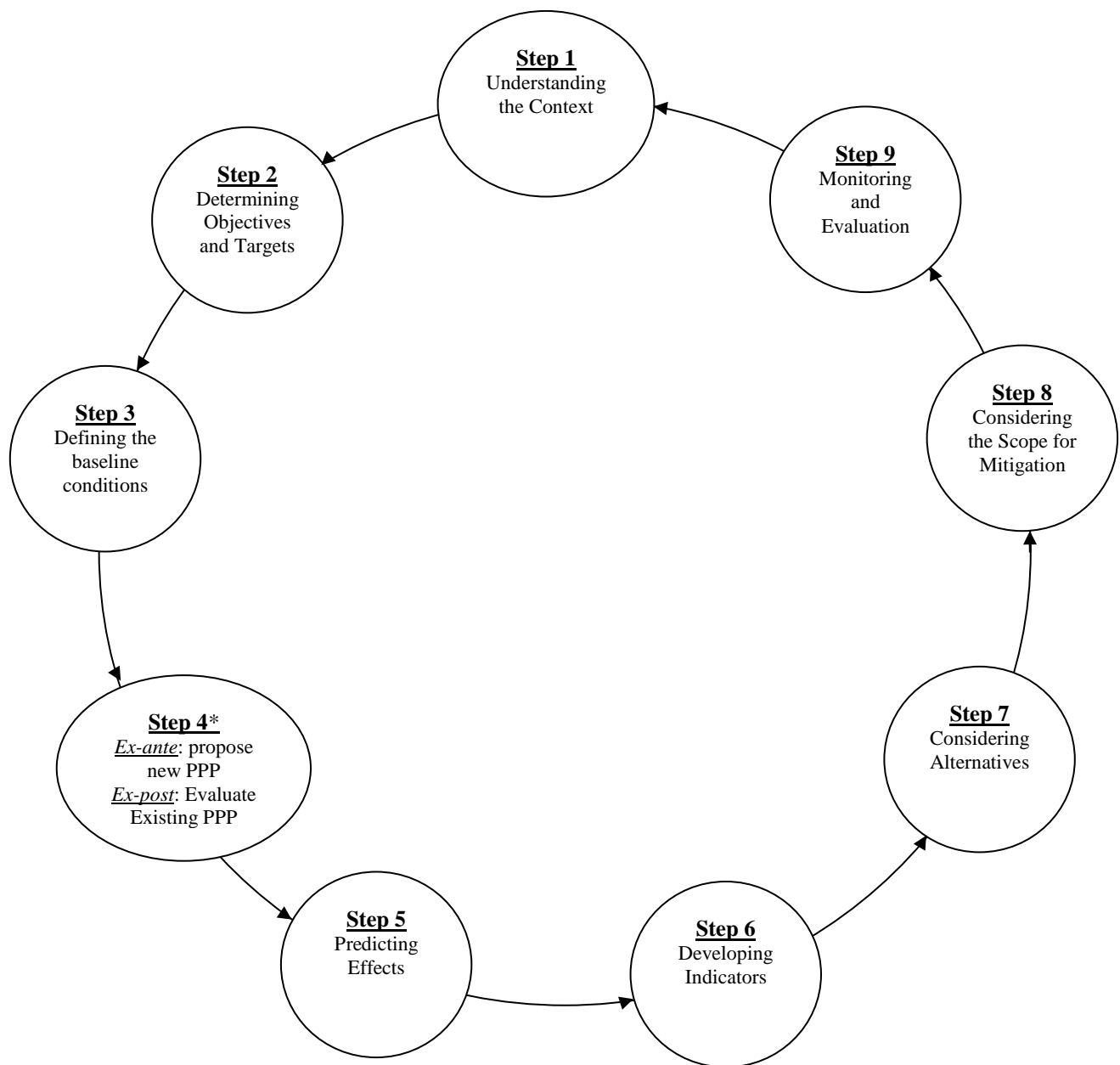
Step 8 Considering the Scope for Mitigation

The shortcomings and opportunities for improvement in the existing PPP will have been exposed and identified in steps 1-7. In this phase, the scope for revising and improving policies is investigated and recommendations are made for new or refined policies.

Step 9 Monitoring and Evaluation

Once the first iteration of the SEA has been completed it is important that the future performance of the PPP should be monitored and evaluated to check whether the individual activities of the PPP are actually delivering what is required and expected.

Figure 2. 1: The SEA process cycle



Step 4: Is a critical stage in SEA. We propose new policies, plans or programmes and then proceed to predict its effect considering the baseline (Step 2). Where PPPs already exist the process is mainly evaluating its effectiveness in relation to the baseline and then recommending improvements.

PERFORMANCE CRITERIA FOR SEA

A good-quality SEA process informs planners, decision-makers and the affected public on the sustainability of strategic decisions, facilitates the search for the best alternative, and ensures a democratic decision-making process. This enhances the credibility of decisions and leads to more cost and time-effective EA at the project level. For this purpose, a good-quality SEA process is:

Integrated:

- Ensures an appropriate environmental assessment of all strategic decisions relevant for the achievement of sustainable development;
- Addresses the interrelationships of biophysical, social and economic aspects; and
- It is tiered to policies in relevant sectors and (transboundary) regions and, where appropriate, to project EIA and decision-making.

Sustainability-led:

- Facilitates identification of development options and alternative proposals that are more sustainable.

Focused:

- Provides sufficient, reliable and usable information for development planning and decision-making;
- Concentrates on key issues of sustainable development;
- Is customized to the characteristics of the decision-making process; and
- Is cost-and time-effective.

Accountable:

- Is the responsibility of the leading agencies for the strategic decision to be taken;
- Is carried out with professionalism, rigour, fairness, impartiality and balance;
- Is subject to independent checks and verification; and
- Documents and justifies how sustainability issues were taken into account in decision-making.

Participative:

- Informs and involves interested and affected public and government bodies throughout the decision-making process;
- Explicitly addresses their inputs and concerns in documentation and decision-making; and
- Has a clear, easily understood information requirement and ensures sufficient access to all relevant information.

Iterative:

- Ensures availability of the assessment results early enough to influence the decision-making process and inspire future planning; and
- Provides sufficient information on the actual impacts of implementing a strategic decision, to judge whether this decision should be amended and to provide a basis for future decisions.

Note: In other words, it contributes to the overall sustainable development strategy as laid down in Rio in 1992 and defined in the specific policies or value of a country

Source: IAIA (2002); criteria developed by Rob Verheem and members of the SEA section

Benefits of SEA

The main objective of SEA is to develop better policies, plans, and programs. The key benefits of SEA are as follows:

- **Advances the sustainability agenda:** SEA provides a means for systematically incorporating environmental, as well as social and economic, considerations into policies, plans, and programs. Ensuring environmental sustainability—the seventh Millennium Development Goal—includes the following target: integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources. SEA can be used as a tool to achieve this target.
- **Strengthens policy, plan, and program decision-making processes:** SEA facilitates consultation and public participation in the evaluation of environmental aspects of policy, plan, or program formulation. Consultation and public participation at the beginning of the planning process brings valuable information into the SEA and thus increases the credibility of the policy, plan, or program that is finally accepted.
- **Allows for consideration of cumulative and synergistic effects:** SEA allows for the consideration of a wider range of impacts and alternatives that are often not considered at the project level.
- **Facilitates the implementation of more environmentally sustainable projects:** SEA helps identify the most practicable alternatives for achieving positive outcomes and minimizing potentially adverse effects of policies, plans, and programs, thereby resulting in the implementation of more environmentally sustainable projects. As well, this process establishes the framework for any subsequent project-level environmental assessments.

Table 2. 1: SEA Principles - Their Implications and Key Actions

PRINCIPLE	IMPLICATIONS	ACTION
SUBSTANTIVE/CONTENT PRINCIPLES		
1. SEA is premised on the concept of sustainability.	<p>The focus of SEA is on integrating the concept of sustainability into the objectives and outcomes of policies, plans, and programs (PPP).</p> <p>Sustainability objectives are applicable to the level, scale and sector of the PPP as well as to the environmental resources to be sustained. The sustainability objectives should be developed with the participation of interested and affected parties.</p> <p>Targets and measurement tools are defined to guide development towards sustainability</p>	Ensure that the concept of sustainability is integrated into different levels of decision-making, within the spatial context of the PPP.
2. SEA identifies the opportunities and constraints that the environment places on the development of the PPP.	<p>The environmental resources (e.g. potable water forests, fertile soil) needed to achieve the sustainability objectives are identified. These resources are maintained and enhanced through the PPP. The resources are prioritized through effective participation procedures.</p> <p>The environmental resources form the basis for the identification of opportunities and constraints, which guide the formulation of PPP.</p>	Identify the environmental resources that should be maintained that should be maintained and/or enhanced in the PPP.
3. SEA sets the criteria for levels of environmental quality or limits of acceptable change within an ecosystem (e.g. maintain x hectares of rain forest).	<p>The levels of acceptable change of the environmental resources are determined. This process reflects public views and scientific information.</p> <p>The PPP is developed in such a way as to maintain and enhance the level of environmental quantity and quality of these resources. This includes an iterative process of developing alternatives and predicting whether the resources will be maintained and enhanced.</p>	
	Management programs are developed to respond to potential negative environmental effects. These are implemented should the limits of acceptable change of the environmental resources be exceeded, or threaten to be exceeded.	
4. SEA is a flexible process that is adaptable to the PPP or development cycle.	<p>SEA is integrated into existing processes for PPP formulation and implementation.</p> <p>There is not one SEA process to be used in all contexts, but different processes for various contexts and strategic tasks.</p> <p>The focus is on understanding the context-specific decision-making and PPP formulation procedure. The objectives of sustainability are then integrated into this process at key decision points, throughout the various levels and scale of PPP developments. The SEA consistently interacts with the PPP procedure in an iterative way.</p>	Integrate sustainability objectives into existing context-specific processes for PPP.

PRINCIPLE	IMPLICATIONS	ACTION
PROCEDURAL PRINCIPLES		
5. SEA is a strategic process, which begins with the conceptualization of the PPP.	SEA introduces sustainability objectives at the earliest stage in the PPP process, from conceptualization through to the many stages of decision-making.	Integrate sustainability objectives into the PPP, starting from the stage of conceptualization.
6. SEA is part of a tiered approach to environmental assessment and management.	SEA addresses higher levels of decision-making in order to provide the context for lower levels. Linkages are established among the various levels of decision-making.	Identify PPP that influence the maintenance and enhancement of the environmental resources identified.
7. The scope of an SEA is defined within the wider context of environmental process. SEA needs to encompass local, regional, and national considerations.	SEA is not limited to a particular site, but considers significant local, regional, national, and international linkages.	What are the political, social-economic, and biophysical processes influencing the maintenance and enhancement of the environmental resources identified?
8. SEA is a participative process.	Participation processes are adapted to the specific socio-political context of the PPP. The participation process should inform and enhance the entire SEA process, in particular the scope and sustainability objectives of the SEA.	Identify the level and type of participation that is most appropriate to enable stakeholders to engage in the SEA process at a level that is suited to their needs and resources.
9. SEA is set within the context of alternative scenarios using the concept of cost-benefit analysis.	Scenarios, visions, and alternative PPP options are developed in a participatory way. Alternative PPP are evaluated in terms of their ability to maintain and enhance the environmental resources identified.	Identify PPP alternatives that will most effectively maintain and enhance the environmental resources identified.
10. SEA includes the concepts of precaution and continuous improvement.	A risk-averse and cautious approach is applied, which recognizes the limitations of current knowledge about the consequences of decision-making. This approach should be linked to a commitment to continuous learning and improvement. This link between a cautious approach and continuous learning contributes to an increasing understanding of sustainability for a region or sector. SEA must lead to a process for: <ul style="list-style-type: none"> • Monitoring and continuous improvement; • Improvement of baseline information; • Understanding of sustainability objectives. 	Identify SEA risk analysis mechanism, as well as SEA monitoring and evaluation protocols.

Source: CIDA Handbook on SEA

**PART 2: SEA TOOL KIT FOR WATER AND
ENVIRONMENTAL SANITATION**

ABOUT THIS PART

This part of the Guide presents in detail, the various tools developed in the process of carrying out the SEA of Water and Environmental Sanitation sector PPPs.

Generally, the tools represent the basic analytical instruments used help focus on the key issues and thereby facilitate the process of assessment and making recommendations for decision-making in line with the objectives of sustainable development.

Part Two is divided into **seven (7) sections** each related to a particular aspect of the SEA:

Section 3 presents the tools for **policy** assessment. These consist of sustainability test criteria with related annotated sheets and compatibility matrix formats. Each of these has appropriate record sheets.

Section 4 deals with two separate but related topics.

The first part of this section deals with the tools used for **Health Profiling and Planning** as related to the preparation of **District Water and Environmental Sanitation Plans**. The tools include questionnaire for assessing the state of WES/health and hygiene at community level through structured surveys and tool for analysing the survey responses.

The second part of the section consists of tools for profiling the state of the environment in a district based on community level assessments. This is to be used in enhancing the District Water and Environmental Sanitation Plans. The format of the tools is similar to those used for Health Profiling and Planning.

Section 5 presents tools for Monitoring and Evaluation (M&E). These consist of M&E tools and M&E Report Sheets prepared to assist in planning for M&E exercises, to monitor and evaluate health improvements at the community level, and to develop appropriate recommendations, based on the M&E exercises. Planned interventions can be adjusted and refined based on the field M&E results.

The latter part of the section consists of M&E tools for use with the District environmental profiling and planning.

Section 6 consists of tools for evaluating feasibility studies to ensure that they cover all elements of sustainability including environmental sustainability in addition to the usual financial and economic considerations.

Section 7 presents tools applied in the preparation of River Basin Plan (based on Densu Basin pilot). These tools complement the sustainable development objectives of the IWRM planning procedures.

As with the other parts of this guide, it is recommended that users may add/adapt relevant information to this part in order to further enhance the utility of the tools. In particular, additions that deal with more specific (local) situations should always be made.

SECTION 3

TOOLS FOR POLICY ASSESSMENT

ABOUT THESE TOOLS

In the effort to achieve sustainable development, it is essential that policies meet the requirements of the '*triple bottom line*' of sustainability which means ensuring the balance between Natural Resources, Socio-Cultural and Economic conditions. In Ghana this bottom line has been expanded to include Institutional aspects. The ***Sustainability Test*** is a tool that has been developed to evaluate policies in line with the 'sustainability bottom line' and facilitates policy refinement for achieving sustainability.

Another important requirement for sustainability is that policies must not conflict with other policies in order to the desired outcomes and impacts. The ***Compatibility Test*** is a tool that has been developed to facilitate the process of comparing policies to identify and eliminate areas of potential conflict. The tool also enables the identification of mutually reinforcing policies which could be implemented in such a way as to achieve maximum synergy.

WHAT IS THE SUSTAINABILITY TEST?

The **sustainability test** is one of the tools used in the SEA of Policies. The purpose is to subject each proposed policy **action** to a simple test of the overall sustainability of the Policy under consideration.

This test provides a simple technique that can be used by all stakeholders without the need for specialist knowledge (although that helps) to analyse policy. The tool is designed to give a visual and quantitative measure of the extent to which a particular Policy action is capable of supporting sustainable development.

It is different from an impact assessment matrix in that it gives equal weight to natural resource, social/cultural, economic and institutional issues. There are 3 basic steps to follow.

- i) Describe the classification; providing enough information to allow an informed judgement to be made about the likely effects of the Policy action on each of the Sustainability Criteria (for example: area affected, number of jobs created, value of future production etc.).
- ii) Assess the performance of the Policy action in relation to each criterion, and score that performance using a scale of '(0)1 -5' as set out below.
- iii) Summarise the findings in a report to decision-makers.

The **criteria** (or **sustainability aims**) listed in the first column of the table are based on measures that should help to minimise environmental degradation, reduce poverty, enhance quality of life, improve social and cultural assets, create better economic conditions and promote good institutional governance.

For each criterion, a scale of 0-5 is used to reflect the extent to which the Policy action supports, is neutral to, or works against the sustainability aim. The scale is as follows:

0	1	2	3	4	5
Not Relevant	Works strongly against the aim	Works against the aim	On balance has neutral effects on the aim	Supports the aim	Strongly supports the aim
No Colour	Red	Red	Yellow	Green	Green

The test gives an instant visual impression of the overall performance of the Policy action – but care must be taken in summing or aggregating scores (because not all of the criteria will warrant equal weight). The tool is particularly valuable when it is used to support revisions to policies since alternatives can be tested by comparing their relative performance.

The validity of the outcome is enhanced when the matrix is completed independently by more than one group of stakeholders (i.e. policy makers, developers, community representatives and professional staff, NGOs etc).

It is helpful to get stakeholders to prepare their own list of sustainability criteria (through a public participation exercise) before using the matrix. This allows local/sector circumstances to be taken into account. For the sustainability appraisal of the NWP and ESP the criteria have been developed in consultation with the stakeholders in the WES sectors.

It is important to complete a record sheet assigning reasons for all the scores in the matrix.

WHAT IS THE SUSTAINABILITY TEST RECORD SHEET?

The Record Sheet is a tool for recording the various issues that have been identified during the process of conducting the sustainability test and the reasons for assigning each score.

The record sheet is useful in communicating to people who have not been involved in the process of carrying out the test.

Record sheets can also be used for checking revisions and refinements of policies on an ongoing basis.

SUSTAINABILITY CRITERIA FOR WATER AND ENVIRONMENTAL SANITATION

Two sets of sustainability criteria have been developed during the SEA of the National Water Policy and that of the Environmental Sanitation Policy. These criteria were developed through highly participatory processes with inputs from all Key stakeholders.

The sets of criteria and their associated annotated versions are presented at the end of this part in the *‘Explanatory Notes and Forms for policies’*.

SUSTAINABILITY TEST OF NWP

The following section gives an example of how the sustainability test was applied to the National Water Policy and the Environmental Sanitation Policy.

The Water Policy Action being tested is “The adoption of a tiered tariff system” under the Water Resources Management (WRM) component. This simply means making the “well off” pay more than the poor for water use, with a lifeline provided for the vulnerable.

A section of the Sustainability Test Sheet showing part of the result of the test is shown below:

Form 3. 1: Example of Sustainability Test of NWP

Form 5: 1. Example of Sustainability Test of NWP

NATIONAL WATER POLICY SUSTAINABILITY TEST							
Water Policy Component: WRM							
Policy Action Description: 5 (ii) – Adopt tiered tariff structure							
Water Sector SEA Sustainability Criteria (Aims/Objectives)		Performance Score					
		0	1	2	3	4	5
1.NATURAL RESOURCES							
1.1	Supports conservation and sustainable utilization of water resources						
1.2	Ensures the preservation of quality of groundwater and surface water resources suitable for intended purposes	x					
1.3	Ensures retention of natural character and function of aquatic ecosystems	x					
1.4	Ensures protection of biodiversity	x					
1.5	Ensures protection of endangered species of fauna and flora	x					
1.6	Prevents discharges (liquid and solid) and disposal of wastewater that adversely affect water bodies						
1.7	Prevents land degradation and soil pollution/infertility	x					
1.8	Promotes sustainable consumption of inputs – recycling, reduction, re-use (energy, chemicals and other raw materials)	x					
1.9	Promotes prevention of floods and mitigation of effects of floods/droughts	x					
1.1	Promotes protection of water basin areas	x					
2. SOCIAL CULTURAL CONDITIONS							
2.1	Enhances access for ALL to water in sufficient quantity and quality for basic needs						
2.2	Promotes good hygiene and contributes to prevention of water-related diseases	x					
2.3	Promotes equitable distribution of (water policy) related benefits						

The result shows that a policy action of “adopting a tiered tariff structure” will be mostly irrelevant to the Natural Resource sustainability aims and objectives. The score of 4 for 1.1 shows that it may support water conservation in the sense that higher tariffs would check frivolous water use by the affluent (watering of lawns, washing cars, swimming pools etc).

However, the adoption of the “tiered tariff structure” is expected to have improved Social benefits in relation to enhancing access to all and promoting equitable distribution of policy benefits as shown by the scores of 4 for 2.1 and 2.3.

The full worked example is together with a set of blank sustainability criteria and related worksheets, included in ‘*Explanatory Notes and Forms for Policies*’ at the end of this section.

SUSTAINABILITY TEST OF ESP

This next example shows how the sustainability test was used on the ESP. In this case the policy objective being assessed is the strategic objective of Establishing a National Environmental Sanitation Day – a day to focus attention on Environmental sanitation issues.

Form 3. 2: Example of Sustainability Test of ESP

Form 3. 2: Example of Sustainability Test of ESR

ENVIRONMENTAL SANITATION POLICY SUSTAINABILITY TEST													
Environmental Sanitation Policy Component: STRATEGIC OBJECTIVES													
Policy Action Description: Establishment of National Environmental Sanitation Day													
Environmental Sanitation Sector Sustainability Criteria (Aims/Objectives)							Performance Score						
							0	1	2	3	4	5	
1.NATURAL RESOURCES													
1.1	Supports conservation and sustainable utilisation of water resources												
1.2	Ensures protection of biodiversity, retention of natural character and function of ecosystems												
1.3	Ensures protection of endangered species of fauna and flora												
1.4	Prevents discharges (liquid and solid) and disposal of <i>wastewater</i> that adversely affect water bodies and human settlements												
1.5	Minimise land and soil degradation												
1.6	Promotes reduction, re-use, recovery and recycling of wastes												
1.7	Promotes prevention of floods and mitigation of effects of <i>stormwater</i>												
1.8	Ensures minimisation of noise and air pollution												
2. SOCIAL CULTURAL and HEALTH CONDITIONS													
2.1	Enhances access for ALL to environmental sanitation services												
2.2	Ensures good hygiene and contributes to prevention of health risks												
2.3	Ensures elimination of conditions for breeding and transmission of disease agents												
2.4	Promotes equitable distribution of (ES policy) related benefits												
2.5	Ensures gender mainstreaming with emphasis on women’s participation at all levels												
2.6	Promotes knowledge, awareness and practices for attitudinal change												
2.7	Ensures minimisation of potential for conflicts in siting of communal facilities and final disposal facilities (NIMBY)												
2.8	Enhances health and hygiene education, information and participation at community level (including NGOs, CBOs, CSOs, FBOs)												
2.9	Ensures consideration of diversity (religious and cultural) at all levels												

Part of the result shown above indicates that the observance of the National Environmental Sanitation Day will be mostly neutral to both the natural resource and socio-cultural sustainability aims. This means that on its own, the establishment of such an event will not necessarily improve or worsen the existing sanitation situation. Nevertheless, it is expected to promote participation and awareness raising as shown by scores of 4 for 2.6, 2.8 and 2.9. The

challenge for policy makers and implementers will be how to turn the expected increased awareness and participation into improved environmental sanitation practices.

As with the case of the NWP, the full worked example and blank sustainability test sheet with related annotations are provided at the end of this section.

THE COMPATIBILITY TEST

The *Compatibility Test* is a tool that has been developed to facilitate the process of comparing policies/policy actions to identify and eliminate areas of potential conflict. The tool also enables the identification of mutually reinforcing policies/policy actions which could be implemented in such a way as to achieve maximum synergy.

Explanatory Notes for the Compatibility Matrices

1. A matrix is simply a table that allows two sets of criteria to be compared. One set of criteria is listed in the first column and the other set is listed across the top row. Analysis is undertaken by considering the interactions between columns and rows. The results are recorded using numbers or symbols and a separate record sheet.
2. For the SEA of the NWP 2 sets of Compatibility Matrices (*intra*, *inter*) were used. The compatibility matrices are used to compare the way in which different policies/policy actions inter-react with each other. Sometimes policies/policy actions are mutually supportive, but at other times policies/policy actions can work against each other; for example, a policy to develop small farm dams to store surplus water for crop irrigation may be strongly sustainable in its own right, but may run counter to another equally valid health policy of 'zero-ponding' designed to eliminate mosquitoes as the vector of malaria.
3. The aim of the compatibility matrix is to determine the degree to which policies support or work against each other – in other words how compatible they are. At the same time the matrix reveals those policies/policy actions that support each other to create synergy.
4. The *intra* matrix is created by:
 - listing a set of policy actions for a NWP component down the rows in the first column.
 - listing these same policy actions across the columns in the top row.
5. The *inter* matrix is created by:
 - listing a set of policy actions for a NWP component down the rows in the first column.
 - listing a set of policy actions for another NWP component across the columns in the top row.
6. Having created the matrices, a review group needs to be established. A matrix can be reviewed by one individual working alone – but it helps if a group of people is established to get a consensus of opinion.
7. The group should review each matrix by examining the interactions of policy/policy action1 identified in the first column with each of the remaining policies/policy actions numbered 2 upwards, appearing across the top of the matrix.

8. Where two policies/policy actions are mutually supportive with each other this should be recorded by marking a ✓ in the relevant box.
9. Where two policies/policy actions have the potential to conflict with each other this should be recorded by marking an X in the relevant box.
10. If there is no significant interaction this should be recorded by an O.
11. An example of a partially completed *intra* compatibility matrix is shown overleaf.

Form 3. 3: Example of Compatibility Test of NWP

Example of a COMPATIBILITY MATRIX		Policy Action 1	Policy Action 2	Policy Action 3	Policy Action 4
		1	2	3	4
1	Policy Action 1 (Access to ALL)		✓	X	✓
2	Policy Action 2 (Community Ownership)	✓		✓	O
3	Policy Action 3 (Cost Recovery)	X	✓		O
4	Policy Action 4 (International cooperation)	✓	O	O	

Use of the Record Sheet

A record sheet should be used to record the basic issues that have been identified in the process of completing the Compatibility Matrix. The record sheet is helpful in communicating to people who have not been involved in the discussions, the reasons why particular policies have been identified as having positive, negative or neutral impacts. Record sheets can also be used for checking revisions and refinements of policies on an on-going basis.

The record sheet is used to record the cases of incompatibility to allow for further investigation and analysis to address the difficulties arising. For the example above, the incompatibility arises between Policy Action 1 (access to ALL) and Policy Action 3 (cost recovery), i.e. cost recovery, if not carefully applied, could hinder access to water by the poor and vulnerable.

Form 3. 4: COMPATIBILITY MATRIX -RECORD SHEET
No.....

Title of Matrix: INTRA-COMPATIBILITY TEST OF NWP

Policy No. (Column)	Policy No. (Row)	REASONS FOR INCOMPATIBILITY
1	3	Cost recovery may hinder access to the poor and vulnerable

EXPLANATORY NOTES AND FORMS FOR POLICIES

- Form 3.5 Worked Example Of A Sustainability Test Of The NWP
- Form 3.6 Blank Sustainability Test Sheet For Water
- Form 3.7 Record Sheet For Water
- Form 3.8 Annotated Sustainability Criteria Used For Water
- Form 3.9 Worked Example Of Sustainability Test Of Environmental Sanitation Policy
- Form 3.10 Blank Sustainability Test Sheet For Environmental Sanitation
- Form 3.11 Annotated Sustainability Criteria For Environmental Sanitation
- Form 3.12 Blank Record Sheet For Environmental Sanitation

Form 3. 5: Worked example of a Sustainability Test of the NWP

NATIONAL WATER POLICY SUSTAINABILITY TEST							
Water Policy Component: WRM							
Policy Action Description: 5 (ii) – Adopt tiered tariff structure							
Water Sector SEA Sustainability Criteria (Aims/Objectives)		Performance Score					
		0	1	2	3	4	5
1.NATURAL RESOURCES							
1.1	Supports conservation and sustainable utilization of water resources						
1.2	Ensures the preservation of quality of groundwater and surface water resources suitable for intended purposes	x					
1.3	Ensures retention of natural character and function of aquatic ecosystems	x					
1.4	Ensures protection of biodiversity	x					
1.5	Ensures protection of endangered species of fauna and flora	x					
1.6	Prevents discharges (liquid and solid) and disposal of wastewater that adversely affect water bodies						
1.7	Prevents land degradation and soil pollution/infertility	x					
1.8	Promotes sustainable consumption of inputs – recycling, reduction, re-use (energy, chemicals and other raw materials)	x					
1.9	Promotes prevention of floods and mitigation of effects of floods/droughts	x					
1.10	Promotes protection of water basin areas	x					
2. SOCIAL CULTURAL CONDITIONS							
2.1	Enhances access for ALL to water in sufficient quantity and quality for basic needs						
2.2	Promotes good hygiene and contributes to prevention of water-related diseases	X					
2.3	Promotes equitable distribution of (water policy) related benefits						
2.4	Ensures gender mainstreaming with emphasis on women's participation at all levels	X					
2.5	Promotes awareness creation for attitudinal change						
2.6	Ensures community cohesion and local character, and minimize potential for conflicts	X					
2.7	Enhances public education, information and participation (including NGOs, CBOs, CSOs, FBOs)	X					
2.8	Promotes adoption/preservation of traditional knowledge, technologies and benign cultural practices	X					
3. ECONOMY							
3.1	Increases macro-economic growth and stability						
3.2	Ensures affordability and price stability						
3.3	Promotes growth of local economy - investments, job creation and alternative livelihoods						
3.4	Ensures balance between costs of initiatives and revenue or other benefits						
3.5	Increases innovation and implementation of cleaner and efficient technologies						
3.6	Ensures cost-recovery, where viable, for system replacement						
4.REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES							
4.1	Promotes good governance -supports principles of democracy, respect for human rights, transparency and accountability						
4.2	Improves dissemination and acceptance of policies and legislation	X					
4.3	Ensures protection of investments	X					
4.4	Supports research, database and technological development and dissemination	X					
4.5	Supports inter-institutional and/or international collaboration	X					
4.6	Enhances institutional strengthening and capacity building	X					

Form 3. 6: Blank Sustainability Test Sheet for Water

NATIONAL WATER POLICY SUSTAINABILITY TEST							
Water Policy Component:							
Policy Action Description:							
Water Sector SEA Sustainability Criteria (Aims/Objectives)		Performance Score					
		0	1	2	3	4	5
1.NATURAL RESOURCES							
1.1	Supports conservation and sustainable utilization of water resources						
1.2	Ensures the preservation of quality of groundwater and surface water resources suitable for intended purposes						
1.3	Ensures retention of natural character and function of aquatic ecosystems						
1.4	Ensures protection of biodiversity						
1.5	Ensures protection of endangered species of fauna and flora						
1.6	Prevents discharges (liquid and solid) and disposal of wastewater that adversely affect water bodies						
1.7	Prevents land degradation and soil pollution/infertility						
1.8	Promotes sustainable consumption of inputs – recycling, reduction, re-use (energy, chemicals and other raw materials)						
1.9	Promotes prevention of floods and mitigation of effects of floods/droughts						
1.10	Promotes protection of water basin areas						
2. SOCIAL CULTURAL CONDITIONS							
2.1	Enhances access for ALL to water in sufficient quantity and quality for basic needs						
2.2	Promotes good hygiene and contributes to prevention of water-related diseases						
2.3	Promotes equitable distribution of (water policy) related benefits						
2.4	Ensures gender mainstreaming with emphasis on women's participation at all levels						
2.5	Promotes awareness creation for attitudinal change						
2.6	Ensures community cohesion and local character, and minimize potential for conflicts						
2.7	Enhances public education, information and participation (including NGOs, CBOs, CSOs, FBOs)						
2.8	Promotes adoption/preservation of traditional knowledge, technologies and benign cultural practices						
3. ECONOMY							
3.1	Increases macro-economic growth and stability						
3.2	Ensures affordability and price stability						
3.3	Promotes growth of local economy - investments, job creation and alternative livelihoods						
3.4	Ensures balance between costs of initiatives and revenue or other benefits						
3.5	Increases innovation and implementation of cleaner and efficient technologies						
3.6	Ensures cost-recovery, where viable, for system replacement						
4.REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES							
4.1	Promotes good governance -supports principles of democracy, respect for human rights, transparency and accountability						
4.2	Improves dissemination and acceptance of policies and legislation						
4.3	Ensures protection of investments						
4.4	Supports research, database and technological development and dissemination						
4.5	Supports inter-institutional and/or international collaboration						
4.6	Enhances institutional strengthening and capacity building						

Form 3. 7: Record Sheet for Water

NWP SUSTAINABILITY TEST: RECORD SHEET			
Water Policy Component:			
Policy Action Description:			
Water Sector SEA Sustainability Criteria (Aims/Objectives)		Score	Reasons
1. NATURAL RESOURCES			
1.1	Supports conservation and sustainable utilization of water resources		
1.2	Ensures the preservation of quality of groundwater and surface water resources suitable for intended purposes		
1.3	Ensures retention of natural character and function of aquatic ecosystems		
1.4	Ensures protection of biodiversity		
1.5	Ensures protection of endangered species of fauna and flora		
1.6	Prevents discharges (liquid and solid) and disposal of wastewater that adversely affect water bodies		
1.7	Prevents land degradation and soil pollution/infertility		
1.8	Promotes sustainable consumption of inputs – recycling, reduction, re-use (energy, chemicals and other raw materials)		
1.9	Promotes prevention of floods and mitigation of effects of floods/droughts		
1.10	Promotes protection of water basin areas		
2. SOCIAL CULTURAL CONDITIONS			
2.1	Enhances access for ALL to water in sufficient quantity and quality for basic needs		
2.2	Promotes good hygiene and contributes to prevention of water-related diseases		
2.3	Promotes equitable distribution of (water policy) related benefits		
2.4	Ensures gender mainstreaming with emphasis on women's participation at all levels		
2.5	Promotes awareness creation for attitudinal change		
2.6	Ensures community cohesion and local character, and minimize potential for conflicts		
2.7	Enhances public education, information and participation (including NGOs, CBOs, CSOs, FBOs)		
2.8	Promotes adoption/preservation of traditional knowledge, technologies and benign cultural practices		
3. ECONOMY			
3.1	Increases macro-economic growth and stability		
3.2	Ensures affordability and price stability		
3.3	Promotes growth of local economy - investments, job creation and alternative livelihoods		
3.4	Ensures balance between costs of initiatives and revenue or other benefits		
3.5	Increases innovation and implementation of cleaner and efficient technologies		
3.6	Ensures cost-recovery, where viable, for system replacement		
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES			
4.1	Promotes good governance -supports principles of democracy, respect for human rights, transparency and accountability		
4.2	Improves dissemination and acceptance of policies and legislation		
4.3	Ensures protection of investments		
4.4	Supports research, database and technological development and dissemination		
4.5	Supports inter-institutional and/or international collaboration		
4.6	Enhances institutional strengthening and capacity building		

Form 3. 8: Annotated Sustainability Criteria used for water

WATER POLICY SUSTAINABILITY CRITERIA – ANNOTATED	
NATURAL ENVIRONMENT AND NATURAL RESOURCES	
	Supports conservation and sustainable utilization of water resources
1.1	Water resources should be conserved and managed in a sustainable manner. For surface water, watersheds should be managed so as to maintain the flow of the water body and other physical features, while ensuring the needs of downstream users. Groundwater resources should not be abstracted beyond their recharge capacity or in a manner causing intrusion of saltwater or other natural threats to groundwater quality.
1.2	Ensures the preservation of quality of groundwater and surface water resources suitable for intended purposes The baseline quality of water should be maintained to sustain natural aquatic ecosystems, ensure safe potable water to the whole population and a suitable quality of water to be utilised for other purposes (domestic, industrial, agricultural, fishery etc.)
1.3	Ensures retention of natural character and function of aquatic ecosystems Water resources should be used and managed with due respect to the natural character (appearance, hydrology, oxygen level etc.) of the water body and its overall ecosystem functions, i.e. its ability to support the living organisms native to the system in question.
1.4	Protection of biodiversity and endangered species of fauna and flora Natural biodiversity and in particular endangered species of fauna and flora and their habitats should not be jeopardised as a result of exploitation of water resources or other water related activities. This applies not only to aquatic ecosystems but also to wetlands and terrestrial ecosystems.
1.5	Prevents discharges (liquid and solid) and disposal of wastewater that adversely affect water bodies Industrial activities, domestic water use and sanitation, agriculture and other land use etc. should not result in discharges, disposal of waste or other loads on the environment that deteriorate the quality of groundwater or surface water resources or character and function of ecosystems.
1.6	Prevents land degradation and soil pollution/infertility Exploitation of water resources or other water related activities should not lead to degradation of land including depletion of nutrients, adverse change of soil structure or erosion, or to soil pollution associated with such exploitation or activities.
1.7	Promotes sustainable consumption of inputs – recycling, reduction, re-use (energy, chemicals and other raw materials) The consumption and use of limited natural raw materials (other than water) for water related projects should be minimised, re-cycling should be maximised and use of fossil fuels limited to the extent possible.
1.8	Promotes prevention of floods and mitigation of effects of floods/droughts The use of water for irrigation, hydro-power and for water-supply as in dams should prevent flooding of downstream stretches. Additionally information based early warning systems should be developed and emergency and disaster response plans put in place to deal with incidence of floods and droughts.
1.9	Promotes protection of water basin areas Activities within basins should be controlled through the use of comprehensive planning and regulatory mechanisms including bye-laws

WATER POLICY SUSTAINABILITY CRITERIA – ANNOTATED	
SOCIAL CONDITIONS	
	Enhances access for ALL to water in sufficient quantity and quality for basic needs
2.1	The whole population should have access to water of good quality and in sufficient quantity for drinking and for other domestic purposes to cover their basic needs. All means non-discrimination and ensuring that the needs of the vulnerable and physically challenged are taken care of.
	Promotes good hygiene and contributes to prevention of water-related diseases
2.2	Health and well-being of people should not be adversely affected due to lack of or inappropriate sanitation, or exposure to increased risk of water borne diseases as a result of water and/or sanitation policies, plans or programmes.
	Promotes equitable distribution of (water policy) related benefits
2.3	Beneficial impacts and results of water policy initiatives and projects should be distributed equitably and should not discriminate against any groups including vulnerable people
	Ensures gender mainstreaming with emphasis on women's participation at all levels
2.4	Women and children play an important role in the supply, distribution and use of water. Water sector policies and activities should therefore support women in fulfilling this role including increasing their participation in planning and decision-making alongside their male counterparts.
	Promotes awareness creation for attitudinal change
2.5	A major challenge related to poor levels water and sanitation is the unacceptable attitudes and habits. So all water sector activities should create awareness leading to behavioural and attitudinal changes.
	Ensures community cohesion and local character, and minimize potential for conflicts
2.6	Water policies and activities should not lead to unacceptable changes in the character and traditions of local communities; and should not create dislocations and conflict situations
	Enhances public education, information and participation (including NGOs, CBOs, CSOs, FBOs)
2.7	Water sector policies and activities should support information dissemination and education of the public to raise the level of knowledge about sound and sustainable use and management of water resources, water related health issues etc. Further, the participation of local people in planning and implementation of water activities should be encouraged.
	Promotes adoption/preservation of traditional knowledge, technologies and benign cultural practices
2.8	Cultural practices and traditional knowledge systems have the potential for sustaining sources of water and the general ecosystem. Water sector policies and activities should identify and support these practices and systems.
ECONOMY	
	Increases macro-economic growth and stability
3.1	Water sector policies and activities should support growth objectives of the economy including agriculture, industry, energy, trade, land and forestry, tourism and other sectors. This would among other criteria require appropriate arrangements for investments in water infrastructure for the benefit of all sectors.

WATER POLICY SUSTAINABILITY CRITERIA – ANNOTATED	
	Ensures affordability and price stability
3.2	Affordability should be an integral part of water policy and activities and should be reflected in specific programmes and projects for providing “safety nets” for demonstrably needy segments of society e.g. guinea worm endemic areas. Price stability is important as it provides predictability especially for large consumers.
	Promotes growth of local economy - investments, job creation and alternative livelihoods
3.3	Water sector policies and activities, where relevant, should seek to improve the possibilities of employment of local people, in particular, women and youth; enhance opportunities for investments to stimulate growth of local economies.
	Ensures balance between costs of initiatives and revenue or other benefits
3.4	Economic valuation of water sector investments should take cognisance of non-revenue benefits such as health improvement outcomes and preservation of the ecosystem.
	Increases innovation and implementation of cleaner and efficient technologies
3.5	Appropriate mechanisms for promoting innovative technologies should be supported by water sector policies and activities.
	Ensures cost-recovery, where viable, for system replacement
3.6	Sustaining access to, and use of water and sanitation facilities requires effective maintenance. As far as practicable user fees should be set so as to ensure viable operation and maintenance of these facilities including replacement where necessary.
REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES	
	Promotes good governance
4.1	Water sector policies and activities and the way they are managed and implemented at all levels should respect the basic tenets of good governance including equity in access, principles of democracy, respect for human rights, transparency and accountability.
	Improves dissemination and acceptance of policies and legislation
4.2	Water policies and activities should support participatory dissemination, monitoring and evaluation of strategies to encourage greater acceptance and compliance.
	Ensures protection of investments
4.3	Water sector initiatives aimed at attracting private sector participation should include provisions for protecting investments.
	Supports research, database and technological development and dissemination
4.4	Sound database and research are essential inputs for developing effective strategies. Water sector policies and activities should support research, technology, and database development.
	Supports inter-institutional and/or international collaboration
4.5	Collaboration among sector institutions is important for knowledge sharing and avoiding duplication of efforts and overlapping functions. Trans-boundary collaboration with riparian countries is essential for improving water resources management and promoting regional cooperation for the benefit of all.
	Enhances institutional strengthening and capacity building
4.6	Water sector policies and activities should promote measures aimed at strengthening related sector institutions and building capacity including training, providing logistics and systems for programme management.

ENVIRONMENTAL SANITATION POLICY SUSTAINABILITY TEST									
Environmental Sanitation Policy Component: STRATEGIC OBJECTIVES (Group 2)									
Policy Action Description: Establishment of National Environmental Sanitation Day									
Environmental Sanitation Sector Sustainability Criteria (Aims/Objectives)						Performance Score			
						0	1	2	3
1.NATURAL RESOURCES									
1.1	Supports conservation and sustainable utilisation of water resources								
1.2	Ensures protection of biodiversity, retention of natural character and function of ecosystems								
1.3	Ensures protection of endangered species of fauna and flora								
1.4	Prevents discharges (liquid and solid) and disposal of <i>wastewater</i> that adversely affect water bodies and human settlements								
1.5	Minimise land and soil degradation								
1.6	Promotes reduction, re-use, recovery and recycling of wastes								
1.7	Promotes prevention of floods and mitigation of effects of <i>stormwater</i>								
1.8	Ensures minimisation of noise and air pollution								
2. SOCIAL CULTURAL and HEALTH CONDITIONS									
2.1	Enhances access for ALL to environmental sanitation services								
2.2	Ensures good hygiene and contributes to prevention of health risks								
2.3	Ensures elimination of conditions for breeding and transmission of disease agents								
2.4	Promotes equitable distribution of (ES policy) related benefits								
2.5	Ensures gender mainstreaming with emphasis on women's participation at all levels								
2.6	Promotes knowledge, awareness and practices for attitudinal change								
2.7	Ensures minimisation of potential for conflicts in siting of communal facilities and final disposal facilities (NIMBY)								
2.8	Enhances health and hygiene education, information and participation at community level (including NGOs, CBOs, CSOs, FBOs)								
2.9	Ensures consideration of diversity (religious and cultural) at all levels								
3. ECONOMY									
3.1	Promotes macro-economic growth and stability and attainment of MDGs								
3.2	Ensures reuse and recycling of waste to support agriculture and other businesses								
3.3	Promotes growth of local economy - investments, job creation and alternative livelihoods								
3.4	Supports innovation and implementation of cleaner and efficient technologies								
3.5	Ensures cost-recovery for sustaining provision of services								
4.REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES									
4.1	Promotes good governance -supports principles of democracy, respect for human rights, transparency, accountability and subsidiarity								
4.2	Improves dissemination and acceptance of policies and legislation								
4.3	Ensures private sector participation and protection of investments								
4.4	Supports database establishment, research, technological development and dissemination								
4.5	Supports cross-sectoral institutional collaboration and coordination within clearly defined roles and mandates								
4.6	Promotes structures for monitoring, enforcement and compliance to set standards including mandatory reporting where appropriate								
4.7	Supports polluter-pays principle								
4.8	Enhances institutional strengthening and capacity building								
4.9	Supports feasible options in the local context (reality check)								

Form 3. 10: Blank Sustainability Test sheet for environmental sanitation

ENVIRONMENTAL SANITATION POLICY SUSTAINABILITY TEST							
Environmental Sanitation Policy Component:							
Policy Action Description:							
Environmental Sanitation Sector Sustainability Criteria (Aims/Objectives)		Performance Score					
		0	1	2	3	4	5
1. NATURAL RESOURCES							
1.1	Supports conservation and sustainable utilisation of water resources						
1.2	Ensures protection of biodiversity, retention of natural character and function of ecosystems						
1.3	Ensures protection of endangered species of fauna and flora						
1.4	Prevents discharges (liquid and solid) and disposal of <i>wastewater</i> that adversely affect water bodies and human settlements						
1.5	Minimise land and soil degradation						
1.6	Promotes reduction, re-use, recovery and recycling of wastes						
1.7	Promotes prevention of floods and mitigation of effects of <i>stormwater</i>						
1.8	Ensures minimisation of air pollution						
2. SOCIAL CULTURAL and HEALTH CONDITIONS							
2.1	Enhances access for ALL to environmental sanitation services						
2.2	Ensures good hygiene and contributes to prevention of health risks						
2.3	Ensures elimination of conditions for breeding and transmission of disease agents						
2.4	Promotes equitable distribution of (ES policy) related benefits						
2.5	Ensures gender mainstreaming with emphasis on women's participation at all levels						
2.6	Promotes knowledge, awareness and practices for attitudinal change						
2.7	Ensures minimisation of potential for conflicts in siting of communal facilities and final disposal facilities (NIMBY)						
2.8	Enhances health and hygiene education, information and participation at community level (including NGOs, CBOs, CSOs, FBOs)						
2.9	Ensures consideration of diversity (religious and cultural) at all levels						
3. ECONOMY							
3.1	Promotes macro-economic growth and stability and attainment of MDGs						
3.2	Ensures reuse and recycling of waste to support agriculture and other businesses						
3.3	Promotes growth of local economy - investments, job creation and alternative livelihoods						
3.4	Supports innovation and implementation of cleaner and efficient technologies						
3.5	Ensures cost-recovery for sustaining provision of services						
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES							
4.1	Promotes good governance -supports principles of democracy, respect for human rights, transparency, accountability and subsidiarity						
4.2	Improves dissemination and acceptance of policies and legislation						
4.3	Ensures private sector participation and protection of investments						
4.4	Supports database establishment, research, technological development and dissemination						
4.5	Supports cross-sectoral institutional collaboration and coordination within clearly defined roles and mandates						
4.6	Promotes structures for monitoring, enforcement and compliance to set standards including mandatory reporting where appropriate						
4.7	Supports polluter-pays principle						
4.8	Enhances institutional strengthening and capacity building						
4.9	Supports feasible options in the local context (reality check)						

ENVIRONMENTAL SANITATION POLICY SUSTAINABILITY CRITERIA – ANNOTATED	
NATURAL ENVIRONMENT AND NATURAL RESOURCES	
1.1	<p>Supports conservation and sustainable utilisation of water resources</p> <p>Water is fundamental to life, therefore the delivery of Environmental Sanitation services should be so as to protect water resources. Point and non-point sources of pollution should not contaminate surface water or watersheds and should be managed so as to maintain the flow of the water bodies. Groundwater resources should also not be contaminated.</p>
1.2	<p>Ensures protection of biodiversity, retention of natural character and function of ecosystems</p> <p>Environmental sanitation services and facilities should be managed with due respect to the natural character and overall ecosystem functions, In particular, wetlands should not be treated as “wastelands”</p>
1.3	<p>Ensures protection of endangered species of fauna and flora</p> <p>Endangered species of fauna and flora and their habitats should not be jeopardised as a result of implementation of environmental sanitation services and other related activities. This applies not only to terrestrial ecosystems but also to aquatic ecosystems and wetlands.</p>
1.4	<p>Prevents discharges (liquid and solid) and disposal of wastewater that adversely affect water bodies and human settlements</p> <p>Industrial activities, domestic water use and sanitation services, agriculture and other land uses etc. should not result in discharges, disposal of waste or other loads on the environment that deteriorate the quality of ground and surface water resources and areas of human habitation.</p>
1.5	<p>Minimise land and soil degradation</p> <p>Waste management services and other related activities should not lead to degradation of land and soils including depletion of nutrients, adverse change of soil structure or soil pollution.</p>
1.6	<p>Promotes reduction, re-use, recovery and recycling of wastes.</p> <p>Environmental sanitation services, especially Waste Management services should promote the 4Rs – reduction, re-use, recovery and recycling in support of NR conservation</p>
1.7	<p>Promotes prevention of floods and mitigation of effects of stormwater</p> <p>Primary, secondary and tertiary drains should be provided to prevent flooding and additionally, information-based early warning systems should be developed and emergency and disaster response plans put in place to deal with incidence of floods.</p>
1.8	<p>Ensures minimisation of air and noise pollution</p> <p>Environmental sanitation services and activities should be controlled such that noise and emission of pollutants to air including smoke, foul odours and noxious gases are minimised</p>
SOCIAL, CULTURAL AND HEALTH CONDITIONS	
2.1	<p>Enhances access for ALL to Environmental Sanitation services</p> <p>The whole population should have access to good quality environmental sanitation services. ALL means non-discrimination and ensuring that the needs of children and the vulnerable and physically challenged are taken care of.</p>
2.2	<p>Ensures good hygiene and contributes to prevention of health risks</p> <p>Health and well-being of people should benefit from provision of appropriate environmental sanitation facilities and adoption of good hygiene practices and help to reduce health risks including workplace risks resulting from environmental sanitation policies, plans or programmes.</p>
2.3	<p>Ensures elimination of conditions for breeding and transmission of disease agents</p> <p>Environmental Sanitation facilities should be suitably sited, constructed and managed in such a way as to avoid creating conditions that lead to breeding and transmission of disease agents.</p>
2.4	<p>Promotes equitable distribution of environmental sanitation policy related benefits</p> <p>Beneficial impacts and results of environmental sanitation policy initiatives and projects should be distributed equitably and should not discriminate against any groups including vulnerable people</p>

ENVIRONMENTAL SANITATION POLICY SUSTAINABILITY CRITERIA – ANNOTATED	
2.5	<p>Ensures gender mainstreaming with emphasis on women's participation at all levels</p> <p>Women and children play an important role in the maintenance of a clean environment. Environmental sanitation policies and activities should therefore support women in fulfilling this role including increasing their participation in planning and decision-making alongside their male counterparts.</p>
2.6	<p>Promotes knowledge, awareness and practices for attitudinal change</p> <p>A major challenge related to poor environmental sanitation is the unacceptable attitudes, practices and habits. So all Environmental sanitation sector activities should promote knowledge, create awareness and promote practices leading to behavioural and attitudinal changes.</p>
2.7	<p>Ensures minimisation of potential for conflicts in siting, establishing and operation of final disposal facilities and communal facilities (NIMBY)</p> <p>The siting of Environmental sanitation facilities, particularly communal facilities and waste disposal sites, should not create dislocations and conflict situations DAs should be mandated to acquire appropriate sites.</p>
2.8	<p>Enhances health and hygiene education, information and participation at community level (including NGOs, CBOs, CSOs, FBOs)</p> <p>Environmental Sanitation sector policies and activities should promote health and hygiene education especially at the community level to raise the level of knowledge about the impact of poor environmental sanitation on health etc. Further, the participation of local people in planning and implementation of environmental sanitation activities should be encouraged.</p>
2.9	<p>Ensures consideration of diversity (religious and cultural) at all levels</p> <p>Environmental sanitation policies, plans and programmes must recognise the roles and sensitivities of cultural and ethnic diversities especially in sanitation and hygiene practices to promote acceptance.</p>
ECONOMY	
3.1	<p>Promotes macro-economic growth and stability and attainment of related MDGs</p> <p>Environmental sanitation sector policies and activities should support growth objectives of the economy including agriculture, industry, tourism and other sectors and the attainment of related MDGs. This would among other criteria require appropriate arrangements for investments in environmental sanitation infrastructure for the benefit of all sectors.</p>
3.2	<p>Ensures reuse and recycling of waste to support agriculture and other businesses</p> <p>Products of waste management facilities such as compost, renewable energy etc should be used to support agriculture and other businesses</p>
3.3	<p>Promotes growth of local economy - investments, job creation and alternative livelihoods</p> <p>Environmental sanitation sector policies and activities, where relevant, should seek to improve the livelihoods of those who depend on the waste stream products and increase possibilities of employment of local people, in particular, women and youth; and also enhance opportunities for investments to stimulate growth of local economies.</p>
3.4	<p>Supports innovation and implementation of cleaner and efficient technologies</p> <p>Appropriate mechanisms for promoting innovative and relevant technologies should be supported by environmental sanitation sector policies and activities.</p>
3.5	<p>Ensures cost-recovery for sustaining provision of services</p> <p>Sustaining access to and use of environmental sanitation services and facilities requires effective maintenance. User fees should be set and structured so as to ensure viable operation and maintenance of these services and facilities including replacement where necessary.</p>

ENVIRONMENTAL SANITATION POLICY SUSTAINABILITY CRITERIA – ANNOTATED	
REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES	
4.1 Promotes good governance	Environmental Sanitation sector policies and activities and the way they are managed and implemented at all levels should respect the basic tenets of good governance including equity in access, principles of democracy, respect for human rights, participation, transparency, accountability and subsidiarity (recognising the lowest level i.e. households)
4.2 Improves dissemination and acceptance of policies and legislation	Environmental Sanitation sector policies and activities should support participatory dissemination, monitoring and evaluation of strategies to encourage greater acceptance and compliance.
4.3 Ensures private sector participation and ensures protection of investments	Environmental Sanitation sector initiatives aimed at attracting private sector participation should include provisions for protecting investments.
4.4 Supports database establishment, research and technological development and dissemination	Sound database and research are essential inputs for developing effective strategies. Environmental Sanitation sector policies and activities should support research, technology, and database development.
4.5 Supports cross-sectoral institutional collaboration and coordination within clearly defined roles and mandates	Collaboration and coordination among various institutions is required for effective management of environmental sanitation issues. Environmental Sanitation sector policies and activities should therefore promote cross-sectoral institutional collaboration within clearly defined roles and mandates.
4.6 Promotes structures for monitoring, enforcement and compliance to set standards including mandatory reporting where appropriate	Various aspects of environmental sanitation management require strict monitoring, compliance and enforcement to be successful. Environmental sanitation sector policies and activities should therefore promote structures for effective monitoring, enforcement and compliance to set standards, and enhance the role of ES Inspectorate.
4.7 Supports polluter-pays principle	Environmental Sanitation PPPs must support the polluter-pays principle as a means to promote good practices
4.8 Enhances institutional strengthening and capacity building	Environmental Sanitation sector policies and activities should promote measures aimed at strengthening related institutions and building capacity including training, providing logistics and systems for programme management.
4.9 Supports feasible options in the local context (reality check)	Due consideration should be given to the various provisions in environmental sanitation PPPs to ensure that they are feasible and realistic within the capacities of local systems and processes in order to ensure smooth implementation.

Form 3. 12: Blank Record Sheet for Environmental Sanitation

ESP SUSTAINABILITY TEST: RECORD SHEET			
Env. Sanitation Policy Component:			
Policy Action Description:			
Environmental Sanitation Policy Sustainability Criteria		Score	Reasons
1. NATURAL RESOURCES			
1.1	Supports conservation and sustainable utilisation of water resources		
1.2	Ensures protection of biodiversity, retention of natural character and function of ecosystems		
1.3	Ensures protection of endangered species of fauna and flora		
1.4	Prevents discharges (liquid and solid) and disposal of <i>wastewater</i> that adversely affect water bodies and human settlements		
1.5	Minimise land and soil degradation		
1.6	Promotes reduction, re-use, recovery and recycling of wastes		
1.7	Promotes prevention of floods and mitigation of effects of <i>stormwater</i>		
1.8	Ensures minimisation of noise and air pollution		
2. SOCIAL CULTURAL CONDITIONS			
2.1	Enhances access for ALL to environmental sanitation services		
2.2	Ensures good hygiene and contributes to prevention of health risks		
2.3	Ensures elimination of conditions for breeding and transmission of disease agents		
2.4	Promotes equitable distribution of (ES policy) related benefits		
2.5	Ensures gender mainstreaming with emphasis on women's participation at all levels		
2.6	Promotes knowledge, awareness and practices for attitudinal change		
2.7	Ensures minimisation of potential for conflicts in siting final disposal facilities (NIMBY)		
2.8	Enhances health and hygiene education, information and participation at community level (including NGOs, CBOs, CSOs, FBOs)		
2.9	Ensures consideration of diversity (religious and cultural) at all levels		
3. ECONOMY			
3.1	Promotes macro-economic growth and stability and attainment of MDGs		
3.2	Ensures reuse and recycling of waste to support agriculture and other businesses		
3.3	Promotes growth of local economy - investments, job creation and alternative livelihoods		
3.4	Supports innovation and implementation of cleaner and efficient technologies		
3.5	Ensures cost-recovery for sustaining provision of services		
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES			
4.1	Promotes good governance -supports principles of democracy, respect for human rights, transparency, accountability and subsidiarity		
4.2	Improves dissemination and acceptance of policies and legislation		
4.3	Ensures private sector participation and protection of investments		
4.4	Supports database establishment, research, technological development and dissemination		
4.5	Supports cross-sectoral institutional collaboration and coordination within clearly defined roles and mandates		
4.6	Promotes structures for monitoring, enforcement and compliance to set standards including mandatory reporting where appropriate		
4.7	Supports polluter-pays principle		
4.8	Enhances institutional strengthening and capacity building		
4.9	Supports feasible options in the local context (reality check)		

SECTION 4

TOOLS FOR HEALTH IMPACT AND ENVIRONMENTAL ASSESSMENT

ABOUT THESE TOOLS:

THE HEALTH PROFILING TOOL:

This tool was developed to assist the key stakeholders (DPCUs, EHOs and EHAs) to analyze and plan to achieve health impact of the WES facilities and hygiene education provided in the communities.

The tool will support a WES related problem analysis at community level.

The tool thereby allows District Water and Environmental Sanitation plans to use health impact in priority setting, and ensure that environmental sanitation issues are addressed as an integral part of the district plans.

THE HEALTH IMPACT PLANNING TOOL:

This tool was prepared to help specify the needed interventions and expected outputs, based on the community health profiles.

The tool will assist the planning teams in the development of strategies to address these problems so that District Water and Environmental Sanitation plans can use health impact in priority setting, and so that environmental sanitation issues can be specifically addressed as an integral part of district plans.

THE ENVIRONMENTAL SUSTAINABILITY ASSESSMENT PLANNING TOOL:

The process of environmental sustainability testing and its related compatibility test are presented. This tool enables the identification of shortcomings of planned policy actions so far as the environment is concerned. It will also help identify mutually reinforcing policies which can be implemented to achieve improved synergy.

THE ENVIRONMENTAL ASSESSMENT TOOL:

This tool covers how to carry out assessments of the important environmental issues (both positive and negative) so that environmental profile of the district (or community) can be developed as part of district water and environmental sanitation planning. The tool helps in the identification of constraints and opportunities and thus planning.

HEALTH IMPACT ASSESSMENT

Health Impact Assessment (HIA) is an approach that provides a systematic but flexible means of considering the impact of PPPs on people's health.

Health in its broad sense implies state of complete physical, mental and social well being and not merely the absence of disease or infirmity. Based on this broader model of health, HIA enables the wide range of factors, which can affect human health, to be identified and taken into account for planning and decision making. A similar approach can be used to plan for health impact of specific interventions.

WHAT IS THE HEALTH PROFILING TOOL?

The main health profiling tool is a Health Profile Form which in one sheet visualizes the connection of incidence of WES related diseases with the available water sources, latrines and environmental sanitation conditions in a community. The purpose is to demonstrate “at a glance” the need for interventions regarding water supply, sanitation and hygiene education.

The tool is based on a classification of WES related contagious diseases according to the mode of transmission of the diseases. This allows for more rational control to be applied for prevention, through breaking these transmission routes.

The health profiling process includes compiling:

- Relevant, available community data at the DA;
- Data on incidence of WES related diseases from the community's application for water supply and/or latrines;
- Interviews and observations conducted in the community by EHA/EHO.

A completed Health Profiling Tool for one of the communities, Oparekrom, in the Akuapem South District is shown overleaf.

As stated above, there are 3 main steps involved in completing the form:

1. First, the basic information about the District ([Akuapem South](#)) and Community ([Oparekrom](#)) including population ([659](#)), distance from water sources, coverage etc. are filled in on the top row.
2. Secondly, information on the incidence of the various WES related diseases gathered from the community sources (available in the Community Facilities Application Form) are then filled in. In the case of Oparekrom, there are many incidences of Bilharzia and Malaria – these are shaded RED. There are few cases of Skin diseases (Yaws and Burulli ulcer) and these are shaded in YELLOW. There are no cases of Worms or Guinea Worms recorded and these are shaded in GREEN.
3. Finally, a field survey of the community based on a representative sample of households (about 10%) and inspection of public areas is conducted and the results processed and summarised to fill in the lower section of the form. In the case of Oparekrom, the data from the survey shows availability of safe drinking water (borehole), solid waste disposal facilities (dump sites) and these are shaded in GREEN. In addition, the household interviews revealed good level of hygiene knowledge and good hand washing practices among the community, these are also shaded GREEN. On the other hand, there are no adequate latrine facilities and waste water disposal is not controlled and these are shaded

RED. Furthermore the level of hygienic practices among the inhabitants in areas such as water storage, cleanliness of latrines etc. was found to be generally poor and this is shaded RED.

The completed form now gives a visual representation of the state of WES facilities and practices in the given community and how this is linked to the various WES related diseases prevailing in the community. This then provides the basis for planning WES interventions to improve health benefits to the community.

Form 4. 1: The Health Profile Form for *Oparekrom*

Visualising the connection of WES related diseases to available water sources, latrines and environmental sanitation conditions.

District: Akuapem South	Community: Oparekrom	Population 659 M: F: C:	Distance from water body: 27.4m	Water supply Coverage %: 45%	Latrines Coverage %: Nil	SHEP No	
	Mode of transmission	Main measures of control	Disease	Level of incidence			Remarks
				None	Few	Many	
1. Diseases of water contact	Contact with contaminated water (Drinking and/or bathing)	Water supply and latrines	Guinea Worms				
			Bilharzia				
2. Water Washed Diseases	Due to lack of sufficient amount of water. Contamination from person to person	Water supply AND Hygiene education	Skin:				Some cases of Yaws and Burulli Ulcer
			Eye:				
3. Faecal-Oral Transmitted	From person to person, contact through water or food (and soil) via the oral route. (4 F)	Hygienic Latrines AND Water supply AND Hygiene education	Diarrhoea				
			Worms				
			Cholera				
4. Insect borne	Through mosquitoes/insects	Control of breeding. Environmental sanitation	Malaria				
<u>DATA FROM FIELD SURVEY</u> Date of Survey: 25 Aug. 2005 Sample size: 10 Person conducting the survey: EHA		Existing water supply. (Q14-20)		Safe		Unsafe	
		Liquid (Excreta) disposal (Q1-6)		Safe		Unsafe	
		Solid waste disposal (Q7-13)		Safe		Unsafe	
		Waste water (Sullage) disposal (Q25-28)		Safe		Unsafe	
		Hand washing Practices (Q21-24)		Good		Poor	
		Hygiene Practices (Q35-38)		Good		Poor	
		Hygiene knowledge (Q6,13, 20, 28)		Good		Poor	
		School Health Education and Facilities (Q 39)		Good		Poor	
		Community Cleanliness (Q40 – 46)		Good		Poor	

PLANNING WES INTERVENTIONS TO ACHIEVE HEALTH IMPACT

WHAT IS THE HEALTH IMPACT PLANNING TOOL

The health impact planning tool compiles the analyzed data from the Health Profile Form. It specifies the reasons for high incidence of specific WES related diseases in the community, and subsequently recommends the interventions needed to prevent these through breaking the transmission routes of the diseases. The tool furthermore specifies the expected outputs and outcomes of the interventions.

STEPS TO HEALTH PROFILING AND PLANNING FOR HEALTH IMPACT

The health profiling and planning has 7 basic steps to follow for the EHO/EHA and DWSP teams. The steps are:

- i. Compile, in the profiling form, basic information on population and coverage of water and sanitation etc.
- ii. Compile, in the profiling form, information about incidence of WES related diseases from community application.
- iii. Plan and carry out interviews and observations in the community.
- iv. Analyze interviews and observation results and transfer these to the profiling form
- v. Analyze profiles and compile information in health impact planning tool
- vi. Record baseline information, and transfer into district map.
- vii. Monitor and evaluate

Using the example of Oparekrom, the Health Impact Planning Tool has been completed to illustrate the process. The steps involved are as follows:

1. The top row information about the community and population etc. are filled in just as in the Health Profiling form.
2. The information on the incidence of the various WES related diseases are now filled in using the appropriate colours for the scores and the reasons for occurrences stated. For example the many incidences of Bilharzia is linked to the use of contaminated water from the nearby river and ponds. The Malaria is attributed to litter and poor water storage providing breeding grounds for mosquitoes.
3. The lower section of the form now provides a list of the available WES interventions and the task of the planning team is to recommend how these facilities and services should be provided in order to contribute to improving the health condition of the community. For the Oparekrom example, it is recommended to improve water supply by adding at least 1 borehole/well. For toilet facilities, it is proposed to install one 10-seater KVIP in a public location while actively promoting household latrines. Other recommendations cover solid waste disposal, drains for waste water, hygiene education etc as shown on the form. The blank forms and additional sources of information and explanatory notes to support health profiling and planning are provided at the end of the section.

Form 4. 2: Example of health impact planning tool for Oparekrom:

District: Akuapem South	Community: Oparekrom	Population: 659 M: F: C:	Distance from water body : 27.4m	Water supply Coverage %: 45	Latrines Coverage %:	SHEP No
		Disease	Score	Reasons		
1. Diseases of water contact		Guinea Worms	None			
		Bilharzia	Many	Water collected from river and pond. Children swim in ponds. Very few latrines in community. Open defecation. Many flies.		
2. Water Washed Diseases		Skin: Buruli Ulcer and Yaws	Few	Lack of water for personal hygiene. Many flies.		
		Eye:	None			
3. Faecal-Oral Transmitted		Diarrhoea	Few	Public pit latrine very unhygienic. Flies everywhere. Open defecation seen. Poor hygiene practices.		
		Worms	None			
		Cholera	Few	Flies everywhere. Open defecation seen. Poor hygiene practices.		
4. Insect borne		Malaria	Many	Lots of litter around. Water stored in uncovered containers.		
Main needs in order to improve health:	Water supply: Quantity: Type and timing. Support by district and contribution by community.		Expected output/outcome: New coverage %. Number of wells/boreholes etc. planned : At least 1 additional borehole/well			
	Quality: Type and timing		E.g. filters present to prevent guinea worms infestation.			
	Sanitation: Toilets/Latrines Type and timing. Support by district and contribution by community.		New coverage %: Number of private and public (hygienic) latrines: At least 1x10 seater KVIP; and actively promote acquisition of household latrines			
	Waste Water: Type, timing and contribution.		Drainage, soakage systems to be provided			
	Solid Waste: Collection, treatment etc. Type, timing and contribution		No littering. No breeding opportunity for mosquitoes in waste. Regular incineration of waste			
	Community participatory planning: Topics/approach: Community mapping exercises. Planning for sanitation. PHAST etc. Approach, topics and timing.		No of latrines being constructed, No open defecation, Decrease in specific diseases. Less flies. Improved hygiene practices. Level of participation.			
	Hygiene education, Health Campaigns: e.g. social marketing of latrines; prevent children from swimming in contaminated ponds. Contents, Timing.		Decrease in targeted diseases. Improved hygiene practices. Construction of latrines.			
	SHEP: Existing programme support or plan for this. Timing.		Children's knowledge and hygienic practice in the school. School has safe drinking water, water for personal hygiene and hygienic latrines.			

ENVIRONMENTAL ASSESSMENT AND PROFILING

Sustainability and Compatibility Testing

The purpose of environmental sustainability testing and compatibility testing, and how it should be implemented, was described in the preceding section on "Tools for policy planning" – this shall not be repeated here. However, the same tools can be applied in essentially the same manner to the planning and programming level and used e.g. in the preparation of district water and environmental sanitation plans.

For that purpose the four main categories of sustainability objectives:

- natural environment/resources
- social, cultural and health conditions
- economy, and
- regulatory, administrative and institutional issues

still form the backbone of the testing, however, the specific objectives within each of the mentioned categories should be critically reviewed and modified as necessary to reflect the scope and objectives of the actual plan or programme in question.

The sustainability criteria for district-level plans are based on the national policy sustainability criteria. However, it is recommended that it adjusted to reflect the objectives of specific districts.

Similarly, a compatibility matrix in line with the one presented for the national policy level should be developed in each specific case.

The plan level sustainability test form is shown overleaf.

Form 4.3: Worked Example of Sustainability Test for Akwapim South District Water and Environmental Sanitation Plans

DISTRICT WATER AND SANITATION PLAN (DSWP) SUSTAINABILITY TEST											
DWSP Component:											
Plan Action Description:											
DWSP Sustainability Objectives						Performance Score					
						0	1	2	3	4	5
1. NATURAL RESOURCES											
1.1	Minimise deforestation and/or land and soil degradation caused by poor agronomic and other practices										
1.2	Promote conservation and sustainable exploitation of groundwater and surface water resources										
1.3	Prevent pollution of surface waters by untreated wastewater effluents and disposal of faecal waste										
1.4	Prevent flooding and mitigate effects of <i>stormwater</i> discharge										
1.5	Maintain biodiversity, protect endangered species of fauna and flora, and of natural character of surface waters										
1.6	Promote safe disposal and reduction, re-use, recovery and recycling of wastes										
1.7	Minimise noise, smell and other nuisances from W&S activities										
2. SOCIAL, CULTURAL AND HEALTH CONDITIONS											
2.1	Enhance access for ALL to water in sufficient quantity and quality for basic needs										
2.2	Enhance access for ALL to environmental sanitation services										
2.3	Eliminate conditions for development and transmission of water-related diseases/health risks incl. pro-active measures such as good hygiene										
2.4	Promote equitable distribution of (WES plan) related benefits										
2.5	Ensure gender mainstreaming with emphasis on women's participation at all levels										
2.6	Promote knowledge, awareness and practices for attitudinal change										
2.7	Ensure minimisation of potential for conflicts in siting of WES facilities including final disposal facilities (NIMBY)										
2.8	Enhance education in health, hygiene and environmental protection, incl. information and participation (including NGOs, CBOs, CSOs, FBOs)										
2.9	Ensure consideration of diversity (religious and cultural) at all levels										
3. ECONOMY											
3.1	Promote growth of local economy - investments, job creation and alternative livelihoods										
3.2	Support innovation and implementation of cleaner and efficient technologies										
3.3	Ensure cost-recovery for sustaining provision of services										
3.4	Ensure reuse and recycling of waste to support agriculture and other businesses										
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES											
4.1	Promote good governance and support principles of democracy, respect for human rights, transparency and accountability										
4.2	Improve dissemination and acceptance of district plans and actions										
4.3	Enhance private sector participation and protection of investments										
4.4	Support polluter-pays principle										
4.5	Support cross-sectoral institutional collaboration and coordination within clearly defined roles and mandates										
4.6	Enhance institutional strengthening and capacity building										
4.7	Support improvement of data base for future planning and implementation of actions										

ENVIRONMENTAL PROFILING AND ASSESSMENT

The Environmental Profiling tool has been developed in line with the Health Profiling tool. However, while the Health Profiling tool targets the community level, environmental profiling is more relevant at the district level since the environmental conditions of individual communities aggregate to reflect conditions of the whole district.

The tool has been designed with an overall lay-out corresponding to that of the health profiling form i.e. an upper part in which the current status of the environmental conditions in the district is assessed while in the lower part the situation with regard to the various fields within Water & Environmental Sanitation (WES) that already form or could form part of a future district plan is assessed. The environmental categories have been chosen to reflect the objectives defined for "natural resources" in the district level environmental sustainability test sheet.

The categories have been arranged in an order that corresponds, to the extent possible, to the natural sequence of dealing with water-related environmental issues i.e. water resource conservation → water exploitation and utilisation → water quality → water pollution (including wastewater) → flooding and physical impacts → waste pollution (→ derived nuisances).

The tool, the Environmental Profiling Form (EPF), completed for the Akwapim South District is shown overleaf (Form 4.4).

The steps involved in completing the EPF are as follows:

Step 1 – Constitute the WES Assessment Team which should comprise staff from EPA, DEHU and the DPCU.

Step 2 – Divide the District into appropriate Lower Levels (i.e. Area or Town Councils) and determine the representative number of communities in each Lower Level that will be surveyed. ***It is advisable to cover ALL communities in the District if time and resources will permit.***

Step 3 – WES Assessment Teams carry out “walk about” and “guided walk” surveys in each of the communities to record the findings using forms 4.20 and 4.21 and related notes.

Step 4 – The results for each Area/Town Council are tallied/aggregated using forms 4.18 for the Existing Environment and 4.19 for the WES services and facilities. The examples shown are for 3 communities in Aburi Area Council (Form 4.6 and 4.7)

Step 5 – The aggregated results for each Area/Town Council are then further aggregated using the Combined Aggregated Form (Form 4.5) and transferred to the EPF (form 4.4) to give the profile of the entire District.

The completed example for Akwapim South District shows that the existing environmental situation is generally fair to poor and that surface water sources suffer pollution mainly from poor waste disposal practices especially in the urban settlements.

The condition of the WES services and facilities are generally poor resulting mainly from inadequate levels of provision and will require substantial improvements

Form 4. 4: Worked example of Environmental Profiling Form for Akwapim South

EPF - Environmental Profiling Form for District WES Planning					
District: Akuapem South	Size (km²): 503	Population: 120,800 (2004)	Water supply coverage (%): 34.2 (2004)		Sanitation coverage (%): 21.3 (2004)
Environmental Category	Typical issues within the category	Assessment of situation			Remarks
		good	fair	Poor	
1. Watershed conservation	Deforestation, water intensive agriculture, soil degradation and erosion				
2. Water resources	Availability of groundwater and surface resources, aquifer recharge capacity				
3. Water quality / pollution	Quality of groundwater resources, pollution of surface waters				Mainly surface water problem
4. Flooding / physical impacts	Frequency/extent of flooding, retention of natural character of surface waters				
5. Waste pollution	Availability of safe waste disposal sites, uncontrolled and unsafe waste disposal				Mainly the large urbanised areas
6. Ecology / biodiversity	Eutrofication of water bodies, wildlife access to water and habitats				
7. Appearance / nuisance (latrines and waste disposal)	Location relative to human dwellings, smell, noise, vermin and other nuisance				
Field Survey Info	District WES Planning Category	Assessment of condition			Remarks
		good	fair	poor	
No. of surveys performed : 21 Survey period: Sept. 2006 Assessment team members:	A. Watershed Management (A.1-3)				
	B. Water supply (B.1-5)				Significant variation within district areas
	C. Wastewater (sullage) disposal (C.1-4)				
	D. Faecal waste disposal (D.1-3)				Significant variation within district areas
	E. Drainage / stormwater (E.1-3)				
	F. Solid waste disposal (F.1-4)				

Form 4. 5: Form for Combined Aggregation of the Existing Situation for BOTH the Environmental Condition and WES Facilities/Services in a District

Form for Aggregation of Lower Level Environmental Profiling Data for DWES Planning				
District: AKUAPEM SOUTH	Size (km²): 503	Population: 120,800 (2004)	Water supply cov. (%): 34.2 (2004)	Sanitation cov. (%): 21.3 (2004)

	Environmental category	Nsawam	Adoagyiri	Aburi	Ajenase Piem	Obodan-Fotobi	Nkyene-nkyene	Dago-Aname-nampa	Aggregated for district
1.	Watershed conservation								
2.	Water resources								
3.	Water quality / pollution								
4.	Flooding / physical impacts								
5.	Waste pollution								
6.	Ecology / biodiversity								
7.	Appearance / nuisance (latrines and waste disposal)								

	DWS Planning Category	Nsawam	Adoagyiri	Aburi	Ajenase Piem	Obodan-Fotobi	Nkyene-nkyene	Dago-Aname-nampa	Aggregated for district
A.	Watershed Management								
B.	Water supply								
C.	Wastewater (sullage) disposal								
D.	Faecal waste disposal								
E.	Drainage / stormwater								
F.	Solid waste disposal								

District or Area Council: Aburi Area Council (Akuapem South)						
Environmental Category		Question / Observation	Lower level assessment of situation			Aggregated assessment
			Green	Yellow	Red	
1.	Watershed conservation	How big a part of the district/area is covered by forest or similar (semi)permanent vegetation?		III		
		Does clearing of forest for preparation of new agricultural land or for other development purposes take place in the area?	I	I		
		Do agricultural lands, in particular in hilly terrain, bear sign of erosion and surface runoff into rivers and streams?		II		
2.	Water resources	Are the yields of boreholes and/or wells in the surveyed area satisfactory/sufficient?		II		
		How is the recharge capacity of aquifers compared to the need for water?		III		
		Are surface water resources limited / does drying up of streams etc. occur frequently?		III		
3.	Water quality / pollution	Does the water from groundwater wells or boreholes taste or smell bad?	III			
		Does surface water used for drinking or other domestic purposes taste or smell bad, or have an unpleasant visual appearance?		I	I	
		Does direct discharge of faecal wastes and/or overflows from latrines into water bodies occur?	III			
		Does discharge of untreated wastewater directly into surface waters take place?		III		
4.	Flooding / physical impacts	Does flooding occur as a result of choked or otherwise poorly maintained drains?		III		
		Does discharge of urban and road stormwater runoff cause the diversion capacity in receiving streams to be exceeded?			I	
		To what extent are dwellings and/or other buildings or facilities located or being erected in flood-prone areas?		II		
5.	Waste pollution	Does disposal of solid waste take place in or along rivers where it can be washed into rivers by stormwater runoff?	I		I	
		Is the generated solid waste disposed at safe locations (in relation to protection of ground water resources)?	II	I		
		Is disposal of non-degradable wastes (plastic, scrap metal, glass, cardboard etc.) in the environment common?		III		
6.	Ecology / biodiversity	Are the streams (and other water bodies) in the area turbid (due to pollution)?			I	
		Do the water bodies sustain a varied aquatic life (vegetation and fauna including fish)?	III			
		Are banks/shores of water bodies freely accessible and of a quality (ie. with vegetation) rendering them attractive to wildlife?		III		
7.	Appearance / nuisance (latrines, waste disp.)	To what extent are latrines and waste disposal sites located to minimise nuisances?		III		
		To what extent are latrines and waste disposal sites designed to minimise nuisances?		III		
		Are latrines etc. and waste disposal sites properly maintained?			I	

District or Area Council: Aburi Area Council (Akuapem South)					
No.	Object	Lower level assessment			Aggregated assessment
		green	yellow	red	
A.	WATERSHED MANAGEMENT				
A.1	Conservation of forests and other natural vegetation		III		
A.2	Erosion/surface runoff in relation to the open (non-urban) land	I	I		
A.3	Waste disposal in groundwater resource areas	III			
A.4	Polluting (industrial) activities in water resource areas	III			
B.	WATER SUPPLY				
B.1	Supply relative to the needs		II	I	
B.2	Stability of yield from HDW/BH		II		
B.3	Stability of supply from surface sources	I	II		
B.4	Quality of groundwater	III			
B.5	Quality of surface water			III	
C.	WASTEWATER DISPOSAL				
C.1	Treatment prior to disposal	I		II	
C.2	Discharge into surface waters		III		
C.3	Soak-away / infiltration			III	
C.4	Use for irrigation			III	
D.	FAECAL WASTE DISPOSAL				
D.1	Location of latrines near rivers	III			
D.2	Frequency of overflow episodes from latrines	II	I		
D.3	Other faecal pollution of rivers	III			
E.	DRAINAGE / STORMWATER				
E.1	Degree of urban drainage			II	
E.2	Maintenance of urban drains		III		
E.3	Measures against flooding		II	I	
F.	SOLID WASTE DISPOSAL				
F.1	Facilities for safe waste disposal			III	
F.2	Solid waste collection			III	
F.3	Level of uncontrolled waste disposal		II	I	
F.4	Re-cycling of waste fractions			III	

As with Health Profiling, this form obtains, on one page, a visual presentation of the environmental situation and problems that may exist within a district as well as an overview of the existing situation with regard to the various WES planning categories. Thus, the form can be utilised to prioritise improvements based on the conditions assessed.

Further, by studying the form it will be possible to see if there are obvious constraints between the need for improvement of the environmental situation and the needs of communities with regard to water and environmental sanitation related services.

For example, if the assessment presented in the EPF shows that the situation with regard to water resources conservation and exploitation is bad, while at the same time there is need for improving access to water is identified, there is clearly a constraint that must be analysed in more detail and be dealt with appropriately.

Or, if the situation with respect to disposal of sullage and wastewater is found to be satisfactory while at the same time the quality of surface waters is found to be bad, an explanation of this apparent discrepancy must be identified and a suitable corrective measure implemented.

To assist the assessor in making the required assessments and filling in the EPF some supporting forms and tables have been developed and provided at the end of this section 'Explanatory notes and forms for plans'.

- List of questions for assessment of environmental situation
- List of questions for assessment of environmental situation - annotated
- List of questions for assessment of status of WES related services and actions
- List of questions for assessment of status of WES related services and actions - annotated

The lists are intended to serve as a guide to the assessor. The questions and answers must be supplemented by a sound judgment by the assessor(s) in the district and, to the extent possible, supported by technical and environmental data.

Often observations/answers will not all point in the same direction and therefore have to be weighed against each other and specific knowledge of local characteristics and conditions (and trends), that cannot be accommodated in a generic type of document as this, must be utilised and incorporated in the assessment.

It is anticipated that the assessment of a situation within a given category will quite often lead to a classification as "fair". But this overall classification can have different reasons e.g. that the situation throughout the district is not particularly "good" but on the other hand not really "poor" either, or that in some parts the situation is "good" while in others it is "poor".

Therefore, a separate record sheet is completed. Together with the 'Remarks' field of the EPP form this helps to provide the basis for selecting appropriate solutions.

EXPLANATORY NOTES AND FORMS FOR PLANS

Form 4.8	Blank Health Profile Form
Form 4.9	Blank Health Impact Planning Tool
Form 4.10	Examples Of Corrective Measures For WES Related Diseases
Form 4.11	Example Of Health Impact Planning Tool
Form 4.12	Community Questionnaire For HIA
Form 4.13	For Community Questionnaire For HIA
Form 4.14	Analysis Tool For Community Environmental Health And Sanitation Survey
Form 4.15	Blank District Sustainability Form
Form 4.16	Environmental Profiling Form for District Water and Sanitation Planning
Form 4.17	Combined Aggregation of Lower Level Env. Profiling Data for DWES Planning
Form 4.18	Form for Aggregated Assessment of WES in Communities or Areas
Form 4.19	Form for Aggregated Assessment of WES in Communities or Areas
Form 4.20	Form for Assessment of Existing Environmental Situation in a Community
Form 4.21	Form for Assessment of Status of WES Planning Objects
Form 4.22	Integrating Environmental Concerns in DWS planning

Form 4. 8: Blank Health Profile Form for visualising the connection of WES related diseases to available water sources, latrines and environmental sanitation conditions.

District:	Community:	Population M: F: C:	Distance from water body :	Water supply Coverage %:	Latrines Coverage %:	SHEP	
	<i>Mode of transmission</i>	<i>Main measures of control</i>	<i>Disease</i>	<i>Level of incidence</i>			<i>Remarks</i>
				None	Few	Many	
1. Diseases of water contact	Contact with contaminated water (Drinking and/or bathing)	Water supply and latrines	Guinea Worms				
			Bilharzia				
2. Water Washed Diseases	Due to lack of sufficient amount of water. Contamination from person to person	Water supply AND Hygiene education	Skin:				
			Eye:				
3. Faecal-Oral Transmitted	From person to person, contact through water or food (and soil) via the oral route. (4 F)	Hygienic Latrines AND Water supply AND Hygiene education	Diarrhoea				
			Worms				
			Cholera				
4. Insect borne	Through mosquitoes/insects	Control of breeding. Environmental sanitation	Malaria				
Data from field survey: Date of Survey: Sample size: Person conducting the survey:		Existing water supply. (Q14-20)		Safe		Unsafe	
		Liquid (Faecal) disposal (Q1-6)		Safe		Unsafe	
		Solid waste disposal (Q7-13)		Safe		Unsafe	
		Waste water (Sullage) disposal (Q25-28)		Safe		Unsafe	
		Hand washing Practices (Q21-24)		Good		Poor	
		Hygiene Practices (Q35-38)		Good		Poor	
		Hygiene knowledge (Q6,13, 20, 28)		Good		Poor	
		School Health Education and Facilities (Q 39)		Good		Poor	
		Community Cleanliness (Q40 - 46)		Good		Poor	

Form 4. 9: Blank Health Impact Planning Tool for determining WES Interventions for improving health outcomes.

District:	Community:	Population M: F: C:	Distance from water body :	Water supply Coverage %:	Latrines Coverage %:	SHEP
		Disease	Score	Reasons		
1. Diseases of water contact	Guinea Worms					
	Bilharzia					
2. Water Washed Diseases	Skin:					
	Eye:					
3. Faecal-Oral Transmitted	Diarrhoea					
	Worms					
	Cholera					
4. Insect borne	Malaria					
Main needs in order to improve health:	Water supply: Quantity:		Expected output/outcome:			
	Quality:					
	Sanitation: Toilets/Latrines					
	Waste Water					
	Solid Waste					
	Community participatory planning: Topics/approach:					
	Hygiene education/Campaigns					
	SHEP:					

EXPLANATORY NOTES FOR HEALTH PROFILING AND PLANNING

Steps to health profiling and planning

Step 1: Compile, in the profiling form, basic information on population and coverage of water and sanitation etc.

District: Name of district	Community: Name of community	Population: Total population Male: Female: Children:	Distance from water body : River or other major water source	Water supply Coverage %: Coverage of safe water supply - all year	Latrines Coverage %: Coverage of hygienic latrines	SHEP School health education, school water supply and school latrines
-------------------------------	---------------------------------	--	--	--	---	--

Step 2: Compile in profiling form information about incidence of WES related diseases from community application.

The incidence of certain WES related diseases were selected as indicators in priority setting for provision of water supply. The level of incidence of these selected diseases is indicated in the community's application for water supply and sanitation as "none, few or many". These should be marked in the profile form in green color for none, yellow for few and red for many.

At a glance it can then be seen how the level of incidence of disease correspond with the availability (coverage) of water and latrines in the community.

The diseases selected as indicators in this form are those presently used for scoring in the community WES application forms.

In communities where other WES related diseases are more predominant, these should be addressed also or instead.

An example is demonstrated below:

	Mode of transmission	Main measures of control	Disease	Level of incidence			Remarks
				None	Few	Many	
1. Diseases of water contact	Contact with contaminated water (Drinking and/or bathing)	Water supply (and sanitation)	Guinea Worms				
			Bilharzia				
2. Water Washed Diseases	Due to lack of sufficient amount of water – contamination from person to person	Water supply AND Hygiene education	Skin: E.g. Buruli Ulcer				
			Eye: E.g. Trachoma				
3. Faecal-Oral Transmitted	From person to person, contact through water or food (and soil) via the oral route. (4 F)	Hygienic Latrines AND Water supply AND Hygiene education	Diarrhoea ¹				
			Worms				
			Cholera				
4. Insect borne	Through mosquitoes/insects	Control of sites of breeding. Environmental sanitation	Malaria				

¹ Diarrhoea is a symptom of many fecal-oral transmitted diseases. It has been selected as criteria because it is listed in this way in the applications, and also often recorded in health services data.

Step 3: Plan and carry out interviews and observations in the community

The field survey will add updated information about other sanitary conditions, practices and knowledge in the communities.

The field survey consists of household interviews, observations in the community and drawing a community map. A questionnaire was developed for this purpose. The questionnaire is rather self-explanatory. It is therefore not described in detail in this text, but is attached, separately, for information and reference as part of this section.

Approximately 10% of the households in the community should be randomly selected and interviewed regarding their water use, sanitary and hygienic practices.

The training module of this guide has more details on how to plan for and conduct the interviews and observations.

Step 4: Analyze interviews and observation results and compile these in the health profiling form

An analysis tool and guide for interpretation of the survey responses supports the determination of whether practices are marked safe/unsafe or good/poor. The guide for interpretation of results is self-explanatory and not explained further in this text, but is attached for information and reference.

Example of part of the Analysis Tool:

A. LIQUID WASTE (EXCRETA DISPOSAL) (Q 1 – 6)

Q1 Ownership		Q2 Facility Type		Q3 Adult Alternative		Q4 Child Alternative		Q5 Disposal		Q6 Knowledge	
Yes	No	Good	Poor	Good	Poor	Good	Poor	Safe	Unsafe	High	Low
IIIIII	IIII IIIIII IIIIII	IIII	II	IIII IIII	IIIIII IIIIII	IIIIII	IIIIIIII IIIIII	IIIIII IIIIII IIIIII	IIIIII	IIIIIIII	IIIIIIII IIIIIIII
■ ■ ■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■ ■ ■ ■ ■	

The results noted in the questionnaires are marked in the analysis tool, which is prepared for each community.

If most results are recorded as safe/good, the bottom line is marked green, whereas if the majority is marked unsafe/poor, the bottom line is marked red. Red marking requires intervention for improvement of water and sanitary facilities and health promotion.

The example of the community above should be marked red in the profiling form, regarding ownership (Q 1).

In some situations it may be difficult to assess whether a practice is safe or unsafe, if so this should generally be marked as unsafe. Some may, however, be marked yellow in the analysis tool and health profile, when for example half of the community practices are marked red and the other half is green. Yellow will then indicate a less severe situation, or a situation where good examples exist and can perhaps provide a point of departure for planning of interventions. Yellow marking will always require an explanation.

Data from field survey:	Existing water supply. (Q14-20)		Safe (green)	yellow	Unsafe (red)	Remarks: Mention specific issues.
Date of Survey:	Liquid (Faecal) disposal (Q1-6)					
Sample size:	Solid waste disposal (Q7-13)					
Person conducting the survey:	Waste water (Sullage) disposal (Q25-28)					
	Hand washing Practices (Q21-24)		Good		Poor	
	Hygiene Practices (Q35-38)					
	Hygiene knowledge (Q6,13, 20, 28)					
	School Health Education and WES Facilities (Q 39)					
	Community Cleanliness (Q40 - 46)					

Step 5: Analysis of findings and preparation of recommendation sheet to DPCU

When the community Health Profile has been completed, it can be seen at a glance how unsafe hygienic conditions and practices result in WES related contagious diseases. This profile should now form the basis for analysis and planning of WES interventions with the community, including methods for health and hygiene promotion.

Furthermore the community survey includes a community map showing the location of water supply, latrines, sewage pits, waste collection, location of schools etc.

[Example of community map should be included here.](#)

Listed below are some general proposals for corrective measures for WES related disease problems. It is important to note that only in the case of guinea worm can improved water supply alone be expected to have any health impact. In relation to all other WES related diseases it is necessary to combine improved water supply with improved sanitation and hygienic practices in order to achieve positive impact on health.

Form 4. 10: Examples of Corrective Measures for WES related diseases

Diseases		Route of Transmission	Corrective WES Measure(s)
1.1	Diseases of water contact		
	Guinea worm	Discharge of larvae from infected person on contact with water. The larvae mature in the water in a tiny intermediate host and when swallowed, guinea worm develops in the human body.	- Safe water supply
	Bilharzia (Schistosomiasis)	Passage of parasite eggs in urine or stools. On reaching water the eggs hatch into larvae which live with a snail as intermediate host. People are infected through skin contact with infected water (infected by the snails carrying the parasite)	- Provide safe water for washing and bathing - Use of latrines for urination as well as defecation - Eradication of snails
1.2	Water washed diseases	Are also called the diseases of poor hygiene.	
	Eye diseases. Trachoma, conjunctivitis.	From person to person. From direct contact with infected eyes or discharge from the infected person's eyes, or his hands, towel etc.	- Increase water quantity. - Hand washing - Improved hygiene practices
	Skin diseases Scabies, Lice and superficial fungal diseases. Also tropical ulcers(e.g. Buruli Ulcer) for which means of transmission is not yet fully defined, may be included in this category.	From person to person. From direct contact with infected skin, discharge or mucus from the infected person, or his hands, clothes, towel, bed sheets etc.	- Increase water quantity. - Hand washing - Improved hygiene practices
1.3	Faecal-oral transmitted	Transmitted from person to person through hands, water, flies or soil via the oral route. (4F: Fingers, Flies, Fields, Fluids to Food)	
	Diarrhoea Symptom of most faecal-oral transmitted diseases	4 F	- Improved personal hygiene - Improved excreta disposal - Improved water supply
	Worms	Fingers and soil	- Improved personal Hygiene - Improved excreta disposal
	Cholera	4 F and Water	- Improved personal hygiene - Improved water supply - Improved excreta disposal
1.4	Insect Borne diseases		
	Malaria	Mosquito bites	- Eliminate stagnant water - Maintain water supply

With these tools the EHO (and EHAs) can plan targeted interventions in more detail with the communities and recommend to the DPCU, how the situation should be improved, keeping in mind that primary prevention and support to improved sanitation and hygienic practices is best value for money, and very effective.

Form 4. 11: Example of health impact planning tool:

District:	Community:	Population M: 100 F: 120 C: 300	Distance from water body : river 500m	Water supply Coverage %: 10	Latrines Coverage %: 5	SHEP No
		Disease	Score	Reasons		
1. Diseases of water contact		Guinea Worms	None			
		Bilharzia	Many	Water collected from river and pond. Children swim in ponds. Very few latrines in community. Open defecation. Many flies.		
2. Water Washed Diseases		Skin: Buruli Ulcer	Many	Lack of water for personal hygiene. Many flies.		
		Eye: Infections Dry season many Wet season few	Many Few	Especially lack of water during dry season. Many flies.		
3. Faecal-Oral Transmitted		Diarrhoea	Many	Very few hygienic latrines. Public pit latrine very unhygienic. Flies everywhere. Open defecation seen. No water and soap for hand-washing. Hand-washing practices poor.		
		Worms	Some	Same as above.		
		Cholera	None			
4. Insect borne		Malaria	Many	Lots of litter around. Water stored in uncovered containers.		
Main needs in order to improve health:		Water supply: Quantity: <i>Type and timing.</i> <i>Support by district and contribution by community.</i>	Expected output/outcome: <i>New coverage %.</i> <i>Number of wells/boreholes etc. planned.</i>			
		Quality: <i>Type and timing</i>	<i>E.g. filters present to prevent guinea worms infestation.</i>			
		Sanitation: Toilets/Latrines <i>Type and timing.</i> <i>Support by district and contribution by community.</i>	<i>New coverage %</i> <i>Number of private and public (hygienic) latrines</i>			
		Waste Water <i>Type, timing and contribution.</i>	<i>Drainage, soakage systems</i>			
		Solid Waste: <i>Collection, treatment etc.</i> <i>Type, timing and contribution</i>	<i>No littering.</i> <i>No breeding opportunity for mosquitoes in waste.</i>			
		Community participatory planning: Topics/approach: <i>Community mapping exercises. Planning for sanitation. PHAST etc.</i> <i>Approach, topics and timing.</i>	<i>No of latrines being constructed, No open defecation, Decrease in specific diseases. Less flies.</i> <i>Improved hygiene practices.</i> <i>Level of participation.</i>			
		Hygiene education, Health Campaigns: e.g. social marketing of latrines; prevent children from swimming in contaminated ponds. <i>Contents, Timing.</i>	<i>Decrease in targeted diseases.</i> <i>Improved hygiene practices.</i> <i>Construction of latrines.</i>			
		SHEP: <i>Existing programme support or plan for this. Timing.</i>	<i>Children's knowledge and hygienic practice in the school.</i> <i>School has safe drinking water, water for personal hygiene and hygienic latrines.</i>			

Step 6: Recording of baseline information into district map.

The health profile of the district is obtained by mapping out the individual community profiles. This profile will assist the DA in setting priorities for interventions in the profiled communities and complement poverty mapping of the district.

An example of a district map illustrating this should be inserted – with communities marked with colors referring to the WES situation.

Step 7: Monitoring and evaluation.

This step is described in detail in Section 5 of this guide.

TECHNICAL SUPPORT TO CAPACITY BUILDING IN SEA PROCESS FOR WATER AND ENVIRONMENTAL SANITATION POLICIES, PLANS AND PROGRAMMES

Form 4. 12: COMMUNITY QUESTIONNAIRE FOR HIA

COMMUNITY..... POPULATION.

RESPONDENT CODE №. H/№.

DISTANCE FROM RIVER DENSU/OTHER WATER RESOURCES.

HOUSEHOLD LEVEL BACKGROUND VARIABLES

SEX: M ☐ F ☐ MARITAL STATUS: MARRIED ☐ SINGLE ☐ DIVORCED ☐

NO. OF CHILDREN..... NO OF CHILDREN UNDER 5YEARS.

-EDUCATIONAL STATUS (a) BASIC ☐ (b) SECOND CYCLE ☐ TERTIARY? ☐

-RELIGION.

-OCCUPATION.

ENQUIRY SECTION

LIQUID WASTE (FAECAL) DISPOSAL

(1). Do you have toilet facility in your house? Yes ☐ No ☐

(2). If "yes" state the type of toilet facility:

W/C	<input type="checkbox"/>
KVIP	<input type="checkbox"/>
VIP	<input type="checkbox"/>
Pit Latrine	<input type="checkbox"/>
Bucket Latrines	<input type="checkbox"/>

(3). If "no" state where you ease yourself:

Public W/C	<input type="checkbox"/>
Public KVIP	<input type="checkbox"/>
Public Pit	<input type="checkbox"/>
Bush	<input type="checkbox"/>
Bare Ground	<input type="checkbox"/>
Chamber Pot	<input type="checkbox"/>
Other, state.....	

(4). Where do your children ease themselves?

Public Toilet	<input type="checkbox"/>
Bush	<input type="checkbox"/>
Bare Ground	<input type="checkbox"/>
Chamber Pot	<input type="checkbox"/>
Other, state.....	

(5). If Chamber Pot or bare ground state where or how you dispose off faeces.

.....

.....

(6). Do you know any disease or hazards associated with wrongful disposal of faeces?
State 2.....

SOLID WASTE

(7). Do you have Sanitary Dustbin for storage of refuse? yes[] no[]
Show it to me

(8). What type of refuse do you generate? Household organic []
Household inorganic []
Trade []
Commercial []
Any other, state

(9). Do you have access to a refuse dump? Yes [] No []

(10). State the method of refuse disposal: Crude []
Burry []
Control []
Burning []

(11). Who disposes off the refuse? Adults [] Children []

(12). What do you think about the distance from here to the refuse dump?
Very long > 1km []
Long 0.5~1 km []
Short 0.1~0.5 km []
Just enough up to 100 m []

(13). Do you know any disease or hazards associated with poor refuse disposal?
State 2.....

WATER SUPPLY

(14). Where do you fetch drinking water? River []
Shallow well []
Deep well, safe []
Deep well, unsafe []
Borehole []
Pond []

(15). Where do you fetch water for other purposes? River []
Shallow well []
Deep well, safe []
Deep well, unsafe []
Borehole []
Pond []

(16).Is the water quantity adequate? Yes [] No []

(17). Is it affordable? Yes [] No []

(18). Do you have Watsan Committee in your community? Yes [] No []

(19). If yes, is the committee active? Yes [] No []

(20). Do you know of any disease or hazards associated with drinking of unsafe water?
State 2:

HAND WASHING PRACTICES

(21) Do you wash your hands with water and soap (or other cleaning agent) before preparing food? Always [] Sometimes [] Never []

(22) Do you wash your hands with water and soap (or other cleaning agent) before eating?
Always [] Sometimes [] Never []

(23) Do you wash your hands with water and soap (or other cleaning agent) after use of toilet?
Always [] Sometimes [] Never []

(24) Do you wash your hands with water and soap (or other cleaning agent) after helping/cleaning children after defecation? Always [] Sometimes [] Never []

WASTE WATER

(25). Do you have a functioning Soak away pit to receive your waste water? Yes [] No []

(26). If "No" where does your waste water flow?
State:

(27). Do you know of any place where water stagnates to breed mosquitoes? Yes [] No []

(28). Do you know of any disease or hazards associated with poor waste water disposal?
State 2:

HEALTH INFORMATION

(29). Are you aware of any predominant disease(s) in your community? Yes [] No []

(30). If Yes, kindly state it (them):
.....

(31). What period does/do it/them occur(s):

(32). Do you have Health Facility in your community? Yes [] No []

(33). If "No" where do you treat such disease(s)?

Chemical sellers	[]
Traditional healers	[]
Faith based healers	[]
Other	

GENERAL OBSERVATIONS TO BE MADE BY INTERVIEWERS IN HOUSEHOLDS

- (34). Availability of water and soap/other cleaning agents for hand washing
- conveniently placed in vicinity of private toilet Yes [] No []
 - in kitchen/cooking place Yes [] No []
- (35). Hygienic standard of private latrines
- Clean [] or Faeces on slab []
 - Tidy [] or Used cleaning material littered around []
 - No Flies [] or Flies Present []
 - No Smell [] or Bad smell []
- (36). Storage of water
- Covered [] or Uncovered pots []
 - Clean [] or Dirty pots []
 - Cleaning/filter facility Yes [] No []
- (37). Hygienic standard of kitchen/cooking place
- Clean [] or Unclean []
 - No Flies [] or Flies Present []
 - Animals inside kitchen, near cooking place No [] or Yes []

GENERAL OBSERVATIONS TO BE MADE BY INTERVIEWERS IN COMMUNITY

In all communities with public latrines:

- (38). Hygienic standard of public latrines
- Clean [] or Faeces on slab []
 - Tidy [] or Used cleaning material littered around []
 - No Flies [] or Flies Present []
 - No Smell [] or Bad smell []

Where applicable:

(39). Residential Areas

- | | | |
|-----------------------------|---------|--------|
| - Choked/blocked Drains | Yes [] | No [] |
| - Stray Animals | Yes [] | No [] |
| - Indiscriminate defecation | Yes [] | No [] |
| - Littering | Yes [] | No [] |

(40). Markets

- | | | |
|-----------------------------|---------|--------|
| - Choked/blocked Drains | Yes [] | No [] |
| - Stray Animals | Yes [] | No [] |
| - Indiscriminate defecation | Yes [] | No [] |
| - Littering | Yes [] | No [] |

(41). Transport Terminals/ Lorry Parks

- | | | |
|-----------------------------|---------|--------|
| - Choked/blocked Drains | Yes [] | No [] |
| - Stray Animals | Yes [] | No [] |
| - Indiscriminate defecation | Yes [] | No [] |
| - Littering | Yes [] | No [] |

(42). Schools/Institutions

- | | | |
|-----------------------------|---------|--------|
| - Choked/blocked Drains | Yes [] | No [] |
| - Stray Animals | Yes [] | No [] |
| - Indiscriminate defecation | Yes [] | No [] |
| - Littering | Yes [] | No [] |

(43). Recreational/Open Areas

- | | | |
|-----------------------------|---------|--------|
| - Choked/blocked Drains | Yes [] | No [] |
| - Stray Animals | Yes [] | No [] |
| - Indiscriminate defecation | Yes [] | No [] |
| - Littering | Yes [] | No [] |

(44). Slaughtering Facility

- | | | |
|-----------------------------|---------|--------|
| - Choked/blocked Drains | Yes [] | No [] |
| - Stray Animals | Yes [] | No [] |
| - Indiscriminate defecation | Yes [] | No [] |
| - Littering | Yes [] | No [] |

(45). Chop Bars/Drinking Spots

- | | | |
|-----------------------------|---------|--------|
| - Choked/blocked Drains | Yes [] | No [] |
| - Stray Animals | Yes [] | No [] |
| - Indiscriminate defecation | Yes [] | No [] |
| - Littering | Yes [] | No [] |

INTERVIEW WITH ALTERNATIVE HEALTH PROVIDERS

- (47).What type of service do you provide)? Chemical sellers []
Traditional healers []
Faith based healers []
Other

(48). What common diseases (up to 5) do you handle and how many incidents?

Diseases	Number/month
1.....
2.....
3.....
4.....
5.....

(49) **ANY OTHER COMMENTS or REMARKS**

- Please provide a sketch of the layout of the community indicating main facilities – water source, public latrines, markets, waste dumps, schools, health posts, clinics etc.

TECHNICAL SUPPORT TO CAPACITY BUILDING IN SEA PROCESS FOR WATER AND ENVIRONMENTAL SANITATION POLICIES, PLANS AND PROGRAMMES

Form 4. 13: NOTES FOR COMMUNITY QUESTIONNAIRE FOR HIA

These notes are provided as a guide to facilitate interpretation of the Survey responses when using the Analysis Form and subsequently summarising to the Health Profiling Tool

LIQUID WASTE (FAECAL) DISPOSAL

- (1). Do you have toilet facility in your house? Yes ☐ - Yes for Ownership (Good)
No ☐ - No for Ownership (Not Good)
- (2). If "yes" state the type of toilet facility:
- | | |
|-----------------|---------------------------------|
| W/C | <input type="checkbox"/> - Good |
| KVIP | <input type="checkbox"/> - Good |
| VIP | <input type="checkbox"/> - Good |
| Pit Latrine | <input type="checkbox"/> - Poor |
| Bucket Latrines | <input type="checkbox"/> - Poor |
- (3). If "no" state where you ease yourself:
- | | |
|--------------------|---------------------------------|
| Public W/C | <input type="checkbox"/> - Good |
| Public KVIP | <input type="checkbox"/> - Good |
| Public Pit | <input type="checkbox"/> - Poor |
| Bush | <input type="checkbox"/> - Poor |
| Bare Ground | <input type="checkbox"/> - Poor |
| Chamber Pot | <input type="checkbox"/> - Good |
| Other; state. | |
- (4). Where do your children ease themselves?
- | | |
|--------------------|---------------------------------|
| Public Toilet | <input type="checkbox"/> - Good |
| Bush | <input type="checkbox"/> - Poor |
| Bare Ground | <input type="checkbox"/> - Poor |
| Chamber Pot | <input type="checkbox"/> - Good |
| Other; state. | |
- (5). If Chamber Pot or bare ground state where or how you dispose off faeces.
Safe Disposal if using any of Good facilities above; otherwise **Unsafe**
- (6). Do you know any disease or hazards associated with wrongful disposal of faeces? State 2.
High if 2 correct answers; Otherwise **Low** if 1 or both wrong answers

SOLID WASTE

- (7). Do you have Sanitary Dustbin for storage of refuse? Yes ☐ - Good
No ☐ - Not Good
- (8). What type of refuse do you generate?

As a rule, organic wastes (mainly food wastes) are preferable to inorganic wastes (plastics and similar materials) since the organics decompose and disappear in the environment while the inorganic wastes remain as persistent pollutants and containers for breeding mosquitoes. Trade and commercial wastes maybe organic or inorganic or a mixture – interviewers need to probe deeper to establish the waste types.

- (9). Do you have access to a refuse dump? Yes [] - Good
No [] – Not Good
- (10). State the method of refuse disposal: Crude [] - Unsafe
Burry [] - Safe
Control [] - Safe
Burning [] - Unsafe
- (11). Who disposes off the refuse? Adults [] - Good
Children [] – Not Good
- (12). What do you think about the distance from here to the refuse dump?
Very long > 1 km [] - Poor
Long 0.5~1 km [] - Poor
Short 0.1~0.5 km [] - Good
Just enough up to 100 m [] - Good
- (13). Do you know any disease or hazards associated with poor refuse disposal? State 2
High if 2 correct answers; Otherwise **Low** if 1 or both wrong answers

(14). Where do you fetch drinking water?	River	[] - Unsafe
	Shallow well	[] - Unsafe
	Deep well, safe	[] - Safe
	Deep well, unsafe	[] - Unsafe
	Borehole	[] - Safe
	Pond	[] - Unsafe
(15). Where do you fetch water for other purposes?		
	River	[] - Unsafe
	Shallow well	[] - Unsafe
	Deep well, safe	[] - Safe
	Deep well, unsafe	[] - Unsafe
	Borehole	[] - Safe
	Pond	[] - Unsafe
(16).Is the water quantity adequate?	Yes	[] - Good
	No	[] - Not Good
(17). Is it affordable?	Yes	[] - Good
	No	[] - Not Good

(18). Do you have Watsan Committee in your community? Yes ☐ - Good
No ☐ – Not Good

(19). If yes, is the committee active? Yes ☐ - Good
No ☐ – Not Good

(20). Do you know of any disease or hazards associated with drinking of unsafe water?
State 2.

High if 2 correct answers; Otherwise **Low** if 1 or both wrong answers

HAND WASHING PRACTICES

As a rule, good hygiene requires regular hand washing with water and soap or other cleaning material such as ash. Occasional hand washing is as bad as never washing hands.

(21) Do you wash your hands with water and soap (or other cleaning agent) before preparing food? Always ☐ - Good
Sometimes ☐
Never ☐ - Poor

(22) Do you wash your hands with water and soap (or other cleaning agent) before eating? Always ☐ - Good
Sometimes ☐
Never ☐ - Poor

(23) Do you wash your hands with water and soap (or other cleaning agent) after use of toilet? Always ☐ - Good
Sometimes ☐
Never ☐ - Poor

(24) Do you wash your hands with water and soap (or other cleaning agent) after helping/cleaning children after defecation? Always ☐ - Good
Sometimes ☐
Never ☐ - Poor

WASTE WATER

(25). Do you have a functioning Soak away pit to receive your waste water? Yes ☐ - Good
No ☐ – Not Good

(26). If "No" where does your waste water flow?

With the exception of soak away pits and/or properly constructed community drains, all other open forms of waste water disposal are considered to be unsafe.

(27). Do you know of any place where water stagnates to breed mosquitoes? Yes ☐ – Not Good
No ☐ - Good

(28). Do you know of any disease or hazards associated with poor waste water disposal?
State 2.

High if 2 correct answers; Otherwise **Low** if 1 or both wrong answers

HEALTH INFORMATION

NB. Information from Q29 – 32 are not intended to be evaluated but rather to be used to check and validate Health information provided in DWST Applications

GENERAL OBSERVATIONS TO BE MADE BY INTERVIEWERS IN HOUSEHOLDS

(29). Availability of water and soap/other cleaning agents for hand washing
- conveniently placed in vicinity of private toilet Yes [] – Good No [] – Not Good
- in kitchen/cooking place Yes [] – Good No [] – Not Good

(30). Hygienic standard of private latrines
- Clean [] - Good or Faeces on slab [] - Poor
- Tidy [] - Good or Used cleaning material littered around [] - Poor
- No Flies [] - Good or Flies present [] - Poor
- No Smell [] - Good or Bad Smell [] - Poor

(31). Storage of water
- Covered [] - Safe or Uncovered pots [] - Unsafe
- Clean [] - Safe or Dirty pots [] - Unsafe
- Cleaning/filter Yes [] - Safe or No [] - Unsafe

(32). Hygienic standard of kitchen/cooking place
- Clean [] - Clean or Unclean [] - Unclean
- No Flies [] - Clean or Flies Present [] - Unclean
- Animals in kitchen, No [] – Clean or Yes [] - Unclean
Or near cooking place

GENERAL OBSERVATIONS TO BE MADE BY INTERVIEWERS IN COMMUNITY

In all communities with public latrines:

(33). Hygienic standard of public latrines
- Clean [] - Good or Faeces on slab [] - Poor
- Tidy [] - Good or Used cleaning material littered around [] - Poor
- No Flies [] - Good or Flies present [] - Poor
- No Smell [] - Good or Bad Smell [] - Poor

Regarding Q34 – 37 the existence of any 1 of the 4 conditions stated is regarded as UNCLEAN, As communities must be encouraged to maintain high standards of environmental sanitation.

(34) - Choked/blocked Drains Yes [] No []
(35) - Stray Animals Yes [] No []
(36) - Indiscriminate defecation Yes [] No []
(37) - Littering Yes [] No []

(38) **ANY OTHER COMMENTS or REMARKS**

- Please provide a sketch of the layout of the community indicating main facilities – water source, public latrines, markets, waste dumps, schools, health posts, clinics etc.

NB. Sketches should be simple but informative, providing approximate distances to facilities and water sources etc.

Form 4. 14: ANALYSIS TOOL FOR COMMUNITY ENVIRONMENTAL HEALTH AND SANITATION SURVEY

District:	Community:	Date of Survey:	Sample size:
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B. LIQUID WASTE (FAECAL DISPOSAL) (Q 1 – 6)

Q1 Ownership		Q2 Facility Type		Q3 Adult Alternative		Q4 Child Alternative		Q5 Disposal		Q6 Knowledge	
Yes	No	Good	Poor	Good	Poor	Good	Poor	Safe	Unsafe	High	Low

C. SOLID WASTE (Q 7– 13)

Q7 Ownership		Q8 Waste Type		Q9 Availability		Q10 Refuse Disposal		Q11 Disposer		Q12 Proximity		Q13 Knowledge	
Yes	No	Organic	Inorganic	Yes	No	Safe	Unsafe	Adult	Child	Good	Poor	High	Low

ANALYSIS SHEET FOR COMMUNITY ENVIRONMENTAL HEALTH AND SANITATION SURVEY

C. WATER SUPPLY (Q14 – 20)

Q14 Drinking Source		Q15 Source for other uses		Q16 Adequacy		Q17 Affordability		Q18 WATSAN in Place		Q19 WATSAN Activity		Q20 Knowledge	
Safe	Unsafe	Safe	Unsafe	Yes	No	Yes	No	Yes	No	Yes	No	High	Low

D. HAND WASHING (Q 21 – 24)

Q21 Food Preparation Practice		Q22 Before Eating Practice		Q23 After Toilet Practice		Q24 After Cleaning Children Toilet Practice	
Good	Poor	Good	Poor	Good	Poor	Good	Poor

E. WASTE WATER DISPOSAL

Q25 Ownership		Q26 Discharge		Q27 Breeding sites		Q28 Knowledge	
Yes	No	Good	Poor	No	Yes	High	Low

ANALYSIS SHEET FOR COMMUNITY ENVIRONMENTAL HEALTH AND SANITATION SURVEY

G. HOUSEHOLD HYGIENE PRACTICE (Q 35 – 38)

Q35 Water, Soap/Other cleaning Agent Availability		Q36 Hygiene Standard of Latrines		Q37 Water storage		Q38 Hygiene standard of Kitchen	
Yes	No	Good	Poor	Safe	Unsafe	Clean	Unclean

H. COMMUNITY STANDARD OF CLEANLINESS (Q39 – 46)

Q39 Public Latrines		Q40 Residential Areas		Q41 Market		Q42 Lorry Parks/ Terminals		Q43 Schools/ Institutions		Q44 Recreational Areas		Q45 Slaughtering Facility		Q46 Chop Bars/ Drinking spots	
Clean	Unclean	Clean	Unclean	Clean	Unclean	Clean	Unclean	Clean	Unclean	Clean	Unclean	Clean	Unclean	Clean	Unclean

Form 4. 15: Blank District Sustainability Forms

DISTRICT WATER AND SANITATION PLAN (DSWP) SUSTAINABILITY TEST							
DWSP Component:							
Plan Action Description:							
DWSP Sustainability Objectives						Performance Score	
						0	1
1. NATURAL RESOURCES							
1.1	Minimise deforestation and/or land and soil degradation caused by poor agronomic and other practices						
1.2	Promote conservation and sustainable exploitation of groundwater and surface water resources						
1.3	Prevent pollution of surface waters by untreated wastewater effluents and disposal of faecal waste						
1.4	Prevent flooding and mitigate effects of <i>stormwater</i> discharge						
1.5	Maintain biodiversity, protect endangered species of fauna and flora, and of natural character of surface waters						
1.6	Promote safe disposal and reduction, re-use, recovery and recycling of wastes						
1.7	Minimise noise, smell and other nuisances from W&S activities						
2. SOCIAL, CULTURAL AND HEALTH CONDITIONS							
2.1	Enhance access for ALL to water in sufficient quantity and quality for basic needs						
2.2	Enhance access for ALL to environmental sanitation services						
2.3	Eliminate conditions for development and transmission of water-related diseases/health risks incl. pro-active measures such as good hygiene						
2.4	Promote equitable distribution of (WES plan) related benefits						
2.5	Ensure gender mainstreaming with emphasis on women's participation at all levels						
2.6	Promote knowledge, awareness and practices for attitudinal change						
2.7	Ensure minimisation of potential for conflicts in siting of WES facilities including final disposal facilities (NIMBY)						
2.8	Enhance education in health, hygiene and environmental protection, incl. information and participation (including NGOs, CBOs, CSOs, FBOs)						
2.9	Ensure consideration of diversity (religious and cultural) at all levels						
3. ECONOMY							
3.1	Promote growth of local economy - investments, job creation and alternative livelihoods						
3.2	Support innovation and implementation of cleaner and efficient technologies						
3.3	Ensure cost-recovery for sustaining provision of services						
3.4	Ensure reuse and recycling of waste to support agriculture and other businesses						
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES							
4.1	Promote good governance and support principles of democracy, respect for human rights, transparency and accountability						
4.2	Improve dissemination and acceptance of district plans and actions						
4.3	Enhance private sector participation and protection of investments						
4.4	Support polluter-pays principle						
4.5	Support cross-sectoral institutional collaboration and coordination within clearly defined roles and mandates						
4.6	Enhance institutional strengthening and capacity building						
4.7	Support improvement of data base for future planning and implementation of actions						

Form 4. 16: Environmental Profiling Form for District Water and Sanitation Planning

District:	Size (km²):	Population:	Water supply coverage (%):	Sanitation coverage (%):
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Environmental Category	Typical issues within the category	Assessment of situation			Remarks
		good	fair	poor	
1. Watershed conservation	Deforestation, water intensive agriculture, soil degradation and erosion				
2. Water resources	Availability of groundwater and surface resources, aquifer recharge capacity				
3. Water quality / pollution	Quality of groundwater resources, pollution of surface waters				
4. Flooding / physical impacts	Frequency/extent of flooding, retention of natural character of surface waters				
5. Waste pollution	Availability of safe waste disposal sites, uncontrolled and unsafe waste disposal				
6. Ecology / biodiversity	Eutrofication of water bodies, wildlife access to water and habitats				
7. Appearance / nuisance (latrines and waste disposal)	Location relative to human dwellings, smell, noise, vermin and other nuisance				
Field Survey Info	District WES Planning Category	Assessment of condition			Remarks
		good	fair	poor	
No. of surveys performed : Survey period:	A. Watershed Management (A.1-3)				
	B. Water supply (B.1-5)				
	C. Wastewater (sullage) disposal (C.1-4)				
Assessment team members:	D. Faecal waste disposal (D.1-3)				
	E. Drainage / stormwater (E.1-3)				
	F. Solid waste disposal (F.1-4)				

Form 4. 17: Form for Combined Aggregation of Lower Level Environmental Profiling Data for DWES Planning

District:	Size (km²):	Population:	Water supply cov. (%):	Sanitation cov. (%):
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	Environmental category	Area Council 1	Area Council 2						Aggregated for district
1.	Watershed conservation								
2.	Water resources								
3.	Water quality / pollution								
4.	Flooding / physical impacts								
5.	Waste pollution								
6.	Ecology / biodiversity								
7.	Appearance / nuisance (latrines and waste disposal)								

	DWS Planning Category								Aggregated for district
A.	Watershed Management								
B.	Water supply								
C.	Wastewater (sullage) disposal								
D.	Faecal waste disposal								
E.	Drainage / stormwater								
F.	Solid waste disposal								

District or Area Council:

Environmental Category	Question / Observation	Lower level assessment of situation			Aggregated assessment
		Green	Yellow	Red	
1.	Watershed conservation				
	How big a part of the district/area is covered by forest or similar (semi)permanent vegetation?				
	Does clearing of forest for preparation of new agricultural land or for other development purposes take place in the area?				
	Do agricultural lands, in particular in hilly terrain, bear sign of erosion and surface runoff into rivers and streams?				
2.	Water resources				
	Are the yields of boreholes and/or wells in the surveyed area satisfactory/sufficient?				
	How is the recharge capacity of aquifers compared to the need for water?				
	Are surface water resources limited / does drying up of streams etc. occur frequently?				
3.	Water quality / pollution				
	Does the water from groundwater wells or boreholes taste or smell bad?				
	Does surface water used for drinking or other domestic purposes taste or smell bad, or have an unpleasant visual appearance?				
	Does direct discharge of faecal wastes and/or overflows from latrines into water bodies occur?				
	Does discharge of untreated wastewater directly into surface waters take place?				
4.	Flooding / physical impacts				
	Does flooding occur as a result of choked or otherwise poorly maintained drains?				
	Does discharge of urban and road stormwater runoff cause the diversion capacity in receiving streams to be exceeded?				
	To what extent are dwellings and/or other buildings or facilities located or being erected in flood-prone areas?				
5.	Waste pollution				
	Does disposal of solid waste take place in or along rivers where it can be washed into rivers by stormwater runoff?				
	Is the generated solid waste disposed at safe locations (in relation to protection of ground water resources)?				
	Is disposal of non-degradable wastes (plastic, scrap metal, glass, cardboard etc.) in the environment common?				
6.	Ecology / biodiversity				
	Are the streams (and other water bodies) in the area turbid (due to pollution)?				
	Do the water bodies sustain a varied aquatic life (vegetation and fauna including fish)?				
	Are banks/shores of water bodies freely accessible and of a quality (ie. with vegetation) rendering them attractive to wildlife?				
7.	Appearance / nuisance (latrines, waste disp.)				
	To what extent are latrines and waste disposal sites located to minimise nuisances?				
	To what extent are latrines and waste disposal sites designed to minimise nuisances?				
	Are latrines etc. and waste disposal sites properly maintained?				

Form 4. 19: Form for Aggregated Assessment of WES in Communities or Areas

District or Area Council:					
No.	Object	Lower level assessment			Aggregated assessment
		green	yellow	Red	
A.	WATERSHED MANAGEMENT				
A.1	Conservation of forests and other natural vegetation				
A.2	Erosion/surface runoff in relation to the open (non-urban) land				
A.3	Waste disposal in groundwater resource areas				
A.4	Polluting (industrial) activities in water resource areas				
B.	WATER SUPPLY				
B.1	Supply relative to the needs				
B.2	Stability of yield from HDW/BH				
B.3	Stability of supply from surface sources				
B.4	Quality of groundwater				
B.5	Quality of surface water				
C.	WASTEWATER DISPOSAL				
C.1	Treatment prior to disposal				
C.2	Discharge into surface waters				
C.3	Soak-away / infiltration				
C.4	Use for irrigation				
D.	FAECAL WASTE DISPOSAL				
D.1	Location of latrines near rivers				
D.2	Frequency of overflow episodes from latrines				
D.3	Other faecal pollution of rivers				
E.	DRAINAGE / STORMWATER				
E.1	Degree of urban drainage				
E.2	Maintenance of urban drains				
E.3	Measures against flooding				
F.	SOLID WASTE DISPOSAL				
F.1	Facilities for safe waste disposal				
F.2	Solid waste collection				
F.3	Level of uncontrolled waste disposal				
F.4	Re-cycling of waste fractions				

Form 4. 20: **Form for Assessment of Existing Environmental Situation in a Community**
 Questionnaire for Environmental Profiling for District Water and Environmental Sanitation
 Planning

Environmental Category		Question / Observation	Assessment of situation		
			Green	Yellow	Red
1.	Watershed conservation	How big a part of the district/area is covered by forest or similar (semi)permanent vegetation?	more than 50%	20-50%	Less than 20%
		Does clearing of forest for preparation of new agricultural land or for other development purposes take place in the area?	only few places	here and there	Wide-spread
		Do agricultural lands, in particular in hilly terrain, bear sign of erosion and surface runoff into rivers and streams?	no or only few places	in some places	Wide-spread
2.	Water resources	Are the yields of boreholes and/or wells in the surveyed area satisfactory/sufficient?	yes	almost / uncertain	No
		How is the recharge capacity of aquifers compared to the need for water?	ample / sufficient	somewhat lower	Low
		Are surface water resources limited / does drying up of streams etc. occur frequently?	no	slightly / uncertain	Yes
3.	Water quality / pollution	Does the water from groundwater wells or boreholes taste or smell bad?	no	slightly	Yes
		Does surface water used for drinking or other domestic purposes taste or smell bad, or have an unpleasant visual appearance?	no	slightly	Yes
		Does direct discharge of faecal wastes and/or overflows from latrines into water bodies occur?	never / rarely	in some places	Often
		Does discharge of untreated wastewater directly into surface waters take place?	only few places	in some places	always / normally
4.	Flooding / physical impacts	Does flooding occur as a result of choked or otherwise poorly maintained drains?	rarely	from time to time	Often
		Does discharge of urban and road stormwater runoff cause the diversion capacity in receiving streams to be exceeded?	rarely	occasionally	Often
		To what extent are dwellings and/or other buildings or facilities located or being erected in flood-prone areas?	no / very little	to some extent	Many places
5.	Waste pollution	Does disposal of solid waste take place in or along rivers where it can be washed into rivers by stormwater runoff?	no	few places	Yes
		Is the generated solid waste disposed at safe locations (in relation to protection of ground water resources)?	yes / in general	Some of it (less than half)	no / only to minor extent
		Is disposal of non-degradable wastes (plastic, scrap metal, glass, cardboard etc.) in the environment common?	no or only few places	occurs to some extent	Yes
6.	Ecology / biodiversity	Are the streams (and other water bodies) in the area turbid (due to pollution)?	no or little	Somewhat	Very
		Do the water bodies sustain a varied aquatic life (vegetation and fauna including fish)?	yes / in general	in some places	no / only few places
		Are banks/shores of water bodies freely accessible and of a quality (ie. with vegetation) rendering them attractive to wildlife?	yes	in some places	no or limited
7.	Appearance / nuisance (latrines and waste disposal)	To what extent are latrines and waste disposal sites located to minimise nuisances?	always / in most cases	here and there	never / rarely
		To what extent are latrines and waste disposal sites designed to minimise nuisances?	always / in most cases	some places	never / rarely
		Are latrines etc. and waste disposal sites properly maintained?	Yes or in most cases	some places	no or rarely

Environmental Profiling for District Water and Environmental Sanitation Plans
Explanatory Notes for Form 4.20 - Supporting Form for Assessment of Existing Environmental Situation

Environmental Category		Question / Observation	Assessment of situation		
			Green	Yellow	Red
1.	Watershed conservation	How big a part of the district/area is covered by forest or similar (semi)permanent vegetation?	more than 50%	20-50%	Less than 20%
		Does clearing of forest for preparation of new agricultural land or for other development purposes take place in the area?	only few places	here and there	Wide-spread
		Do agricultural lands, in particular in hilly terrain, bear sign of erosion and surface runoff into rivers and streams?	no or only few places	in some places	Wide-spread

Comments to (1): "Watershed conservation"

The conservation of water resources within a watershed may well (typically) be an issue that goes beyond the boundaries of a district and which should then rather be assessed in a river basin perspective. Therefore, there is a risk that, even if the situation within the district with regard to coverage by forests etc. is assessed to be acceptable, the conditions in neighbouring districts can negatively affect the available water resources. Still, a protective policy and good conditions within the district will help maintaining the resources.

A forest or similar vegetation with good surface coverage have several functions in the conservation of water: it attracts precipitation and decreases evaporation, it reduces the risk of erosion and mere runoff of water, and it occupies land thus rendering it unavailable to polluting activities. Larger forest areas will usually be more beneficial than several small areas that in total occupy the same surface area. The hillier a terrain is the more important is it to maintain a good vegetation cover. The assessment of the conditions of a watershed must integrate local characteristics such as density and distribution of population, intensity and pattern of cultivation, other land uses affecting the natural vegetation cover, soil types and geology etc.

Environmental Category		Question / Observation	Assessment of situation		
2.	Water resources	Are the yields of boreholes and/or wells in the surveyed area sufficient?	yes	almost / uncertain	No
		How is the recharge capacity of aquifers compared to the need for water?	ample / sufficient	somewhat lower	Low
		Are surface water resources limited / does drying up of streams etc. occur frequently?	no	slightly / uncertain	Yes

Comments to (2): "Water resources"

The conservation and sustainable utilisation of water resources are obviously closely linked to watershed protection. A more precise determination of whether a given aquifer or other water resource is being exploited beyond its recharge capacity requires specialist knowledge and often long term studies and monitoring to provide the necessary data for an assessment. Thus, the answers to the above questions can only be considered to be indicative of the sustainability of the present water utilisation unless results of real hydro-geological surveys to determine the recharge capacity are available.

A further complicating factor is that the situation, especially what surface waters are concerned, will differ from season to season and from year to year depending on the climatic conditions including the precipitation pattern. Therefore, possible trends in the yields of wells or the flow the streams can only be revealed if observations (including qualitative, local observations) covering at least 3 hydrological cycles are available.

Environmental Category		Question / Observation	Assessment of situation		
3.	Water quality / pollution	Does the water from groundwater wells or boreholes taste or smell bad?	no	slightly	Yes
		Does surface water used for drinking or other domestic purposes taste or smell bad, or have an unpleasant visual appearance?	no	slightly	Yes
		Does direct discharge of faecal wastes and/or overflows from latrines into water bodies occur?	never / rarely	in some places	Often
		Does discharge of untreated wastewater directly into surface waters take place?	only few places	in some places	Always / normally

Comments to (3): "Water quality / pollution"

With regard to the taste, smell or appearance of groundwater or surface waters, the use of actual (chemical) data from studies or monitoring should be favoured, if they are available. In the absence of specific data the more qualitative approach of using simple observations of smell and taste can be useful to assess the current situation but hardly to detect any trends in the situation.

The overall situation can be regarded as bad if the quality of groundwater and surface water is already bad, or if it is assessed that the disposal of (untreated) wastewater and faecal waste into surface waters occurs so extensively that it is just a matter of time before the quality is affected in significant parts of the system. Even if the discharge points cannot be observed directly it will usually be possible to reveal such discharges by the colour or turbidity of the water body (avoid observations immediately after rain where turbidity due to suspended natural mineral particles (clay, silt) may disturb the assessment).

Environmental Category		Question / Observation	Assessment of situation		
4.	Flooding / physical impacts	Does flooding occur as a result of choked or otherwise poorly maintained drains?	rarely	from time to time	Often
		Does discharge of urban and road stormwater runoff cause the diversion capacity in receiving streams to be exceeded?	rarely	occasionally	Often
		To what extent are dwellings and/or other buildings or facilities located or being erected in flood-prone areas?	no / very little	to some extent	Many places

Comments to (4): "Flooding / physical impacts"

There are two main environmental aspects of flooding:

(1) the local flooding of urban areas resulting from poor or badly maintained drainage systems and affecting the population by creating unhygienic conditions that can cause sickness and diseases.

(2) the downstream flooding occurring because the diversion capacity of the water course in question is exceeded. This can be a natural phenomenon occurring from time to time, but it is in

many places aggravated as a result of physical alterations of the natural physical features of the course of a stream or because the natural runoff is increased by discharge of stormwater from urbanised areas and roads.

While straightening of water courses, paving of the banks or construction of embankments increase the diversion capacity locally and thereby help relieving flooding of low-lying quarters, the "bill" will often be paid further downstream where the increased volumes of water (arriving much faster than previously) cannot be contained in the river bed thus resulting in more severe flooding of and damages to unprotected areas.

Environmental Category		Question / Observation	Assessment of situation		
5.	Waste pollution	Does disposal of solid waste take place in or along rivers where it can be washed into rivers by stormwater runoff?	no	few places	Yes
		Is the generated solid waste disposed at safe locations (in relation to protection of ground water resources)?	yes / in general	some of it (less than half)	no / only to minor extent
		Is disposal of non-degradable wastes (plastic, scrap metal, glass, cardboard etc.) in the environment common?	no or only few places	occurs to some extent	Yes

Comments to (5): "Waste pollution"

The environmental assessment of solid waste should in this context focus on the risks to quality of ground water resources or surface waters caused by improper/unauthorised disposal or disposal at locations that are not safe in relation to water resource protection. Depending on the physical character of the waste (solid or liquid) and its components (inert or reactive; natural or chemical) the impact can be purely physical or aesthetical, or it can directly contribute to deterioration of the water quality (by being toxic or cause eutrofication). The conditions may vary significantly within a district and there is no easy answer as to when the overall assessment should be "fair" or "poor" as it can be difficult to determine to what extent a poor water quality in a stream is due to wastewater discharges or to waste disposal (though the former is normally most likely).

Environmental Category		Question / Observation	Assessment of situation		
6.	Ecology / biodiversity	Are the streams (and other water bodies) in the area turbid (due to pollution)?	no or little	Somewhat	Very
		Do the water bodies sustain a varied aquatic life (vegetation and fauna including fish)	yes / in general	in some places	no / only few places
		Are banks/shores of water bodies freely accessible and of a quality (ie. with vegetation) rendering them attractive to wildlife?	yes	in some places	no or limited

Comments to (6): "Ecology / biodiversity"

The environmental state with regard to ecology/biodiversity, fauna and flora should ideally be assessed through monitoring and determination of biodiversity indices or determination of trends in the numbers or frequency of key species, including red list species of aquatic organisms including water-dependant wildlife. However, in case the necessary expertise or resources for that is not available more simple observations should be made that can at least give an indication of the ability of a water body and nearest surroundings to sustain good ecological conditions.

Streams, lakes and wetlands in which the water is always/normally turbid, i.e. due to other reasons than the occurrence of natural suspended particles following rainfall (clay, silt, fine organic material), will generally have a poorer aquatic life than others, and the living conditions for water-dependant species of birds and wildlife will additionally depend on both the physical features of the banks or shores and the biological quality of these in terms of vegetation that can serve as hiding places or even habitats.

Environmental Category		Question / Observation	Assessment of situation		
7.	Appearance / nuisance (latrines and waste disposal)	To what extent are latrines and waste disposal sites located to minimise nuisances?	always / in most cases	here and there	never / rarely
		To what extent are latrines and waste disposal sites designed to minimise nuisances?	always / in most cases	some places	never / rarely
		Are latrines etc. and waste disposal sites properly maintained?	Yes or in most cases	some places	no or rarely

Comments to (7): "Appearance / nuisance"

Nuisance from latrines etc. and sites/facilities for disposal of waste include the aesthetic aspect as well as more tangible impacts such as unpleasant smell, noise and attraction of vermin. Such nuisance can be caused either by inadequate location of such facilities or installations, by improper design or by insufficient or unqualified operation and maintenance.

Environmental Profiling for District Water and Sanitation Plans

No.	Object	Assessment			Remarks
		good	fair	poor	
A.	WATERSHED MANAGEMENT				
A.1	Conservation of forests and other natural vegetation				
A.2	Erosion/surface runoff in relation to cultivation of land				
A.3	Waste disposal in groundwater resource areas				
A.4	Polluting (industrial) activities in water resource areas				
B.	WATER SUPPLY				
B.1	Supply relative to the needs				
B.2	Stability of yield from HDW/BH				
B.3	Stability of supply from surface sources				
B.4	Quality of groundwater				
B.5	Quality of surface water				
C.	WASTEWATER DISPOSAL				
C.1	Treatment prior to disposal				
C.2	Discharge into surface waters				
C.3	Soak away / infiltration				
C.4	Use for irrigation				
D.	FAECAL WASTE DISPOSAL				
D.1	Location of latrines near rivers				
D.2	Frequency of overflow episodes from latrines				
D.3	Other faecal pollution of rivers				
E.	DRAINAGE / STORMWATER				
E.1	Degree of urban drainage				
E.2	Maintenance of urban drains				
E.3	Severity of flooding episodes				
F.	SOLID WASTE DISPOSAL				
F.1	Facilities for safe waste disposal				
F.2	Solid waste collection				
F.3	Level of uncontrolled waste disposal				
F.4	Re-cycling of waste fractions				

Environmental Profiling for District WES Planning

Annotated Supporting Form for Assessment of Status of WES Planning Objects

Introduction

This complementary document to the "Supporting Form for Assessment of Status of WES Planning Objects" developed to support the Environmental Profiling Form (EPF), is intended as a help to fill in the Form, and subsequently the EPF, by providing further details on the questions to be asked or observations to be made to assess the current situation within six categories of planning and action related to water resources and supply, environmental sanitation and solid waste. Simple categories of answers are provided, which, when combining the answers within a certain category, give an indication of what should be considered a "good", a "fair" and a "poor" situation.

However, the document is not an "answer list" providing an unambiguous key to the classification of the situation within this complex field - it merely presents a systematic approach and give some guidance, which must be supplemented by a sound judgement by the assessor(s) in the district, based on his/hers expertise and local experience. Observations/answers that often do not all point in the same direction must be weighed against each other and specific knowledge of local characteristics and conditions (and trends), that cannot be accommodated in a generic type of document as this, must be utilised and incorporated in the assessment.

For each of the six main categories in the EP Form (A-F) that relate to sustainable planning of Water and Environmental Sanitation at district level, a number of issues are addressed that together should provide the basis for assessment of the existing conditions.

No.	Observation theme	Question	Answer	
A.	WATERSHED MANAGEMENT			
A.1	Conservation of forests and other natural vegetation	Does afforestation or planting of other (semi-) permanent vegetation take place in the district?	Widespread Limited No / rarely	[] [] []
A.2	Erosion/surface runoff in relation to the open (non-urban) land	Is the district characterised by hilly terrain?	Yes No	[] []
		Is soil erosion (outside urbanised areas) a widespread phenomenon?	Yes No	[] []
		Are actions to counteract/minimise soil erosion implemented?	Yes No	[] []
A.3	Waste disposal in groundwater resource areas	To what extent are landfills/dump sites placed over or just upstream of important groundwater resources?	Yes Some places Never/rarely	[] [] []
A.4	Polluting (industrial) activities in water resource areas	Are there industries located in water resource areas that typically discharge or spill polluted water or liquid wastes?	Many Few None	[] [] []

Additional comments to "A":

Though watershed management is probably normally outside the scope of district WES planning it is definitely an issue that must be considered in relation to the provision of water to the population in the district to ensure sustainability. The magnitude of the water resources relative to the demand must be assessed and measures to preserve the resources introduced. Forests or other permanent vegetation with good surface cover are very important for the conservation of

water resources, while avoidance of polluting activities including unsafe waste disposal in important water resource areas is crucial for maintaining acceptable water quality.

B.	WATER SUPPLY			
B.1	Supply relative to the needs	How big are the present resources estimated to be relative to the needs projected for the district WES plan period?	100% Over 50% Under 50%	[] [] []
B.2	Stability of yield from HDW/BH	Do groundwater resources (HDWs and BHs) supply the expected volume of water and in a stable way?	Yes Most do Often not	[] [] []
B.3	Stability of supply from surface sources	Are the surface water resources assessed to be ample and stable in the plan period?	Yes Largely Hardly	[] [] []
B.4	Quality of groundwater	Do the groundwater resources in the area meet the standards for drinking water?	Yes Generally Often not	[] [] []
B.5	Quality of surface water	Do the surface water resources in the area meet the standards for drinking water?	Yes Generally Often not	[] [] []

Additional comments to "B":

The larger the discrepancy between existing or projected needs and estimated resources (and recharge capacity) is, the less sustainable is the water supply situation. If the resources have not been assessed by hydro-geological experts an indication of the balance, or imbalance, between inputs and outputs can be gained from observations over time of the yields and stability in the supply from various sources (groundwater wells and surface water). Also increasing deterioration of water quality can be an indication of over-exploitation if it is caused by undesired, but natural constituents of the underground such as sodium chloride (salt intrusion) or fluoride. The importance of monitoring trends in quantities and quality for this assessment is emphasised.

C.	WASTEWATER DISPOSAL			
C.1	Treatment prior to disposal*	How much of the wastewater is treated prior to discharge or other method of disposal?	Majority Some None / little	[] [] []
C.2	Discharge into surface waters*	How much of the wastewater is discharged into water bodies at controlled locations reflecting the needs of other water users?	Majority Some None / little	[] [] []
C.3	Soak-away / infiltration*	Does soak-away/infiltration of wastewater take place in consideration of the needs of other water users?	Generally Some times No / rarely	[] [] []
C.4	Use for irrigation*	Does re-use of wastewater for irrigation of crops take place in consideration of risk of contamination?	Generally Some times No / rarely	[] [] []

* The overall assessment of "C" should reflect the relative importance of the different disposal methods

Additional comments to "C":

The safest way to avoid risk of water contamination is to treat the wastewater prior to disposal. Simple mechanical treatment is better than nothing but a combination with biological treatment is preferable. Even soak-away/infiltration or irrigation can be fully acceptable disposal methods if

applied in the right way i.e. in respect of the needs of other present or future users. Direct discharge of untreated wastewater should be avoided and at least only take place at a safe distance from other users, soak-away/infiltration should not be applied where groundwater is being exploited nearby, and irrigation (using untreated wastewater) should only be applied to crops that are not directly intended for human or animal consumption.

D.	FAECAL WASTE DISPOSAL			
D.1	Location of latrines near rivers and streams	Is the risk of surface water contamination taken into consideration when deciding on locations for new latrines?	Generally Some times No / rarely	[] [] []
D.2	Frequency of overflow episodes from latrines	Does overflow from latrines occur that lead to pollution of surface waters?	Frequently Some times No / rarely	[] [] []
D.3	Other faecal pollution of rivers	Does "uncontrolled defecation" take place directly into or right next to surface waters?	Widespread Some times No / rarely	[] [] []

Additional comments to "D":

Outflows from latrines and similar installations will, if they reach surface waters (rivers, streams, lakes and wetlands), contribute not only to general deterioration of surface water quality entailing impoverishment of the natural ecological features but also pose a direct risk of transmission of infections and other diseases caused by pathogenic micro-organisms to local users of surface water. The more direct and the more frequent such releases are, the higher is the risk to the population.

E,	DRAINAGE / STORMWATER			
E.1	Degree of urban drainage	Are the urbanised parts of the district provided with drainage systems?	All /most Some areas None / few	[] [] []
E.2	Maintenance of urban drains	Are urban drainage systems being maintained to avoid blocking/plugging?	Generally Some places No / rarely	[] [] []
E.3	Measures against flooding	Are measures being taken/implemented in order to protect dwellings and low-lying areas against flooding by stormwater?	Yes/normally In some cases No /rarely	[] [] []

Additional comments to "E":

Drainage of urban areas is essential to avoid flooding of low-lying quarters during and following heavy rains. Often drains are constructed as open canals or trenches rendering them susceptible to blocking by garbage, litter, leaves etc. and thus not fulfilling their mission. Flooding of urban quarters creates unhygienic conditions that can lead to increase in sickness and diseases.

On the other hand, as the urbanised areas increase in size and still larger fractions of the ground surface become covered by roofs, paved streets and other impervious surfaces, the volumes of stormwater that must be rapidly diverted increase correspondingly. Eventually, the volume may exceed the diversion capacity of the receiving natural transport channels (rivers and streams) and cause, potentially very dramatic, flooding further downstream. Further, stormwater discharge episodes may lead to significant erosion of stream/river banks.

Examples of actions addressing environmental sustainability objectives

Environmental Sustainability Objective		Way forward	Action (example)
1.1	Minimisation of deforestation and/or land and soil degradation caused by poor agronomic practices	Stop deforestation, increase proportion of land area with forest cover	- ban logging at critical sites and ensure re-planting where logging must take place
		Change agronomic practices that lead to erosion and increased surface runoff	- increase environmental awareness among farmers and train them in better practices
		Minimise inappropriate (non-agricultural) seizure and destruction of areas with natural vegetation	- avoid removal of natural vegetation where not necessary and initiate re-planting in critical areas
1.2	Conservation and sustainable exploitation of groundwater and surface water resources	Avoid exploitation of groundwater resources beyond their recharge capacity	- establish new boreholes or intakes at suitable locations - reduce per capita consumption - investigate alternative water sources e.g. surface water or rain-harvesting - stop deforestation and bad agronomic practices leading to erosion etc.
		Avoid exploitation of surface water resources beyond capacity (think also of downstream users)	- see relevant actions above
		Prevent impairment of potable water quality (surface or groundwater)	- consider whether quality problem is due to natural constituents (e.g. salt or iron) and, hence, probably a result of over-exploitation (see actions above), or - the impairment is caused by pollutants in which case the cause of pollution should be removed, if possible. If not, an alternative source must be found
1.3	Prevention of pollution of surface waters by untreated wastewater effluents and/or disposal of faecal and solid waste	Do not establish water supply without due consideration of how to handle the associated wastewater	- establish safe collection systems where water supply is established in sensitive areas - establish treatment plants for handling of wastewater / sewage transported in piped systems
		Consider how and where solid waste can be disposed of safely	- remove solid waste from critical places and prevent new disposal. - provide safe locations for disposal of waste.
		Improve on capacity and maintenance of latrines	- increase capacity and ensure proper maintenance (regular emptying and transport schemes for safe treatment/final disposal))
		Ensure appropriate location of latrines	- move such latrines to safer locations where outflow cannot contaminate water bodies
		Prevent direct discharges of untreated liquid faecal wastes into water bodies	- implement proper collection, treatment and disposal of such wastes

Environmental Sustainability Objective		Way forward	Action (example)
1.4	Prevention of flooding and mitigation of effects of stormwater discharge	Maintain drains and protect them against impairment (blockage) by solid wastes	<ul style="list-style-type: none"> - inspect and clean drains with regular intervals - provide drains with cover to prevent waste blockage
		Consider runoff volume relative to the capacity of receiving water environment	<ul style="list-style-type: none"> - provide more capacity by identifying areas which can serve to relieve pressure in critical situations
		Appropriate regulation of streams and rivers (and only when needed)	<ul style="list-style-type: none"> - restore meandering and remove embankments/dikes etc. , where possible
1.5	Maintenance of biodiversity, protection of endangered species of fauna and flora, and of natural character of surface waters	Avoid overexploitation of surface waters (causing them to dry out)	<ul style="list-style-type: none"> - see measures under 1.2
		Reduce pollution of surface waters (typically by organic matter and nutrients)	<ul style="list-style-type: none"> - eliminate or reduce discharges or runoff of untreated liquid faecal wastes and/or wastewater (sullage)
		Improve water dependant species' access to natural surface waters including banks/shores with natural appearance	<ul style="list-style-type: none"> - provide access by removing fences, illegal constructions etc. - do not permit paving, construction or cultivation of land too close to surface waters
		Improve or restore natural character of streams, rivers and wetlands	<ul style="list-style-type: none"> - stop straightening, channelling and pipelining of streams/rivers where justification is weak or where other possibilities exist
		Avoid construction of houses and other structures along river banks/into rivers	<ul style="list-style-type: none"> - remove illegal constructions, do not allow new constructions in the future and enforce the decision
		Ensure appropriate waste disposal	<ul style="list-style-type: none"> - remove solid waste on the banks of surface waters including wetlands and prevent new disposal of waste
1.6	Promotion of safe disposal, reduction, re-use, recovery and recycling of wastes	Ensure that the treatment and/or disposal capacity balances the volume of waste generated	<ul style="list-style-type: none"> - support re-cycling etc. and/or increase capacity of safe disposal sites.
		Avoid risk of pollution of (ground)water resources by solid waste	<ul style="list-style-type: none"> - find safer location of waste disposal site (landfill) - construct safe disposal facilities i.e. ensure proper lining and collection of leachate etc.
		Avoid pollution and unpleasant appearance of our surroundings due to non-degradable waste components	<ul style="list-style-type: none"> - support re-cycling etc. of plastic, scrap metal, bottles and other glass, cardboard etc. - remove existing waste in the environment
1.7	Minimisation of noise, smell and other nuisances from WES activities	Consider carefully where to locate latrines and solid waste disposal sites	<ul style="list-style-type: none"> - locate such activities away from the dwellings of people, if possible - ensure that the design of the facilities supports minimisation of such nuisances

SECTION 5

TOOLS FOR MONITORING AND EVALUATION

ABOUT THESE TOOLS

The tools are:

- M&E Planning Tool (District Level);
- M&E Tool (for health impacts and DWES plans);
- M&E Report Sheet.
- Sustainability indicators for M&E (DWES plans)

An important aspect of development planning is to assess whether plans and programs achieve their stated objectives.

The M&E tools were prepared to assist EHAs, EHOs, and DPCUs to plan for M&E exercises, to monitor and evaluate health improvements at the community level, and to develop appropriate recommendations, based on the M&E exercise. The tools are intended to help that district-level water-and-sanitation plans achieve their health-improvement objectives. Planned interventions can be adjusted and refined based on the field results. The M&E process will evolve and be improved over time, as data is generated.

The *Sustainability Indicator* tool provides a selection of indicators that are intended to be used in monitoring and evaluating DWESPs. The indicators are just a guide and specific ones should be developed for specific districts.

These tools supplement and complement other district or national-level M&E systems by providing district/community-specific, disaggregated data that more precisely measure the conditions on the ground.

WHAT IS THE M&E PLANNING TOOL?

The M&E Planning tool is essentially a checklist of items for the districts to consider before setting up a M&E program at community level related to water and environmental sanitation. To use the tool, each of eight (8) items is discussed with decision makers, other stakeholders, and M&E personnel to obtain a consensus on how to proceed.

WHAT IS THE M&E TOOL?

The M&E tool is a simple tool that can be used to monitor / evaluate health improvements during and after plan implementation. The tool is based on the Health Profile Form (see Section 4). The purpose is to compile in a 1-page format the progress (or lack thereof) towards improved health, usually with respect to a planned community-level water-and-sanitation intervention. There are two steps in using the M&E tool:

- Complete the M&E tool using available data and field data;
- Compare the M&E results to result(s) from previous visit(s) to highlight changes since the last visit.

WHAT IS THE M&E REPORT SHEET?

The M&E Report Sheet is a simple tool to document and present the results of the M&E exercise. The tool is based on the *Health Profile, Record and Planning Sheet* (see Section 4). Its purpose is to make recommendations to decisions makers for how to improve health during or post plan intervention. It uses a 1-page format to summarize recommendations and attaches an up-to-date community map.

The different steps for each tool are described below.

THE M&E PLANNING TOOL (*District Level*)

For the purpose of this discussion, monitoring and evaluation will be defined as follows:

Monitoring: is an ongoing process of observation and verification of progress towards set objectives.

Evaluation: is a process which is usually carried out at prescribed intervals to examine the changes and factors influencing them and tends to be more detailed than monitoring.

As mentioned above, the M&E Planning Tool is essentially a checklist of the eight (8) items below, for the districts to consider before setting up a M&E program for community-level health interventions / improvements. This tool helps ensure through discussion that all parties have a similar understanding regarding:

- The purpose of the M&E exercise;
- The resources needed;
- The need to make appropriate preparations;
- Who will conduct the M&E;
- Who will own the results;
- Who will receive the report;
- The indicators;
- The strategy.

Each of the above items is discussed below.

Outline the purpose of the monitoring and evaluation (M&E) exercise

Monitoring and evaluation are management tools. The purpose of a M&E exercise can vary, but usually includes some (or all) of the following:

- Show/summarize the 'conditions' at a point in time;
- Ensure that plans or interventions yield the desired result(s);
- Verify that the infrastructure or education provided are being applied correctly;
- Assess the effectiveness of the policies, programs, or plans;
- Improve results;
- Resolve problems, as they arise;
- Analyze trends and recommend changes, as needed;
- Introduce new measures when those applied are not sufficient.

Obtain the necessary resources

M&E activities should be incorporated into a program with:

- Clear objectives and responsibilities;
- Resources [i.e., staff (e.g., EHAs/EHOs), budgets, and background reports];
- Institutions in charge (e.g., MLGRD);

- Instruments / equipment (e.g., paper / pens for drawing community maps, camera, where possible, and transport).

Prepare for M&E

Preparing for a M&E exercise requires that the monitor(s) / evaluator(s) be familiar with:

- Basic community data from the DA (i.e., population, WSS coverage);
- The data on the incidence of WES related diseases from the community application forms and the results of the health profile exercise;
- Previous WS community maps;
- The indicators (see below);
- Other water-and-sanitation documents, data, and field surveys pertaining to the community.

Specify who will conduct M&E

M&E should be done by technical personnel (e.g., EHAs/EHOs) having the mandate and the capacity to do so. And, in the spirit of stakeholder involvement and SEA, it should be done with / by representatives of the host community. M&E can be conducted by:

- The EHA or EHO, in collaboration with the WATSAN committee;
- Other community representatives (e.g., informal leaders);
- Various authorities, including DPCU;
- Consultants;
- The project designer or implementer;
- Others (e.g., affected sectors or the sponsor).

Monitoring can be conducted quite frequently, e.g., at 6 month or 1-year intervals. Evaluation (a more robust exercise, perhaps involving about 10% of the population) is usually conducted at 2–3 year intervals.

Specify who owns the M&E Results

In the spirit of developing a community-level M&E system that will be of use at the community level and of use to the various levels of the hierarchy, the records (and community maps) associated with M&E visits should be held at the community level, probably with the WATSAN committee. Copies of the materials can be held with the EHOs, EHAs, DA, and other relevant databases (e.g., DiMES or InfoSys), as an input to relevant efforts and subsequent planning efforts.

Specify who should receive the M&E Report

The results of the M&E exercise (and recommendations) should be reported to (at minimum):

- The community;
- The MLGRD (central, regional, district level);
- DPCUs, DWSTs and the providers of the infrastructure (e.g., CWSA);
- EPA;
- Relevant databases (e.g., DiMES or InfoSys);
- Donor.

A report format will need to be agreed to beforehand (see 5.3).

Understand the indicators

To carry out M&E effectively requires identifying appropriate indicators. However, ‘selecting appropriate indicators’ has proven a challenge to all sectors. There are three (3) broad types of indicators:

- Results / output indicators (progress indicators);
- Outcome indicators;

- Impact indicators.

“**Results / output indicators**” are closely associated with the *inputs* and the *outputs* of plan or project implementation. For instance, if the plan is to dig two boreholes and to construct one institutional latrine in a community, the monitoring exercise could set as an indicator ‘two boreholes and one institutional latrine completed (satisfactorily) and the resulting % coverage’. In fact, most current M&E of water-and-sanitation programs focus on the % of households with *access*² to safe water and adequate / improved sanitation, and the % coverage.

‘**Outcome indicators**’ relate to intended benefits of the output and are generally not quantifiable. Examples include change in ‘sanitation’ behaviour, increased use of latrines, improved hygiene and cleanliness etc.

“**Impact indicators**”: generally these relate to intended long-term objectives of a plan or programme. Examples include ‘*decrease in incidence of faecal-oral diseases*’ and ‘*sustained presence of femal students in schools*’.

The diagram below provides some examples of indicators using this continuum from ‘results/outputs’ indicators to ‘impact’ indicators.

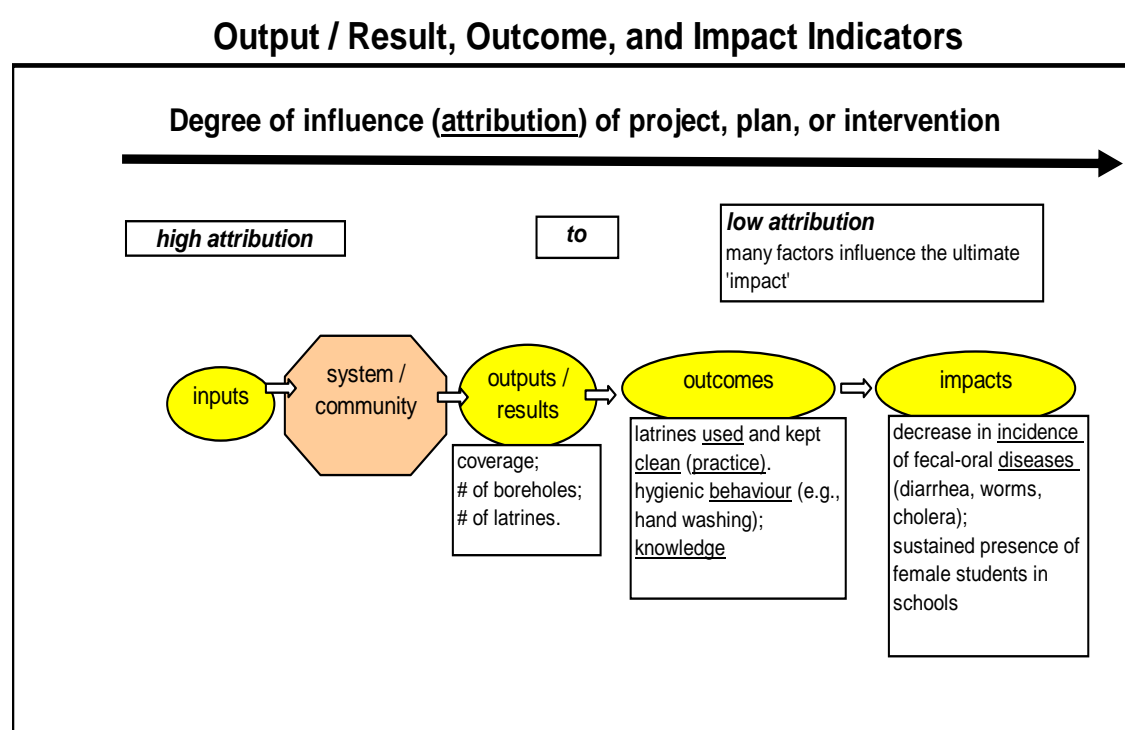


Figure 5.1 **Output/Result, Outcome and Impact indicators**

² It should be noted that ‘access’ can be a misleading statistic. For instance, it does not capture the long queues, the high prices, the sometimes frequent interrupted availability, and even the unhygienic conditions.

A proposed list of indicators for M&E of health improvements at the community level

Parameter	Indicator / criteria (as defined in HPF questionnaire)
Results / Output Indicators: Coverage	
Water supply	(change in) % coverage
Latrines	(change in) % coverage
Drainage (& sullage disposal)	(Change in) length (km) of drains, No. Soakage pits
Solid Waste Collection/Disposal	(Change in) % coverage; No. of disposal facilities
School Hygiene Education Program	Presence / absence
Impact Indicators: Incidence (reduction) of diseases	
Water-contact diseases (guinea worms or bilharzia)	(change in) Incidence
Water-washed diseases (skin and eye infections)	(change in) Incidence
Faecal-oral diseases (diarrhoea, worms, cholera)	(change in) Incidence
Insect-borne diseases (malaria)	(change in) Incidence
Outcome Indicators: Use and practices, behaviour, and knowledge	
<u>Use and Practice</u>	
Water supply	Safety of water supply, use (water available and affordable in sufficient quantity), cleanliness of water supply area
Faecal disposal	Safety of faecal disposal, incidence of open defecation, availability of acceptable latrines
Solid waste disposal	Safety of solid waste disposal, e.g., managed, dedicated disposal area
Waste water disposal	Safety of waste water disposal, adequacy of soakaways, stagnant ponding
<u>Behaviour:</u>	
Hand washing with soap, at appropriate times	Hand washing before food preparation and eating and after toilet use and childcare
Hygiene practices	Availability of soap, HH latrines used and kept clean, safe storage and handling of water, safe preparation of food
<u>Knowledge</u>	
<u>General</u>	
School education facilities	(Adequacy of) Hygiene and cleanliness of school facilities; (Adequacy and safety) of school water supply
Community cleanliness	(Adequacy of) Drainage, (Adequacy of) cleanliness of public latrines, residential areas, markets, lorry parks, and open areas

Adopt a monitoring / evaluation strategy

Monitoring and evaluation have to deal with qualitative data (based on interviews and direct observation) obtained at the community level. Some characteristics of a community-level system include:

- The monitoring / evaluation system should be a community level (rather than district level) system because health improvements will first be detected at the community level;
- The data collected must be of use to the community and the district (i.e., the data can be used for community and district planning, monitoring, and evaluation purposes);
- The system will need to be further designed and improved with communities and districts;

- In spite of the need to monitor/evaluate several parameters, the system should keep in the spirit of only collecting data on a ‘need to know’ rather than ‘nice to know’ basis. The indicators should be simple, relevant, realistic, manageable, measurable and cost-effective.

THE M&E TOOL

There are two steps in using the M&E tool:

- Complete the M&E tool using available data and field data;
- Compare the M&E results to result(s) from previous visit(s) to highlight changes since the last visit.

Complete the M&E tool using available data and field data

The M&E tool mirrors the Health Profile Form (HPF) (see Section 4). It should assist the DWSP teams, EHOs, and EHAs in progress monitoring and evaluation and in adjusting plans and programs, where needed. The performance of any intervention or plan can be monitored and evaluated to check whether the individual activities are actually delivering what is required and expected. The M&E tool will measure change over time where there are planned actions or interventions (e.g., with a new borehole or after a hygiene promotion campaign). The M&E tool can also simply measure change over of time in the ‘without project’ situation.

The M&E team will closely follow the procedures outlined for the HPF (Section 4). The M&E team will record using the M&E Tool the most recent available data related to:

- Water supply coverage and latrine coverage;
- Incidence of diseases.

By conducting interviews and through direct observation, the M&E team will also take note of the existing water supply and the practices associated with liquid-, solid-, and waste-water disposal. Importantly, they will also record behaviour (e.g., hand-washing practice and other hygiene practices). Hygiene knowledge, school hygiene, and community cleanliness will also be noted. The M&E team will also draw an up-to-date map showing relevant WES features (e.g., garbage disposal areas, latrines, water supply and streams).

Compare the M&E results to result(s) from previous visit(s) to highlight changes since the last visit

Analysis is undertaken by considering and comparing the results of the previous visit(s). This could be the established baseline (the first health profile) or a previous monitoring visit. Each indicator is compared to its ‘value’ or ‘score’ from the previous visit. Compare:

- Coverage;
- Incidence of diseases;
- Use, practices, behaviour, knowledge, and general community features;
- Previous water-and-sanitation community maps.

It can be helpful to get stakeholders to prepare their own list of ‘improvement’ criteria through a public participation exercise. This allows local circumstances to be taken into account. Conditions that are:

- | | | |
|--------------------------------------|---|---|
| ▪ Improving can be noted as positive | + | |
| ▪ Degrading can be noted as negative | - | |
| ▪ Static can be noted as | | o |
| ▪ Uncertain can be noted as | ? | |

The M&E tool is shown overleaf.

Form 5. 1: The Monitoring / Evaluation Tool for documenting health improvements

District:	Community:	Population M: F: C:	Distance from water body :	Water supply Coverage %:	Latrines Coverage %:	SHEP	
	Mode of transmission	Main measures of control	Disease	Level of incidence			Remarks (<i>comparison or change since last visit</i>)
				None	Few	Many	
1. Diseases of water contact	Contact with contaminated water (Drinking and/or bathing)	Water supply (and hygienic latrines)	Guinea Worms				
			Bilharzia				
2. Water Washed Diseases	Due to lack of sufficient amount of water – contamination from person to person	Water supply AND Hygiene education	Skin:			Xxxxxx	e.g., (-) many more complaints about skin rashes compared to 6 months ago
			Eye:				
3. Faecal-Oral Transmitted	From person to person, contact through water or food (and soil) via the oral route. (4 F)	Hygienic Latrines AND Water supply AND Hygiene education	Diarrhoea			Xxxxxx	(-) more complaints since last visit
			Worms				
			Cholera				
4. Insect borne	Through mosquitoes/insects	Control of breeding. Environmental sanitation	Malaria				
Data from the field:		Existing water supply (Q14-20) (and cleanliness of surrounding area)	Safe		Unsafe		
Date of Monitoring Visit		Liquid (Faecal) disposal (e.g. evidence of open defecation) (Q1-6)			Xxxxxx	(-) area for open defecation has expanded during the rains	
Date of Previous Visit:		Solid waste disposal (Q7-13)		xxx			
Sample size:		Waste water (Sullage) disposal (Q25-28)				(0) no change since last visit	
		Hand (and face) washing practices (Q21-24) (before food preparation; before eating; after toilet; after child care)			Xxxxxx	e.g., (-) persons interviewed had poor practices	
Person conducting the monitoring exercise:		Hygiene Practices (Q35-38) (availability of soap, latrine used and kept clean, safe storage and handling of water; safe preparation of food)					
		Hygiene knowledge (Q6,13, 20, 28) (about diseases and hygiene)					

	School Health Education and Facilities (Q 39)				
	Community Cleanliness (Q40 - 46) (public latrines; residential areas; markets; lorry parks; schools/institutions; open areas)			Xxxxxx	(-), public latrines dirty and no longer in use

M&E REPORT SHEET

Complete and submit the M&E Report Sheet

As mentioned previously, the M&E Report Sheet is a simple tool to document and present the results of the M&E exercise. The tool is based on the *Health Profile, Record and Planning Sheet* (see Section 4). Its purpose is to make recommendations to decisions makers for how to improve health during or post plan intervention.

The comparison of the change in conditions between field visits will highlight aspects that are improving, areas with no change, aspects that are degrading, or aspects that are uncertain. The aim (in subsequent efforts) is to:

- Support or encourage areas that are improving;
- Correct areas that are problematic;
- Promote action in areas that are not changing;
- Further study aspects that are unclear.

A M&E Report Sheet should be completed to highlight and explain the key issues and recommendations stemming from the M&E exercise. A new community map showing the water-and-sanitation situation should be appended. The Report can be submitted to the relevant stakeholders, for further action.

The M&E Report Sheet is shown overleaf.

The M&E Tool and the M&E Report Sheet can also be used to create the baseline for the next M&E visit.

N.B. An evaluation would consider all previous relevant data and would more fully apply the tools, (e.g., 10% of the population would need to actually complete the HPF questionnaire tool).

5.4 Concluding Comment

Altogether, the M&E sheets of all communities in a district can be used to assess health improvements at the district level.

It will be necessary to collate the results from the community M&E process to the district level, for incorporation into other efforts. This will involve ‘summing’ or ‘mapping’ all M&E sheets.

Form 5. 2: M&E REPORT SHEET

District:	Community:	Population M: F: C:	Distance from water body :	Water supply Coverage %:	Latrines Coverage %:	SHEP
Date of M&E visit:		Disease	Score	Reasons / Explanations / Changes since last Monitoring Visit		
Person conducting the M&E visit:						
1. Diseases of water contact	Guinea Worms					
	Bilharzia					
2. Water Washed Diseases	Skin:					
	Eye:					
3. Faecal-Oral Transmitted	Diarrhoea		The situation has degraded (-) in this monitoring period, with many more cases. There was rain run-off from the areas with open defecation. Also, the public latrines are very dirty.		
	Worms					
	Cholera					
4. Insect borne	Malaria					
				Recommendation	Indicators	
Main needs to improve health:	Water supply:	Quantity:				
		Quality:				
	Sanitation:	Toilets/Latrines	Install community latrine and water source for hand washing at position XXX			
		Waste Water				
		Solid Waste				
	Community participatory planning:	Topics/ approach:				
	Hygiene education/ Campaigns		Repeat health campaign, focused on prevention of diarrhoea			
	SHEP:		Repeat health campaign at the primary school, focused on prevention of diarrhoea.			

ENVIRONMENTAL MONITORING AND EVALUATION (M&E)

General principles and three specific tools for health impact M&E have been presented earlier. However, these tools can also be used (with some modification) for environmental monitoring and evaluation (e.g. based on the Environmental Profiling Form instead of the Health Profiling Form).

Basically, an environmental monitoring exercise should be planned along the same line as monitoring of health issues i.e. by following the below "checklist" of preparatory considerations and actions:

- Establish the purpose of the M&E exercise
- Calculate and obtain the resources needed
- Specify the persons and institutions who will conduct the M&E
- Identify other stakeholders and obtain necessary accepts/permits
- Establish ownership of results and who should be informed/receive results
- Determine the M&E strategy and methodology i.e. what should be monitored, how should it be done (including use of indicators presented in earlier section), frequency and duration of exercise etc.

However, the health impact assessment and profiling as described for M&E planning is conducted with a somewhat different focus than the corresponding environmental exercise as it is anchored in community-based observations including household interviews while the environmental assessment/profiling needs to be performed at a more aggregated level (i.e. district level or higher) to be meaningful.

The aim of the environmental assessment and profiling tool is enhance District Water and Environmental Sanitation Plans (DWESP) by incorporating considerations of environmental sustainability in the planning process. Therefore the associated M&E programme should this into consideration.

Environmental sustainability monitoring using indicators

Each time a new DWESP is going to be developed the full environmental assessment and profiling exercise using the tools presented in Section 4 of this part of the Guide should be applied. It should be noted that the M&E exercise should be based on selected indicators of the main environmental issues identified at the planning stage.

A number of possible indicators of sustainability objectives within each of the four main categories ("Natural environment and resources", "Social and cultural conditions", "Economy" and "Regulatory and institutional issues") are presented at the end of this section.

For each objective within the four categories one or more indicators are proposed. For some of the indicators it is obvious how data can/should be collected in practice while for other various technical methods may exist. In those situations the most appropriate method must be selected. The frequency of monitoring will vary depending on which environmental category it is intended to represent as well as on the specific parameter to be measured. Some types of conditions react very rapidly to changes in the pressures upon them (e.g. the water quality in streams receiving wastewater discharges (hours-days)) while others (e.g. changes in

groundwater conditions downstream of a pollution sources (months-years)) generally respond

Environmental sustainability objective 1. Natural environment and resources	Specific target aspect	Indicator	Appropriate monitoring level			
			Nat.	Reg.	Dist.	Comm.

much more slowly but still with variations depending on local conditions.

Form 5.3: Indicators for Monitoring the Sustainability of District Water and sanitation Plans

1.1	Conservation and sustainable utilisation of water resources	Magnitude of water resources	- recharge capacity vs. demand - level of groundwater table - number of wells drying out	x	X x	x x	x
		Water quality	- salinity - concentration of contaminants - bad taste or odour	x x	X (x)	x	x
1.2	Protection of biodiversity, retention of natural character and function of ecosystems	Biodiversity in freshwater ecosystems	- biodiversity index - level of nutrients/organic matter - turbidity	x x	(x) x x	x	x
		Functionality of streams/rivers	- flow in rivers - frequency of flooding	x	x (x)	(x) x	x
1.3	Protection of endangered species of fauna and flora	Red-list or key species	- number of red-listed species - presence of key species	x (x)	(x) X	(x)	(x?)
1.4	Prevention of discharges (liquid and solid) and disposal of <i>wastewater</i> that adversely affect water bodies and human settlements	Water quality in streams/rivers	- level of dissolved oxygen - level of contaminants - turbidity	x x	x (x) X	x	x
		Quality of aquatic ecosystems	- biodiversity index - presence/dominance of pollution tolerant species	x x	(x) X	(x)	
1.5	Minimisation of land and soil degradation	Combat of drought and erosion	- number of streams and wetlands that dry out	x	X	x	x
1.6	Reduction, re-use, recovery and recycling of wastes	Waste disposal	- number of complaints due to littering/uncontrolled disposal - extent of rat problems			x x	x x
		Waste production and recycling	- volumes of different waste types being re-cycled - waste production per capita	x x	x x	(x)	
1.7	Prevention of floods and mitigation of effects of stormwater	Regulation of streams/rivers	- frequency of flooding - size of flooded areas	x x	x x	x x	x x
1.8	Minimisation of noise and air pollution	Noise and smell/gases from waste	- odour complaints - noise complaints			x x	x x

Environmental sustainability objective 2. Social and cultural conditions		Specific target aspect	Indicator	Appropriate monitoring level			
				Nat.	Reg.	Dist.	Comm.
2.1	Access for ALL to water in sufficient quantity and quality for basic needs	Water coverage and quality	- number of households connected - fraction meeting quality standard	X X	X X	X X	X X
2.2	Access for ALL to environmental sanitation services (ESS)	ESS coverage	- number of functioning latrines etc	X	X	X	X
2.3	Good hygiene and prevention of water related diseases	Water-related diseases Awareness about hygiene	- frequency of guinea worm cases - frequency of cholera cases (etc.) - level of hand-washing	X X	X X	X X	X X
2.4	Equitable distribution of water policy related benefits	Distribution of WES services	- distribution (geographic and social) of WES services	X	X	X	X
2.5	Ensure gender mainstreaming and women's participation at all levels	Women's participation	- fraction of women in WES related committees etc.	X	X	X	X
2.6	Awareness creation for attitudinal change	Awareness raising	- number of awareness/ education campaigns conducted	X	X	X	X
2.7	Ensure community cohesion and local character, minimisation of potential for conflicts	Amenity loss and nuisance	- number of complaints about planned disposal locations			X	X
2.8	Increase public education, information and participation	Awareness/knowledge of WES issues	- number of awareness/ education campaigns conducted	X	X	X	X
2.9	Adopt/preserve traditional knowledge, technologies and benign cultural practices	Use of existing knowledge and practices	- traditional knowledge/ practices incorporated in DWSPs - awareness raising made about these practices and knowledge		X X	X X	X X

Environmental sustainability objective 3. Economy		Specific target aspect	Indicator	Appropriate monitoring level			
				Nat.	Reg.	Dist.	Comm.
3.1	Macro-economic growth and stability	Improved water quality and its beneficial impact on health conditions	- reduced health and sickness related costs	X	X	X	
3.2	Affordability and price stability	Water tariff level	- % of poor people with access to clean water at affordable tariffs	X	X	X	X
3.3	Growth of local economy (investments, job creation and alternative livelihoods)	Improved health, reduced sickness and time savings from piped water systems as compared to fetching water at water points	- improved livelihood	X	X	X	X
			- increase in numbers/turnover in relevant sectors	X	X	X	
			- number of jobs in relevant sectors	X	X	X	
3.4	Balance between costs of initiatives and revenue or other benefits	Cost recovery	- water tariffs cover all O&M costs	X	X	X	X
3.5	Innovation and implementation of cleaner and efficient technologies	Piped water systems	- coverage of population with piped water system	X	X	X	X
3.6	Cost-recovery, where viable, for system replacement	Cost recovery	- water tariffs cover all O&M costs	X	X	X	X

Environmental sustainability objective 4. Regulatory and institutional issues		Specific target aspect	Indicator	Appropriate monitoring level			
				Nat.	Reg.	Dist.	Comm.
4.1	Good governance - support to principles of democracy, respect for human rights, transparency and accountability		<ul style="list-style-type: none"> - fewer complaints/accusations on these issues related to WES sector policies and plans - systems supporting transparency and accountability implemented 	X X	X X	X X	X X
4.2	Dissemination and acceptance of policies and legislation	Water policy and related laws	- degree (and speed) of implementation of agreed NWP actions at different administrative levels	X	X	X	X
4.3	Protection of investments		- increase in numbers and volume of investments in WES sector	X	X	X	
4.4	Research, database and technological development and dissemination	Research and development	- size of public (and private) financial support to WES facilities development	X	X	X	
		Dissemination	- number of districts applying new technological principles in their WES planning/implementation	X	X	X	
4.5	Inter-institutional and/or international collaboration	Inter-institutional collaboration	- number of inter-institutional committees being active	X	X	X	
		International collaboration	- degree of participation by Ghana in relevant international for a	X	X		
4.6	Institutional strengthening and capacity building		<ul style="list-style-type: none"> - number of staff having received WES relevant training - percentages of administrative mistakes and calculation errors made 	X X	X X	X X	X X

SECTION 6

TOOLS FOR QUALITY ASSURANCE OF FEASIBILITY STUDIES

ABOUT THESE TOOLS

Policies are usually implemented through Plans and Programmes and may include a number of projects. Feasibility Studies are typically prepared for these plans, programmes and projects to assure their viability. Two tools have been developed for evaluating and appraising Feasibility Studies.

a. Tool for Checking the Contents of a Feasibility Study: this tool is a simple form or checklist that provides various criteria for checking to ensure that the study covers all the key areas and in particular that the sustainability elements of the study have been properly dealt with. This tool can also be used in the preparation of Terms of Reference for such studies.

b. Tool for Appraising Sustainability Elements of a Feasibility Study: this tool which is based on the general layout of the Sustainability Test sheet, is designed to provide decision makers with the means for assessing the sustainability of the plan, programme or project. This is done by subjecting each of the sustainability elements of the feasibility study to a simple test. This test provides a simple technique that gives a visual measure of the extent to which a particular element of the plan/program is capable of supporting sustainable development.

FORM USED FOR CHECKING FEASIBILITY STUDY CONTENT

What is the feasibility study content form?

The feasibility study content form is one of the tools used in the SEA of Plans and Programs. The purpose is to ensure that the content of the feasibility study will be appropriate for decision making and in particular that the sustainability elements of the feasibility study will be properly addressed

This form provides a simple technique that can be used by decision-makers as a check-list when preparing Terms of Reference for feasibility studies. The form outlines the main elements of the feasibility study (left column) and lists for each element the main topics to be covered in the study (middle column). The decision-maker will provide remarks as to whether all elements and topics have been properly integrated in the Terms of reference (right column)

Based on the remarks the decision-maker will submit the Terms of Reference for further review/improvement or submit them for further processing in relation procurement

Form 6. 1: Feasibility Study Content

Feasibility Study content -main elements and topics to be included in Terms of Reference		
Main elements of feasibility study	Main topics to be covered	Remarks-Have elements and topics been properly integrated
1. Introduction and background	Status of WES in Ghana	
	Project (or plan/program) history-Status of WES in the project area	
	Socio-economic description of project area	
	Project need	
2. Project scope	Project objective	
	Main project principles (technical, finance, institutional)	
	Main project components	
3. Assessment of water resources and water demand	Assessment of surface waters and groundwater potential	
	Assessment of current and projected water demand with and without the project	
4. Water supply engineering	Service standards and design criteria	
	Technical proposal for piped water schemes	
5. Improved environmental sanitation and hygiene behaviour	Affordable and appropriate household sanitation facilities	
	Improving hygiene behaviour and sanitation practices	
	Assessment of health impact without and with the project	
6. Institutional framework	Service provider-professional background and financial status-roles and responsibilities in terms of ownership, management and operation.	
	User group-its organisation and roles and responsibilities in terms ownership, service level, tariff arrangements and payment. Specific arrangements for low-income members of the user group	
	Institutional arrangements related to improved hygiene behaviour and sanitation practices	
7. Environmental assessment	Existing environmental situation	
	Assessment of environmental impact without and with the project	
8. Financial analysis	Estimated investment cost by project components	

Feasibility Study content -main elements and topics to be included in Terms of Reference		
Main elements of feasibility study	Main topics to be covered	Remarks-Have elements and topics been properly integrated
	Proposed tariff levels according to affordability surveys	
	Estimated incremental operation and maintenance cost (without and with project)	
	Estimated capital cost without and with project	
	Financial cash flow including financial viability criteria i.e. Net Present Value (NPV) and Financial Internal Rate of Return (FIRR). Accumulated financial net cash flow after capital cost.	
	Sensitivity analysis measuring the impact of changes in main parameters on financial viability	
9. Economic analysis	Economic price of water	
	Economic pricing of investment and operation and maintenance costs?	
	Transfer of quantified environmental and health impact into monetary terms	
	Economic cash flow including economic viability criteria i.e. Net Present Value (NPV) and Economic Internal Rate of Return (EIRR)	
	Sensitivity analysis measuring the impact of changes in main parameters on economic viability	
10. Procurement arrangements	Bidding procedures for civil works and technical assistance and training	
11. Implementation schedule	Including detailed design, tender period, institutional arrangements, site preparation, civil works	

Feasibility study content

A plan/programme proponent should, as a basis have prepared a feasibility study which contains a number of important sustainability elements. For most projects/plans/programmes of an investment cost exceeding USD 300,000 a feasibility study should be a requirement. Smaller investment projects do not require full feasibility studies.

The elements are outlined in the left column in above form. Specific topics which should be covered as part of the elements have been outlined in the middle column. Remarks to whether elements and specific topics have been sufficiently included in TOR for the feasibility study can be inserted in the right column of the form. Specific comments for some of the elements are provided below:

Comments to "Institutional framework".

The financial status of the service provider may be supported by Profit and Loss statement and a balance sheet.

Comments to "Financial Analysis"

Financial viability of plan/program: The financial analysis of the feasibility study concludes whether the plan/programme is financially viable. This is the case if the plan/programme provides sufficient revenues to meet its financial obligations, i.e. when accumulated financial net cash flow is positive at the time where capital cost (loan repayment with interest) for the plan has been fully paid by the service provider. Otherwise the service provider needs to refinance the plan or subsidies have to be injected from the government.

Tariff levels: Increasing tariff levels towards full cost recovery is a policy issue emphasized in the water policy. The ultimate goal is that tariffs reflect full financial cost including capital cost and operation and maintenance cost. When tariffs only cover operation and maintenance public subsidies have to be injected to ensure financial viability of the project.

Comments to "Economic Sustainability"

Economic viability: The plan/programme is economically viable provided it gives more value to the society than the situation without the plan/programme. This is the case when the calculated Economic Internal Rate of Return (EIRR) exceeds the discount rate (10% as an example but to be decided by Min. of Finance/Economy). The EIRR is a result of the cost benefit analysis being prepared as part of the feasibility study. EIRR will of course only reflect economic sustainability as long as the feasibility study including all its elements has been prepared in accordance with sound principles.

Economic pricing of water: The real economic price of water to society is difficult to assess and object for several research studies. In the cost benefit analysis planned jointly with WRC for the Densu River Basin it has been agreed to use the financial cost of delivering water plus the cost of purifying water from current pollution level to an acceptable standard level as an estimate for the economic price of water.

Economic pricing of all costs and benefits: Investment and maintenance cost which are phrased in financial or market prices should be reduced for any sales tax, duty or VAT to reflect economic prices. Benefits other than those deriving from water tariffs should likewise be expressed in economic prices.

APPRAISAL FORM USED FOR CHECKING SUSTAINABILITY ELEMENTS OF A FEASIBILITY STUDY

What is the appraisal form?

The appraisal form is one of the tools used in the SEA of Plans and Programs. The purpose is to subject each of the sustainability elements of the feasibility study to a simple test indicating the actual sustainability situation according to the study.

This test provides a simple technique that can be used by decision-makers with some knowledge about the techniques used in carrying out feasibility studies. The tool is designed to give a visual measure of the extent to which a particular element of the plan/program is capable of supporting sustainable development.

There are 3 basic steps to follow.

- a) Assess the feasibility study for information and analysis to allow an informed judgement to be made about the likely effects of the Plan/Programme on each of the Sustainability Elements (Economic, Financial, Environment, Social/cultural and Health and Regulatory/Institutional)
- b) Provide answers as to describe the situation as "Good", "Fair" or "Bad" to the specific questions included under each of the sustainability elements.
- c) Based on the answers the decision-maker submits the feasibility study for further review/investigation of specific sustainability elements or recommends for implementation.

As part of the process of developing the SEA tools for WES, an appraisal of the World Bank funded Ghana Urban Water Project (UWP) was carried out by stakeholders. The result is presented overleaf. The appraisal was carried out using a copy of the World Bank's Project Appraisal document.

The steps involved as noted above are:

1. The top row of the form is filled with the available information as shown in blue.
2. Next each of the 5 feasibility elements are evaluated by answering the questions using information from the project document.

From the results obtained it can be seen that the project is generally sustainable. With an economic internal rate of return (EIRR) of 21%, the economic viability of the project is assured and a GREEN shading is used appropriately.

The areas of difficulty as shaded in RED have to do with insufficient consideration of health and related impacts. Additionally, the financial sustainability is at risk due to negative net cash flows. There are also difficulties with regulatory and institutional inadequacies associated with improper identification of user groups.

Blank forms and explanatory notes for the Tools in this section are provided at the end of this section.

Appraisal form used for checking sustainability elements of a feasibility study.					
River Basin, District or Town: GHANA (National)	Plan or program name: Urban Water Project	WES sub-sector: Urban Water (GWCL)	Investment cost (¢1080 billion) USD 120 M		Feasibility study prepared by: Government of Ghana/World Bank
Sustainability elements of feasibility study	Typical issues of the element	Appraisal of situation			Remarks
		good	fair	poor	
1. Economic	Is the plan/program economically viable?				21% against 10% EIRR: good, gives more value to society as well.
	Has proper economic pricing of water been applied?				Other alternative uses not considered.
	Has proper economic pricing been applied for all costs and benefits?				Environmental and health costs not taken into consideration
	Is economic viability sensitive to changes of specific parameters?				Does not involve issues such as water demand., pricing, health, etc.
2. Financial	Is Ghana Water Company Limited financially viable?				P & L negative B/S negative
	Is the plan/program financially viable?				Negative net cash flow
	Are tariffs set at levels which would ensure cost recovery?				OPEX & maintenance captured, but not CAPEX.
	Is financial viability sensitive to changes of specific parameters?				More parameters need to be taken into account.
3. Environmental	Have environmental impacts been quantified and included in monetary terms in the analysis?				Impacts assessment with capital investment has been covered.
	Have investment and maintenance cost of environmental mitigation measures been properly reflected in the financial and economic analyses?				Mitigation measures has been duly covered (costed EAMP).
4. Social, cultural and health	Are tariffs affordable for consumers?				PURC are assumed to be modest however consumers are saying tariff is high.
	Have vulnerable groups been included as consumers?				They have been catered for in the project reference objective and pp4
	Have all stakeholders been properly involved in program planning?				All have been involved
	Have health impacts been quantified and included in monetary terms in the cost benefit analysis				Health impacts have not been costed and included.
5. Regulatory & institutional	Is the private operator working under a service contract fully capable of undertaking the plan/program?				There are conditions to check and confirm the performance and capabilities of the operator.
	Is the user group fully organised to participate in the plan/program?				The user group are not well identified
	Have legal/contractual documents or arrangements between the private operator and user group been prepared?				The user group are not well identified

EXPLANATORY NOTES AND FORMS FOR FEASIBILITY APPRAISAL

Form 6.2 Appraisal Form used for Checking Sustainability Elements of a Feasibility Study

Appraisal form used for checking sustainability elements of a feasibility study					
River Basin, District or Town:	Plan or program name:	WES sub-sector:	Investment cost (GCD billion)		Feasibility study prepared by:
Sustainability elements of feasibility study	Typical issues of the element	Appraisal of situation			Remarks
		good	fair	poor	
1. Economic	Is the plan/program economically viable?				
	Has proper economic pricing of water been applied?				
	Has proper economic pricing been applied for all costs and benefits?				
	Is economic viability sensitive to changes of specific parameters?				
2. Financial	Is the service provider financially viable?				
	Is the plan/program financially viable?				
	Are tariffs set at levels which would ensure cost recovery?				
	Is financial viability sensitive to changes of specific parameters?				
3. Environmental	Have environmental impacts been quantified and included in monetary terms in the analysis?				
	Have investment and maintenance cost of environmental mitigation measures been properly reflected in the cost benefit analysis?				
4. Social, cultural and health	Are tariffs affordable for consumers?				
	Have vulnerable groups been included as consumers?				
	Have all stakeholders been properly involved in program planning?				
	Have health impacts been quantified and included in monetary terms in the cost benefit analysis?				
5. Regulatory & institutional	Is the service provider fully capable of undertaking the plan/program?				
	Is the user group fully organised to participate in the plan/program?				
	Have legal/contractual documents or arrangements between the service provider and user group been prepared?				

Notes on Appraisal form for feasibility study

A plan/programme proponent should, as a basis, have prepared a feasibility study which contains a number of important sustainability elements. For most plan/programmes of an investment cost exceeding USD 300,000 a feasibility study should be a requirement. Smaller investment projects do not require full feasibility studies.

The sustainability elements as outlined in the left column of the appraisal form should be appraised positively prior to any investment decision being made. Appraisal notes and comments for each of the five sustainability elements are provided below:

Supporting form for appraisal of sustainability elements as included in feasibility study

Sustainability elements of feasibility study		Questions	Appraisal of situation		
			Good	Fair	Poor
1.	Economic	Is the plan/program economic viable?	$EIRR \geq 10\%$	$7\% \leq EIRR < 10\%$	$EIRR < 7\%$
		Has proper economic pricing of water been applied?			
		Has proper economic pricing been applied for all costs and benefits?			
		Is economic viability sensitive to changes of specific parameters?			

Comments to "Economic Sustainability"

Economic viability: The plan/programme is economically viable provided it gives more value to the society than the situation without the plan/programme. This is the case when the calculated Economic Internal Rate of Return (EIRR) exceeds the discount rate (10% as an example but to be decided by Min. of Finance/Economy). The EIRR is a result of the cost benefit analysis being prepared as part of the feasibility study. Provided EIRR exceeds 10% the situation should be termed as "Good". Provided the EIRR is between 7-10% the plan/program should be deemed "Fair". Below 7% economic viability of the plan/program is "Poor". EIRR will of course only reflect economic sustainability as long as the feasibility study has been prepared in accordance with sound principles as outlined in the other economic, financial, environmental, social, cultural and health and regulatory & institutional sustainability elements.

Economic pricing of water: The real economic price of water to society is difficult to assess. In the cost benefit analysis planned by the WRC for the Densu River Basin the estimate of the economic price of water is based on the financial cost of delivering water plus the cost of purifying water from current pollution level to an acceptable standard level. The situation should be appraised as "Good" provided an estimate has been made for an economic price of water. Otherwise the situation should be appraised as "Poor".

Economic pricing of all costs and benefits: Investment and maintenance cost which are phrased in financial or market prices should be reduced by any sales tax, duty or VAT to reflect economic prices. Benefits other than those derived from water tariffs should likewise be expressed in economic prices. Provided all costs and benefits have been expressed in economic prices the situation should be appraised as "Good". In other cases the situation should be characterised as "Poor".

Sensitivity of result against specific parameters: The impact of changes in main parameters including water demand, water pricing, investment cost, pricing of environmental impact and of health impact on the economic viability should be assessed in the feasibility as part of a sensitivity analysis. Provided the analysis has been carried out and provides a conclusion as to which parameters are the most crucial for economic viability the situation may be termed as "Good"

Sustainability elements of feasibility study	Questions	Appraisal of situation		
		Good	Fair	Poor
2. Financial	Is the service provider financially viable?			
	Is the plan/program financially viable?			
	Are tariffs set at levels which would ensure cost recovery?			
	Is financial viability sensitive to changes in specific parameters?			

Comments to "Financial Sustainability"

Financial viability of service provider: With a positive financial status supported by Profit and Loss statement and balance the situation is "Good". A negative financial status similarly documented provides a "Poor" situation.

Financial viability of plan/program: The financial analysis of the feasibility study concludes whether the plan/programme is financially viable. This is the case if the accumulated financial net cash flow is positive at the time where capital cost (loan repayment with interest) for the plan has been fully paid by the service provider. In this case the situation is termed "Good". Otherwise the service provider needs to refinance the plan or subsidies have to be injected from the government and the situation is "Poor".

Tariff levels: Increasing tariff levels towards full cost recovery is a policy issue emphasized in the water policy. Provided tariffs reflect full financial cost including capital cost and operation and maintenance cost the situation is considered "Good". If tariffs cover operation and maintenance and part of capital cost the situation is fair. When tariffs only cover operation and maintenance (and public subsidies should provide for all capital cost) the situation is poor.

Sensitivity of result against specific parameters: The impact of changes in main parameters including water demand, water pricing, and investment cost on the financial viability should be assessed in the feasibility as part of a sensitivity analysis. Provided the analysis has been carried out and provides a conclusion as to which parameters are the most crucial for financial viability the situation may be termed as "Good"

Sustainability elements of feasibility study		Questions	Appraisal of situation		
			Good	Fair	Poor
3.	Environmental	Have environmental impacts been quantified and included in monetary terms in the analysis?			
		Have investment and maintenance cost of environmental mitigation measures been properly reflected in the analysis?			

Comments to "Environmental Sustainability"

Environmental impact: Provided environmental impacts have been properly quantified and transferred into monetary terms the situation is "Good". When for example untreated wastewater is led into the river there is an impact on fish catch. No quantification of environmental impact on the other hand is a "Poor" situation.

Mitigation measures: Negative environmental effects should be addressed through mitigation measures. Where the investment and maintenance costs of such measures have been included in the cost benefit analysis-such situation is termed "Good". Where mitigation costs have not been included the situation is termed "Poor".

Sustainability elements of feasibility study		Questions	Appraisal of situation		
			Good	Fair	Poor
4.	Social, cultural and health	Are tariffs affordable for consumers?			
		Have vulnerable groups been included as consumers?			
		Have all stakeholders been properly involved in program planning?			
		Have health impacts been quantified and included in monetary terms in the cost benefit analysis			

Comments to "Social & Cultural Sustainability"

Tariff affordability: Provided affordability and willingness to pay surveys have been carried out and indicate that suggested tariffs are affordable and that consumers are willing to pay for services rendered the situation should be appraised as "Good". With no surveys on affordability and willingness to pay the situation is "Poor".

Participation by vulnerable groups: Provided the poorest people in the area of influence of the plan/program have been facilitated to participate through subsidies or otherwise the situation should be termed as "Good". In case that the poorest people have not been considered for participation in the plan/program the situation is "Poor".

Stakeholder participation: where all identified stakeholders have been involved in developing a plan or programme the situation should be termed as "Good". In situations where any groups are left out it should be described as 'poor'.

Health impacts included: Provided health impacts have been properly quantified and transferred into monetary terms the situation is "Good". For example where open sewers are replaced with installation of sewer networks a positive health improvement is expected (mortality and morbidity). If there is no quantification of this health impact then it is a "Poor" situation.

Sustainability elements of feasibility study		Questions	Appraisal of situation		
			Good	Fair	Poor
5.	Regulatory & institutional	Is the service provider fully capable of undertaking the plan/program?			
		Is the user group fully organised to participate in the plan/program?			
		Have legal/contractual documents or arrangements between utility and user group been prepared?			

Comments to "Regulatory & Institutional Sustainability"

Experience of service provider: In case the service provider has shown a track record of previous plans/programs carried out, or otherwise can demonstrate similar experience the situation should be termed "Good".

User group organisation: Provided the user group is organised as a legal entity supported by bye-laws and producing annual accounts the situation is termed "Good". If the user group is only informally organised the situation is "Poor".

Legal/contractual documents: Awareness of content of legal/contractual documents outlining roles and responsibilities of utility and user group in connection with plan/program implementation is termed as a "Good" situation.

Note: In all these cases, the assessment of "Fair" will be subjective and this underscores the need for broad stakeholder engagement and participation so as to arrive at acceptable decisions supported by reasons from all segments. This is a key SEA principle.

ABOUT THESE TOOLS

In the effort to achieve sustainable development, it is essential that policies meet the requirements of the '*triple bottom line*' of sustainability which means ensuring the balance between Natural Resources, Socio-Cultural and Economic conditions. In Ghana this bottom line has been expanded to include Institutional aspects. The ***Sustainability Test*** is a tool that has been developed to evaluate policies in line with the 'sustainability bottom line' and facilitates policy refinement for achieving sustainability.

Another important requirement for sustainability is that policies must not conflict with other policies in order to the desired outcomes and impacts. The ***Compatibility Test*** is a tool that has been developed to facilitate the process of comparing policies to identify and eliminate areas of potential conflict. The tool also enables the identification of mutually reinforcing policies which could be implemented in such a way as to achieve maximum synergy.

SEA PROCEDURES APPLIED IN THE PROCESS OF IWRM PLANNING

In preparation of the IWRM plan two working processes take place in parallel.

On one side an overall technical description of the existing situation within the basin is undertaken based on measurements, interpretation of data and other technical information. The technical description of the basin is summarised in a “baseline description”, saying, where are we and what is the situation with regard to Natural Resources, Social, Cultural Conditions, Economy and Regulatory, Administrative and Institutional Issues.

As part of this overall “baseline description” the effects of a continuous development is assessed, saying, what will happen in the future if nothing is done. Is that in line with the goals of Ghana Water Policy and are the effects of the future development in accordance with what we want to happen.

Technical information is available for making a technical baseline description of Densu Basin. It is the task of WRC, who has access to information and resources, including computer based modelling tools, to make this description. In that process consultations are mainly restricted to communication with other authorities, experts, and research institutions.

In parallel with making the baseline description SEA procedures and consultations with stakeholders are taking place with the purpose as far as possible to address the opinion of the public and the perception of the situation within the basin with regard to Natural Resources, Social, Cultural Conditions, Economy and Regulatory, Administrative and Institutional Issues.

The key aspects of IWRM planning is to make an action plan to mitigate or to avoid that adverse effects arise as a consequence of doing nothing as described in the base-line description. To create understanding, ownership and commitment for implementation of the IWRM plan SEA procedures are applied in consultation with stakeholders down to the level where everybody have the opportunity to participate in the planning process and to be heard.

The content of the final version of the IWRM plan is however the responsibility of WRC and it will at the end be WRC who will identify the needed action programmes to be launched in the IWRM plan as required to ensure a general basin wide, integrated and sustainable water management practise within Densu Basin in the future. In consequence of this responsibility, it is however, also an obligation of WRC to be able to defend the content of the plan and to respond to objections, proposals and critical remarks from stakeholders. For that reason the SEA procedures have been prepared with a participatory approach to let stakeholders respond to the plan even at early stages of the planning process

The overall approach for applying SEA procedures in the IWRM planning process with special regard to the Densu Basin can be summarised in four steps:

- Preliminary screening of everyday problems at workshop meetings and meetings with local authorities for identification of planning issues, actions and programmes that might be addressed in an IWRM plan (Procedures and tools 1A-1C)
- Scoping for identification of possible planning targets (issues) in an IWRM plan and application of ranking tools for prioritisation and segregation of local and regional planning issues (Procedures and tools 2)

- Hearing for discussion of effects of the plan as well as objections, disagreements or for adoption of additional proposals of actions and programmes in a preliminary draft version of the IWRM plan (Procedures and tools 3)
- Testing of the sustainability of the IWRM plan to examine whether it complies with the overall goals in the Ghana Water Policy and Ghana Poverty Reduction Strategy (Procedures and tools 4)

As an outcome of the SEA based IWRM planning process two categories of problems and corresponding actions and effects will be addressed.

- Basin wide, crosscutting activities affecting the whole basin like the future availability of water, water supply to Accra, inter basin transfer of water from Volta or eventually new bauxite mining activities. Such activities will be addressed in collaboration Ghana Water Company, other investors and major donors. Implementation of such projects is at the moment beyond the capacity of WRC and the ambition of the IWRM plan. But the relevance of such projects cannot be questioned and will accordingly be addressed in the IWRM plan.
- Isolated but general problems needing coordination but affecting mainly local areas within the basin like e.g. protection of river banks, deforestation, waste disposal or attitudinal and behavioural change to avoid water borne diseases will be addressed as well. Such problems are however proposed to be coordinated by Densu Basin Board and the District Authorities based on partnership agreements and decisions on how to segregate of planning issues to be addressed by District planning and issues to be addressed by WRC

PROCEDURES AND TOOLS 1A -1C

Preliminary Identification and Screening of Water Management Problems within the Basin

- 1A: Table for individual listing and description of problems in everyday life
1B: Table for listing of prioritised problems agreed on in working groups
1C: Table for listing of prioritised problems and corresponding mitigation actions

Preliminary Screening and Identification of Problems within the Basin

Procedures and tools are intended for a preliminary identification and screening of problems met with in everyday life in Densu Basin. Procedures and tools should only be applied on workshops with participation of 40-50 persons or more. The tools are simple, straight forward and need no explanations. The procedure is intended for a preliminary screening of problems within the basin described by many stakeholders with the aim to convert them into one ranked list of problems and a corresponding prioritised list of mitigation actions to be applied in further discussions.

Scope of actions, format and intended outputs are described under procedures and tools 1A -1C as shown below with reference to table 7.1 in the main text

Procedures and tool	Specific scopes of actions	Format of SEA activities	Intended outputs
1A	To let stakeholders individually identify and describe water management problems met with in everyday life in the basin	Consultations at workshop and meetings in Districts Procedure and tool 1A	Preliminary screening of the range of problems to be addressed as part of the IWRM planning process.
1B	To let stakeholders negotiate and agree on prioritisation of cross-cutting water management problems to be solved within the basin	Consultations at workshop and meetings in Districts Procedure and tool 1B	Identification of interests regarding crosscutting, basin wide problems to be addressed as part of the IWRM planning process.
1C	To let stakeholders agree on actions required to solve prioritised, cross-cutting water management problems within the basin	Consultations at workshop and meetings in Districts Procedure and tool 1C	Identification of interests regarding crosscutting, basin wide actions to be addressed as part of the IWRM planning process

The general approach for generating a prioritised list of actions is to guide the participants through a planning process in **4 steps**.

- 1) Individually each participant lists and describes the 5 most important water management problems that need to be addressed in Densu Basin, see table 1A next page
- 2) In groups of 5-8 persons the participants negotiate and agree on the 10 out of 25-40, individually listed, most important water management problems that need to be addressed in the basin, see table 1B next page
- 3) In the same preceding group of 5-8 persons the participants negotiate and agree on a prioritised list of the 10 most important water management problems that need to be addressed in Densu Basin, see table 1C next page. Hereafter agree on a prioritised list of the 10 most important mitigation actions that need to be implemented in Densu Basin, see table 1C next page.
- 4) An optional activity. From each list in each group select the two highest ranked actions for creation of a list of 10-16 actions to be addressed in an IWRM plan. The outcome of this

procedure is a first preliminary approach for creation of an action plan for a basin based on stakeholder participation. Not shown.

On a workshop with 60 participants 300 problems met within everyday life will be described, but will during the planning process be reduced and converted into one plan of 10-15 prioritised actions agreed on with a participatory approach.

Table 1 A Preliminary identification and screening of problems in everyday life in the basin

Name	Individual assessment and description of the 5 most important water management problems in the Basin
ID.	List of problems
1	
2	
3	
4	
5	

Table 1 B: Preliminary identification and screening of problems in everyday life in the basin

Group No:	In groups of 5-8 persons negotiate and agree on 10 out of 25-40 individually listed most important water management problems that need to be addressed in the Basin
ID.	Listed most important problems
1	Low level of women's involvement in water management activities
2	Lack of alternative livelihoods for communities along the river basin
3	Conflicting activities in various districts which may work against integrated development of the basin
4	Pollution: Dumping of solid and liquid waste and use of chemicals and other undesirable methods of fishing.
5	Lack of access between communities on both sides of the river e.g. Risk of children crossing to school
6	Encroachment: Building beyond the buffer zones.
7	Algae plant bloom which disrupts smooth flow etc
8	Prevalence of water borne diseases e.g. Buruli ulcer, Bilharzias etc
9	Clearing of vegetation along the river banks that affect the rainfall pattern, water level among others.
10	Sand winning close to the riverbed, which affects river flow etc.

Table 1 C Preliminary identification and screening of problems in everyday life in the basin

Group No:	In groups of 5-8 persons negotiate and agree on a prioritised list of the 10 most important water management problems and provide a prioritised list of the 10 most appropriate mitigation actions to be implemented Densu Basin	
ID	Prioritised list of problems	Prioritised list of mitigation actions
1	Clearing of vegetation along the river banks that affect the rainfall pattern, water level among others.	Enforcement of building laws/regulations and intensification of public education to sensitise people on buffer zones and their demarcation; to target traditional rulers
2	Pollution: Dumping of solid and liquid waste and use of chemicals and other undesirable methods of fishing.	Pollution a) Provide waste disposal sites for communities along the banks b) Construction of manholes and soakaways, household VIP latrines to be promoted c) Banning use of chemicals for fishing and other unapproved methods of fishing
3	Encroachment: Building beyond the buffer zones.	Holistic and integrated approach to the development of the entire basin as being done today
4	Algae plant bloom which disrupts smooth flow etc	Provision/Construction of bridges at vantage points
5	Lack of alternative livelihoods for communities along the river basin	Algae plants to be harvested as and when they occur.
6	Conflicting activities in various districts which may work against integrated development of the basin	Awareness creation through sensitisation on the buffer zone, laws among others and other water policies and regulations.
7	Sand winning close to the riverbed, which affects river flow etc.	Increase involvement of women in water management activities
8	Prevalence of water borne diseases e.g. Buruli ulcer, Bilharzias etc	Promote alternative livelihoods/enterprises that do not depend solely on the river basin.
9	Lack of access between communities on both sides of the river e.g. Risk of children crossing to school;	Public Awareness;- a) Promotion of personal hygiene through public education b) Provision of potable water c) Improved access to health facilities
10	Low level of women's involvement in water management activities	Education a) Banning of sand winning close to the river banks b) Educate traditional authorities and other stakeholders on the environmental impact of such activities

Application of SEA in Densu basin

As background for applying SEA principles in IWRM planning in Ghana, there have been a number of basic conditions to be taken into account during the working process.

Table 7. 1: Specific scopes, formats and intended outputs

Procedures and tools	Specific scopes of actions	Format of SEA activities	Intended outputs
1A	To let stakeholders individually identify and describe water management problems met with in everyday life in the basin	Consultations at workshop and meetings in Districts Procedure and tool 1A	Preliminary screening of the range of problems to be addressed as part of the IWRM planning process.
1B	To let stakeholders negotiate and agree on prioritisation of cross-cutting water management problems to be solved within the basin	Consultations at workshop and meetings in Districts Procedure and tool 1B	Identification of interests regarding crosscutting, basin wide problems to be addressed as part of the IWRM planning process.
1C	To let stakeholders agree on actions required to solve prioritised, cross-cutting water management problems within the	Consultations at workshop and meetings in Districts Procedure and tool 1C	Identification of interests regarding crosscutting, basin wide actions to be addressed as part of the IWRM planning

Procedures and tools	Specific scopes of actions	Format of SEA activities	Intended outputs
	basin		process
2	To let stakeholders apply scoping procedures and tools for identification of issues that might be addressed within the basin	Interactive partnership collaboration with participation of Densu Basin Board, District Administrations and other stakeholders Procedure and tool 2	Identification of issues that might be addressed in the IWRM plan and segregation of responsibilities
3	To let all stakeholders discuss and assess the effects of action programmes included in a draft version of the IWRM plan	Public hearing addressing the draft content of the IWRM plan Procedure and tool 3, but to be based on the outcome from using procedure and tool 2	Identification of effects of action programmes in a draft version of the IWRM plan at a public hearing
4	To let stakeholders test the sustainability of proposed action programmes in the IWRM plan	Workshop consultation or hearing Procedure and tool 4	Testing the sustainability of proposed action programmes addressed in an IWRM plan
As required	To prepare and distribute reports, proceedings of meetings and general information.	Direct information Procedures and tools as required	Enhancement of the general awareness, and knowledge of the IWRM plan

PROCEDURE AND TOOL 2

Scoping and Delegation of Responsibilities

Scoring table (empty)

Scoring table (with scores)

Reporting table (empty)

Explanatory table (explanation of issues that might be addressed)

Scoping and Delegation of Responsibilities

Procedures and tools are intended for collaboration between Densu Basin Board, District authorities and other stakeholders on IWRM planning. Scope of actions and format are described below with reference to table 1 in the main text.

Procedure and tool	Specific scope of actions	Format of SEA activities	Intended outputs
2	To let stakeholders apply scoping procedures and tools for identification of issues that might be addressed within the basin and delegation of responsibilities	Interactive partnership collaboration with participation of Densu Basin Board, District Administrations and other stakeholders Procedure and tool 2	Identification of issues that might be addressed in the IWRM plan and segregation of responsibilities

For scoping, and delegation of responsibilities that might be addressed in the IWRM plan three steps shall be followed

1) Screening of problems and mitigation actions that might be addressed in an IWRM plan.

2) Prioritisation and ranking of issues that might be addressed in the IWRM plan, applying 3 scoring categories:

- Importance of the issues that might be addressed,
- Interlinked effects from addressing the issues
- Need for addressing the issues

3) Reporting and explanation of the scoring for prioritisation of the issues that might be addressed in IWRM planning

Ad.1) A first preliminary listing of issues that might be addressed in an IWRM plan is assumed to have been undertaken. The listed issues represent the outcome from screening of problems with procedures and tools 1A -1C at stakeholder meetings and a number of follow-up meetings in Districts and with Densu Basin Board

Ad.2) Three categories of ranking criteria shall be applied.

A The importance of issues that might be addressed

+4 = important to national/international interests

+3 = Important to basin-wide interests

+2 = Important to local conditions

+1 = Not important

B Interlinked effects from addressing the issue

+3 = Interlinked and coherent. Issues to be addressed with a cross-cutting approach

+2 = Only partly interlinked and coherent. Issues which need coordination

+1 = Not interlinked and coherent.

C The need to address the issues

+3 = Significantly needed as it is not addressed within existing planning

+2 = Needed, but it is to some extent already addressed in existing planning

+1 = Not needed

The score is calculated as:

$$(A \times B) + C = TS$$

Where TS is the total score

The total score, TS describes the main issues that may be addressed in the IWRM plan and is an expression of the approach to applied for delegation of responsibilities between WRC and Districts

An Explanatory Table has been attached to assist the understanding of the listed issues.

Ad 3. Reporting Tables are attached. In this version of the manual the following tables are attached:

- Scoring table (empty)
- Scoring table (with scores)
- Reporting table (empty)
- Explanatory table (explanation of issues that might be addressed)

Form 7.1 Worked Example of Scoping and Delegation of Responsibilities

Scoring Table					
1. NATURAL RESOURCES					
	Issues that might be addressed in the IWRM plan:	A Importance	B Interlinked effects	C Need	SCORE (AxB)+C= TS
		1 – 4	1 – 3	1 – 3	TS
1.1	Planning of the availability of surface water resources within the basin	3	3	3	12
1.2	Planning of the exploitation of groundwater resources	2	2	2	6
1.3	Planning the supply of water to the Metro Accra area	4	3	3	15
1.4	Management of waste water discharges	2	2	2	6
1.5	Planning of water quality and/or the hygienic safety of water	3	2	2	8
1.6	Protection of “red list” species and/or endangered species in protected areas	2	2	2	6
1.7	Protection and/or rehabilitation of river banks	2	2	2	6
1.8	Flood management	2	2	2	6
1.9	Land use, deforestation and/or soil degradation	2	2	2	6
1.10	Waste management	2	2	2	6
2. SOCIAL CULTURAL CONDITIONS					
	Issues that might be addressed in the IWRM plan:	A Importance	B Interlinked effects	C Need	SCORE (AxB)+C= TS
		1 – 4	1 – 3	1 – 3	TS
2.1	Management, operation and maintenance of water facilities	2	1	1	3
2.2	Awareness of the need for attitudinal and behavioural change concerning water related health risks	2	2	2	6
2.3	Fishing methods and effects on environmental conditions	2	2	2	6
2.4	Traditional and benign cultural and gender practices on management of water	2	2	2	6
3. ECONOMY					
	Issues that might be addressed in the IWRM plan:	A Importance	B Interlinked effects	C Need	SCORE (AxB)+C= TS
		1 – 4	1 – 3	1 – 3	TS
3.1	Procedures for efficient collection of payments for existing and future water related services	2	2	2	6
3.2	Distribution of costs for initiation and implementation of basin wide plans and programmes	3	3	3	12
3.3	Provision of assessment procedures and tools for decision making concerning prioritisation and financing of actions and programmes within Densu Basin.	3	2	2	8
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES					
	Issues that might be addressed in the IWRM plan:	A Importance	B Interlinked effects	C Need	SCORE (AxB)+C= TS
		1 – 4	1 – 3	1 – 3	TS
4.1	Promotion of good governance, principles of democracy, respect for human rights, transparency and accountability	3	3	1	10
4.2	Enforcement of decisions for initiation and implementation of basin wide actions and programmes within Densu Basin	3	3	3	12
4.3	Enforcement of rights and obligations of private and public landowners concerning land use and exploitation of water and other natural resources	2	2	3	7
4.4	Promotion of initiatives on research and technological development	3	2	2	8
4.5	Inter-institutional collaboration and coordination of institutional capacity building	3	3	3	12

Scoping and Prioritization of issues to be addressed in the IWRM Plan.

A1 The importance of proposed issues that might be addressed

+4 = important to National/international interests

+3 = Important to basin-wide interests

+2 = important only to local conditions

+1 = Not important

A2 The need to address the issues

+4 = Significantly needed

+3 = Needed

+2 = No change

+1 = Not Needed

B1 Permanence of issues

+3 = Permanent

+2 = Temporary

+1 = No Change

B2 Interlinked effects from addressing the issue

+3 = Interlinked and coherent

+2 = Only partly interlinked and Coherent

+1 = Not interlinked and isolated

Form 7. 2: **Scoping and prioritization of issues to be addressed in the IWRM plan**

scoring table						
1. NATURAL RESOURCES						
	Issues that might be addressed in the IWRM plan:	A1 Importance	A2 Need	B1 Permanence	B2 Interlinked effects	Score A1x A2=AT B1+B2=BT ATx BT=CT
		1-4	1-4	1-3	1-3	CT
1.1	The availability of surface water resources	4	4	3	3	96
1.2	The availability of groundwater resources	3	2	1	1	12
1.3	The geographical distribution of surface water	1	1	3	1	4
1.4	The geographical distribution of groundwater resources	1	2	1	1	4
1.5	Supply of water to the Accra Metro Area	4	4	3	3	96
1.6	Waste water discharges	4	4	3	3	96
1.7	Water quality and/or the hygienic safety of water.	4	4	3	3	96
1.8	Protection of "red list" species and/or endangered species in protected areas.	4	4	3	3	96
1.9	Protection and/or rehabilitation of river banks for protection of the aquatic environment	4	4	2	3	80
1.10	Risks of flooding	3	4	3	2	60
1.11	Land use deforestation and/or soil degradation	3	4	3	3	72
1.12	Waste disposal and management	4	4	3	3	96

Scoping and prioritization of issues to be addressed in the IWRM plan scoring table						
2. SOCIAL CULTURAL CONDITIONS						
	Issues that might be addressed in the IWRM plan:	A1 Importance	A2 Need	B1 Permanence	B2 Interlinked effects	Score A1xA2=AT B1+B2=BT ATxBT=CT
		1-4	1-4	1-3	1-3	CT
2.1	Utilization of water resources among economic water consuming sectors, institutions, households and the poor.	4	4	3	3	96
2.2	Establishment, operation and maintenance of water facilities.	4	3	3	3	72
2.3	Awareness of the need for attitudinal and behavioral change concerning pollution of water and mitigation of water related health risks.	4	4	3	3	96
2.4	Fishing methods and effects on environmental conditions.	4	4	3	3	96
2.5	Traditional and benign cultural and gender practices on management of water and cultivation of crops.	4	4	3	3	96
3. ECONOMY						
3.1	Procedures for efficient collection of payments for existing and future water related services.	4	4	2	3	80
3.2	Distribution of costs for initiation and implementation of basin wide initiated actions and programmes	3	4	3	3	72
3.3	Principles for introduction of full cost-recovery and abolition of subsidies for public water related services.	3	3	3	3	54
3.4	Initiatives on privatization	1	1	3	3	6
3.5	Provision of assessment procedures and tools for decision making concerning prioritization and financing of actions and programmes within the Densu Basin.	3	3	3	3	54

4 REGULATORY,ADMINISTRATIVE AND INSTITUTIONAL ISSUES						
	Issues that might be addressed in the IWRM plan:	A1 Importance	A2 Need	B1 Permanence	B2 Interlinked effects	Score A1x A2=AT B1+B2=BT ATx BT=CT
		1-4	1-4	1-3	1-3	CT
4.1	Obligations to promote good governance, principles of democracy, respect of human rights, transparency and accountability	4	4	3	3	96
4.2	Awareness of policies and legislation	4	4	3	3	96
4.3	Enforcement of decisions for initiation and implementation of basin wide actions and programmes within the Densu Basin.	3	3	3	3	54
4.4	Procedures of appeal in case of disagreements among decision makers and/or disagreements with decision makers and local societies or individual stakeholders.	2	3	3	3	36
4.5	Enforcements of rights and obligations of private and public landowners concerning land use and exploitation of water and other natural resources.	4	4	3	3	96
4.6	Enforcement procedures for supervision of permissions to exploit and discharge waste water and disposing of waste.	4	4	3	3	96
4.7	Initiatives on research and technological development	3	4	3	3	72
4.8	Inter-institutional collaboration and co-ordination of institutional capacity building.	4	4	3	3	96

PROCEDURE AND TOOL 3

Assessment of effects of an IWRM plan
Scoring table

Assessment of Effects of an IWRM Plan

Procedures and tools are intended for a public hearing. Specific scope of actions and format are described under procedure and tools 3 as shown below with reference to table 1 in the main text. The final version of procedures and tools cannot be finalised until a draft version of the IWRM plan has been prepared

Procedures and tools	Specific Scope of actions	Format of actions	Intended outputs
3	To let all stakeholders discuss and assess effects of actions and programmes included in a draft version of the IWRM plan	Public hearing addressing the draft content of the IWRM plan Procedure and tool 3, but to be based on the outcome from using procedure and tool 2	Identification of effects of action programmes in an IWRM plan

Tools and procedures 3 are assumed to be applied in **3 steps**:

1) Preparation of a draft IWRM plan addressing the issues identified with tools and procedures described under Tools and Procedures 2: Scoping and prioritisation of issues to be addressed in the IWRM plan.

2) Assessment of impacts and effects of plans and programmes using of 4 sets of assessment and scoring criteria:

- Importance of effects
- Magnitude of effects
- Permanence of effects
- Cumulative effects

3) Reporting and explanation of the scoring

Ad.1) It is assumed that the draft version of the IWRM plan, and the issues to be addressed in the plan have been identified, using tools and procedures 2: Scoping and prioritisation of issues to be addressed in the IWRM plan. It is as well assumed that the draft version of the plan has been prepared with the purpose to evaluate the impacts and effects of different possible plans and programmes (scenarios)

Ad.2) Four categories of ranking criteria may be applied.

A1 The importance of effects

+4 = important to national/international interests
+3 = Important to basin wide interests
+2 = Important only to local conditions
+1 = Not important

A2 The Magnitude of effects

+4 = Major positive effect
+3 = Significant positive effect
+2 = Positive effects

+1 = No change

B1 Permanence of effects

+3 = Permanent

+2 = Temporary

+1 = No change

B2 Cumulative effects

+3 = Cumulative and synergistic

+2 = Only partly cumulative and synergistic

+1 = Not cumulative/isolated

The score is calculated as:

$A1 \times A2 = AT$

$B1 + B2 = BT$

$AT \times BT = CT$

Where CT is the total score

The total score, CT indicates the performance of a plan or programme with regard to effects and hereby indicates how to rank the relevance of plans and programmes in an IWRM plan.

However, in the final design of the scoring table other assessment criteria as well as scoring values may be introduced depending on the issues and effects to be addressed in the IWRM plan.

It is a major task to assess all possible scenarios for improvement of water management practises within a basin and it is not appropriate to try to do that as part of a public hearing. Instead the application of the scoring table should be restricted to a single category of scenarios as for instance scenarios of plans and programmes intended for provision a safe and sustainable water supply in the future.

A more comprehensive application of the tool for assessment of many scenarios will require that the procedures and tools are used in a computer application.

PROCEDURE AND TOOL 4

Testing of the sustainability of an IWRM plan

Scoring table

Explanatory table

Testing Of the Sustainability of an IWRM Plan

The procedure and tool is intended for a consultation workshop or public hearing when a draft version or final version of the IWRM plan has been prepared. Specific scope of actions and format are described under procedure and tools 3 as shown below with reference to table 1 in the main text.

Procedure and Tool	Specific scopes of actions	Format of SEA activities	Intended outputs
4	To let stakeholders test the sustainability of proposed plans and programmes to solve prioritised water management problems within the basin	Workshop consultation or hearing Procedure and tool 4	Testing the sustainability of proposed plans and programmes addressed in the IWRM plan

The procedure and tool shall be applied in **1 step**

1) Testing of the sustainability of an IWRM plan in draft or final version.

Ad 1. It is assumed that the participants at either a workshop or public hearing are acquainted with the content of the IWRM plan to be tested. The participants have to fill in the scoring table

The sustainability test can be applied for the whole IWRM plan or to some extent for specific plans and programmes within the IWRM plan

A scoring table for visualisation of the general compliance with Ghana Water Policy and Ghana Poverty Reduction strategy is attached

An explanatory table is attached to assist with an understanding of the listed sustainability criteria applied in the scoring table.

EXPLANATORY NOTES AND FORMS FOR IWRM PLANNING

Form 7.3	Scoping and Delegation of Responsibilities; Scoring Table
Form 7.4	Scoping and delegation of responsibilities; Reporting table
Form 7.5	Scoping and delegation of responsibilities; Explanatory form
Form 7.6	Tools for Scoping and Distribution of Planning Responsibilities

Table 1A	Preliminary identification and screening of problems in everyday life in the basin
Name	Individual assessment and description of the 5 most important water management problems in the Basin
ID.	List of problems
1	
2	
3	
4	
5	

Table 1B	Preliminary identification and screening of problems in everyday life in the basin
Group No:	In groups of 5-8 persons negotiate and agree on 10 out of 25-40 individually listed most important water management problems that need to be addressed in the Basin
ID.	Listed most important problems
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Table 1C	Preliminary identification and screening of problems in everyday life in the basin	
Group No:	In groups of 5-8 persons negotiate and agree on a prioritised list of the 10 most important water management problems and provide a prioritised list of the 10 most appropriate mitigation actions to be implemented Densu Basin	
ID	Prioritised list of problems	Prioritised list of mitigation actions
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Form 7.3 Scoping and delegation of responsibilities; Scoring table (empty)

1. NATURAL RESOURCES					
	Issues that might be addressed in the IWRM plan:	A Importance	B Interlinked Effects	C Need	SCORE (AxB)+C= TS
		1 – 4	1 – 3	1 – 3	TS
1.1	Planning of the availability of surface water resources within the basin				
1.2	Planning of the exploitation of groundwater resources				
1.3	Planning the supply of water to the Metro Accra area				
1.4	Management of waste water discharges				
1.5	Planning of water quality and/or the hygienic safety of water				
1.6	Protection of “red list” species and/or endangered species in protected areas				
1.7	Protection and/or rehabilitation of river banks				
1.8	Flood management				
1.9	Land use, deforestation and/or soil degradation				
1.10	Waste management				
2. SOCIAL CULTURAL CONDITIONS					
	Issues that might be addressed in the IWRM plan:	A Importance	B Interlinked effects	C Need	SCORE (AxB)+C= TS
		1 – 4	1 – 3	1 – 3	TS
2.1	Management, operation and maintenance of water facilities				
2.2	Awareness of the need for attitudinal and behavioural change concerning water related health risks				
2.3	Fishing methods and effects on environmental conditions				
2.4	Traditional and benign cultural and gender practices on management of water				
3. ECONOMY					
	Issues that might be addressed in the IWRM plan:	A Importance	B Interlinked effects	C Need	SCORE (AxB)+C= TS
		1 – 4	1 – 3	1 – 3	TS
3.1	Procedures for efficient collection of payments for existing and future water related services				
3.2	Distribution of costs for initiation and implementation of basin wide plans and programmes				
3.3	Provision of assessment procedures and tools for decision making concerning prioritisation and financing of actions and programmes within Densu Basin.				
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES					
	Issues that might be addressed in the IWRM plan:	A Importance	B Interlinked effects	C Need	SCORE (AxB)+C= TS
		1 – 4	1 – 3	1 – 3	TS
4.1	Promotion of good governance, principles of democracy, respect for human rights, transparency and accountability				
4.2	Enforcement of decisions for initiation and implementation of basin wide actions and programmes within Densu Basin				
4.3	Enforcement of rights and obligations of private and public landowners concerning land use and exploitation of water and other natural resources				
4.4	Promotion of initiatives on research and technological development				
4.5	Inter-institutional collaboration and coordination of institutional capacity building				

Form 7. 4: Scoping and delegation of responsibilities; Reporting table (empty)

To be applied together with scoring tables		
1. NATURAL RESOURCES		
	Issues that might be addressed in the IWRM plan:	
1.1	Planning of the availability of surface water resources within the basin	
1.2	Planning of the exploitation of groundwater resources	
1.3	Planning the supply of water to the Metro Accra area	
1.4	Management of waste water discharges	
1.5	Planning of water quality and/or the hygienic safety of water	
1.6	Protection of "red list" species and/or endangered species in protected areas	
1.7	Protection and/or rehabilitation of river banks	
1.8	Flood management	
1.9	Land use, deforestation and/or soil degradation	
1.10	Waste management	
2. SOCIAL CULTURAL CONDITIONS		
	Issues that might be addressed in the IWRM plan:	
2.1	Management, operation and maintenance of water facilities	
2.2	Awareness of the need for attitudinal and behavioural change concerning water related health risks	
2.3	Fishing methods and effects on environmental conditions	
2.4	Traditional and benign cultural and gender practices on management of water	
3. ECONOMY		
	Issues that might be addressed in the IWRM plan:	
3.1	Procedures for efficient collection of payments for existing and future water related services	
3.2	Distribution of costs for initiation and implementation of basin wide plans and programmes	
3.3	Provision of assessment procedures and tools for decision making concerning prioritisation and financing of actions and programmes within Densu Basin.	
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES		
	Issues that might be addressed in the IWRM plan:	
4.1	Promotion of good governance, principles of democracy, respect for human rights, transparency and accountability	
4.2	Enforcement of decisions for initiation and implementation of basin wide actions and programmes within Densu Basin	
4.3	Enforcement of rights and obligations of private and public landowners concerning land use and exploitation of water and other natural resources	
4.4	Promotion of initiatives on research and technological development	
4.5	Inter-institutional collaboration and coordination of institutional capacity building	

Form 7.5: Scoping and delegation of responsibilities; Explanatory form

To be applied together with scoring tables	
1	NATURAL ENVIRONMENT AND NATURAL RESOURCES
	Issues that might be addressed in the IWRM plan:
1.1	Planning of the availability of surface water resources within the basin The availability of surface water might become a wide problem in Densu Basin in the future. Sustainable management of water rely on integrated water management within basins. Water management regarding availability is a problem that in the long term cannot be addressed only through local initiatives, but need crosscutting basin wide management
1.2	Planning of the exploitation of groundwater resources Ground water resources are only partly being exploited within the basin, but they are geographically unevenly distributed. Sustainable management of water might be addressed with the approach that surface and ground water is an integrated but finite resource within the basin. Ground water might increasingly be regarded as an alternative to the use of surface water in many places and may be done based on local initiatives and licensed by WRC
1.3	Planning the supply of water to the Metro Accra area Accra is located at the coast and depends fully on the resources made available within the whole basin or from neighbouring basins. The supply of water to Accra is a regional problem to be addressed through coordinated management of water resources within the basin and/or neighbouring basins through a national initiative
1.4	Management of waste water discharges Discharges of waste water may be considered as a cross-cutting problem having downstream effects within the basin, but regulation of discharges may most properly be managed locally, but coordinated based on common guidelines on best practise to be provided by the Densu Basin Board
1.5	Planning of water quality and/or the hygienic safety of water Water quality and the hygienic safety of water depends mostly on waste water discharges with high contents of organic matter and might be considered as a cross-cutting problem having downstream effects within the basin, but regulation of water quality might most properly be managed locally based on common water quality criteria to be achieved and a combined approach for regulating waste water discharges and water quality simultaneously
1.6	Protection of "red list" species and/or endangered species in protected areas Endangered and red list species are only found in the Ramsar area downstream Weija Dam and is as such a local activity
1.7	Protection and/or rehabilitation of river banks For protection of the environment rehabilitation of river banks might have a positive effect but need not be regulated as a crosscutting basin problem. It might most poperly be initiated locally but based on coordination and guidelines on best practises to be provided by Densu Basin Board
1.8	Flood management Risks of flooding is a local problem but mitigation activities might be coordinated within the basin based on Guidelines of best practice
1.9	Land use, deforestation and/or soil degradation Inappropriate land-use, deforestation and soil degradation is widespread within the basin but not with crosscutting effects, but requires regulation of private property rights that most properly might be enforced locally
1.10	Waste management Inappropriate waste disposal and management is a major and widespread problem within the basin and it is a problem that already is taken of locally. It need not necessarily be managed at basin level but might need coordination based on guidelines on best practise
2	SOCIAL CULTURAL CONDITIONS
	Issues that might be addressed in the IWRM plan
2.1	Management, operation and maintenance of water facilities Establishment, operation and maintenance of water facilities is a local task or the responsibility of Ghana Water Company even if they operate in several town areas within Densu Basin.
2.2	Awareness of the need for attitudinal and behavioural change concerning water related health risks The best results of campaigning on needs for attitudinal and behavioural changes are achieved through local activities addressing daily practises. The problems are being addressed but are general within the basin and may be coordinated based on common guidelines on best practises
2.3	Fishing methods and effects on environmental conditions Enforcement of existing rules and regulations on proper fishing methods are most appropriately

	being addressed as a local activity to be coordinated based on guidelines on best practise to be provided by Densu Basin Board
2.4	Traditional and benign cultural and gender practices on management of water Cultural practices, traditional and gender knowledge systems have the potential for sustained utilisation of water and protection of the environment. To apply such practises is a local concern but may need basin wide campaigns through the initiative of Densu Basin Board.
3. ECONOMY	
	Issues that might be addressed in the IWRM plan:
3.1	Procedures for efficient collection of payments for existing and future water related services It is a responsibility of local authorities to collect payments for water services. Ghana water company collect payment for local water services as well. But if basin wide and crosscutting activities for protection of the availability of water resources shall be initiated then the contribution from consumers must be based on efficient collection of payments
3.2	Distribution of costs for initiation and implementation of basin wide plans and programmes Enforcement of an IWRM plan will require a budget for implementation of actions and programmes. In the present situation revenue for financing of activities and programmes in an IWRM plan is restricted to payments from issuing water permits, allocations on the state budget and donor funding. Introduction of payment based on full cost recovery for public services indicates that a basin wide regulation of local contributions might be relevant and be negotiated among stakeholder authorities
3.3	Provision of assessment procedures and tools for decision making concerning prioritisation and financing of actions and programmes within Densu Basin. No authority has experience in prioritisation and decision making on financing of actions and programmes in an IWRM plan. Cross-cutting tools and procedures for prioritisation of environmental and social benefits will be needed as well as procedures and tools for assessment of the viability of actions and programmes and the capacity of the beneficiary
4. REGULATORY, ADMINISTRATIVE AND INSTITUTIONAL ISSUES	
	Issues that might be addressed in the IWRM plan:
4.1	Promotion of good governance, principles of democracy, respect for human rights, transparency and accountability To apply SEA procedures in IWRM planning are intended for basin wide promotion of all the mentioned principles
4.2	Implementation of basin wide actions and programmes within Densu Basin No enforcement procedures or institutional practices exist for implementation of basin wide actions and programmes. Partnership agreements between District authorities and Densu Basin Board on behalf of WRC might be the basis for initiation of coordinating activities. WRC will be responsible for implementation of cross-cutting basin wide actions programmes in the IWRM plan that are not addressed in District planning
4.3	Enforcement of rights and obligations of private and public landowners concerning land use and exploitation of water and other natural resources Enforcement of obligations of landowners is closely related with the behaviour of specific legal persons or institutions and is consequently dependent on initiatives of local authorities, until specific land use planning is incorporated in IWRM planning. Coordinating actives and campaigning might be relevant based on guidelines on best practise to be provided by Densu Basin Board.
4.4	Promotion of initiatives on research and technological development The water sector needs research and technology addressing problems regarding specific but general problems regarding IWRM planning. To identify such problems and to establish collaboration with research institutions might be an issue to be targeted in the IWRM plan.
4.5	Inter-institutional collaboration and coordination of institutional capacity building IWRM planning is a new activity in Ghana and it is necessary for IWRC continuously to extend the collaboration on water management at all levels of public administration and to develop the capacity on the specific need of a basin authority. Development of competencies and capacity of WRC and subordinate institutions must be addressed in the IWRM plan as a cross-cutting activity

Form 7. 6: Tools for Scoping and Distribution of Planning Responsibilities

Scoping and prioritization of issues to be addressed in the IWRM plan scoring table						
1. NATURAL RESOURCES						
	Issues that might be addressed in the IWRM plan:	A1 Importance	A2 Need	B1 Permanence	B2 Interlinked effects	Score A1xA2=AT B1+B2=BT ATxBT=CT
1.1	The availability of surface water resources					
1.2	The availability of groundwater resources					
1.3	The geographical distribution of surface water					
1.4	The geographical distribution of groundwater resources					
1.5	Supply of water to the Accra Metro Area					
1.6	Waste water discharges					
1.7	Water quality and/or the hygienic safety of water.					
1.8	Protection of "red list" species and/or endangered species in protected areas.					
1.9	Protection and/or rehabilitation of river banks for protection of the aquatic environment					
1.10	Risks of flooding					
1.11	Land use deforestation and/or soil degradation					
1.12	Waste disposal and management					

Scoping and prioritization of issues to be addressed in the IWRM plan scoring table						
2. SOCIAL CULTURAL CONDITIONS						
	Issues that might be addressed in the IWRM plan:	A1 Importance	A2 Need	B1 Permanence	B2 Interlinked effects	Score $A1 \times A2 = AT$ $B1 + B2 = BT$ $AT \times BT = CT$
2.1	Utilization of water resources among economic water consuming sectors, institutions, households and the poor.					
2.2	Establishment, operation and maintenance of water facilities.					
2.3	Awareness of the need for attitudinal and behavioral change concerning pollution of water and mitigation of water related health risks.					
2.4	Fishing methods and effects on environmental conditions.					
2.5	Traditional and benign cultural and gender practices on management of water and cultivation of crops.					

3. ECONOMY						
	Issues that might be addressed in the IWRM plan:	A1 Importance	A2 Need	B1 Permanence	B2 Interlinked effects	Score $A1 \times A2 = AT$ $B1 + B2 = BT$ $AT \times BT = CT$
3.1	Procedures for efficient collection of payments for existing and future water related services.					
3.2	Distribution of costs for initiation and implementation of basin wide initiated actions and programmes					
3.3	Principles for introduction of full cost-recovery and abolition of subsidies for public water related services.					
3.4	Initiatives on privatization					
3.5	Provision of assessment procedures and tools for decision making concerning prioritization and financing of actions and programmes within the Densu Basin.					

4 REGULATORY,ADMINISTRATIVE AND INSTITUTIONAL ISSUES						
	Issues that might be addressed in the IWRM plan:	A1 Importance	A2 Need	B1 Permanence	B2 Interlinked effects	Score A1x A2=AT B1+B2=BT ATx BT=CT
4.1	Obligations to promote good governance, principles of democracy, respect of human rights, transparency and accountability					
4.2	Awareness of policies and legislation					
4.3	Enforcement of decisions for initiation and implementation of basin wide actions and programmes within the Densu Basin.					
4.4	Procedures of appeal incase of disagreements among decision makers and/or disagreements with decision makers and local societies or individual stakeholders					
4.5	Enforcements of rights and obligations of private and public landowners concerning land use and exploitation of water and other natural resources.					
4.6	Enforcement procedures for supervision of permissions to exploit and discharge waste water and disposing of waste.					
4.7	Initiatives on research and technological development					
4.8	Inter-institutional collaboration and co-ordination of institutional capacity building.					

PART 3: TRAINING GUIDE

ABOUT THE TRAINING GUIDE

As has been the intent all along, this Guide is to be used by all, firstly, as a reference of how SEA is carried out and what has evolved from applying SEA in the water and environmental sanitation sector in Ghana. Secondly, the guide is intended to assist and enhance skills of policy makers, senior officers and practitioners within ministries, departments and agencies at central government, regional and district assembly levels, as they go through hands-on exercises.

It is intended that those who did not have the opportunity to be part of the participatory assessments of various policies and plans will be afforded the opportunity of learning and using, on a routine basis, the tools developed and assembled during those exercises.

The materials for Part 3 are derived mainly from the outputs and outcomes of various participatory assessments and training workshops, roundtable-meetings focused-group-discussions and introductory sessions that took place over a period of 15 - 18 months as part of capacity building in SEA in the water and environmental sanitation sector.

Training Processes

The materials in this Guide have been put together to reflect, to the extent possible, the 'Process' and 'Content' principles of SEA as have been applied in developing and assembling the tools and training modules:

For example, in the case of participatory assessment of policies the following issues were addressed under the main principles:

- *Process Issues*
 - Broad stakeholder engagement in development of sustainability criteria
 - Focus group discussions and key person interviews involving MWH-WD, CWSA, GWCL, WRC, CONIWAS, Hydro, GIDA, MLGRD, PURC
 - Awareness raising
 - in FGDs and KPIs and sharing of outputs and outcomes of all exercises
 - Building capacity in use of SEA tools
 - Workshops on sustainability and compatibility tests of policies
- *Content*
 - Refinement of policies, plans and programmes to respond to sustainability
 - Peer review of draft water policy
 - Produces SEA report documenting the process to support transparent decision-making
 - SEA Report

The Guide contains reference material that can be used for keeping the main principles of SEA in mind and one will necessarily come back to various sections now and then. The next section introduces the modules and how together with Part 4 the Guide can be used to mainstream issues of environment and institutionalize SEA in the Water and Environmental Sanitation sector.

SECTION 8

TRAINING MODULES

This section contains the various modules that have been assembled, so far, over the period. It is significant to note that an underlying principle of this Guide (and it so for the concept of SEA) is *flexibility*. That the modules should be used flexibly to meet the needs of trainees and the content of modules could be modified as well. More importantly new modules as and when these are developed should be incorporated in the Guide.

ABOUT THESE MODULES

The modules that follow have resulted from practical consultations and exercises, including:

- Participatory Assessment workshops: where specific policies (National Water Policy which was under preparation and the existing Environmental Sanitation Policy) were assessed based on sustainability objectives and criteria as explained under Section 3.
- Toolkit Pre-testing Workshop: where a number of tool-kits e.g. Health Profiling and Planning (HIPP) and Environmental Assessment and Profiling (EAP) tools were introduced and discussed.

The step-by-step instructions in the modules that follow have been simplified so that officials at all levels can be proactive in engaging in Training of Trainers within their relevant areas of work.

There are 6 modules in this section and they cover:

- Module 1 Basic Concepts of SEA
 - Definition of SEA and its hierarchy in the family of procedures of environmental assessments, generic steps in SEA, and the application of SEA in ex-ante and ex-post situations, and a background of how SEA has evolved in Ghana and the main-line agencies responsible for SEA in Ghana
- Module 2 SEA of Policies
 - Developing and Using Sustainability Criteria
 - Compatibility matrices
- Module 3 SEA of Plans and Programmes
 - Health and environmental profiling
- Module 4 Monitoring & Evaluation
 - Indicators for M&E
- Module 5 Environmental Assessment and Profiling
- Module 6 Quality Assurance of Feasibility Studies
- Module 7 River Basin Planning

In order to achieve the maximum benefit of the use of the modules it is recommended that Module 1 – Basic Concepts be used in all first-time training sessions. To keep Training Sessions within one (1) week frames typically *Modules 1, 2 and 6* could be presented as a package for policy makers, while *Module 1, 3, 4 and 5* could be another package for those involved with implementation of plans and programmes. Module 7 is appropriate for those involved in River Basin Planning. Because of the need for use of computers *Module 6* could be a stand-alone session. However, it is recommended that participants get the chance to cover all the modules over time.

The combination of modules to be used for any particular ToT session will have to be determined during a *pre-planning* workshop where the core team of identified trainers and facilitators can pre-view sessions, needs of participants and setting for the training.

MODULE 1: INTRODUCTION TO SEA - BASIC CONCEPTS AND PRINCIPLES

This module is intended to be used to introduce various stakeholders to the basic principles and concepts of SEA. It is meant to be the starting point for training participants who are to be involved in any SEA process.

The overall purpose of the module is to introduce SEA as a decision-making support tool. It will introduce the principles and concepts of what constitutes good practice in SEA, particularly as it is used to assess the context within which strategic decisions in policy-making, planning and programme development are taken. The emphasis will be on the role of SEA, and how SEA needs to be formulated in both *ex-ante* and *ex-post* situations to influence the strategic decision-making process.

The module will:

- (1) take participants through key concepts and principles of SEA including definitions,
- (2) review the practice of SEA in Ghana and
- (3) focus on the characteristics and requirements of strategic assessments to assist decision-making for ensuring sustainability.

Good practice principles, steps and examples as developed by CIDA and other individual experts provide further explanations.

The approach will lead participants to understand the key elements and components of SEA that constitute good practice and to explore options adapted to different sectoral or organizational decision-making realities.

The number of sessions mentioned and the timing for these are provided as a guide and it is expected that the contents and timing would always be adjusted to suit the purpose and the background of participants.

This module comprises 4 sessions and requires a total of 6 to 8 hours.

The overall objectives of the module:

- To equip the participants with theoretical background knowledge on Strategic Environmental Assessment and related issues such as Sustainable Development, MDGs, EIA, etc.
- To introduce participants to EIA and SEA practice in Ghana
- To equip participants to partake actively in the various stages of the SEA process in the WES sector in Ghana

Materials required are:

- Hand outs: SEA Guide, Copies of power point presentation
- Pens and paper
- Post-It Note pad (for Ice breaker)
- Coloured pencils: red, yellow and green
- Flipchart

Session 1: Introduction, Ice Breaker, Definitions, SEA in Ghana

1-2 hours

- Introduction of participants and Facilitators.
Facilitators first introduce themselves, their backgrounds and experience in SEA and or Environmental Assessment in general.
- Participants introduce themselves, including their background and experience with SEA or EIA or PPPs.
- Ice Breaker: Using the Post-It note papers, participants are asked to write down their understanding of the following concepts/terms: Environment, Sustainable Development, Water, Sanitation, and Health
- Each participant in turn sticks up their note pad under the appropriate heading.
- Participants are encouraged to work out the most appropriate definitions
- Formal definitions of SEA, EIA, Sustainable Development, Sustainability, PPPs are now presented and discussed
- Brief presentation on SEA practice in Ghana

Session 2: SEA in Practice - Principles and Concepts, ex-post, ex-ante

1- 2 hours

- SEA Principles and Concepts
Present and discuss the main principles of SEA with emphasis on sustainability, participatory approach, broad stakeholder consensus, transparency etc. Explain the broad definition of Environment when used in SEA and sustainability discussions.
Present and discuss the generic steps of SEA
- Ex-ante and Ex-post SEA.
Explain the terms *ex-post* and *ex-ante*
Explain the rationale for ex-ante and ex-post SEAs.
Explain the tools and methods used for ex-ante SEA
Explain the tools and methods used for ex-post SEA

Session 3: Group Work – Planning to carry out an SEA

3 hours

- The aim of the group work is to expose participants to various steps required in carrying out an SEA. Participants will be in 2 main groups – one group will look at ex-post SEA while the other group tackles an ex-ante SEA. Within each main group there may be a number of sub-groups depending on the number of participants. Ideally each sub-group should not be larger than 6 members
- Provide the ex-post group with appropriate section of a PPP document (e.g.extract from ESP or NWP) to be assessed
The tasks for this group include:
 - studying and analysing the PPP document
 - defining the objective of the SEA,
 - outlining the steps to be carried out for the SEA
 - describing the activities and resources needed for each
 - preparing a brief report for presentation and discussion
- Provide the ex-ante group with appropriate problem/situation requiring the formulation of a PPP (e.g. What are the sustainable policy options for cost recovery in the provision of WES services?)

The tasks for this group include:

- studying and analysing the given problem/situation
- defining the objective of the SEA,
- outlining the steps to be carried out for the SEA
- describing the activities and resources needed for each
- preparing a brief report for presentation and discussion

Session 4: Wrap up and Evaluation

1 hour

- **Wrap up**

Sum up the definitions of SEA and the other main concepts discussed. Participants should be confident to define these concepts in their own words.

Ask pertinent questions relating to various scenarios for doing SEA to ensure participants are well able to distinguish between ex-post and ex-ante SEAs.

Allow participants to identify the various mechanisms they would adopt to ensure that they consistently apply SEA principles in their work on PPPs.

Answer any remaining questions.

- **Evaluation**

Let the participants fill a simple, written evaluation form, using the principles of the contents of the training. The form should be constructed in a way that the answers you get are useful for improving your next training sessions.

Also let the participants express verbally their impressions about the training and its usefulness to them.

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MODULE 2: CARRYING OUT SEA OF POLICIES

This Module is divided into 5 sections and requires a total of one (1) long day or preferably spread over one-and-half (1½) days.

Session 2.1 – Introduction and Overview (Plenary session – Time Allocation, 30 minutes)

During this introduction, explain that the aim of this module is to provide an introduction to carrying out sustainability testing and compatibility testing of policies. Let participants know that the session will allow them to go through learning-by-doing exercises that will show how policy objectives and actions can be improved to meet expectations of sustainability.

This session will be used to allow for initial “ideas fair” of what participants know about existing policies in the water and environmental sanitation sector and how they were developed and who are the proponents for these policies.

Ask participants of how policies can be improved from what they have learnt from Module 1. Get one participants to write up answers on a flip-chart.

Explain that the training session draws upon experiences from real-life application of SEA to existing policies. Stress the point that an important value-adding aspect of this exercise is that participants are afforded the opportunity to read thoroughly (literally line-by-line) the contents of PPPs and their implications.

Session 2.2 – Principles, policy objectives and policy actions (mix of plenary and group sessions). Allow 1 hour 30 minutes overall

Start the session by making available copies of policies (relevant to the target audience; e.g. National Water Policy if participants are drawn mainly from water sector or the National Environmental Sanitation Policy if they from the environmental sanitation and waste management sector).

Ask participants to discuss the main principles guiding the policies in question and what the relevant policy objectives seek to achieve. Allow for 15 minutes open discussions.

Ask course participants to break into groups (4-6 persons) to discuss what policy objectives relate to which principles, and what actions have been designed to meet the objectives and to report back. Allow for 45 minutes group discussions. Group participants should be coached to present work in matrix form.

Bring the groups back to present what have been developed. Allow a further 20 minutes for reporting back.

Allow 10 minutes for open discussions of presentations and conclude the sessions on what participants think of as further policy actions that are required and how these can be supported at policy level.

Session 2.3 – Developing and using Sustainability Criteria [Allow for One and half (1½) to two (2) hours].

This session will introduce the sustainability test criteria used for testing policies and discuss what the *sustainability test* is. Explain the basis of criteria used in for WES as derived from general sustainability expectations (objectives) of decision-makers and those applied in main government development framework, in the case of Ghana, the Ghana Poverty reduction Strategy (GPRS1). Allow for 15 minutes.

Explain how draft criteria are developed and how to get inputs of stakeholders to improve on the draft going through the following steps:

1. Carry out systematic stakeholder identification (relevance to previous session 2.2)

- Core Sector Institutions; those directly involved in the formulation/implementation of the PPP
- Related Institutions; those sectors whose activities will be affected by the PPP
- Specialists/Individuals; those who have specialist knowledge or expertise relevant to the PPP
- Development Partners (including donors, NGOs/CBOs etc); major donors and NGOs active in the sector

2. Prepare materials for sensitising stakeholders

- Abridged versions of the policies (relate to the previous session 2.2)

3. Carry out consultations

- FGDs; useful for engaging groups within core institutions to enhance knowledge sharing and facilitates wide sensitisation and dissemination of concepts and objectives
- KPIs; use for engaging individuals with specialist knowledge and promoting advocacy
- Seminars and Workshops; for hands-on learning-by-doing exercises, allowing in-depth analysis of policies and building networks among stakeholders for supporting policies.

This session should discuss how the perspectives of various institutional groups influenced the finalization of *sustainability test* criteria used in WES sector.

Allow for 15 minutes.

Present the *Sustainability Test* Score sheets, *Sustainability Test* Record sheets. Allow participants to ask further questions. The session should conclude with explanation on how the criteria can be modified for locality-specific applications (e.g. District-level policies). Allow for 45 minutes.

Session 2.4 - Carrying on Sustainability Testing and Scoring (Allow for 3 hours and 30 minutes)

Provide detail explanation of scoring and recording in plenary (30 minutes).

Participants will break into groups (3-5) and carry out scoring (including colouring) and write up explanations and observations that go with allocated scores (2 hours)

Materials for this session are:

Colour Pencils – a set of Red, Gold, Green per group

Copies of sections of policy with marked policy actions to be tested. Where applicable and if participants suggested a number of policy actions (from Session 2.2) these can be tested for sustainability.

Record Sheets

At least 2 facilitators should be present to go round groups to give further explanations on scoring and recording reasons. As much as possible groups should write out explanations fully for each score.

The facilitators should discuss their observations from interacting with individual groups. If necessary group work should be paused for groups (selected or all) to do present “*where we are so far - feedback*” and allow general discussions. (Allow for 15 minutes)

At the end of the session Groups will present feed-back on scoring and recorded explanatory notes to plenary. Allow 30 minutes.

Allow a further 15 minutes for general plenary feed-back on scoring.

Session 2.5 – Developing a compatibility matrix and carrying out compatibility Test (Allow for 1 hour and 45 minutes)

This session will explain the purpose of compatibility, how to develop compatibility matrix and how to use it to test policy objectives within a policy as well as among objectives of related sector objectives and how to *record findings* of the test.

Start the session by explaining what compatibility is supposed to achieve and ask general questions as to what participants understand compatibility to mean. Allow for 10 minutes.

Using policy objectives and actions (from the previous sections) go through an example of checking compatibility and completing record sheet(s). Allow for 20 minutes including questions and answers.

Participants will break into groups (3-5) and develop compatibility matrices and related score sheets. Allow for 45 minutes.

Come back into plenary and get feed-back from participants. Allow 15 minutes.

Session 2.6 – Writing the SEA Report and Presenting Recommendations (Allow for 2 hours)

Explain the rationale for preparing the SEA report;

- Refining policies (plans and programmes) to respond to sustainability
- Preparation of SEA report documenting the process to support transparent decision-making

In plenary discuss with participants the outline of an SEA report. Give examples of recommendations of previous SEAs and how these led to amending (or including) objectives/actions to be make them more sustainability-responsive. Also give examples of

real-life changes in written policy objectives or actions from existing SEA reports. Allow for 25 minutes.

Participants will break into Groups and prepare group SEA Reports of the whole exercise. The report should document both *process* and *content* issues as has been applied under Module 2. Participants will have to refer to Module 1 to recap on the general process and content principles of SEA. Allow for 45 minutes.

Each group will present its SEA report and defend their recommendations in plenary. A panel of decision-makers (formed from participants) and other stakeholders will hear and deliberate on the report. Allow for 30 minutes.

Wrapping-up – using what has been learned (Allow for 15 minutes)

It will be appropriate to end Module 2 at this point. Encourage discussions on how what has been learned can be applied to various needs in everyday work. Also discuss how other modules complement these sessions and what other tools are appropriate for enhancing and adding to what has been learned.

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MODULE 3: HEALTH IMPACT PROFILING AND PLANNING

This module is divided into 2 parts. In each district part one (which is meant for EHO/EHA and other staff working with health profiling) should be followed by part two for the DWSP team and other planners in the district.

The number of sessions mentioned and the timing for these are all advisory for basic training on all important issues regarding the profiling exercise. The contents and timing should always be adjusted to suit the purpose and the background of participants.

Part one: “Health profiling and planning” is targeted to EHA/EHO and other staff responsible for the health profiling and planning for WES improvements in and with communities.

This section has, if carried out full scale, 9 training sessions and requires a total of 2 – 3 days.

The overall objectives of part one are:

- To equip the participants with theoretical background and skills to plan for and prepare quality health profiles and planning for health impact in and with the communities which apply for support to improved water supply and sanitation.
- To adjust the profiling and planning tools to suit the local conditions of the communities and district (if needed).

Part two: “Planning for health impact” is targeted to DWSP teams and others who will use the health profiles and community plans for priority setting and WES planning in the district. This section has 6 sessions and requires one (1) day.

The overall objectives of the part two are:

- To establish a common understanding among DWSP team members and planners of the importance of health profiling and subsequent strategic planning to actively combine the interventions of water supply with environmental sanitation, community participation and health and hygiene education, in order to achieve a positive health impact.
- To adjust the tools to suit local conditions (if needed)

Part One: Health Profiling and Planning

It is anticipated that the participants are familiar with the CWSA Extension Services Guides. This training builds on the same background and principles, and is supplementary to these.

The full training course is prepared to guide the participants through sessions that bring out and build on their knowledge from working in the communities. This is then compiled in a structure that leads to ownership and to adjusting the tool to suit the local conditions.

The approach is combining brief lectures in plenary sessions with group works, field visits and community mapping exercises. Practical experiences are discussed and the tools adjusted, if this is found feasible.

All the EHA/EHO and others in the district who will work with WES health profiling in practice in the communities should participate in the training. If the group is big, only the

plenary and concluding sessions should be for all participants at one time, whereas the working sessions should be in groups not bigger than 6 persons.

Materials required are:

- District data on community WES coverage etc.
- Samples of community applications
- Hand-outs: Guide (perhaps only the relevant section), Tools (including questionnaire) and model of health determinants
- Pens and paper
- Colored pencils: red, yellow and green
- Flip-over with big size papers

Session 1: Introduction, objectives and steps

1 hour

- Introduction of the objectives of this training course and it's relation to the SEA process.
Explain objectives of health profiling, and why this can add a new dimension to strategic planning, aimed to achieve positive health impact of WES interventions. Give a brief introduction to the different steps and how the group will work with them during the training.
Explain that the participants are regarded as competent staffs, which have a deep and important experience, and that this experience is much valued in this training.
- Introduction of participants and trainers.
Trainers firstly introduce themselves, their backgrounds and experience in working with community health impact planning.
Each participant introduces her/himself, including their background and experience with community planning. What does she/he think needs more attention in order to achieve better health impact of WES interventions?
Note on flip-over important points mentioned, which should be addressed during the course.

Session 2: Health, health impact, health promotion and disease prevention

1 - 2 hours

- Definition of health in a broad perspective
First let participants give their definitions of health. Note important issues/elements. Conclude and compare with WHO definitions.
Explain further (if needed) the definition of health seen in a broad perspective, and how health is an important factor in development and poverty reduction.
- Health determinants.
Show and explain the Model of Health determinants.
How is this model relevant seen in the community perspective?
Add/discuss local determinants in the spheres of "lifestyle" and "social- and community networks".
- What is health impact?
Let participants give their idea on – or examples of - what health impact is. Conclude after some bids. Remember to have examples of negative as well as positive health impact.

Discuss the health impact of water supply alone. Discuss other relevant/needed interventions and their expected impact on health.

- Health promotion and Disease prevention.
Discuss the relation between health promotion and disease prevention.
Discuss the different levels of prevention (Primary, secondary and tertiary prevention), and give an example. Let the participants give other examples related to other diseases.

Session 3: Categories of WES related diseases 1-2 hours

- Main transmission routes of WES related diseases
Let participants mention the main transmission routes.
List and group these.
- Categories of WES related diseases.
Describe main categories of the diseases according to groups mentioned and those diseases predominant in the area. Make sure to have at least the 4 groups of the profiling tool. If more groups appear, discuss whether these could be included in the four groups or whether another needs to be added in this district.
- Breaking transmission routes.
Discuss with the participants the main interventions needed to break these transmission routes. Discuss and focus on measures of primary and secondary prevention.

Session 4: The Health profiling tool 1 - 2 hours

- Introduce the health profile tool and relate it to the previous session (3).
Are the relevant diseases and measures of control mentioned in the two first parts of the tool? Should something be added, specified or clarified?
- Compiling of data from districts and community applications.
Let groups work with compiling data in the two first parts of the tool.
Does this still make sense according to the available data?
Discuss in plenary and adjust tool, if appropriate.

Session 5: Conducting survey: Interviews and observations 1 + 2- 3 hours

- Presentation and discussion of questionnaires.
Each part of the questionnaire should be discussed, and it should be clarified, if some questions should be specified in more detail (e.g. types of latrines, water supply sources and predominant practices), or perhaps irrelevant parts omitted.
- Preparations for field survey.
Discuss what is needed to prepare for a field survey in the community. Which preparations at district level and with the community? When should the survey be carried out (season, time of the day etc.)?
Prepare a checklist with the participants.
- Interviews and observations in a community
If time permits participants should go to a nearby community to test working with the questionnaire, interviewing and observing. In that case session 6 should also be carried out before the visit to a community.
If this is not possible, let the participants interview each other, pretending they are villagers. Each group should have at least 10 questionnaires to work with.

Session 6: Community mapping.

1 - 2 hours

- Presentation and discussion about community mapping.
Explain the value of community mapping, as a tool for analysis, understanding, planning and participatory planning with the community.
Explain which features should be included in all maps: Water supply facilities, sites for collecting water, washing, bathing, latrines, area for open defecation, waste, drainage, schools and other institutions etc.
Do not at this stage discuss symbols for the different issues.
- Mapping of nearby community.
Community mapping is always an eye opener for people at all levels. Therefore some practical mapping should be included, even if time is scarce. If so, at least let the participants go to the surrounding area for ½ hour and do a brief mapping exercise, just to experience how differently issues are observed, when they need to be noted into a map and related to the general WES situation.
If time permits the mapping should be done in the community, where interviews and observation is carried out.
- Discussing the prepared community maps.
In a plenary session the groups present their maps, and each map is discussed regarding status and analysis of present WES situation in the community mapped.
Is some consensus needed regarding symbols in the maps?

Session 7: Health Impact Planning Tool

3 hours

- Compiling survey data in Profile tool.
Present and explain “notes for questionnaire” and the analysis tool.
Let the individual groups compile their data in the health profiling tool, marking in green, yellow and red, and filing remarks to the reasons of the situation in the community.
- Presentation and discussions about the completed profiles.
Groups present their health profiles, give their analysis of the WES related health of the community and give recommendations for WES improvements to achieve better health.
- Transfer of data to planning tool
Groups should now (after the analysis) transfer the congregated data to the planning tool, specifying which actions can support health improvement and thereby also the expected outcomes and health impact.
- Presentation and discussion of the completed planning tools and recommendations to DWSP teams:
Groups present their plans and explain about their recommendations to the DWSP team: What they recommend, why it is recommended and what is the expected impact on health.
Discuss the appropriateness of each plan and add, subtract, revise until all participants think this is the best possible solution.

Session 8: Participatory planning

1 hour

- Consultation with and participation of community in the planning process
The health profiling tool and the community map may also be useful when planning for interventions together with the community or its representatives.
The profile demonstrates the health problems and possible reasons for these. The map further explains this.

Use the community map as an exercise to plan (with the community or participants) where and how improvements are most appropriate and possible. Discuss how this can be carried out in practice.

This is the short version, but the PHAST method, and other participatory approaches for solving health and hygiene WES related issues, are of course most relevant for this purpose.

The main issue in this regard is to use a participatory, structured, strategic approach.

Session 9: Wrap up and Evaluation

1 hour

- Wrap up
Sum up the process through the various steps and ensure that all outstanding issues are included now.
Present the profiling tool (with changes) and make sure there is a consensus that this is now a usable form for the profiling purpose.
Present the planning tool (with changes) and make sure there is a consensus, that this is now the final version.
Answer any remaining questions.
- Evaluation
Let the participants fill a simple, written evaluation form, using the principles of the contents of the training. The form should be constructed in a way that the answers you get are useful for improving your next training sessions.
Also let the participants express verbally their impressions about the training and its usefulness to them.

Part Two: Planning for Health Impact

It is anticipated that the participants are familiar with the CWSA Guides for DWSP teams. This training builds on the same background and principles and is supplementary to these.

The contents of this part is similar with the contents of part one, only more informative and less participatory.

Session 1: Introduction and objectives

½ hour

- Introduction of the objectives of this training course and it's relation to the SEA process.
Explain objectives of health profiling, and why this can add a new dimension to strategic planning, aimed to achieve positive health impact of WES interventions.
Give a brief introduction to the different steps.
- Introduction of participants and trainers.

Session 2: Health, health impact, health promotion and disease prevention

½ hour

- Definition of health in a broad perspective, and the importance of health in development and poverty reduction.
- Health determinants.
Show and explain the Model of Health determinants.
- What is health impact?
Briefly discuss as an example the health impact of e.g. water supply alone.
An impact not planned for cannot be expected.
- Health promotion and Disease prevention.
Discuss the relation between health promotion and disease prevention.

Discuss the different levels of prevention (Primary, secondary and tertiary prevention), and give an example.

Session 3: Categories of WES related diseases, ½ hour

- Present classification of WES related contagious diseases
- Explain the classification, routes of transmission and prevention as a key to strategic approach to health impact profiling and planning.

Session 4: The Health profiling and health impact planning tools 2 hours

- Present the tools one by one
- Explain the process to health profiling, and the potential of the overview “at a glance”
- Explain the health impact planning tool and its potential use at community and district levels.
- Discuss the tools with participants. Will the tools add value to the WES planning process? How can the tools supplement existing tools and procedures?
How can the tools add to district mapping, priority setting and participatory planning?
If time allows divide participants into smaller groups which can discuss and present models for integration of the tools into the planning process.

Session 5: Wrap up and Evaluation 1 hour

- Wrap up and conclude
- Add to or adjust HI planning form if appropriate.

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MODULE 4: MONITORING AND EVALUATION (M&E) OF HEALTH IMPACTS

This Module is divided into eight (8) sessions. With advance preparations to facilitate field site visits, the training can be conducted over a 2-day period. This Module must be completed after Module 3, that is, after the introduction of the Health Profile Form.

Requirements:

Course presenters

It will be best if two trainers present this module to ensure that:

- A diversity of actual experience is presented;
- That there are at least 2 different site visits.

Workshop binder

The trainers will prepare handouts covering all workshop topics (i.e., the three M&E tools).

Number of participants

Ideally, about 10–12 participants should attend the course. This is to ensure that the hands-on field monitoring exercise is well executed. Some community representatives should also attend the course.

Course setting

The course should be conducted at the District level. It assumes that a suitable room will be available for classroom presentations, group presentations, and plenary sessions.

Also, ideally two communities that have undergone a Health Profiling exercise will be available for site visits.

DAY 1

Session 4.1 – Introduction and Overview (*Plenary session; 20 minutes or 0.3 hours*)

The Trainers should introduce themselves. And then have the participants' introduce themselves (they may know each other, but the trainers need to know them too).

Subsequently, the trainers will explain that the aim of this module is to introduce three tools for M&E.

The trainers will provide an overview of the training and a tentative calendar of activities for the two days. Participants will be asked to review the calendar and to make amendments, where necessary.

Session 4.2 – The M&E Planning Tool (District Level) (*Group sessions and Plenary session; about 2.6 hours in total*)

Materials: Flipchart, pens, paper

Start the session by forming work groups (3-to-4 persons/group).

Each group can brainstorm on the first (6) topics listed in the M&E Planning Tool. This brainstorming should be a quick exercise (*about 30 minutes for the brainstorm session*) to capture the participants' views and experience related to M&E. Each group should select a spokesperson.

In plenary session, the trainers should introduce each of the first 6 topics (i.e., purpose of M&E, necessary resources) and obtain the group inputs. A flipchart can be used to record inputs. As needed, the trainers can add issues, which have been omitted by the groups. The objective is to obtain a common understanding and consensus about M&E (*about 30 minutes for the plenary session*).

The issue of indicators and understanding indicators (topic #7 in the M&E Planning Tool) can be addressed next. Within the plenary, the trainers should introduce the framework to classify indicators (output, outcome, and impact indicators). Then the trainers can ask participants to list WES indicators and to assign them to their relevant category. By the end of the exercise, the participants' list of indicators can be compared to the list provided in the guidance Guide and a consensus can be reached on the list of indicators (*about 1 hour*).

This *M&E Planning Tool* session can be concluded by having a group discussion on 'a monitoring and evaluation strategy'. Important points to highlight will be the need to have a community-level system that is useful at community level and that will start off using a number of qualitative indicators, which will need to be cross checked (*about 20 minutes*).

Session 4.3 – The M&E Tool (*Plenary session, about 30 minutes*)

Using a plenary session, the trainers should review the M&E Tool with the participants. This tool should be quite familiar; as the participants would have recently been trained on the Health Profile Form (HPF) and, hopefully the participants will already have experience with completing a HPF (Module 3).

Session 4.4 – The M&E Report Sheet (*Plenary session, about 30 minutes*)

Using a plenary session, the trainers should review the M&E Report Sheet with the participants. This tool should be quite familiar, as the participants would have recently been trained on the *Health Profile, Record and Planning Sheet* and, hopefully the participants will already have experience in completing a planning sheet (Module 3).

Session 4.5 – Preparations for a field monitoring exercise (*Group work, about 2 hours*)

Materials and advance preparations: *The trainers should ensure that an adequate amount of information on (at least) 2 communities is available (WES coverage, facility application form showing incidence of WES diseases, health profile, and previous community maps).*

The trainers will have obtained permission from at least 2 communities to conduct an M&E exercise beforehand and will have complied with any other necessary protocol to arrange such a field site visit.

Using the morning groups, participants will now prepare for a M&E visit. Each group will be assigned to a specific community. Using all available relevant background data on their assigned community, each group will start completing the M&E tool using the available data.

Otherwise, the group members will carefully study all available data and develop their strategy for conducting the M&E visit (scheduled for the following day). For instance, one group member may want to focus on conducting household interviews, another may focus on general community observations and observations at various institutions (practices and behaviour), and still another may complete the community map. Each group will also discuss how to make the field visit a participatory monitoring visit.

Each group must ensure that they have a good understanding of WES conditions of their assigned community, as of the date listed on the existing data. This will help ensure that they will be able to ‘compare’ the conditions during the monitoring visit to the conditions prevalent during the previous visit.

A group leader should be selected for the site visit.

During this time, the trainers should try to ensure that all groups are making adequate preparations for their M&E visit by asking relevant questions or through coaching.

DAY 2

Session 4.6 – Field monitoring exercise (*Group work, about 3 hours*)

Materials: *Writing pads, interview questionnaire, paper for map drawing, camera (if available), transport to field site*

There will be one trainer going to each of the two community sites. The trainers will not intervene in the workings of the group(s), unless very necessary.

The group leader will organize the group so as to complete the M&E exercise within a 3-hour period. This will probably mean an early start on the field day, given that the groups will need to travel to and from the communities.

Session 4.7 – Complete the M&E Report Sheet (*Group work, about 1.5 hours*)

Materials: *Overhead projector, transparencies, markers, and/or flipcharts to prepare presentations*

After lunch, the participants will continue their group work. The groups should select a presenter. The groups will review the results of the field visit and complete the M&E Tool and the M&E Report Sheet. The recommendations should entail both ‘content’ and ‘process’ recommendations. The groups should also be ready to discuss ‘what worked’ and ‘what didn’t work so well’ during their monitoring visit.

Session 4.7 – Presentation of Group work (*about 1 hour*)

Each group will present its completed M&E tool and M&E Report Sheet. The trainers will facilitate critical discussion on relevant aspects after each presentation.

Session 4.8 – Wrap up (*0.5 hour*)

The trainers will lead a discussion on the key issues that were learnt over the 2-day period.

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MODULE 5: ENVIRONMENTAL ASSESSMENT AND PROFILING

This Module is divided into 7 sections and requires a total of two (2) days to be carried out effectively (Day 1: sessions 5.1-5.4, and Day 2: sessions 5.5-5.7). It sets out how to carry out environmental profiling of a District and how environmental issues can be catered for in a District Water and Environmental Sanitation Plan.

Session 5.1 – Introduction and Overview

[Plenary session – Time Allocation: 30-45 minutes]

During this overview, explain that the aim of this module is to provide an introduction to carrying out an assessment of the important environmental issues (both positive and negative) so that an environmental profile of the district (or community) can be developed and used in district water and sanitation planning. It would be useful to mention the various levels of environmental assessments (from Module 1) and the general steps used in developing an Environmental Profile for a District.

The session would allow for participants understanding of environmental issues and profiling. Participants would be asked to list the main environmental issues (related to the sector) in a number of districts that they have fairly good working knowledge of.

Ask participants of how plans and programmes can be improved from what they have learnt from Module 2 (SEA of policies) and Module 3. Answers should always be captured on a flip-chart.

Let participants know that the module is based on a hands-on (practical) approach that will show how potential actions of a District Water and Environmental Sanitation Plans can be improved to meet expectations of environmental sustainability and how to record reasons for particular ‘judgements’ when assessing environmental issues.

Briefly introduce the Environmental Profiling Form (Form 4.2.3).

Session 5.2 – Assessing the status of environmental conditions

[Plenary/group session - Time allocation: 1½ hours].

Explain the objective

Explain to participants the objectives of the session and its usefulness (and how it is linked) to completing the Environmental Profiling Form (Form 4.2.3). Explain that the observation and assessment of existing environmental conditions is crucial for the subsequent definition of issues and actions to be included in the WES planning.

It is useful to allow participants to give their views on which environmental categories are relevant in relation to the WES planning process and how existing environmental conditions are captured in DWSPs if they are available. *Allow for a total of 20 minutes.*

Introduce Form 4.2.3.A and Form 4.2.3.B and explain how the latter is used to support the completion of the former. Take time to explain the various – ‘observation theme’, ‘Question’ and ‘Answer’ columns and the importance of each ‘object’ category of Form 4.2.3.A and the elements within each category, as well as how they are developed (through participative FGDs/KPIs) and should be adjusted depending on local conditions and the issues to be addressed in the DWSP. *Allow for 30 minutes.*

Allow the course participants to study the two forms and discuss them briefly in groups of 4-6 persons after which a short round in plenary for clarification of questions, presentation of viewpoints and proposals for improvement/modification of the tools should be held. *Allow for 40 minutes.*

Materials for this session:
Forms 4.2.3C and 4.2.3D
Record Sheets

Session 5.3 – Assessing the status of water and environmental sanitation (WES) [Plenary/group session - Time allocation: 2 hours].

Explain the objective

Explain to participants the objectives of the session and its usefulness (and how it is linked) to completing the Environmental Profiling Form (Form 4.2.3). Explain that this session is crucial to adding value to the DWES planning process. The participants should be allowed to give their views on how existing environmental sanitation situation is captured in DWSPs if they are available. *Allow for a total of 20 minutes.*

Introduce Form 4.2.3.C and Form 4.2.3.D and explain how the latter is used to complete the former. Take time to explain the various – ‘observation theme’, ‘Question’ and ‘Answer’ columns and the importance of each ‘object’ category of Form 4.2.3.C and the elements within each category, as well as how they are developed (through participative FGDs/KPIs). *Allow for 30 minutes.*

Allow the course participants to study the two forms and discuss them briefly in groups of 4-6 persons after which a short round in plenary for clarification of questions should be held. *Allow for 20 minutes.*

After this, the groups should - based on an existing DWSP - discuss and carry out an "ex post" assessment of WES planning objectives and to report back. Participants should be reminded to write out in full the ‘Remarks’ for each assessment. *Allow for 45 minutes.*

Bring the groups back to present briefly in plenary what have been developed as well as possible problems encountered during the process. Finalise the session with an open discussion of the session including proposals for improvement of exercises and tools. *Allow for 30 minutes.*

Materials for this session:
Forms 4.2.3C and 4.2.3D
Copies of District Water and Environmental Sanitation Plans

Section 5.4 - Field observations of environmental and WES conditions

[Practical (field)/group session - Time allocation: 2½-3 hours].

This is a practical session (field trip in groups) and should be set in a situation that allows for observation of environmental conditions and WES services in a district or community.

Explain the objective:

Explain to the participants that this session is intended to give them an opportunity to make an "ex ante" assessment of (selected categories) of existing environmental conditions and WES services, which is the way the tools are intended to be used in the future. Explain the practicalities related to the session and break the participants into small groups of 3-4 persons. *Allow for 15 minutes.*

Allow the groups to walk/drive and observe the environmental and WES conditions in a nearby community/district. The groups should observe and record their answers to questions/observations in selected categories of "environmental situation" and "WES planning" (Forms 4.2.3A and 4.2.3C, respectively).

Allow for 2 hours.

Upon return of the groups they give feed-back on the experiences gained (including constraints) in gathering the information and making the assessments for each of the forms. The conclusions to be drawn - including possible needs for adjustment of the approach to reduce practical difficulties - should be discussed in plenum.

Allow for 30 minutes.

Materials for this session:

Forms 4.2.3A, 4.2.3B, 4.2.3C and 4.2.3D

Record Sheets

Session 5.5 - Environmental profiling for district WES planning

[Mix of plenary and group session - Time allocation: 2 hours]

This session starts Day 2 and will explain the use of the Environmental Profiling Form (4.2.3) and how it can be used to add value to DWES planning. Start the session by making available copies of DWESPs relevant to the district assembly (or assemblies if dealing with a river basin, for example). Ask participants to discuss the main objectives of the plans in question and how issues of environment have been captured and taken care of. *Allow for 15 minutes.*

Make available Form 4.2.3. Explain that the Environmental Profiling Form provides at a glance a 'snap shot' the state of environment in a district. Go through the various sections of the form and explain each environmental and WES category and the typical issues within the category. Explain how possible critical issues and constraints in the DWES planning can be identified by comparing the scoring in comparable categories of the upper and the lower part of Form 4.2.3.

Explain how the 'questions and observations' and 'assessment of situation' from the supporting forms (4.2.3A and 4.2.3C) should feed into Form 4.2.3. Carefully explain the basis

for scoring ‘Green’, ‘Yellow’ or ‘Red’. It is important to let participants appreciate that the ‘questions and answers’ are only examples and sound field judgment is important.

Allow for 20-30 minutes.

Ask course participants to break into groups (4-6 persons) to discuss and complete Form 4.2.3 based on an existing DWSP ("ex post" assessment). Participants should be reminded to write out in full the ‘Remarks’ for each assessment. *Allow 1 hour for the group work.*

Bring the groups back to present what have been developed. Conclude by an open discussion of presentations and on what participants think of the session and how the session and exercises can be improved.

Allow for 20 minutes.

Materials for this session:

Form 4.2.3

Forms 4.2.3A, 4.2.3B, 4.2.3C and 4.2.3D

Copies of District Water and Environmental Sanitation Plans

Record Sheets

Session 5.6 - Carrying out district WES plans sustainability testing and scoring

[Plenary/group session - Time allocation: 2 hours]

This session will normally follow on to Sessions 5.2-5.5. It can also be used for further instruction and exercising in support of Module 2: SEA of Policies.

In plenary, provide explanation of the links among Form 4.2.1, Form 4.2.2 and Form 4.2.3. Also explain in detail how scoring and recording is carried out using Form 4.2.1.

Allow for 15 minutes.

Participants will break into groups (4-6) and carry out scoring (including colouring) and write up explanations and observations that go with allocated scores.

Allow 1-1½ hours.

At least 2 facilitators should be present to go round groups to give further explanations on scoring and recording reasons. As much as possible groups should write out explanations fully for each score.

The facilitators should discuss their observations from interacting with individual groups. If necessary group work should be paused for groups (selected or all) to present “*where we are so far - feedback*” and allow general discussions. (Allow for 5 minutes per group)

At the end of the session Groups will present feed-back on scoring and recorded explanatory notes to plenary. Conclude with general response on the session.

Allow for 20-30 minutes.

Materials for this session:

Forms 4.2.1, 4.2.2, 4.2.3

Copies of district water and environmental sanitation plans

Annotated Sheets explaining sustainability criteria

Session 5.7 – Monitoring and evaluation of sustainability objectives + wrapping up

[Plenary/group session - Time allocation: 2 hours]

Explain the objectives of this session.

Explain different purposes and ways of performing monitoring and evaluation (M&E) of DWSPs including how M&E can be used to improve future plans. Describe the process of developing a monitoring plan using the principles and tools described in Part 2, Section 5. Explain the use of indicators for monitoring of strategic objectives such as environmental sustainability objectives.

Allow for 30 minutes.

Participants will break into groups of 4-6 persons and, based on the preceding sessions and the materials used for these (and the practical observations made during the field exercise, Session 5.4), be asked to discuss and develop proposals for M&E of selected sustainability objectives including which indicators should be used, how they can be measured and who should do it.

Allow for 1 hour.

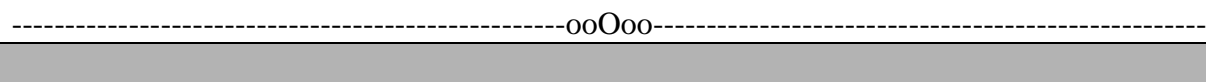
Bring the groups back to present what have been developed and the possible constraints they have encountered both with regard to identifying suitable indicators and with regard to resources required and capacity/capabilities needed.

Allow for 15 minutes.

Wrapping-up – using what has been learned

It will be appropriate to end Module 5 at this point. Encourage discussions on how what has been learned can be applied to various needs in everyday work. Also discuss how other modules complement these sessions and what other tools are appropriate for enhancing and adding to what has been learned.

Allow for 20-30 minutes.



MODULE 6: COST BENEFIT ANALYSIS AND QUALITY ASSURANCE OF FEASIBILITY STUDIES

This Training Module is targeted at decision makers in the water sector. The module serves to update their knowledge in feasibility study and cost benefit analysis seen in the context of SEA of plans and programs.

In addition to the cost benefit analysis the module will introduce the use of the following SEA formats i) Format for checking feasibility study content and ii) Appraisal form for checking sustainability elements of a feasibility study.

The Module is divided into 4 sessions and requires a full day.

Session 6.1 – Introduction and Overview (Allow for 0.5 hour)

Start the introduction by asking participants to explain their experience in preparing financial and economic project analysis.

Explain that the content of the Module consists of three parts:

Module 6.2-A theoretic part presents the overall purpose of a feasibility study in the context of Plan/Programme and in relation to the main phases of the project cycle.

Module 6.3-A case study illustrates how to prepare a cost benefit analysis with focus on the use of profitability criteria such as Net Present Value (NPV), Financial Internal Rate of Return (FIRR) and Economic Internal Rate of Return (EIRR)

Module 6.4-A Group Work allows participants a hands-on experience in how to assess the most important sustainability elements of the feasibility study

The Training Module requires computer workstations for all participants with installed excel software installed

Session 6.2 – Purpose of feasibility study in the context of Plan/Program identification, formulation, appraisal and implementation. (Allow for 2 hours)

1) Introduction to Plan/Program identification, formulation, appraisal and implementation (20 minutes).

Purpose: Introduce the feasibility study and its elements as a tool which facilitates the process from Plan/Programme identification to implementation via formulation and appraisal. Explain the content of identification, formulation and appraisal.

Use the "Feasibility SEA" Power Point presentation (Slides 1-6)

2) Introduction to the main elements of a feasibility study (1 hour)

Purpose: Introduce economic and financial analysis and the main differences between the two tools.

Introduce the main tools to be used as profitability criteria in economic and financial analysis including Net Present Value (NPV), Financial Internal Rate of Return (FIRR) and Economic Internal Rate of Return (EIRR)

Use the "Feasibility SEA" Power Point presentation (Slides 7-15)

3) Introduction of form for checking feasibility study content (30 minutes):

Purpose: Introduce form for Feasibility Study content which can be used as a cheque list when formulating Terms of Reference for a feasibility study.

Use the "FS" Word file

4) Q&A session (10 minutes)

Session 6.3 – Case Study: Cost benefit analysis (Allow for 1 hour 15 minutes).

This session will introduce the actual cost-benefit analysis of a specific project. The case examples to be employed in this session will be drawn from urban, community water and water-resources sub-sectors. In a few cases, examples from environmental sanitation shall be used.

1) Cost benefit methodology including the identification of costs and benefits (pricing of water and discounting (30 minutes)

Purpose: Present an excel based example of a cost benefit analysis with identification of costs and benefits and application of discounting methodology based on selection of alternative discount rates.

Use Power Point File "Group Work" (Slides 2-7) and Excel File "Group Work Comp".

2) Financial and economic indicators-NPV, FIRR and EIRR (20 minutes)

Purpose: Present methodology for calculating NPV, FIRR and EIRR

Use MS Powerpoint File "Group Work" (Slides 2-7) and MS Excel File "Group Work Comp".

3) Appraisal form for checking sustainability elements of a the feasibility study (15 minutes)

Purpose: Introduce the Appraisal form for checking sustainability elements of a feasibility study.

Use the Word File "Appraisal May 18"

6) Q&A session (10 minutes)

Session 6.4 - Group Work-Cost benefit analysis (Allow for 2 hours)

1) Participants will be divided into a number of groups each 3-4 members. Each group should answer a number of questions related to cost benefit issues as discussed and related to Session 6.3. The specific questions (as outlined under "Group Work" slides 8-11 should be answered by completing the Appraisal Form for, as an example, the WB project "Ghana Urban Water Project" (1 hour)

The groups should have access to and use the following files:

The Power Point file "Group Work" (slides 8-11)

Word File "Appraisal May 18"

The WB Project Appraisal Document: Ghana Urban Water Project, July 1, 2004 : PDF File 285570GH

Excel File "Group Work Comp"

2) Each group will be asked to present solutions to questions, followed by discussions (1 hour)

Each group has access to a computer with excel software

Wrapping-up – evaluation of what has been learned (Allow for 30 minutes)

Encourage discussions on how what has been learned can be applied to various needs in everyday work. Ask participants to provide an evaluation of the module by filling in and return prepared evaluation form.

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MODULE 7: SEA IN RIVER BASIN PLANNING

This Training Module is targeted at decision makers in the water sector. The module serves to update their knowledge in feasibility study and cost benefit analysis seen in the context of SEA of plans and programs.

In addition to the cost benefit analysis the module will introduce the use of the following SEA formats i) Format for checking feasibility study content and ii) Appraisal form for checking sustainability elements of a feasibility study.

The Module is divided into 4 sessions and requires a full day.

Session 6.1 – Introduction and Overview (Allow for 0.5 hour)

Introduction to Module 6 and participants (30 minutes)

Session 6.2 – Purpose of feasibility study in the context of Plan/Program identification, formulation, appraisal and implementation. (Allow for 50 minutes)

- 1) Introduction to Plan/Program identification, formulation, appraisal and implementation (10 minutes)
- 2) Introduction to the main elements of a feasibility study (20 minutes)
- 3) Introduction of form for checking feasibility study content. (10 minutes)
- 4) Q&A session (10 minutes)

Session 6.3 – Case Study:cost benefit analysis (Allow for 1 hours and 50 minutes).

This session will introduce the actual cost-benefit analysis of a specific project. The case examples to be employed in this session will be drawn from urban, community water and water-resources sub-sectors. In a few cases, examples from environmental sanitation shall be used.

- 1) Cost benefit methodology (20 minutes)
- 2) Identification of costs and benefit and discounting (20 minutes)
- 3) Pricing of water (20 minutes)
- 4) Financial and economic indicators-NPV, FIRR and EIRR (20 minutes)
- 5) Appraisal form for checking sustainability elements of a the feasibility study (20 minutes)

6) Q&A session (10 minutes)

The session including the group work will utilize excel based presentation material.

Session 6.4 - Group Work-Cost benefit analysis (Allow for 1.5 hours)

1) Participants will be divided into a number of groups each 3-4 members. Each group should answer a number of questions related to cost benefit issues as discussed and related to Session 2.3. (1 hour)

2) Each group will be asked to present solutions to questions (30 minutes)

Each group has access to a computer with excel software

Wrapping-up – evaluation of what has been learned (Allow for 30 minutes)

Encourage discussions on how what has been learned can be applied to various needs in everyday work. Ask participants to provide an evaluation of the module by filling in and return prepared evaluation form.



**PART 4: RESOURCES FOR
IMPLEMENTING SEA**

IMPLEMENTING SEA

As indicated under earlier sections an important consideration for applying SEA is to meet MDG 7 (Target 9) *‘integrate the principles of sustainable development in country policies and programmes and reverse the loss of environmental resources’*.

The final Part of the Guide covers resources that are required to implement SEA given the purpose and scope of a given situation. Examples of resources required for broad categories of SEA and specific examples of the Water and Sanitation Sector are provided. The section also gives examples of areas of work that stakeholders can apply SEA routinely so the principles can become immersed in the sector.

SECTION 9 ELEMENTS OF IMPLEMENTING SEA AND RESOURCE REQUIREMENTS

The routine use of SEA principles and tools is cannot be achieved through one-off, short-term or series of capacity building and training exercises but through routine application by users of SEA principles and related tools.

The development of the SEA Guide on WES is to help achieve the above as it:

- contains practical tools developed through participatory exercises by sector stakeholders;
- serves as a reference on basic principles of SEA on how to apply the tools;
- contains training modules to assist in training of trainers to enhance replication and sharing of practical hands-on-experiences; and
- serves as a mechanism for institutionalising SEA practice.

On the last point, the main challenge is identifying and defining tasks to which SEA is applied routinely by stakeholders and lead to gradual immersion of staff in everyday use of content and process principles of SEA.

9.1 Responding to demand and identifying routine applications

The transition to routine application depends a lot not only on the sense of ownership that stakeholders have but also the value that stakeholders perceive to gain from applying SEA.

The approach to developing skills adopted in this Guide relies on learning-by-doing and making tasks, normally carried out by staff, the centre of the process. Thus the use of the SEA Guide allow users to adapt criteria and apply (as well as develop new) tools appropriate to their specific setting.

To make the use of the Guide demand-responsive it is useful to identify the key areas of application that enable all levels of users to derive benefits. Examples of how we can apply SEA tools to the systematic tiers of PPPs and the corresponding administrative tiers applicable to Ghana are illustrated in Figure 8.2.4. The examples are only illustrative and show a number of routine exercises and the key proponents of the activities. Similar applications will be identified during training sessions (on use of modules).

9.2 Conducting SEAs – purposes and resources required

While exposing stakeholders to SEA will help mainstream its application and lead to its becoming institutionalised experience and lessons gained from similar initiatives show that

periodic capacity building is required and should be provided until mandatory enforcement for the application of SEA principles and tools at all levels of PPPs is reached.

9.2.1 Purpose and scope of SEA

The PURPOSE and SCOPE of the required SEA exercise will determine the dominant principles that will be applied, applicable tools, methods adopted for developing and using the tools and hence the resources required.

From earlier discussions on *Ex-ante* and *Ex-post* SEA it is obvious that resources required will differ for each case.

The tools in this Guide have been influenced by the purpose of the exercises to which the relevant SEA principles were applied:

For the Water Sector; focus was on the preparation of the National Water Policy which required –

- Review of draft policies through comprehensive policy analysis;
- Re-drafting involving consolidation of the three main sub-sector policies;
- assessment of sustainability of proposed policy objectives and actions;
- re-drafting of policy objectives and actions based on recommendations of SEA

For the Environmental Sanitation Sector; focus was on the Environmental Sanitation Policy (ESP) and District Water and Sanitation Planning –

- for the ESP, assessment of sustainability of policy directives, objectives, and actions; and
- for DWSPs assess the level of integration of health aspects and potential impacts and the integration of environmental concerns, impacts and remedial actions.

9.2.2 Required Resources

The following tables give illustrative examples of resources used for carrying out SEAs.

Table 9. 1: RESOURCES FOR SEA

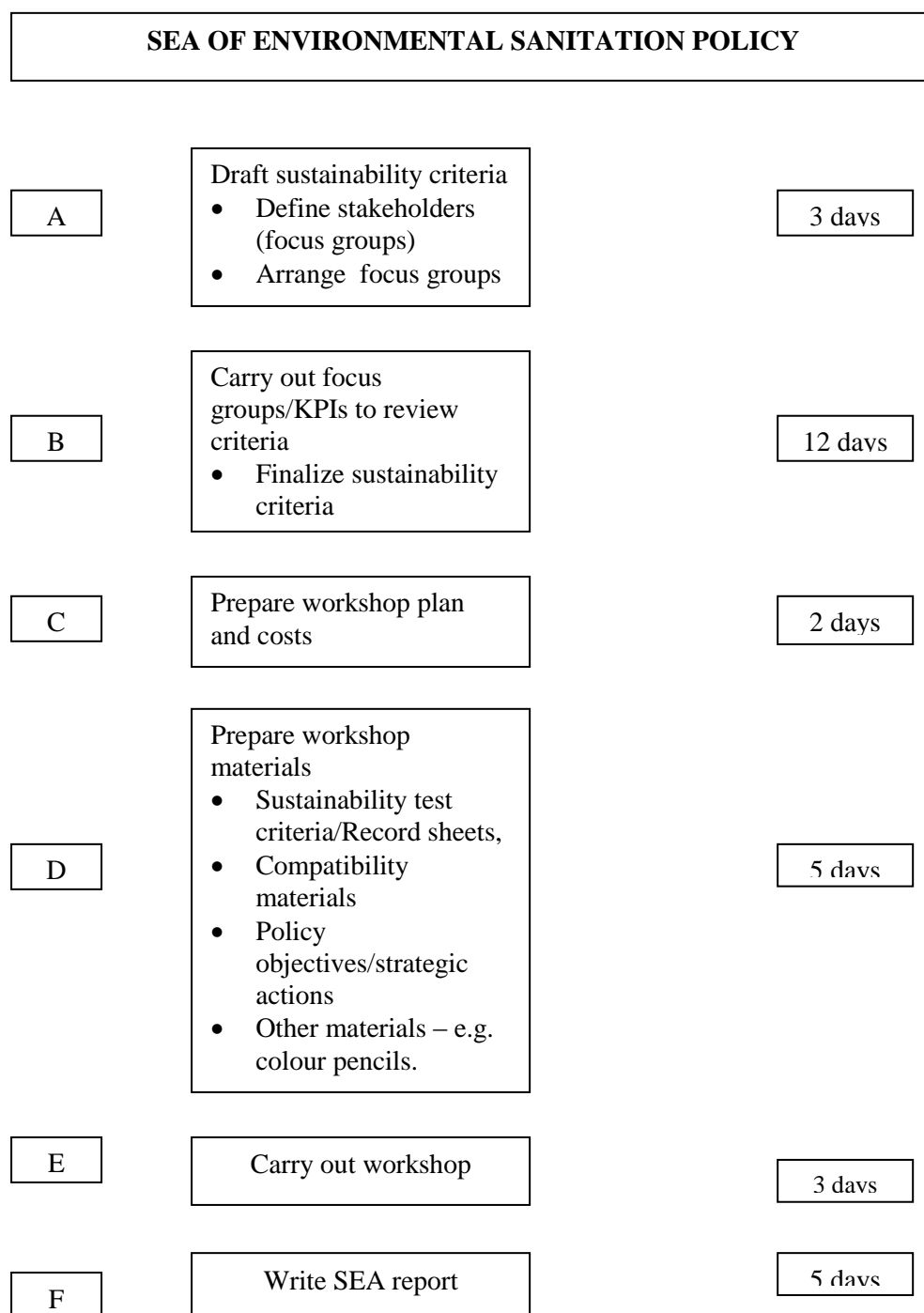
Type of SEA	Period	Person Effort	Financing
Rapid	1 -10 days	1- 3	Low
Mid-Range	up to 3 months	Team	Medium
Long-term	up to 18 months	Team	High

The personnel and level of effort and the schedule of completion of the SEA exercise will vary based on the organisational options adopted for the team that will carry out the assessment.

If the assessment were carried out through a facilitated process over a number of months, the level of effort may be intermittent over a number of months. A facilitated process using a working Group model might require up to 80 to 100 days of time, with multiple inputs by a consultant over a six- to nine-month period.

If the assessment were carried out by a consultant team within a relatively short period of time, the level of effort by a single team member might be in the range of 22 – 28 days per person (or 60 – 75 days for 1 3-person team).

Figure 9.2. 1: Resources for sustainability testing of existing policy
(example of ex-post SEA)



Note: The exercise was carried out by a two-member team of specialists with peer-review by NDPC/EPA SEA Team.

Figure 9.2. 2: SEA of National Water Policy (example of hybrid of *ex-ante* and *ex-post* SEA)

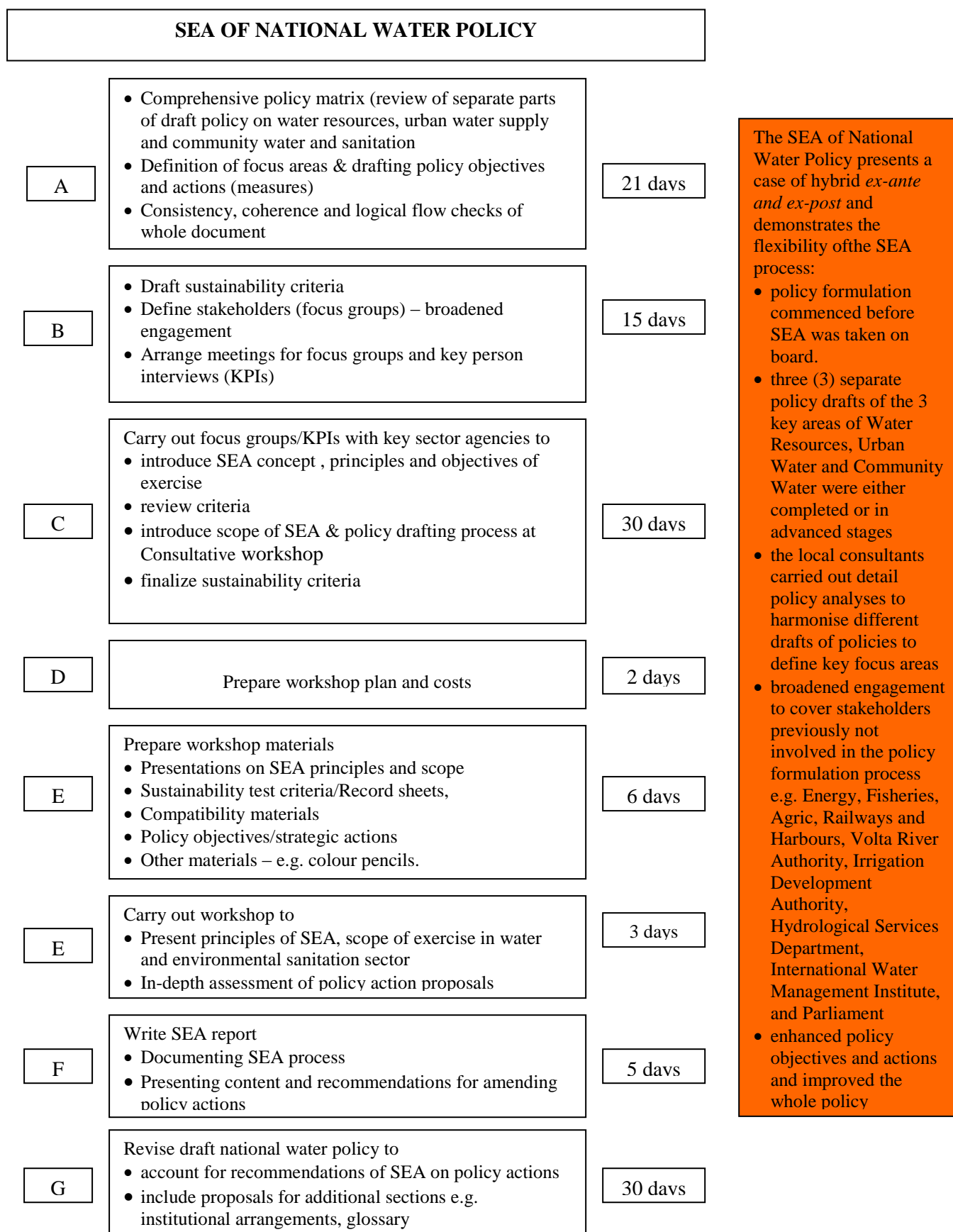


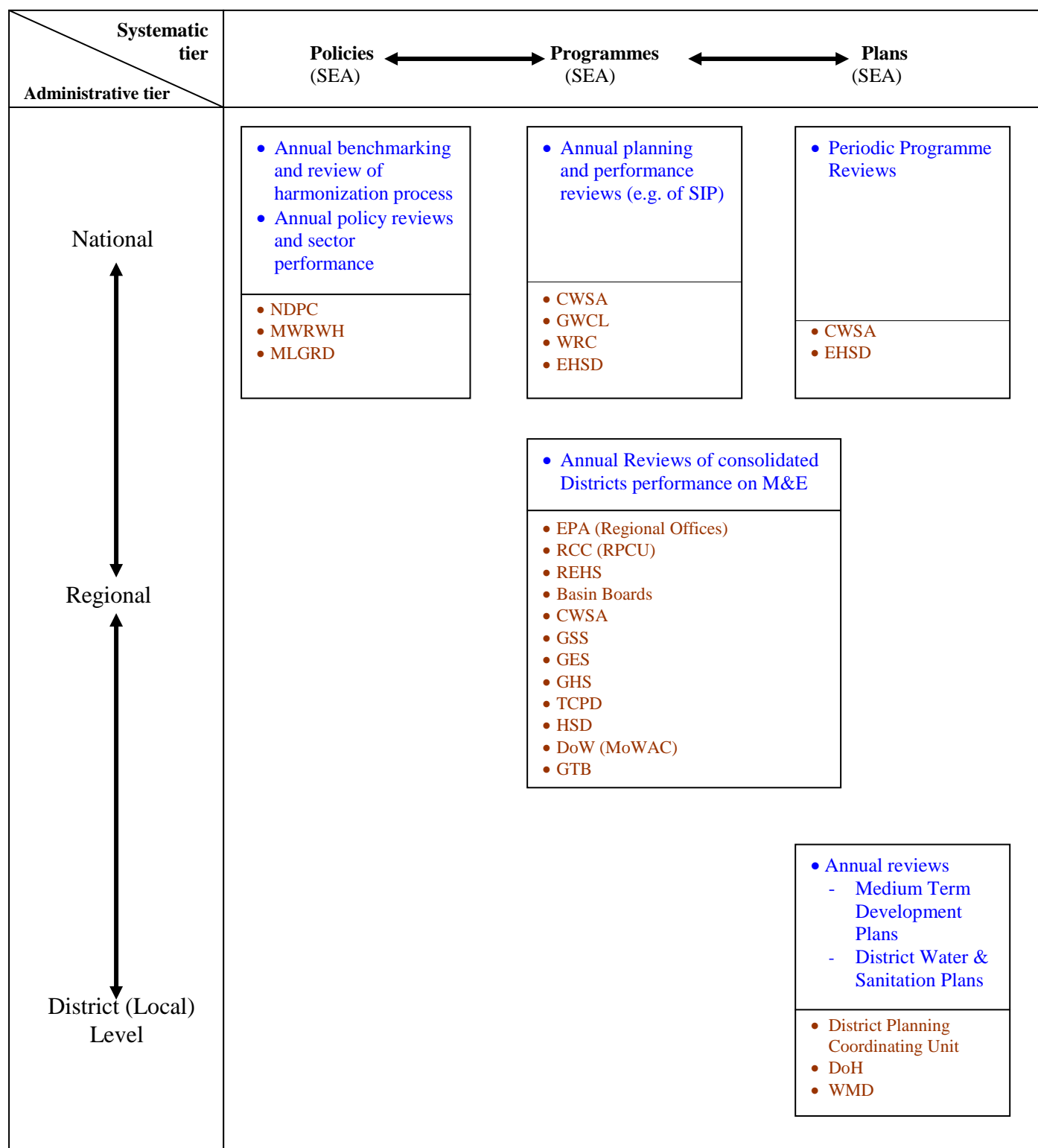
Figure 9.2. 3: Resources for SEA Process (General)

Ensuring that the SEA is Done Well and Resourcing it		
SEA stage	Person-days	Comments and advice
Early in the development of the strategic action		
SEA training for decision-making	3	An SEA consultant/trainer gives the SEA team a half-day training course on SEA, focusing on legal requirements and a good practice SEA case study similar to that being worked on
Devise SEA objectives	2	Link SEA objectives to existing objectives where appropriate. Check whether other assessment requirements (eg appropriate assessment) apply and integrate them with SEA if appropriate. Carry out an internal compatibility appraisal (see Appendix C) of the SEA objectives
Quick SEA of the existing strategic action	5	The authors of the strategic action quickly assess the (old) existing strategic action, if one exists, using the agreed SEA objectives, Tables 4.2 and Box 8.6 (as in the 1 day SEA). This provides a starting point for drafting the new version of the strategic action
Collect baseline data and identify environmental/sustainability issues	20	Set a specific timeframe for this stage, as it can in theory take forever. Use a cyclical process: collect some data identify key issues, collect more data on these issues, etc. Start discussions with consultees. Document the findings
Identify links to other relevant strategic actions	5	Use existing lists of strategic actions and their requirements where possible to save time. Document the finds (see Table 6.8)
Write draft scoping report	2	Documentation of the above stages as they are being carried out helps to ease this process, leaving only the following aspects: methodology, purpose of the SEA, difficulties, limitations, etc. Test the quality of the report so far by using the checklist in Box 4.3
Consult on, and agree the scoping report (this could also be done after alternatives are identified)	4-7	This could be done (preferably) in a meeting of key stakeholders, or by correspondence. The extra days are if the public is also consulted (eg through a website and newspaper announcement)

Identify alternatives or options; test them against the SEA objective; mitigate impacts; test whether preferred alternatives/options are compatible with each other	10	This is done in small groups, definitely including the decision-makers but possible also other officers from the authority, outside experts, politicians and/or members of the public. Figure 7.1 provides a starting point for identifying sustainable alternatives. Table 4.2 and Box 8.6 provide a template for assessing the alternatives. Check the cumulative impact of the preferred alternative/options (eg table 8.6) and revisit the options if cumulative impacts are significant
Implement the SEA findings	2	The decision-makers put procedures in place to ensure that the early Sea findings are implemented
... preferred alternatives/options are chosen and evolved into detailed statements		
Screen statements	1	Use the questions in Box 8.3 to ensure that those statements with the most significant impacts are given the most attention and vice versa
Test statements against the SEA objectives; mitigate impacts	30	This could involve small group 'expert judgment' sessions again, but could also involve research and possibly quantification for issues that need more detail (Appendix C). Remember to keep documenting limitations and any problems or uncertainty encountered
Implement the SEA findings, propose a monitoring programme	3	The decision-makers put procedures in place to ensure that the SEA findings are implemented and monitored
Write the SEA Report	4	Use Table 9.1 as a template. Allow plenty of time for formatting and editing. Test the quality of the report using the checklist in Box 4.3
Consult on the SEA report; take consultation comments on board; document how this was done	6-8	Table 9.2 provides a template for this
Celebrate the completion of the SEA	0.5	

Source: Strategic Environmental Assessment in Action, Riki Therivel

Figure 9.2. 4: Demand Responsive Application of SEA Tools
Showing Proponents (*examples of routine applications to ensure institutionalisation*)



Appendix 1: Objectives of SEA in DANIDA WSSPSII

The broad objective of Integrating SEA principles into the water and environmental sanitation sector under the Danida Water and Sanitation Sector Programme Support Phase II (WSSPSII) has been divided into three sub-components covering Water, Environmental Sanitation and Integrated Water Resources Management (IWRM).

The objectives for each of these sub-components are as follows:

1. Integrating SEA principles into the water PPP process

The *Development objective* of the activity is “water policies, programmes and plans in Ghana promote environmentally sustainable development”. The implementation of the activity will support the Water Directorate of MWH to co-ordinate and enhance the ongoing process of developing a new water policy in Ghana, in integrating SEA principles into the water sector and strengthen co-operation and co-ordination between the institutions involved in the policy development.

The SEA activity has three immediate objectives:

- Water Directorate is performing its stipulated role in co-ordinating the development of a water policy integrating environmental concerns.
- Key water sector institutions at ministerial, directorate and agency level are actively participating in the policy dialogue and in promoting environmental concerns as part of water sector policy, programme and plan development.
- The water policy process enhanced through analyses of costs and benefits, assessment of environmental consequences and application of SEA tools.

2. Integrating SEA principles into District Water and Sanitation Planning within three districts in the Densu River Basin as pilots

The *Development objective* of the SEA activity is “water and sanitation plans at the district level use health impacts in priority setting and address environmental sanitation issues as an integral part of the district plans”. The SEA activity will build capacity in the Environmental Sanitation Unit of the Policy Directorate of MLGRD to support the regional health officers and the environmental health officers at district level in environmental health and sanitation.

The SEA activity has three *immediate objectives*:

- The Environmental Sanitation Unit in the Policy Directorate of MLGRD performing its stipulated role in supporting regional health officers and district health units.
- The Regional health officers in Greater Accra and Eastern Region perform its stipulated role in supporting environmental sanitation in district planning.
- Environmental health officers in pilot districts enabled to provide input on health impacts and environmental sanitation to district planning processes.

3. Integrating SEA principles into basin planning with Densu River Basin as a pilot

The *development objective* of the SEA activity is “efficient and effective basin planning procedures supporting an environmentally sustainable development and use of Ghana’s water resources”. The implementation of the SEA activity will build capacity at WRC in regulating and managing water resources taking land use practices, environmental pressures and

environmental protection needs into concern. The activity will create awareness in the Densu Basin Board in water/environment links and in cross-district planning procedures.

The SEA activity has two *immediate objectives*:

- Capacity of WRC further enhanced in basin planning.
- Densu Basin Board actively involved in addressing environmental issues at district level as a result of a basin planning process.

4. Development of sector Specific SEA tools

The SEA team (EPA/NDPC) as part of the SEA of GPRS has developed a number of tools that will be used both in assessment at policy and planning level and as a basis for development of water Specific SEA tools. The following tools have been developed already: An *Environmental Appraisal tool (Poverty-Environment Matrix)*, *Sustainability tests* and a *Compound Matrix*.

The SEA activities of WSSPS II will as described above add a number of tools to the list already developed at policy and planning level. This will comprise a SEA policy analysis tool, a cost-benefit analysis tool, a SEA tool for basin planning addressing SEA in cross-district planning and a SEA tool to analyse district water and sanitation plans with focus on health and environmental sanitation issues.

This first version of the Guide covers outputs related to objectives 1, 2 and 4 that fall under the PMMS component. The Guide is designed to allow for further updates including outputs of the IWRM sub-component.

Relation to MDG Goal 7 and GPRS

Building capacity in the application of SEA is in line with MDG 7 (Target 9) ‘*integrate the principles of sustainable development in country policies and programmes and reverse the loss of environmental resources*’. It is expected that by adopting and employing this Guide, sector practitioners will ensure that PPPs incorporate appropriate sustainable strategies in support of the goal of the Growth and Poverty Reduction Strategy ‘*achieving accelerated and sustainable shared growth, poverty reduction, gender equity, protection and empowerment of the vulnerable and excluded within a decentralised democratic environment*’.

Appendix II: References for further reading

1. Strategic Environmental Assessment of the Ghana Poverty Reduction Strategy (GPRSI) – Handbook for District development Plan Sustainability Appraisals. Environmental Protection Agency (EPA) and National Development Planning Commission (NDPC), 2003.
2. Strategic Environmental Assessment of Ghana Poverty Reduction Strategy (GPRS). Environmental Protection Agency (EPA) and National Development Planning Commission (NDPC), 2004.
2. Strategic Environmental Assessment in Action. Riki Therivel. Earthscan, 2004.
3. Strategic Environmental Assessment – A Sourcebook and Reference Guide to International Experience. Barry Dalal-Clayton & Barry Sadler, International Institute for Environment and Development. Earthscan, 2005.
4. Strategic Environmental Assessment of Policy, Plan, and Program Proposals: CIDA Handbook. CIDA, 2004.
5. Strategic Environmental Assessment in World Bank Operations. Experience to Date – Future Potential. Olav kjorven and Henrik Lindhjem. World Bank, 2002.
6. Integrating Environmental Considerations in Policy Formulation. Lessons from Policy-Based SEA Experience. Environment Department/ESSD. World Bank, 2005.
7. Environmental Assessment Outlook. Capacity building and benchmarking good practice. Institute of Environmental Management and Assessment 2003 and the EIA centre (University of Manchester) 2003.
8. Hong Kong Strategic Environmental Assessment Manual. Environmental Protection Department. 2004.