

The Lutheran World Federation
Department for World Service

Environmental Reporting, Monitoring and Evaluation in LWF/DWS

A toolbox for LWF/DWS' country programs

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CONTENTS

INTRODUCTION.....	1
RATIONALE FOR LWFs ENVIRONMENTAL STRATEGY.....	1
BACKGROUND OF THE PRESENT DOCUMENT	2
FOR QUICK REFERENCE: HOW TO USE THIS GUIDELINE ?	4
SUMMARY: WHAT DOES ERMES ASK THE FIELD PROGRAMS TO DO ?	5
BASIC PRINCIPLES OF ENVIRONMENTAL ASSESSMENT IN LWF	5
ENVIRONMENTAL MANAGEMENT AND CONDITIONS OF DWS' WORK AS AN HUMANITARIAN ORGANISATION.....	6
ENVIRONMENTAL REVIEW AND THE PROJECT CYCLE	7
<i>Where comes environmental monitoring into play in the project cycle ?.....</i>	<i>7</i>
ENVIRONMENTAL REPORTING, MONITORING AND EVALUATION OVER THE LIFE SPAN OF A PROJECT	9
STEP 1: ENVIRONMENTAL ASSESSMENT IN THE PHASE OF PROJECT DESIGN	10
<i>Tool 1: Characterisation of major aspects of the project's environment.....</i>	<i>11</i>
<i>Tool 2: Environmental focus areas</i>	<i>12</i>
STEP 2: ENVIRONMENTAL ASSESSMENT IN THE IMPLEMENTATION PHASE.....	14
<i>Tool 3: Environmental resource manual</i>	<i>15</i>
<i>Tool 4: Checklist Training and Exposures</i>	<i>16</i>
STEP 3: ENVIRONMENTAL ASSESSMENT IN THE FOLLOW-UP PHASE	18
ANNEXES	19

Introduction

Rationale for LWF's environmental strategy

The present guideline is a step further in the development of LWF's environmental strategy. Following the intentions of the first „Environmental Guidelines“ of LWF, the present document aims at sharpening the view on environmental issues of all actors involved in the implementation of field programs. Accepting the human responsibility for creation, the objective is to actively work towards the protection of the natural environment

and seek to rehabilitate the environment and to maximise the ecological positive impact of LWF's projects. Accepting, that LWF's foremost humanitarian rationale is to alleviate human need, our professional approach appreciates that we have to do this in a way, which does not compromise the productive capacity of the ecological systems, that we are part of.

What do we mean by »Environment«?

Environment is understood as the physical, chemical and biological surroundings where local communities live and develop their livelihoods. It embraces all natural factors, which are influenced or which are influencing human activities. The environment provides the natural resources which sustain people's life and so needs protection to maintain this essential function.

Environmental changes caused by human activities are usually characterised by a much higher speed than natural changes. It hence, in many instances overstrains the adaptability and the mechanisms for self-recovery of natural systems – with often unintentional far-reaching consequences for the stability and availability of basic human living conditions. The ERMES guideline addresses the need to prevent overexploitation, pollution and degradation of environmental conditions and proposes preventive actions with the aim to secure the environment's life supporting functions.

The immediate requirement for LWF's environmental strategy is hence to aim at ecological sustainability in order to preserve the productive capacity of natural systems. This obligation includes not to jeopardise their availability and usability for future generations. Foremost aim for ecological sustainability is to protect and improve the ability of natural systems for self-recovery.

Good human stewardship for nature has become an indication for the quality of service of humanitarian organisations. Relying on the financial support of our partners for our work, the environmental quality of LWF's

performance may positively contribute to maintain this support.¹ Encouraging coherence within the family of ecumenical humanitarian agencies and the international donor community may hence become a decisive factor for the sustainability of LWF as an organisation.²

¹ During DWS' Annual Forum 2000 major partner agencies of LWF explained the necessity for DWS to have its distinct environmental policy in order to prove to their own constituency and the international donor community that the necessary care for the natural environment is taken when LWF implements joint programs.

² "The promotion of the environmentally sustainable use of natural resources continues to be a major objective for Denmark's rural development policy" (Danida, 1994b).

Background of the present document

In April 1997 the first edition of the „LWF/DWS Environmental Guidelines“ was issued. The document was seen as the first stage towards the formulation of an LWF environmental policy. The core of the guideline were General Environmental Principles, which should form the backbone of the policy on environment for all country programs of LWF/DWS. Two „General Environmental Principles“ were put ahead of others:

- to apply the Christian recognition of the human stewardship for nature as an obligation to aim at **sustainability** and **equity**.
- To practice environmental concern by **setting a good example**.

The basic idea was, that the guideline should sharpen the awareness of field staff for environmental issues and equip them with tools to take better care of these in their day to day work. Two of these tools –detailed guidelines for projects working with displaced populations and for dryland situations - were included in the guideline. It was hoped that field programs would, in due course develop and add further tools.

The call for an increased sustainability of LWF's operations was again reinforced in 1999 by the formulation of „Guiding Principles for Sustainable Development“, a policy document, which discusses major global issues and trends and declares LWF's preparedness to aim in all of its fields of involvement at sustainability, based on a theological rationale. On the environment the document discusses LWF's awareness and concern about current global environmental trends and sets the objectives for the involvement of the Federation.

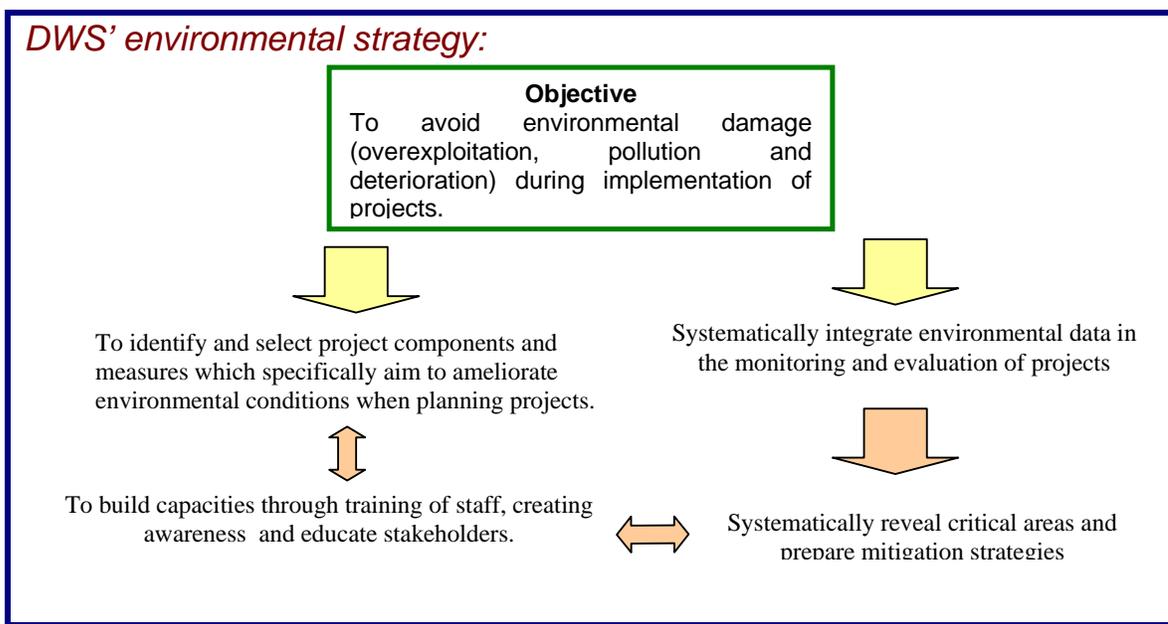


Fig.1 : Aims of LWF's environmental strategy

This document is a step further towards a systematic integration of environmental concerns into the practice of LWF's field programs. The document has a twofold intention. On one hand the guideline intends to deepen the understanding of project staff for environmental concern by explaining why it is necessary for LWF to highlight the care for the environment in the implementation of projects. By doing so, it is hoped that the number of projects which are focussing on environmental improvement will increase. Clearly, this intention cannot exhaustively be satisfied by a guideline alone. It requires a constant process of training staff and educating stakeholders on environmental issues – project population and implementation partners as well as donors.

Secondly and not less importantly the guideline seeks to improve the ecological sustainability of all projects undertaken by the organisation: Linked to the Planning and Monitoring System the guideline will assist field staff to screen new and existing projects systematically to identify activities which might help to avoid environmental damage. As only rehabilitation and development projects follow the cycle of the Planning and Monitoring System, ERMES primarily focuses on these. Nevertheless emergency relief projects should apply the proposed procedures and tools in order to develop recommendations for an improved implementation.

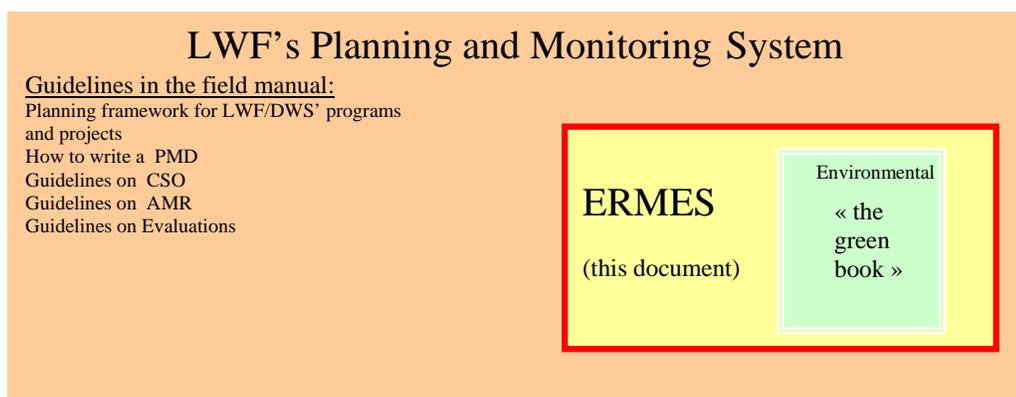
Finally it has to be stressed that this guideline wants to be a living document. The approach should regularly be improved, the international discussion about environmental issues and current trends needs to be monitored and the guideline should regularly be revisited. Particularly the tools such as checklists and monitoring procedures should be constantly refined and supplemented by the field staff.

Scope of ERMES

- a) To describe how to address environmental aspects in Planning, Monitoring, Evaluation and Reporting of projects.
- b) Provide tools for environmental management (i.e. how to achieve the environmental objectives of LWF).
- c) Provide tools for environmental assessment (i.e. when and how to assess environmental aspects during the life cycle of a project).

Role of this toolbox in the framework of guidelines for reporting, monitoring and evaluation

This document is part of DWS' field manual. Thematically it belongs to the PMS guideline, informing field staff how to plan, monitor, evaluate and to report about relevant aspects of a program's/project's environment. As it thematically integrates LWF's *Environmental Guidelines* released in 1997, it replaces them and should be used as the guiding document for all LWF/DWS' country programs on how to deal with environmental issues. The "Green Book" may still be used as a reference and check list when dealing with refugee situations and arid ecosystems. It is further useful for sensitizing and training field staff about environmental issues. The following diagram shows this relation:



For quick reference: How to use this guideline ?

This guideline is tailored

- to be used within the existing system for planning, reporting, monitoring and evaluation in LWF/DWS' field programs.
- this guideline offers tools to address environmental aspects systematically within existing planning, reporting and monitoring documents.
- the tools guide through the different phases in the project cycle.

The guideline differentiates between three basic phases in the life span of a project, namely

- Step 1: Environmental assessment in the phase of **project design**,
- Step 2: Environmental management in the **implementation phase**,
- Step 3: Environmental monitoring in the **follow-up phase**.

For each phase the guideline stipulates certain steps and proposes tools to integrate environmental monitoring into existing PMS documents. Using the guidelines means to simply follow the structure relevant for the respective project phase listed under these headings, apply the proposed tools and to fill in the required information into the PMS documents.

This guideline is only available as an online document. It can be downloaded from LWF's internal webpage MaRS .

How to download the latest version of ERMES from the internet:

1. <http://mars.lutheranworld.org/> takes you to the MaRS main page.
2. On the MaRS main page you find under "links" the "*Work Areas*" . Clicking on this link takes you to a page with that same name.
3. At the bottom of the page you'll find a link *Environmental Guidelines*. Clicking this link takes you to a page, from where you can download ERMES as a Word document

Hardcopies can be ordered from environment@lutheranworld.org for those who do not have reliable access to the internet.

Summary: What does ERMES ask the field programs to do ?

The new guideline stipulates to reflect and to comment on environmental concerns of all project measures. Obtaining baseline data about the environmental situation of any given country program or project becomes compulsory as well as to describe the environmental impact of any project of a field program.

- a) Applying the tools as proposed in this guideline, the "*Characterization of major aspects of the project's environment*" becomes a short but important annex of the Planning and Monitoring Document –the "PMD". You will find more information further below what this document should look like.
- b) The guideline further asks you to state in the Annual Monitoring Report – the "AMR" to mark all activities which have special environmental significance in the column „Cross cutting significance“ with an "E" in order to allow a quick check which project measures do have a relevant impact on the environment.

This guideline does not require to write extensive environmental reports. It just deals with documents, which are anyhow required to be submitted during the project cycle. Of course you may give more detailed information in PMD and AMR, if you feel this may be necessary, but keep in mind that a shorter information is more digestible for those who just want to see how World Service is doing with environmental concerns in its field program.

The application of ERMES may reveal critical areas of environmental concern, which make further investigations necessary. In this case the PMD should take provisions to consult environmental specialists in order to undertake a special Environmental Impact Assessment (EIA). Some donors do request (and fund) EIAs by external consultants as a standard requirement.

Basic principles of Environmental Assessment in LWF

Environmental assessment includes all tasks which are leading to the preparation of basic programme and project documents

Sequence of
measures for
Environmental
Assessment

for an informed decision making about environmental aspects of LWF's projects such as:

- A description of the affected environment
- Identification of potential environmental impacts of a project
- Quantification of potential environmental impacts
- Appraisal of the significance of environmental impacts
- Description of mitigation strategies for negative environmental impacts or of reasonable alternatives
- Preparation of reports and documents for the use of decision makers.

In the institutional framework of LWF/DWS's field guidelines **Environmental Assessments can be described as the range of methodologies which are systematically used for measuring the impact of relief, rehabilitation and development projects on the natural environment in the locality of implementation.**

What does
>environmental
assessment<
mean?

Environmental Management and Conditions of DWS' work as a humanitarian organisation

Humanitarian organisations are often experiencing a situation where immense human needs facing a very limited base of human and financial resources.

Informed decision making about environmental aspects is hence challenging. In many developing countries the availability of environmental data is insufficient. Political priorities of the governments are often different and reliable data about important environmental concerns (such as quality of soils, erosion etc.) are usually not available because environmental data enjoy comparatively less attention as e.g. economic performance data. Another constraint for obtaining environmental data is, that ecological processes are usually very complex. Fully understanding cause and effect may require extensive research. Large-scale baseline research is expensive and mostly always beyond the financial and personal capacity of our projects. We would hence recommend to apply the *principle of optimal ignorance* („do only investigate what is really needed“)³ keeping in mind, that we have to compromise between the needs of the project population and the need for a scientifically comprehensive approach. The art of responsible management for the integration of environmental concerns in NGO humanitarian work may appear as a tightrope walk between the principles of being a good steward for God's creation and practice a high accountability to our stakeholders.

LWF/DWS' principles for environmental management

³ Chambers, R.(1992) Rural Appraisal:Rapid,Relaxed and Participatory. The concept means that there are limits to the amount of information we can digest. Too much information may hamper proper management. Ignoring information that we don't absolutely need to know makes us better managers.

- TM to practice an efficient use of scarce project funds to manage
- TM a meaningful system for reporting, monitoring and evaluation of environmental factors, which is
- TM manageable comprehensive and
- TM easily understandable and applicable for program staff, partners and other stakeholders.
- TM All phases of project implementation shall systematically include environmental assessments.

Fig.2 :LWF's principles for environmental management

Environmental Review and the Project Cycle

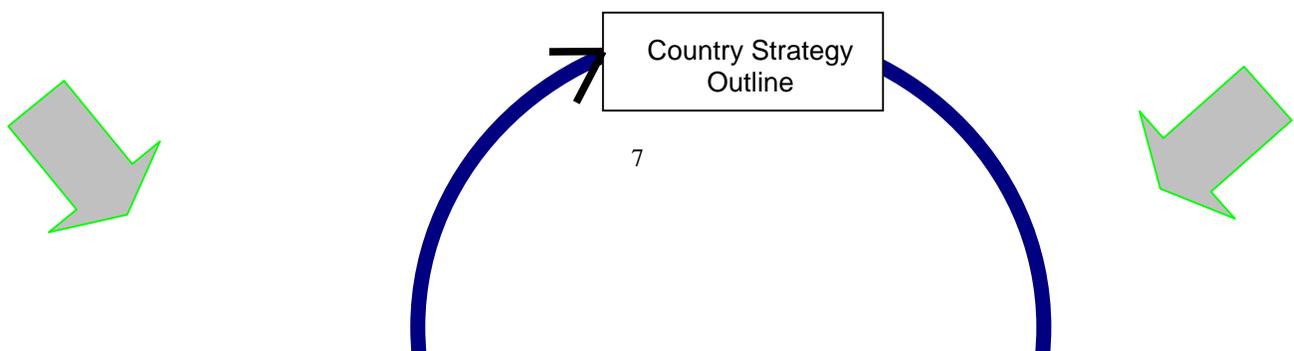
The following section deals with the intention of this guideline to assist field staff

- to integrate environmental assessments into all stages of country strategy, program and project development;
- to gather relevant baseline information for effective environmental assessments.
- to integrate physical, socio-economic and environmental assessment of programs, policies and projects;

In order to comply with LWF/DWS' System of Planning, Monitoring and Evaluation – PMS – we need to look at the major components of the PMS and how the system is structured. It may be recalled that the implementation of any project follows a feedback cycle. Assessing the environmental impact has to be linked to the stages of project implementation.

Where comes environmental monitoring into play in the project cycle ?

Environmental monitoring is the systematic integration of our concern for the environment into all phases of a project. The boxes below show major events and related documents during the phases of a project. **Events/documents in *italics* signify those, which have to observe environmental requirements.** The shaded arrows from outside indicate where to apply the tools presented in the following sections of this guideline. Generally our concern for the environment requires to „wear environmental spectacles“ when conducting any measure during our work.



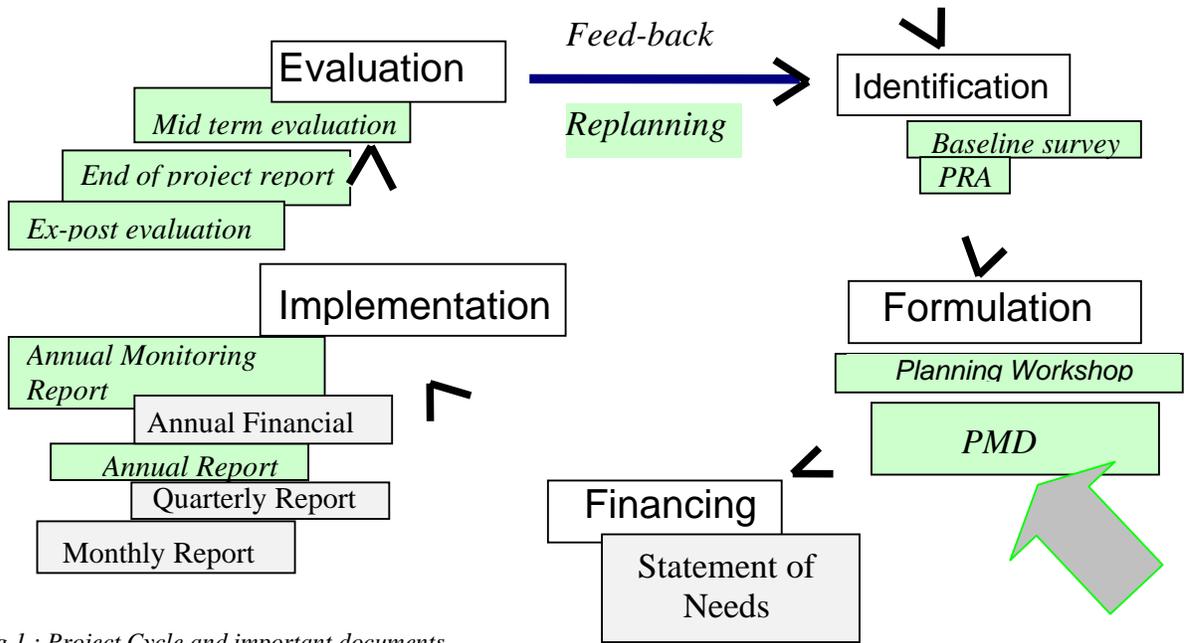
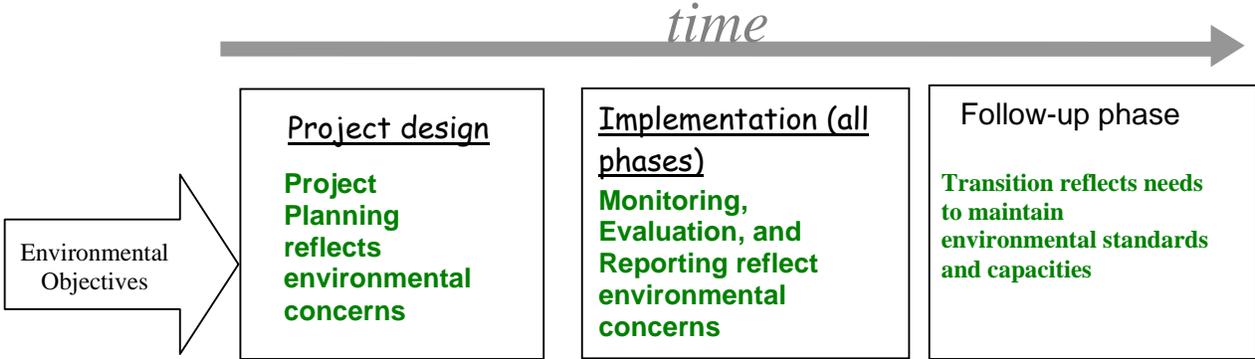


Fig.1 : Project Cycle and important documents related to the stages of a project

Environmental reporting, monitoring and evaluation over the life span of a project

Integrating environmental concerns into a project requires to define the different needs and objectives for assessing the environmental conditions during the different phases of a project. Basically there are three major phases of a project in the course of time:

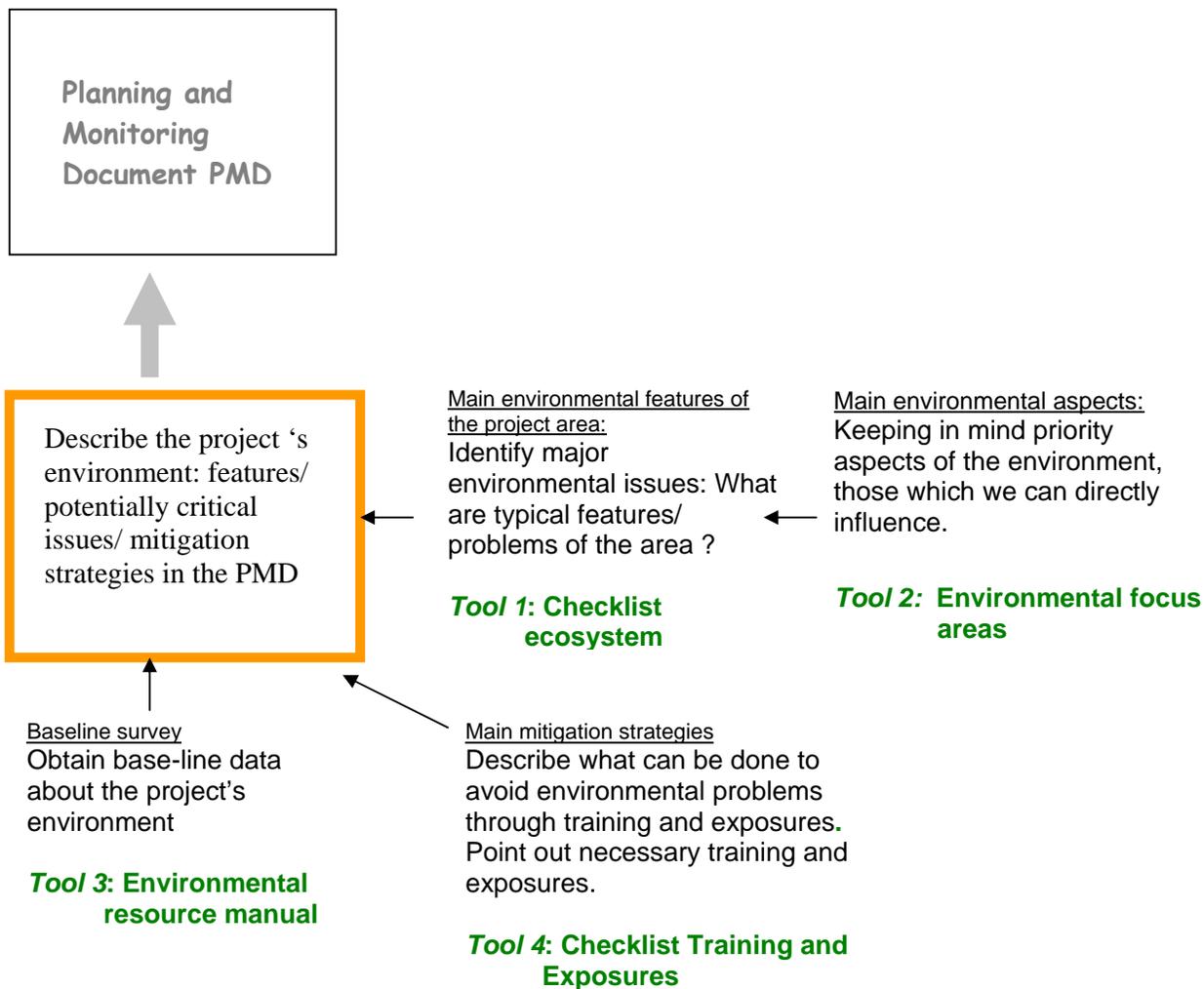


Aiming to achieve these environmental objectives requires to look at the basic documents used in LWF/DWS' System of Planning, Monitoring and Evaluation



.... and to apply appropriate tools to assess environmental impact for feeding back information into the decision making process, for reporting, monitoring and evaluation.

Step 1: Environmental Assessment in the phase of project design



- * The application of LWF's ERMES may reveal critical areas of environmental concern, which make further investigations necessary. In this case the PMD should take provisions to consult environmental specialists in order to undertake a special Environmental Impact Assessment (EIA). Some donors do request (and fund) EIAs by external consultants as a standard requirement.

Characterisation of major aspects of the project's environment

Tool 1: Ecosystem checklist

The project's planning framework (planning matrix) describes the objectives, intended medium and long term results, impacts and proposed activities to achieve these. At the same time it lists indicators and their means of verification for measuring the degree of goal achievement. Critical factors, such as potential environmental hazards, need to be taken into consideration and related mitigation activities need to be included into the planning framework of the project strategy. Providing this information precedes the actual participatory planning process. The environmental information about the project area should be compiled and attached to the PMD as an Annex using the following structure:

- I. Classification of the Eco-system
e.g., coastal plain, humid tropic wetland, arid/semi-arid lowland, arid highland etc..
- II. A short description of the environmental situation in the project area
the description shall include basic environmental features such as
 - mean annual temperatures,
 - precipitation and rainfall pattern,
 - seasonal climatic changes,
 - biological diversity (vegetation, wild animals, aquatic flora and fauna, birds, rare species etc.)
 - land uses, including uses for main sub-areas and their utilisation for agriculture / horticulture, pastoral, forestry and mixed utilisation (e.g. silvo-pastoral), settlements, industry etc.
 - pests
 - fertiliser use
 - water, sanitation, irrigation,
 - areas of traditional, cultural, religious significance
- III. A short analysis of the environmental situation in the project area
the analysis shall inform about potential environmental hazards and capacities of the project population to deal with these such as:
 - agricultural practices,
 - division of labour under special consideration of gender
 - demographic factors and trends
 - environmental legislation and its effectiveness
 - social fabric of the communities and its impact on the environment (land tenure, racial issues etc.)
 - quantification of potential environmental impacts
 - appraisal of the significance of environmental impacts
- IV. A summary of recommendations for the project strategy
 - Description of mitigation strategies for negative environmental impacts

Please note:

The „Characterisation of major aspect of the project's environment“ should not exceed three pages. Additional checklists, such as e.g. the „dryland checklist“ or the „wetland checklist“ (see Annexes) may be consulted to arrive at a most meaningful description, without overlooking important aspects. Please keep in mind, that the existence of this tool in the PMD is not a sufficient condition for environmental assessment. Recommendations need to be taken up and be included in the project framework and subsequently be addressed in the project strategy.

Tool 2: Environmental focus areas

Following the basic principles of Environmental Assessment in LWF (see page 6) and looking at the variety of global environmental concerns (see „Background Info“ boxes in the Annex), it becomes clear that, for the sake of practicability, only major environmental aspects can be integrated into LWF's system of environmental assessment.

With priority we need to focus on those aspects which can be influenced by our projects' environmental strategy or which are major influencing factors for the success of our projects, and which we need subsequently to address in the projects' strategies.

Much of LWF's rehabilitation and development work in developing countries is focussing on improvements of the living conditions of communities. Main issues that our projects address are related to resource management and adjoining concerns: food security, agricultural production, rural development, poverty alleviation, income generation and small projects development, water and sanitation, irrigation, watershed management, desertification, community development, peace and reconciliation etc.

Dominant features, which we need to concentrate on in LWF's environmental strategy are hence:

Focus areas Sub-categories	Positive impacts (improved, increased...)	Negative impacts
Soil	Conservation, fertility, productivity,	Erosion, degradation, salination
Water Drinking water Irrigation Groundwater Rainwater Sanitation	Economy, availability, quality Resource protection, sustainability	Flooding , pollution, eutrophisation, over-exploitation
Biodiversity Ecosystem management	Protection of rare species, variety of species, availability of genetic resources, natural regeneration	Extinction, impoverishment of diversity, pests, monoculture
Forestry Reforestation	Economy, availability of forest products, micro-climatic effect, traditional utilisation	Denudation, overexploitation, deforestation
Appropriate Technology / Renewable resources	Onfarm-/household economy / renewability Low external input/acceptability	

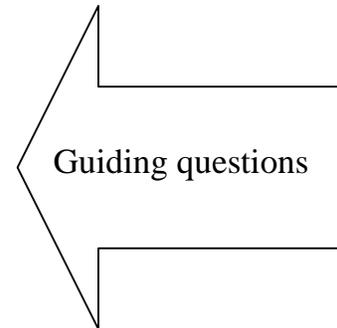
The importance of this tool lies in guiding us through the environmental assessment of areas which are new for a country program or for staff acquiring experience with unfamiliar environmental situations/project areas seeking to develop more detailed checklist which are pointing to the specific conditions on site.

Guiding questions are :

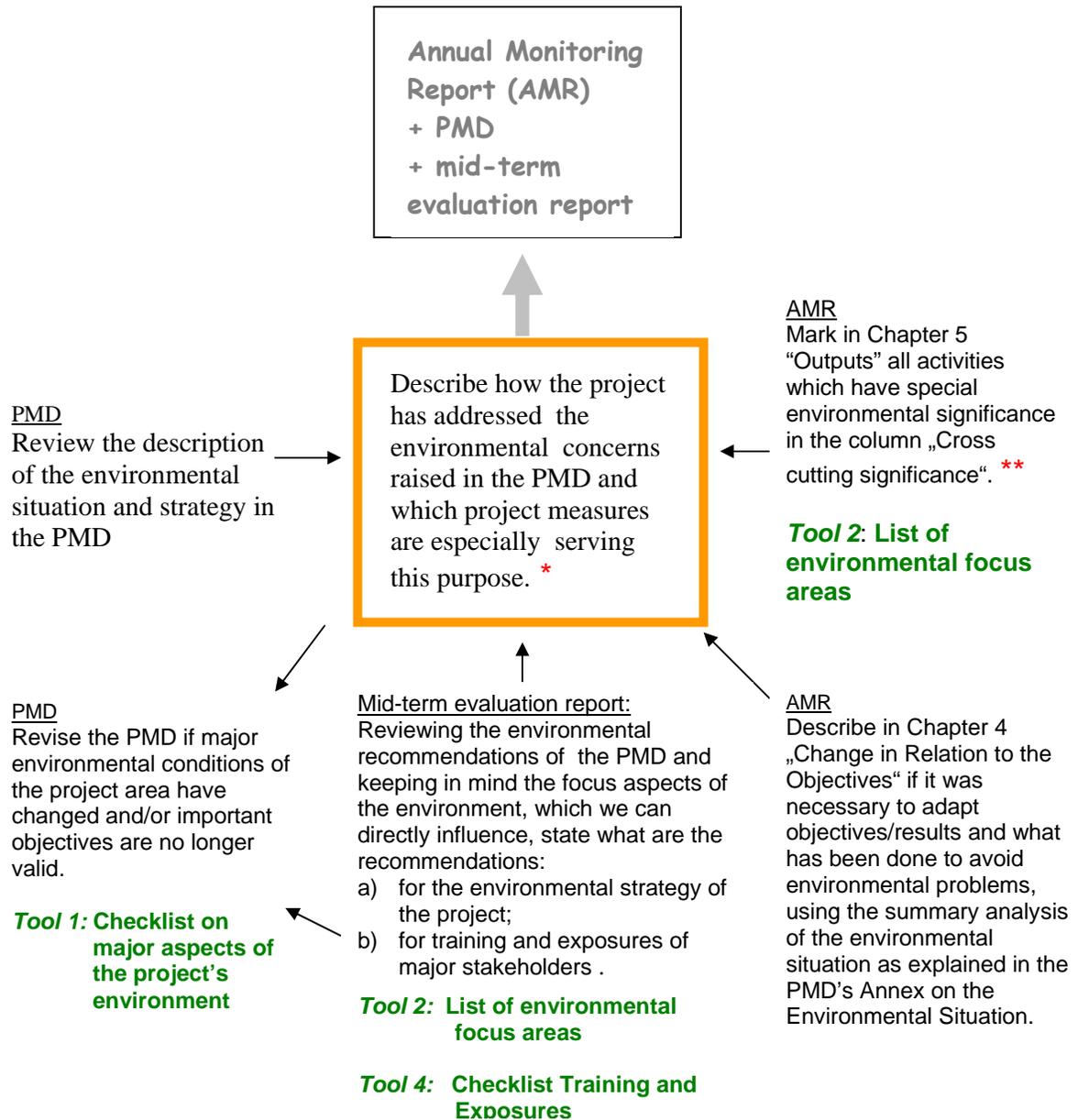
What are the main problems regarding the focus area in the project area ?

What will be the impact of the project measures on the focus areas ?

Who uses/manages the related resources and how could the project assure a sustainable utilisation?



Step 2: Environmental assessment in the implementation phase



* The application of LWF's ERMES may reveal critical areas of environmental concern, which make further investigations necessary. In this case the PMD should take provisions to consult environmental specialists in order to undertake a special Environmental Impact Assessment (EIA). Some donors do request (and fund) EIAs by external consultants as a standard requirement.

** The last column of the reporting table of Chapter 3 "Outputs" in the AMR is reserved for marking cross cutting significance of an activity (environment, gender, HIV /AIDS etc.) . If the reported activity is specially important for the natural environment please mark the activity with the capital letter „E“ . The idea is to sharpen the environmental sensitivity of program staff and other stakeholders reading the AMR about environmental concerns. Please refer to the Environmental Focus Areas (Tool 2). Please compare also the sections about AMR layout in the PMS guideline.

Tool 3: Environmental resource manual

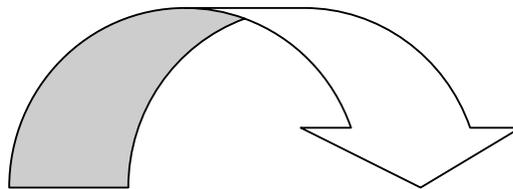
Gathering relevant baseline information for effective environmental assessments

As already mentioned earlier, obtaining valid and up-to-date baseline information from public sources within a program country is often problematic. Logically, the conditions are different in each country. Keeping in mind our principle of „optimal ignorance“ program staff may be able to develop a sufficiently comprehensive base for locally relevant baseline data, when applying the checklists (Tool 1 and 2, as well as the agro-ecological checklists in the Annex) and use these to interview local population and Government's extension staff, working in the area.

Generally, frequent exchanges and involving staff of the respective Government Ministries for Agriculture, Rural Development, Health, Education in base line activities such as PRAs, field surveys, feasibility studies at an early stage of project planning may fosters a favourable atmosphere and a constructive relationship with them.

To find out about the local condition of a project area, another valuable source in many countries are data bases of other international organisations working in the country. Provided they are willing to co-operate and to share information, particularly the well funded projects of bilateral Government-to-Government technical co-operation (e.g. Danida, GTZ, ODA, US-AID etc.) may provide the required baseline data for our decision making process.

Part of the necessary base line information concerns regional or national data (e.g. climatic parameters). With the emergence of world-wide communication via the internet, a much wider resource base may be consulted. In the Annex you will find a list of contacts, including the respective internet addresses. This list is very general but can be used as a starting point to build your own information networks to find the relevant information. It may further be consulted to support training on environmental assessment and finding institutional support for the project.



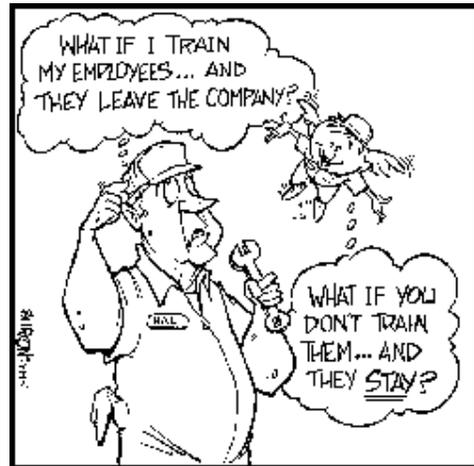
If you come across interesting local, regional or international sources of environmental information.....please inform the network:

Environment@lutheranworld.org

Tool 4: Checklist Training and Exposures

The following list intends to help field staff to define the needs for training to meet the objectives of LWF's environmental strategy. At the same time the list will help LWF/DWS' co-ordinators at regional level and Headquarters to estimate the requirements for environmental training. According to the two major aims for the LWF's environmental strategy the training needs to differentiate between general aspects, aiming to help field staff and transition partner „to wear environmental spectacles“, i.e. to sensitise staff and partners for the environmental dimension in all activities, and those training needs, which arise out of the need to find solutions for a concrete project environment.

Environmental strategic objectives and standards can only be put into effect by an efficient administrative project management. Environmental problems are usually complex and require cross-sectoral managerial skills. Training has hence to foster the ability to think and act in complex systems, as well equipping project staff with management skills, techniques and procedures of environmental control, monitoring and reporting.



Keeping in mind, that with increased population the pressure on the natural environment increases, many traditional practices (e.g. using forests for the provision of household fuel) are no longer sustainable. Changing environmental attitudes and traditions of how to deal with the environment becomes an indispensable condition for the environmental sustainability of any project. The second part of the checklist shall help also in identifying needs for environmental education and training of project population and other stakeholders on site.

General environmental training for field staff

- LWF's environmental strategy / How to apply ERMES ?
(List key project staff to be trained)
- Environmental Focus Area Training on
 - Soil
 - Water
 - Biodiversity / Ecosystem management
 - Forestry / Reforestation
 - Appropriate Technology / Renewable resources*(please specify where do you see the greatest need for training)*
- The environmental policy of the related agencies and their back donors.
(please specify which are your donors and where you see the greatest need for training)

Special environmental training

- Did the application of checklists pose a problem for staff ?
- Did the application of the environmental checklist(s) (see *Tool 1*) reveal environmentally sensitive or critical areas ? If yes: Is project staff equipped with the relevant know-how to develop mitigation strategies ? Were lacks of know-how discovered when discussing strategic options?

(List key project staff to be trained and on which issues training should be focussed)

Training and exposures of major stakeholders

This may include sensitisation and training for all partners directly or indirectly involved in the implementation of program/project measures: community people, community animators, extension staff of government offices, NGO partner staff, church staff/ functionaries and other people involved. In some cases, visit of program and other staff of related agencies may be used to sensitise them about environmental issues in order to enable informed decision making at this very important level.

Where to find resources for training ?

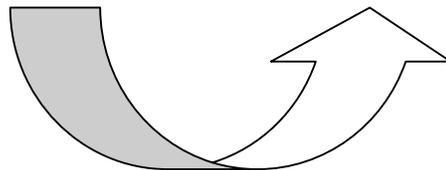
At a very early point of program planning financial resources for environmental training should be identified. Training on environmental issues is clearly linked to the implementation of programmes and has hence to be included in project budgets for rather than in general program support budget lines.

Where to find trainers and training institutions ?

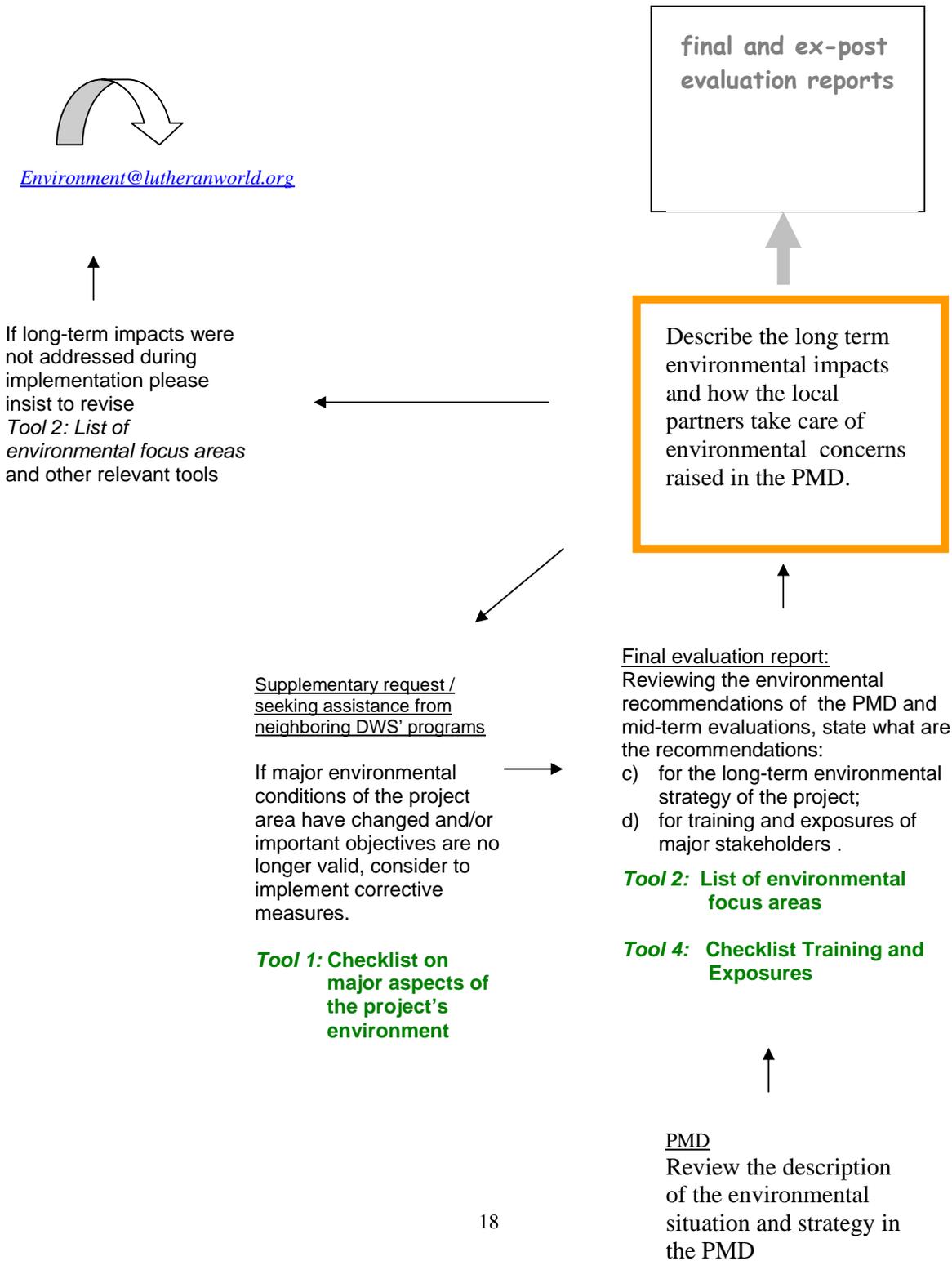
Consider to find local trainers in your program country. Many international organisations may have representations in your country. Inquire with LWF/DWS programs in neighbouring countries about regional training partners. Address the need for special training during LWF's Regional Consultations. Exposures and exchanges between LWF field programs can be a very efficient and cost-effective way.

If you come across
interesting sources
for environmental
trainingplease
inform the network:

Environment@lutheranworld.org



Step 3: Environmental assessment in the follow-up phase



ANNEXES

This section contains:

Annex 1 :

Eco-system checklist
Wetlands

Annex 2 :

Background Info and strategic guidance for World Service Projects

Global environmental situation and international discussion

Global environmental issues:

Atmosphere

Global warming and climate change

Environment in emergencies

Biodiversity

Renewable Energies

Appropriate Technology

Forestry

Soils

Water

Population

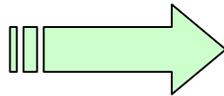
Annex 3 :

Web-links and references

WETLAND ENVIRONMENT CHECKLIST

This checklist covers environmental information that would be useful in evaluating potential and existing development sites. Following this format and asking the questing of the general “Tool 1: Ecosystems Checklist” for each site would allow for a thorough check of the environmental situation. This list may be more comprehensive than the baseline data actually necessary, serving also to remind developers of the many potential issues to be addressed. Many points of this list would apply to other ecological situations as well. For **arid lands** please use the “checklist – dryland situations” on page 28 of the “LWF Environmental Guidelines” Geneva 1997

The country program specialists are requested to elaborate similar lists for typical ecological conditions in their project areas and to share these with the network.



Environment@lutheranworld.org

Wetland Classification

Identify any dominant landscape features and classify the site as one of these wetland types:

- Tidal/coastal flood plain (salt water)
- Coastal river plain (brackish estuary)
- Inland tidal river plain (above salt wedge yet influenced by tides)
- River flood plain (influenced by rainfall and river discharge only)
- Inland depression (regime determined by rainfall, local runoff, and evaporation)
- Small inland valleys (upper valley reaches)
- Gather information on the local climate:
- Mean annual precipitation
- Mean annual potential evapotranspiration
- Mean annual temperatures

Land Uses

- Identify (quantify) lost land uses due to development (traditional medicinal plants, pastureland)
- Identify sites or areas of religious or spiritual significance
- Identify sites or areas of special social or cultural interest
- Identify farmer groups, capacity for training and disseminating
- Characterize upstream and downstream land uses and ground cover
- Characterize livestock systems (#, care, grazing zones, uses, illnesses)
- Note dry season and wet season activities in wetlands
- Note earliest use of wetlands
- Note any water and soil conservation measures
- Note existing physical degradation of the local environment
- Note any potential gender, age bias

- Note access to land and rights to use
- Note legal considerations such as servitudes and access/movement patterns
- Note community cohesion
- Estimate population with no access to wetlands
- Estimate decreased slash and burn land area (#farmers not involved)
- Estimate % of land remaining under natural or derived vegetation

I

Hydrology

- Note sinusoidal patterns in stream bed forms
- Note any traditional/existing water management techniques
- Note changes to flood plains
- Note stream turbidity (inflow and outflow) Locate erosion/deposition zones
- Locate stagnant/flowing water zones
- Locate infiltration/discharge zones
- Estimate various land slopes within the watershed
- Estimate the ratio stream length : watershed area
- Estimate the ratio stream number : watershed area
- Estimate stream velocities
- Estimate stream flow rates (high, low, mean annual)
- Estimate depth and duration of flooding in different zones
- Estimate percolation rate
- Estimate water table depth~ amount of seasonal fluctuation, change due to activities
- Sketch wetland width (high and low water marks) vs. Distance downstream
- Sketch wetland elevation vs. Distance downstream
- Sketch stream cross sections
- Suggest monitoring options (maximum flow rate, rainfall, groundwater depth)

Mangroves

Note and/or estimate the following characteristics particular to mangrove swamps:

- wave and tidal action
- deposition/removal of sand
- sedimentation rates and patterns
- turbidity

- salinity
- chemical processes or nutrient balances
- functioning of estuary systems
- river mouths

ii

Environmental Health

- Note availability and adequacy of clinics/health services
- Visit health clinics for water-related disease data, program information, concerns
- Question local inhabitants about health concerns, pests, animals
- Note parasitological considerations (schistosomiasis, elephantiasis, river blindness)
- Identify sources of water pollution (animals, latrines, agricultural runoff)
- Identify drinking water sources
- Identify toilet facilities/practices
- Identify causes and quantify stagnant water areas
- Note if manure is available and used as a fertilizer in the project and whether its use could result in the spread of disease through human contact
- Note existing use of leguminous crops to restore soil fertility
- Agriculture
- Note method of irrigation (sprinkle, seepage, canal)
- Note potential pest management interventions (ipm)
- Describe agricultural calendar, crop patterns, fallow schedule
- Characterize topsoil (organic and clay content, limiting nutrient, porosity, gradation)
- List major lowland crops grown with related cultivation practices and by whom
- List major upland crops grown with related cultivation practices and by whom
- Estimate land area with potential for rice cultivation, barren (iron-laden)
- Estimate soil productivity (kg rice/acre)
- Estimate potential for other crops (orchards, garden produce) in periphery
- Estimate land area requiring leveling or other soil disruption
- Estimate land area requiring tree/vegetation clearing

- Establish field visits and farm walks at major stages of development
- Estimate present turnaround time between succeeding crops
- Sketch typical toposequences (cross-sectional and lateral views)
- Sketch layout of parcels (plan view)
- Sketch typical soil profile (noting organic material, iron, high permeability layers)

Biodiversity

- Note the survival (and needs for) and diversity of:
 - Wild animals (previously and presently, large and small)
 - Birds
 - Fish
 - Note number of different cultivated rice varieties
 - Vegetation (trees, shrubs, grasses) both native and invasive
 - Endangered species
 - Note major diseases (blast brown spot, RYMV)
 - Note major pest problems
 - Note fertilizer use
 - Note any evidence of overexploitation, eutrophication, siltation, salinization

Background Info and strategic guidance for World Service Projects

- I. Introduction: Environment and Development
- II. Global environmental situation and international discussion
- III. Global environmental issues:
 - i. Atmosphere
 - ii. Global warming and climate change
 - iii. Climate Change and Biodiversity
 - iv. Biodiversity
 - v. Population

I . Environment and Development

There are now believed to be six billion humans on the planet. A significant proportion, approximately 20% to 50%, of the total biomass produced through photosynthesis on terrestrial surface is diverted away from natural ecosystems to support human beings. Practically this figure is probably much greater as it does not count the losses due to deforestation, pollution etc..Over large areas of the planet's surface humans have replaced complex and diverse habitats with much simpler ecosystems specialised for agricultural production and human habitation. Logging, clearance by fire, burning of charcoal and firewood production, soil cultivation, human infrastructures, industrial production and transportation and other human activities have reduced the richness of ecosystems and species have released chemical elements formerly fixed in the lithosphere into the atmosphere.

It is indisputable, that human activities have profound local impacts on the natural environment. What now is becoming clear is that these activities have planet-wide impacts, particularly on climate. There are well founded concerns that the global impacts will diminish the future chances for human life on a global scale. On the following pages we will look at these concerns and try to outline what the analysis of global environmental impact should mean for our own strategy as a humanitarian organisation.

II. Global environmental situation and international discussion

Since the early 70ies environmental issues have become a subject of the international discussion when it became clear that most of the environmental problems have a gobal character. The UN system has responded to the concerns raised and integrated and institutionalised many of these issues. A highlight of this development was the UN conference on Environment and Development (UNCED) 1992 in Rio de Janeiro, Brazil. The 178 countries, which participated in the conference have raised the term of »Sustainable Development« as a joint guiding political concept. In a nutshell, the normative term means to accept that development aiming at improving the living conditions of the present generation shall not jeopardise the chances of future generations.

Background Info and strategic guidance for World Service Projects

Sustainable Development is understood as an interactive process between social, ecological and economic development. The resolution of global environmental problems is seen as interconnected with the problem of poverty alleviation and development.

In the „Declaration of Rio“ the industrialised countries accept their special responsibility for the global environmental problems and the solutions.

As rule of thumb it is true, that one fifth of the world's population living in industrialised countries is causing four fifth of the global environmental pollution. This applies e.g. to the consumption of energy, the emission of carbon dioxide and for the consumption of wood and raw materials.

Binding commitments for industrialised and developing countries are discussed but political solutions are still far from being realised.

Inequality and a lack of social justice in the North-South relations have been identified as structural obstacles, which are partly responsible for global environmental problems.

More recently the international discussion about these questions recognised that also gender issues play an important role. Environmental problems in developing countries are often linked to poverty. Addressing gender inequality and the empowerment of women is increasingly accepted as part of the strategy to fight poverty and related environmental problems.

Example: Collecting firewood as household fuel is in many countries a task for the women. Sensitising women and men for overexploitation of forest resources and addressing the issue in the project strategy may contribute to a solution which protects the environment, relieves the women from drudgery of carrying heavy loads and improves the income situation of the family.

III. Global environmental issues

i. Atmosphere

The composition of the earth's atmosphere is of utmost importance for life. The chemical composition is responsible for the reflection of various kinds of radiation respectively for the amount of radiation and its kind which is reaching the earth's surface. (e.g.harmful UV radiation causing a high incidence of skin cancer). The composition of the atmosphere is also determining the retention of heat energy, which may cause climatic changes. Close to the earth's surface the composition atmospheric gases is an important factor for the functioning of biological processes such as photosynthesis and respiration, Human activities, which are influencing the composition of the global atmosphere, can have dangerous consequences for climatic conditions, the world's ecosystems and for human health.

ii. Global warming and climate change

The ability of atmospheric trace elements to reduce heat radiation for the earth's surface is sometimes called „natural greenhouse effect“. Without it, the world's mean temperature close to the surface would be a very uncomfortable -18°C . The most important „natural greenhouse gases,, are steam (gaseous water) 61%, Carbon dioxide (CO₂) 21% and Ozone (O₃) 7% as well as a mixture of other gases which account for the remaining 11%. This natural composition is affect to natural variations. Recent studies indicate however that human activities superimpose natural variations. It has been confirmed that human activities influence the accumulation of „green house gases“ and hence lead to an man-made greenhouse effect causing an increase of mean temperatures hence a global warming and a climate change.

Situation

The global average temperature is today by 0.7°C higher than at the end of the 19th century. The year 1999 was the fifth warmest year ever recorded. Excluding the equatorial region, it can be stated that 1998 and 1999 were the warmest years in history. Seven of the such years since 1860 were recorded in the last decade of 20th century. Examinations of annual rings of trees, ice drilling cores and corals revealed that the 90ies were even the warmest decade in the last millennium.

Sea levels rose during the last 100 years by 10 to 25 cm. This is also seen as an indication for the climatic change. A further raise by 15-95 cm.is feared when the present trend continues. If this happens, coastal populations world-wide will be affected and flooding will have more serious consequences that ever before in history. Even if the increasing occurrence of extreme weather conditions can not yet doubtlessly be associated with the human influence on global climatic conditions, it is widely understood by climatologists that the global warming will contribute to the increased occurrence of devastating cyclones, floods and droughts.

iii. Climate Change and Biodiversity

Climate change is one of the major threats to biodiversity both for species and on ecosystem levels. As already mentioned, the rate of global climate change is projected to be more rapid than any change in climate that has occurred in the last 10,000 years. The Intergovernmental Panel on Climate Change (IPCC) -- the UN scientific body responsible for providing policy-relevant information on climate change -- concluded in its Second Assessment Report that climate change will lead to a severe adverse impact on habitats and wildlife as well as on ecosystems and the goods and services they provide society.

Species will be more vulnerable because of climate change. Even those species, which are able to tolerate changes, will have to deal with a variety of new competitors, predators, diseases, species for which they have no natural defense.

Background Info and strategic guidance for World Service Projects

Change of ecosystems

Climatic change could dramatically alter the distribution of wetlands and freshwater resources. Desertification may accelerate in some regions. Existing forested areas will undergo major changes: some may entirely disappear, while others will experience dramatic changes in the composition of species. Sea level rise, increasing ocean temperatures, and changes in storm patterns will threaten coral reefs, mangroves and other coastal and marine resources.

Dramatic changes in ecosystem and species distribution will have serious socio-economic consequences. An increased incidence of floods and droughts, possibly triggered by climate change, threatens food and water security. Communities that are impoverished or heavily depending on traditional resources are likely to be the most vulnerable to changes in climate.

Hurricane Mitch in 1998 devastated human settlement, crippled national and local economies, and displaced tens of thousands of people. The floods in Mozambique, Bangladesh and China had a similar effect. More often than not, the areas most affected were areas where the environment was the most degraded, and the most vulnerable people were those which are depending on the natural environment, including women and children. Nature conservation in protected areas and other areas with effective management regimes in place demonstrated an ability to buffer at least some of the adverse effects.

What can we do ?

The massive utilisation of fossil energy sources like petroleum products, fuels and coal is largely the main reason of anthropogenic production of the green house gas CO₂. Unfortunately we do not yet dispose of any practically feasible alternative which could replace fossil fuels for most applications in the day to day operation of our field programs. Fuel for transport is the greatest expense of fossil energy in LWF's field operations, followed by electricity (which is in many countries generated using fossil fuels).

Until alternative energy sources will be available on a large scale, raising the efficiency of our operations is the greatest source of saving fuel, the environment ...and costs. The following list of examples points in the direction we need to think:

Energy efficient equipment

- Transport can be more efficient if appropriate means are employed. Field offices are usually located in a country's capital, where normally road conditions do not require the use of four-wheel drive vehicles. For most operations there, small ordinary passenger cars are much more appropriate than using Landcruisers or other heavy (duty) vehicles. Sending a Toyota double cab 4WD to buy pencils in town qualifies a environmentally outdated management ! Efficient operation procedures think ahead by regularly reviewing practices, material and procedures in order to identify the least damaging option.
- For small offices solar panels can largely help to improve the energy efficiency and availability in field offices. Buying fossil fuel electricity from the grid or using own generator sets may in short run be cheaper but
- increase use of renewable energy sources solar, water, wind, biomass, biogas etc.

iv. Biodiversity

The term describes the diversity of all species of plants and animals. More recently it is used to describe the diversity of ecosystems as well as the variability within a species. The objective to preserve biodiversity is on one hand a result of acknowledging the intrinsic value of a diverse creation and of each of its species. On the other hand it is based on the discovery that the diversity of life is a precondition for the stability of ecosystems, which again is a condition for human life on earth. Nonetheless biodiversity is an economic resource. It is subject of a harsh controversy between bioindustry and protectionists.

Despite the knowledge about its central significance the loss of biodiversity is proceeding at high speed.

Problems and reasons

In 1995 the United Nations Environmental Program UNEP estimated the number of known species to be 1,750,000 . Annually about 12,000 new species are added. Only a fraction of all species is currently known. Estimates say, that the total number of species may be as high as 10 or even 100 million.

The global variety of life varies according to the different biospheres. Tropical rainforests which cover only 7% of the world's land surface host up to 90% of all terrestrial species. More recent studies indicate that there are areas on earth which have a special significance because of their great biodiversity. These »Hot Spots« represent only 1.4% of the planet's surface, but are specially important because they host 44% of all plant species and 35% of all vertebrates.

Estimates assume that the loss of species in the next 50 years will be in the range between 10 % and 50 % of the total number of species that ever existed on earth. Every day between 70 and 300 species are ultimately disappearing. The current rate of extinction is proximately 50 to 100 times higher than extinction due to natural factors.

Special concern is the vanishing biodiversity within species. In the course of agro-economic development the multitude of traditional sorts are replaced by high-yielding varieties. Some examples: From about 10,000 varieties of wheat which were cultivated in China in 1949 only 1,000 were still found 25 years later. In India farmers exploited about 30,000 kinds of rice; today roughly 50 varieties are still cultivated. Reasons are manifold: Increased productivity as the sole objective of national and international agro politics, marketing strategies of agro-industries pushing for high-yielding seeds requiring fertiliser and pesticides packages produced by the same industrials and the concentration of agricultural property in the hands of fewer owners just to name some.

What can we do ?

For agricultural aspect of development work a decreased genetic biodiversity means an ultimate loss of potential adaptability of species towards climatic change and new diseases. Reports indicate that many ecosystems which are elementary important for human life are seriously degraded. A failure of mitigation strategies would very likely involve social and economic consequences. When designing projects priority should be given to the following issues:

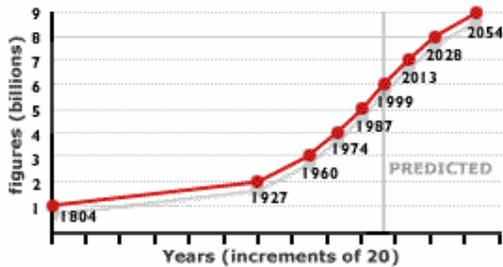
- Protection of humid areas and swamps
- Stopping deforestation (change of forests into agricultural land, use forests for charcoal production, timber logging)
- Protection of forests
- marine resources: stopping overexploitation by promoting appropriately sized utilisation patterns
- Fight soil degradation and soil erosion

Background Info and strategic guidance for World Service Projects

v. Population Growth

On October 13, 1999 UN Secretary-General Kofi Annan has welcomed the planet's sixth billionth human being into the world at a maternity hospital in Sarajevo. This rather symbolic threshold signifies a development which carries a lot of fears of an overpopulated planet with it, which could eventually no longer bear the burden of hosting mankind in a decent way. What are the facts ?

World Population



The world currently hosts a population of presumably 6.076 billion⁴ Future population growth projections indicate that even after the "replacement fertility level" of 2.1 kids/couple is achieved, that the world population will increase because of the fact that presently 3 billion people which are younger than 24 years cause a population momentum.

Population Growth is determined several factors. Key determinants are:

- Death rate
- Migration rate
- Total fertility rate (TFR Total number of children in woman's lifetime)

Whereas in many developed countries death rates and birth rates fell gradually since 1850s in many LDCs death rates declined rapidly (1930s-1970s) to 20/1,000, mainly due to improvements in health services, sanitation and an increased food production. But birth rates and fertility remained high (40/1,000) so that population growth took place. Only during 1970ies birth rates declined significantly in many countries⁵. Today the TFR is lower than 2.1 in 60 countries which represent 44% of the world population. Out of these countries are 27 LDCs. Hence it is fact that the world population grows today at a slower rate than some years back.

Trends in Rate of World Population Growth

While there was a peak of population growth in 1965-70 of 2.04% per year, the current rate is 1.3% per year (1995-2000). Experts believe that this trend will continue to a projected rate of 0.34% in 2045-2050. Whereas the population growth rate declining rapidly in most regions of the world, there is a significantly slower decline in Africa.

Population Growth Rate/year	
• DCs:	0.3%
• All LDCs:	1.6%
• Poorest LDCs:	2.4%

There are major differences between countries (1980-1993); in 17 countries it is still very high (3-3.9%).⁶

⁴ 2000-POPClock, US Census

⁵ e.g. India: 1965 TFR 6.2 1995-2000 TFR 3.13 Global TFR: 1950=5.0; 1995-2000=2.7

⁶ Gambia, Ivory Coast, Yemen, Zambia, Botswana, Kenya, Niger, Madagascar, Ghana, Tanzania, Zimbabwe, Paraguay, Honduras.

Background Info and strategic guidance for World Service Projects

The growth rate has a significant impact on the time that the world population would double: At the low growth rate in Europe it would take 270 years, whereas it would need only 22 years when applying the present rate of Africa. (Average fertility rate = 6.1)

Age Distribution and urbanization put another burden on developing countries and should determine political priorities. Looking at the fact, that the population in developing countries is younger than in developed countries issues like education and child health should become a priority for a responsible policy – and the management of strategies of World Service's country programmes .

•	Region	<15 years	>65 years
•	Africa	45%	3%
•	LDCs	37%	4%
•	DCs	22%	11%

Rapid growth in urban population present another challenge for development workers and decision makers:

Region	1960 (%)	2000 (%)	2030(%)
1. LA	49	75	83
2. Africa	17	38	53
3. Asia	16	37	55

Whereas in 1990 the majority of world population still lived in rural areas, in 2000 already 21 cities had a population of more than 10 million people, out of these were 17 in LDCs. Projections say that in 2030 the urban population will double and that at the end of the 21st century 90% of the world's population growth will take place in cities.

Growing problems are common not only to the mega-cities but affect quality of life of urban population world wide also in smaller towns and villages. Action needed concerns primarily

4. Water, sanitation, solid wastes, air and water pollution
5. Unemployment, poverty, housing
6. Civil violence, ethnic radicalism and religious fundamentalism

What can we do ?

Adopting international policy development and strategies

An important third international UN conference on population was held in 1994 in Cairo, Egypt. This *International Conference on Population and Development* (ICPD) developed a non-binding Program of Action on population issues. This Program was supported (with slight reservations) by all 189 countries, including the Vatican. The Plan was created after a preparatory phase of over two years of pre-conference meetings throughout the world with a great deal of input from NGO's, particularly women's groups. The 1994 ICPD placed population within the context of development. The recommendations of this conference may as well serve as an orientation for project work of World Service.

The most important goals formulated by the conference were::

- empowerment of women through education and employment.
- expand family planning and reproductive health programs, to make services available to the 120 million women who want but do not have access to family planning.
- protection of girl children.
- increase male responsibility for child rearing and family planning.
- reduce infant and child mortality.
- reduce poverty and unsustainable production and consumption patterns.

Background Info and strategic guidance for World Service Projects

More concretely the conference formulated goals and indicators to be achieved by the year 2015:

- Provide universal access to a range of safe and reliable family planning methods and related reproductive health services.
- Reduce infant mortality rates to below 35/1000, and under-age-5 mortality to below 45/1000.
- Reduce maternal mortality to below 60/1000.
- Increase life expectancy to over 75 years.

Universal completion of primary education, and ensure girls and women the widest and earliest possible access to secondary (and higher) levels of education.

(to be continued)

Environment / Africa

Detailed information, baseline data and lots of infos on environmental issues in Africa.
<http://www-sul.stanford.edu/depts/ssrg/africa/eco.html>

Food aid and environment

List of links to information providers on environmental issues , standards of USAID (A Field Guide to USAID Environmental Procedures, 2000), CARE(CARE Bibliography of Environmental Resources) GTZ (Promoting Participation and Self-Help in Natural Resource Management: Guidelines for Project Staff) and many other international organisations.
<http://www.foodaidmanagement.org/envmt3.htm>

Refugees

<http://www.unhcr.ch/environ/enviro.htm>
Detailed information and guidelines on environmental issues in refugee situations.

Water and Sanitation

SOURCE WATER AND SANITATION WEEKLY (formerly Source Bulletin), a monthly e-mail newsletter of the Water Supply and Sanitation Collaborative Council (WSSCC) and the IRC International Water and Sanitation Centre

Subscribe/unsubscribe via the Source Web page:
<http://www.wsscc.org/source>
or via E-mail:
To subscribe <mailto:majordomo@listserv.antenna.nl>, the message:
subscribe source-weekly

Pesticides and agro-chemical pollution

Chemical substances and groups of substances/register of substances
http://www.gtz.de/uvp/publika/English/begin.htm#Environmental_Handbook

Standards for environmental quality and standards for influences on the environment

General information
Waste water
Solid wastes
Chemical aids
Changes in land-use

Special reference to international standards

Air quality
Climatic situation
Noise situation
Water quality
Soil quality

http://www.gtz.de/uvp/publika/English/begin.htm#Environmental_Handbook

DANIDA

Environment and Development - Volume II - Annexes - ANNEX 2: Sectoral Environmental Objectives and Sectoral Indicator Checklists

<http://www.um.dk/danida/evalueringsrapporter/1996-2-2/1996-2-2.2.asp>

SIDA (Sweden) policy on sustainable development

The fifth goal of Swedish international development cooperation is: "sustainable use of natural resources and protection of the environment". The action programme for sustainable development into its programmes of international development cooperation. The programme shall permeate all Sida's work and describes what Sida intends to do to follow up the results of UNCED.

Guidelines for Environmental Impact Assessments in International Development Cooperation.

All guidelines are unfortunately not yet available online. Hardcopies may be requested by environment@lutheranworld.org or <http://www.sida.se/Sida/jsp/Crosslink.jsp?d=107>

CIDA (Canada)

CIDA, as the agency responsible for managing over 80% of Canada's official development assistance, is mandated to support sustainable development in developing countries, in order to reduce poverty and contribute to a more secure, equitable and prosperous world. To accomplish its role CIDA concentrates its resources on the following seven programme priorities:

- Basic human needs
- Women in development
- Environment
- Human rights
- Democracy and good governance
- Infrastructure services
- Private sector development

http://w3.acdi-cida.gc.ca/cida_ind.nsf/

A very informative "Handbook on Environmental Assessment of NGOs and Institutions Programs and Projects" ISBN: 0-662-26156-9 is available as hard copy.