

**GUIDELINE
FOR PLANNING AND IMPLEMENTATION**
of ecosan projects in rural and peri-urban areas of the Philippines

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Table of content:

Introduction and objective of the guideline

I. Ecosan principles

II. Methodology

III. Implementation steps

1. Awareness raising

2. Request for assistance

3. Project launch

4. Baseline Study

5. Stakeholder Information, Social Preparation

6. Feasibility Study

7. Decision Making

8. Implementation:

Construction, Operation & Maintenance, Technical and Organisational Set-ups

Activities throughout the whole project process:

Capacity Building, Monitoring & Evaluation, Documentation

References

Bibliography

List of Figures

- Figure 1: Separation of substances and examples of possible ecosan elements
Figure 2: Bellagio principles
Figure 3: Implementation steps for ecosan projects proposed by the GTZ Water Program, Philippines

List of Boxes

- Box 1: Lessons learnt - Awareness raising
Box 2: Lessons learnt - Project partners/ stakeholder
Box 3: Lessons learnt - Plan of Operation
Box 4: Lessons learnt – Social Preparation
Box 5: Lessons learnt - Stakeholders workshop
Box 6: Lessons learnt - Construction
Box 7: Lessons learnt - Monitoring and Evaluation
Box 8: Lessons learnt - Ecosan training for project partners

List of appendixes:

- Appendix A: Material for hygiene and sanitation promotion
Appendix B: Example for Partnership Agreement
Appendix C: Plan of Operation
Appendix D: Material for basic ecosan training
Appendix E: Questionnaire form and guided questions for sanitation assessment
Appendix F: List of principal stakeholders
Appendix G: Concept for stakeholder workshop (example)
Appendix H: Methods for social preparation
Appendix I: Plan of activities for social preparation
Appendix J: Selection criteria for partner households
Appendix K: Construction plan and list of construction material for UDDT
Appendix L: Posters for a urine diversion toilet - UDDT (user manual)
Appendix M: Guidelines for the reuse of urine and faeces
Appendix N: Concept for reuse training for ecosan products (example)
Appendix O: IEC concept for households
Appendix P: Monitoring and Evaluation questionnaire and form
Appendix Q: Useful addresses and links related to ecosan

Introduction and objective of the guideline

With more than 7000 islands the Philippines face a series of special challenges in the water supply and sanitation sector. In the past years, investing in this sector has not been a priority. Only recently the connection between safe water supply and sanitation and its impact on public health, poverty and development has been recognized.

Even though there is progress in water supply and wastewater treatment, still more than 90% of the sewage generated in the Philippines is not disposed or treated in an environmentally acceptable manner. This predicament is a constant threat to the health of the local population and the environment.

As anywhere else in the world the millennium development goals put pressure on the government to react by enacting laws and regulations to raise awareness and attract investment from the private sector. In municipalities with little financial resources economically feasible and environmentally friendly technologies for water supply and sanitation systems are needed.

In the last two years ecological sanitation has been promoted by different development agencies in the Philippines. Pilot sites of this new concept and its technologies were implemented to demonstrate the advantages to municipalities as well as to the population. In addition, ecological sanitation has received a wider recognition through presentations at national events such as the First Philippine Sanitation Summit that was held in July 2006 in Manila.

This implementation guideline is based on experiences and lessons learnt from the GTZ¹ ecosan pilot projects implemented in the Visayas, Southern Philippines that commenced in 2005 to date². It is also based on the Bellagio Principles, formulated by the World Water Supply and Sanitation Collaborative Council (WSSCC).

The guideline is fore mostly intended for application in rural and peri-urban areas, i.e. ecosan projects that might include on-site sanitation facilities, facilities with anaerobic digesters and biogas recovery.

Main objective of the guideline is to encourage planners and implementers to apply a participatory and structured approach when implementing ecosan projects. Only when the users of sanitation services are actively involved in the planning process, sustainability can be achieved. The guideline provides an overview of proposed planning steps, complemented by various tools in the appendices.

Additionally it should be noted that the reader should be familiar with the ecosan approach, hence ecosan as a concept will only be introduced briefly in this guideline.

The implementation guideline is structured into three chapters that are complemented by various appendices which include material about the proposed activities and methods. The first chapter provides an overview of the ecosan principles and possible technology options. Chapter II introduces shortly the Bellagio Principles and gives an overview of the steps proposed for a structured planning and implementation process. Chapter III describes these implementation steps, based on the above-mentioned methodology and experiences from the ecosan pilot projects in the Southern Philippines. Each step is described including its purpose, proposed activities, tools and output.

1 GTZ: German Agency for Technical Cooperation, in particular the Water, Sanitation and Solid Waste Program

2 ecosan status report available at GTZ Water Program Office, Manila

I. Ecosan principles

Thanks to many campaigns of international development agencies and local NGO's ecological sanitation (ecosan) gains more and more popularity. What started with small pilot projects in Africa and Asia is now becoming an accepted way towards a sustainable and comprehensive solution for sanitation problems all over the world.

The core principle of ecosan is to close the loop between sanitation and agriculture, enabling and bringing about "agricultural reuse", along with other means of closing flow cycles. This new approach considers waste as a natural resource containing nutrients and minerals needed in agriculture. Compared to conventional sanitation concepts³ the ecosan approach aims at saving water and energy, making use of nutrients and selecting technologies in compliance with the social, organizational and environmental conditions.

Ecosan offers a wide range from simple to sophisticated technologies appropriate for rural, peri-urban and urban areas. In the Philippines, selected technologies are known and tested in rural and peri-urban areas, i.e. urine-diverting dry toilets with reuse of ecosan products in agriculture, composting of organic waste, anaerobic treatment with production of biogas, treatment of domestic waste water in constructed wetlands with reuse of the effluent.

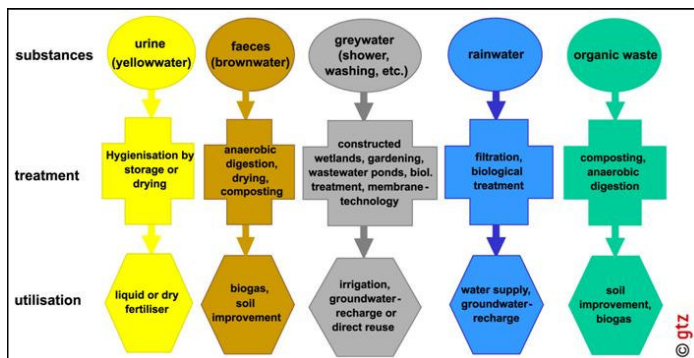


Figure 1: Separation of substances and examples of possible ecosan elements

A well-designed ecosan concept focuses on the household demands and needs. Participatory methods with active involvement of the users guarantee the development of a "reuse loop" for liquid and solid waste from an individual household or even a whole municipality. Hygiene & sanitation promotion, environmental education, capacity building, food security and the reuse of ecosan products in agriculture, are equally important aspects of the ecosan approach.

However, ecosan as a concept is still in the infant stage and especially with its holistic approach it demands careful adaptations to local circumstances - there is no one-way of implementation, rather individual solutions.

³ Linear end-of pipe systems such as sewer networks, septic tanks, and waste water treatment plans

II. Introduction of the Planning and Implementation Process

In the past few years many international organizations and agencies agreed that new strategies are needed to provide adequate water supply and sanitation to people all over the world.

Meeting at Bellagio in February 2000, an expert group brought together by the Water Supply and Sanitation Collaborative Council agreed that current policies and practices are abusive to human well-being, economically unaffordable and environmentally unsustainable. They therefore called for a radical overhaul of sanitation policies, and suggested a new approach based on the following 4 principles, called the '**Bellagio Principles**'.

THE BELLAGIO PRINCIPLES

1. **Human dignity, quality of life and environmental security should be at the centre of the new approach, which should be responsive and accountable to needs and demands in the local setting.**
 - solutions should be tailored to the full spectrum of social, economic, health and environmental concerns
 - the household and community environment should be protected
 - the economic opportunities of waste recovery and use should be harnessed
2. **In line with good governance principles, decision-making should involve participation of all stakeholders, especially the consumers and providers of services.**
 - decision-making at all levels should be based on informed choices
 - incentives for provision and consumption of services and facilities should be consistent with the overall goal and objective
 - rights of consumers and providers should be balanced by responsibilities to the wider human community and environment
3. **Waste should be considered a resource, and its management should be holistic and form part of integrated water resources, nutrient flows and waste management processes.**
 - inputs should be reduced so as to promote efficiency and water and environmental security
 - exports of waste should be minimised to promote efficiency and reduce the spread of pollution
 - wastewater should be recycled and added to the water budget
4. **The domain in which environmental sanitation problems are resolved should be kept to the minimum practicable size (household, community, town, district, catchment, city) and wastes diluted as little as possible.**
 - waste should be managed as close as possible to its source
 - water should be minimally used to transport waste
 - additional technologies for waste sanitisation and reuse should be developed

Figure 2: Bellagio Principles

Proposed Steps for Planning and Implementation of ecosan projects in rural and peri-urban areas of the Philippines

The Bellagio Principles represent an extremely suitable approach for ecosan projects. As they stand they are fully compatible with the ecosan philosophy. Based on these principles and the experiences from pilot projects in rural and peri-urban areas in the Southern Philippines an 8 step process for the planning and implementation of ecosan projects has been developed by the GTZ Water Program Philippines. The steps are shown in Figure 3 and described in detail in Chapter III.

The ecosan project steps

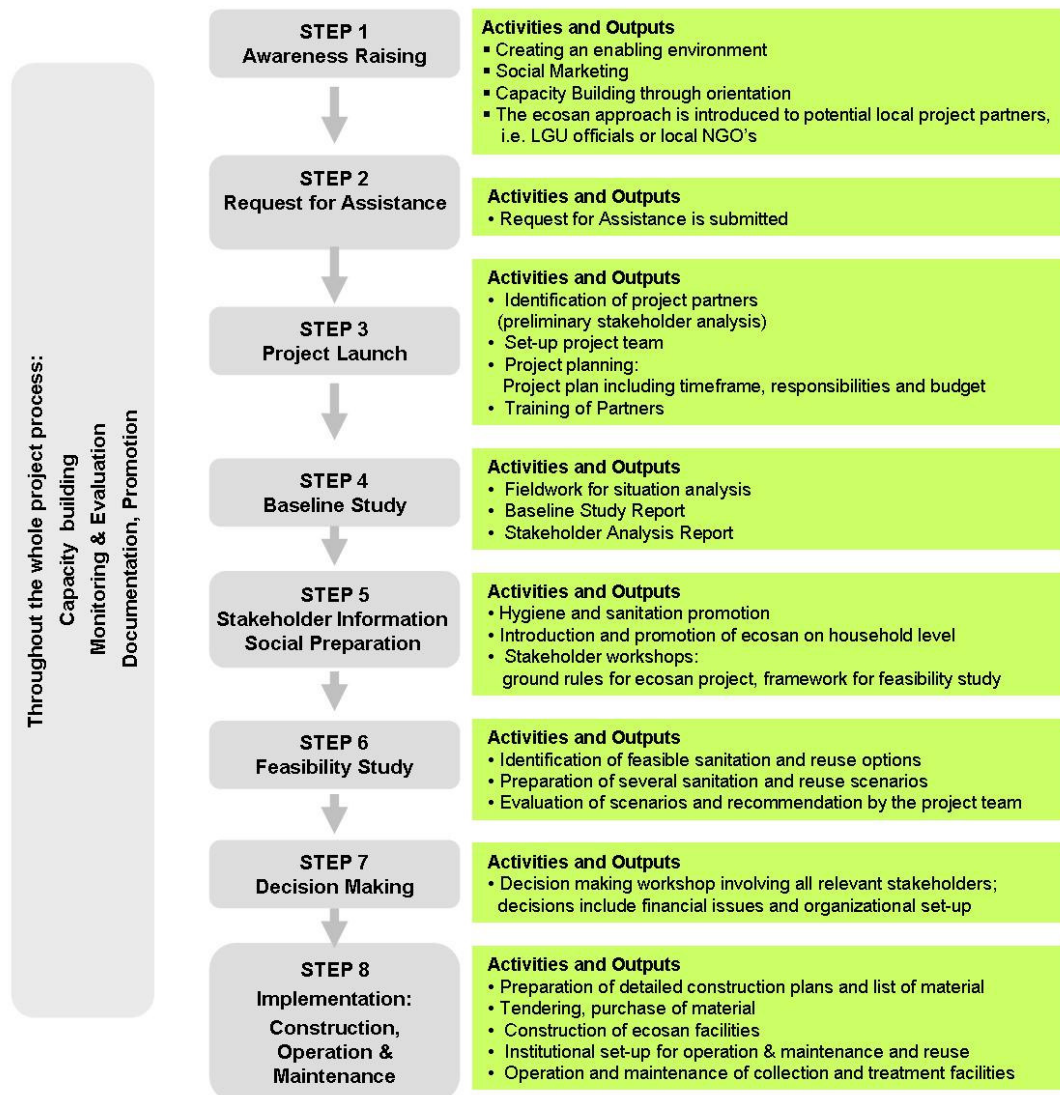


Figure 3: Proposed implementation steps for ecosan projects, GTZ Water Program Philippines

III. Implementation steps

The following section describes 8 proposed steps for planning and implementing an ecosan project, along with the main activities and outputs of each step.

There are certain key tasks and moments in the course of an ecosan project that determine whether and how the project continues. They are discussed below within the particular step in which they occur.

The 8 steps represent an idealised model of the planning process; however it is obvious that in reality the sequence does not need to be followed strictly: depending on specific circumstances certain steps may be omitted or some steps may have to be repeated.

It is very important that the planning procedure be viewed as a process focusing on participatory development of solutions, rather than being simply a sequence of workshops to be held and reports to be produced.

1. Awareness raising

A successful implementation of ecosan needs careful preparation, as ecosan is a new approach to sanitation and requires a change of attitude regarding sanitation of all stakeholders. Only when the stakeholders have an understanding of the strengths and weaknesses of their current situation and the possibilities of addressing them can they make a truly informed choice. No project exists at this stage. Stakeholders simply receive information on different sanitation systems.

The aim of awareness raising is a rethinking towards the sustainable and environmentally friendly use of all natural resources as well as a change of attitude and behaviour from common sanitation practices and systems⁴ to ecological sanitation. Awareness raising combined with hygiene and sanitation promotion is probably the most intensive part within the implementation phase of an ecosan project, and it should be conducted throughout the entire planning and implementation process.

The content and methods of awareness raising should be appropriate to the circumstances and level of knowledge of the target audience. Senior staff of a planning and development office might already have background information on the subjects, whilst farmers might need to develop a basic understanding first, and households might need information about the linkages between bad hygiene and sanitation and certain diseases.

Awareness raising on different levels: LGU/NGO, community and households

Outlined below is the proposed content of an orientation for provincial/municipal representatives or local NGO's:

- Hygiene and sanitation issues and basic rules
- Introduction of ecosan - what is ecosan?
- Benefits and advantages of the ecosan approach (public health, water protection, reuse options for agriculture)

⁴ In rural areas: open pit latrines, pour flush toilets or even open defecation.

- Best practice examples of ecosan projects from simple technologies to sophisticated solutions, including costs

Proposed content for ecosan presentations on household level or to barangay officials:

- Effects and transmission routes of waterborne diseases
- Sources for ground and surface water pollution
- Recommendations for better hygiene and sanitation practices
- Closing the loop, ecosan principles and examples of ecosan concepts.

Simple visual aids might be more appropriate than a computer and a LCD projector, when attending a community meeting or visiting a household. Examples for visuals can be found in Appendix A.

The first meeting with a community or household, ideally together with an informed community mobilizer, should only raise the awareness of water and sanitation problems. The ecosan principles could be introduced at the same time or later; depending on the existing knowledge of the family.

Box 1: Lessons learnt – Awareness raising

Tailor the content and type of your presentation to the knowledge level and interests of your audience

Don't overwhelm the participants with too much information and details

Avoid technical terminology

Include a lot of photos and/or drawings in the presentation

Mention studies and surveys or interviews to underline your argumentation

Encourage the participants to ask questions at any time

Distribute printed information material of the ecosan concept

Invite for a next meeting

Be prepared for FAQ (frequently asked questions)

(what does a dry toilet / biogas reactor look like, how does it function, how much does it cost?).

Hygiene and sanitation promotion has to be carried out throughout the planning and implementation process, ideally prior to any project, before potential users can be identified

Output

Documentation of Awareness Raising Activities

2. Request for assistance

The request for assistance should be formulated by the relevant stakeholders (e.g. the users of the sanitation facility or of the recyclates) possibly with the feedback of the supporting institution (e.g. an NGO). It should be passed on to the organisation that can respond to the demand, e.g. the local authorities or a **supporting organisation** such as an NGO or international development organisation. A positive response should lead to the next step.

Output

Request of Assistance

3. Project launch

The objective of the project launch is to identify project partners and stakeholders and to negotiate their role in the project and the participatory approach that will be applied for the project.

The project launch should include: a) identification of project partners and stakeholders b) set-up of a project team (consortium), c) preparation of a project plan and d) training of project partners.

Start-up workshop

It is suggested to carry out the project launch in a series of smaller steps. It could begin with a start-up workshop to inform all stakeholders about the process itself. Some of the questions which may be addressed here are: Who has made the request? What is needed in the next step? What must be decided upon by the stakeholders? What are the tasks, roles and means of the stakeholders? Who will pay for the project? What are the project boundaries (both physical and for example in terms of the reuse possibilities)? Is there a need to define sub-projects due to differences in housing structure or income levels? Are there specific objects to be dealt with (e.g. schools etc.)?

In the start-up workshop the project boundaries (e.g. project area, number of households, public facilities such as schools) should already be agreed. This will define the framework for the project plan that is also part of step 3.

Project Partner

The project partner could be an NGO, a municipal or provincial department or simply some interested households; further implementation steps must be adapted accordingly.

Preliminary Stakeholder Analysis

A preliminary stakeholder analysis helps to identify the major stakeholders of the project, e.g. users of the sanitation facilities, users of the ecosan products, service providers and relevant LGU offices.

Project Team

A project team or technical working group that takes responsibility for the planning and implementation should be set up at this stage and a partnership agreement between the project partners and the supporting organisation should be signed. This agreement should contain the project framework, implementation methods (participatory), activities and schedule, clarification of responsibilities and a budget.

An example for a Partnership Agreement can be found in Appendix B.

Box 2: Lessons learnt - Identification of project partners and stakeholders

If possible incorporate ecosan activities in already existing programs/projects related to sanitation, environmental education campaigns, hygiene & sanitation activities, organic farming among others (An extra meeting with all partners should be organized to assess and evaluate so far experiences with the community, tools and strategies being used and lessons learnt).

A partnership agreement between the implementing partners should be signed at this stage, containing the implementation methods (participatory), activities and schedule, clarification of responsibilities and a budget.

Before any implementation steps at household level are carried out, the project partner (NGO or LGU staff) should be trained on the ecosan concept.

The ecosan project team (technical working group), should be multisectoral: e.g. sanitary inspectors, health workers, community organisers, engineers, agriculturists and local leaders.

Ensure regular communication and follow up of meetings and possible project adaptations between all project partners by equal participation.

Project Plan

A carefully worked out plan of operation is essential for an organized implementation process. It should be jointly developed by all project partners and stakeholders. This process ensures that all involved stakeholders/ project partners agree on one implementation strategy. However, this strategy should include the participation of all stakeholders and the involvement of ecosan users when appropriate, and take into consideration specific social and cultural habits.

A plan of operation should include:

- A detailed outline of the next implementation steps.
- Responsibility of each stakeholder/project partner for activities (planning and organizing workshops, community mobilization, technical design, purchase of material)
- Timeframe, regular meetings and updates on project development.
- Budget for the project (this topic should be handled with care regarding the households)
- Development of monitoring and evaluation plan

An example for a project plan (Plan of Operation) is shown in Appendix C.

Box 3: Lessons learnt Project Plan

Include sufficient time for capacity development, monitoring and the development of IEC material for users

Unforeseen problems could postpone the implementation process (i.e. bad weather, availability of materials and equipment), allow time in the plan for those events

Include meetings for regular updates and problem analysis

ecosan training for project partners

The ecosan training for project partners serves the simple purpose to ensure that the partners, especially field staff and community mobilizers, have sufficient knowledge of the ecosan approach. They should have the confidence to answer questions related to technology options, health, hygiene and sanitation behaviour and the ecosan concept in general. These are questions which might be asked by the community and households at any time during the planning and implementation process. The training is essential for a successful implementation and if possible should include a study tour to already existing sites.

An ecosan training for stakeholder/project partners should include the following aspects:

- Current sanitation situation and prevailing problems such as ground and surface water pollution, cases of water borne diseases of the local population, unsafe hygiene habits among others (based on results of baseline study).
- The closed loop concept
- Introduction of different ecosan technologies and options (urine diversion, compost toilets, biogas, reed beds, etc)
- Social and health aspects including, community mobilization methods and tools, hygiene and sanitation aspects
- Re-use options and guidelines for ecosan products
- The importance of the participatory approach of the ecosan concept
- Monitoring and evaluation methods

Various training material is compiled in Appendix D.

Output

Workshop / Training reports

Preliminary stakeholder analysis

Ecosan project team

Partnership Agreement;

it should include the working procedure, tasks, roles and means and the project boundaries.

Project Plan

(plan of operation; including timeframe, activities, responsibilities and budget)

4. Baseline Study

The purpose of the baseline study is to find out how sanitation services are provided and used by the households/community. Therefore a comprehensive assessment of the current water supply and sanitation facilities as well as the cultural background of the target area needs to be conducted. This survey, also known as **sanitation analysis** should be summarized in a report since it will be essential for the monitoring and evaluation on impact on public health, the improvement of water and sanitation

facilities, behaviour change of the users, etc. It will form the basis for a comprehensive strategy for the implementation of ecosan projects within the household or community.

The **baseline study** should include the following activities:

- General survey and assessment of the existing water and sanitation situation
- Status of water resources and sources of pollution
- Public health, hygiene and sanitation habits and practices of the population (knowledge on the household level in hygiene and sanitation practices)
- Agricultural activities/ infrastructure
- Local plans for infrastructure projects (new housing areas, schools, etc.).
- Inventory of potential programs/projects on hygiene and sanitation on environmental education where ecosan could be included along with a list of community-based staff to contact for follow-ups.
- Evaluation of ecosan potential for the target area.

Tools and instruments for conducting a baseline study:

- Analysis of statistics, maps and official plans documents.
- Interviews with LGU departments (Planning and Development, Health, Agriculture etc.).
- Observations of hygiene and sanitation practices
- Site visits and documentations (photos, water quality analysis).
- Interviews on the household level
- Community mapping

Guiding questions used for the sanitation analysis in Bohol and Oriental Negros and an example questionnaire are presented in Appendix E.

Stakeholder Analysis

In connection with the baseline study, it is recommended to conduct a detailed stakeholder analysis in order to identify all relevant stakeholders, including the users of the sanitation facilities, the users of the recyclates (e.g. foresters, farmers and aquaculturists), service providers and the LGU, as well as sector agencies and regulatory bodies if necessary.

Stakeholders could be for example the following LGU's, NGO's and groups:

- Provinces and/or municipalities and cities:
Planning and development office, Agricultural Office, Health Office, Engineering Office, Environment Management / Natural Resources Office
- Local NGO's, Development agencies,
- Universities, schools or research institutes
- Community assemblies/ organizations
- Youth and women's groups
- Farmers, agricultural or horticultural associations
- Interested households

A list of principal stakeholders including examples for motivation and constraints is presented in Appendix F.

Output

Baseline study report

Stakeholder analysis report

5. Stakeholder Information, Social Preparation

Stakeholder Information

Stakeholder information plays a key role in the implementation process. Only if people fully understand the ecosan approach and appreciate its benefits, ecosan will be beneficial for them by providing a clean toilet, organic fertilizer and less ground or surface water pollution.

The main objectives of stakeholder information are:

- Comprehensive ecosan education of stakeholders on the household level, conducted by the ecosan project team.
- Establish 'ground rules' in dialogue with all stakeholders on: priorities of the users regarding the sanitation system and the reuse of ecosan products, priorities of the service providers and LGU, willingness to pay/contribute to construction and maintenance of ecosan facilities.
- Discussion and agreement on further implementation steps between all stakeholders, ensuring household contribution to the project (providing labour, local available construction material, purchase of toilet bowl or others). There should be an agreement on a fixed amount (%) for the contribution, e.g. 20-40% of the overall construction cost.
- Development of criteria and selection of pilot families (site visit if possible).

This may require an iterative process of the previous steps before a range of solutions are developed that are acceptable to all stakeholders. A wide range of sanitation options may be necessary for the project area due to differences in the housing and social structure.

A concept for a stakeholder workshop is shown in Appendix G.

Box 10: Lessons learnt Stakeholder workshops

Be clear about the required/expected contribution.

As long as there is no financially acceptable concept for the beneficiaries don't discuss cost details.

The venue of the workshop should be easily accessible for the participants, ideally it is conducted on-site, if not organize transport.

Plan the duration of the workshop according to the availability of the participants; they might not be able to attend a two-day event. A two-day workshop takes time away from the family's daily business,

which might be essential for them. Conducting the workshop sessions in several half-day or one-day activities should ensure the families full attention.

A follow up discussion about the workshop with selected families a few days later should be hold, in case families change their mind or have further questions.

Define contribution by the households in a written memorandum/agreement.

Social preparation

Social preparation and the active involvement of the target group are essential for a successful implementation and should not be underestimated. The ecosan project team should agree on a common strategy based on the users needs⁵.

Community organizing implies that user groups in the community take ownership of the sanitation system and responsibility and control over the operation, maintenance and management of its facilities. Finally, the organized groups ensure that the facilities are effectively used and maintained and that the whole project contributes to the general development of the community.

Community organizing is a process that involves three primary tasks: a) education & training, b) organization building and c) mobilization.⁶

In the context of ecosan community organizing is a very important process that should take place throughout the planning and implementation process, ideally combined with excessive hygiene and sanitation promotion activities. However, community organising requires a carefully prepared strategy and should be adapted to local habits and culture.

The objectives of any community organizing activity with the target group should be

- Creating an atmosphere of trust, empowerment and ownership
- Motivation and encouragement to participate within the implementation process, woman as key persons
- Stakeholders have sufficient knowledge to make an informed choice about their sanitation system
- Acceptable ecosan options are identified

Community mobilization in ecosan projects has been carried out through various methods. The Participatory Hygiene and Sanitation Transformation, short PHAST and Demand Responsive Approach, or DRA, and the Methodology for Participatory Assessment, MPA, which is commonly used for community mobilization/organisation in the Philippines as well as complimenting tools are described in Appendix H.

As mentioned before, the social preparation is a crucial process during any ecosan program. It is recommended to draft a plan of activities for the community mobilization. Appendix I. presents a plan of activities that is based on the experiences from previous projects.

In Appendix J. selection criteria for partner households are listed.

⁵ Ideally a user's needs assessment regarding technology, hygiene, sanitation and health education is conducted first.

⁶ DILG (2001): Community Organizing Process guidebook.

Box 5: Lessons learnt Social Preparation

Before any social preparation starts, a work plan and schedule for the mobilization activities needs to be prepared.

Address only one theme per community meeting.

Keep the meetings short (30 min + question and discussion time).

Use visual aids for demonstration; they should be easy to understand¹.

Output

Reports on stakeholder workshops

Reports on social preparation activities

Report on acceptable ecosan options for the project area, based on the 'ground rules'

6. Feasibility Study

The objective of this step is to develop recommendations for the ecosan system. First, a feasibility study should be conducted to analyse the different scenarios that were identified in the previous steps. It should cover all components and aspects of the ecosan project, i.e. the different solutions for collection, treatment and reuse. The task is to assemble and integrate these options into a sanitation concept that responds to the needs of the entire project area.

An example of how such a range of sanitation and reuse solutions could fit together would be:

- Urine separating dehydrating toilets installed in a settlement area with the collection and reuse of the urine and faeces being organised by a local organisation/association.
- Urine separating dehydration toilets installed in scattered settlements in the rural areas with on-site treatment and re-use for backyard farming.
- Communal toilets for a market place with an anaerobic treatment of faeces and urine producing biogas used for baking in a local bakery, and with sludge from the biogas reactor being used by local farmers.
- A biogas installation operated by a local farmer that treats and reuses the black water from the toilets of surrounding houses together with animal manure from the farm.
- A constructed wetland for treating waste water from a settlement, which is subsequently reused to irrigate a local park or other green areas.

General remark about small and pilot projects: For small ecosan projects and pilot projects a brief comparison of appropriate scenarios, including cost, is sufficient. In case of on-site facilities this could be the comparison of two-chamber UDDT's, including on-site treatment and reuse with one-chamber UDDT's connected to a communal storage and treatment facility.

Based on the feasibility study the ecosan project team should evaluate the scenarios and prepare recommendations for the implementation.

Output

Feasibility Study, including several sanitation and reuse scenarios
Recommendations for ecosan system

7. Decision Making

The feasibility study and the recommendations should be presented to and approved by all stakeholders. This may best take place during a workshop or official meeting.

It might be necessary to repeat steps 5 and 6 to adequately address the concerns of the stakeholders allowing them to approve of the assembled plans. Conflicts of interest between groups of stakeholders may become critical at this point and complicate attempts to reach a consensus or obstruct the finalising of the consolidated plans.

For example the inclusion of a composting plant may have initially been accepted by all participants as a suitable method of treating both faeces and biodegradable domestic waste. However when presenting the plan it may become clear that the stakeholders won't accept such an installation in the vicinity of their homes. Practical methods of resolving such problems are therefore needed. This may involve another series of awareness raising activities and the elaboration of a more acceptable alternative.

Output

Approved ecosan concept,
including decisions about sharing of cost for construction and responsibilities for
operation & maintenance

8. Implementation: Construction, Operation & Maintenance

This step includes all aspects of the implementation of the project, i.e. construction of collection and treatment facilities, operation and maintenance activities, set-up of organisational structure (service provider), including introduction of service fees. In many projects, full implementation of ecosan systems may have to be introduced in a stepwise process, as the systems may not yet be sufficiently developed or well known to decision makers and users, and they may therefore lack the confidence to apply an ecosan system to cover the entire project area. Implementation steps may therefore begin with pilot and demonstration projects which may subsequently be evaluated, adjusted and further developed for implementation in a wider area.

Construction

The construction phase is an important step during the implementation, especially for the individual households with on-site facilities such as urine diversion dehydration toilets (UDDT).

General remark about on-site facilities: A toilet is an individual facility meeting the user's needs and habits, their financial or labour contributions. But first of all the toilet should be comfortable for the user.

In general, any suitable material can be used as long as they meet the criteria of strength, durability and weather resistance. Ideally, locally available materials are used and the design should fit into the environment. In the Philippines the following can be used: bamboo mats for the superstructure, nippa for the roof, concrete for the floor slab and hollow blocks for the collection chamber.

Recommendations for the design of a Urine Diversion Dehydration Toilet (UDDT), a construction plan (example), including a list of proposed construction material are presented in Appendix K.

Box 11: Lessons learnt Construction of UDDT's:

Prepare detailed construction plan and a list of all construction material including

Update the contributions of the households

Clarify on who is purchasing which materials

Photos of the construction progress are useful promotion materials for further ecosan projects.

Operation and Maintenance

An ecosan project does not finish with the completion of the construction. Operation and maintenance of the collection and treatment facilities are even more important for the success and sustainability of the ecosan system.

Based on the approved ecosan concept the organisational set-up for operation and maintenance has to be established. In the case of on-site facilities the users might need technical support from the project team/supporting organisation regarding appropriate maintenance procedures or in case of problems, e.g. odor or insect problems.

Appendix L shows a poster for the use and maintenance of a UDDT.

Reuse of ecosan products

A key part of ecosan is the safe reuse of ecosan products by applying different treatment methodologies and procedures for the safe handling.

The complete reduction of the main four human-pathogen indicators found in human excreta, namely faecal coli forms, *Salmonella* spp., enteric viruses and helminth ova may vary according to local circumstances, such as the individual construction of the toilet facility, the use of bulking material (ash, lime, rice husks), and the climate amongst others.

Comprehensive training containing basic cultural management and practices of vegetable production, farming methods, use of crop protection material and finally safe treatment and application methods need to be conducted to the beneficiaries. Special attention should be paid to safe and hygienic application procedures.

In cooperation with the Peri-urban Vegetable Project of Xavier University a set of application guidelines have been developed for the Philippines⁷ and are attached in Appendix M.

⁷ The training report with detailed information can be requested from the GTZ Water Program Office in Manila

Output

Detailed construction plans for ecosan facilities

Facilities are completed

Operation & Maintenance is established;
including organisational set-up

Reuse of ecosan products is established

Activities throughout the whole project process:

Capacity Building, Monitoring & Evaluation, Documentation and Promotion

Capacity Building – Train the right people

Several training and education workshops should be conducted throughout the whole planning and implementation process. Decision makers⁸ should be invited to ensure a backup from officials. After trainings and education participants should be able to:

- fully understand and appreciate the ecosan approach
- make an informed choice about the ecosan system they want to implement
- operate and maintain their ecosan facilities
- safely handle the ecosan products during treatment and reuse

Appendices D and N. contain training material for the various capacity building activities

After the construction of ecosan facilities the challenge is to keep the families interest in applying the concept. As ecosan should be practiced as a holistic approach, the implementation of any ecosan facility is just the beginning. The overall goal of ecosan is behaviour change from common practiced sanitation toward an establishment of environmentally friendly and resource protection facilities.

For the first months of the use of the new ecosan facilities an intensive monitoring and support system is recommended. This could be combined with brief information and education campaigns (IEC) for the users. An example for such an IEC concept is shown in Appendix O.

Box 7: Lessons learnt Ecosan training for project partners

Hygiene and sanitation promotion activities are essential for a successful ecosan implementation and should be carried out already before the start of any project.

Ensure honest interest in ecological sanitation and its benefits.

The stakeholder/project partner should have sufficient and reliable human resources to participate actively the implementation process.

⁸ In this case decision makers means: Provincial and municipal officials such as team leaders from Planning and Development Office, Health officer, Water and Sanitation representatives among others.

Ensure that the stakeholder/project partner is aware of the long-term commitment required and is in the position to fulfil the given commitment (secured funding).

Check cost recovery possibilities

Output

Training reports and material

Monitoring & Evaluation

Ongoing monitoring & evaluation activities are extremely important in an ecosan program. These should be performed throughout the entire process, beginning in the awareness raising phase, with the activities and results being documented and evaluated. The results should be used to make necessary adjustments in the activities to ensure that the process continues as desired.

Recognised methods such as interviews, statistical evaluation, questionnaires or observations, should be used to collect the necessary information within reasonable and appropriate limits. Energy should not be wasted collecting information which will serve no practical purpose.

M&E remains important in all other steps of the project, right through to implementation for both the documentation of the change in the original situation for research and development purposes (with respect to the environment, hygiene, user satisfaction, costs, profits, resource use, productivity, increase in harvests, job creation etc.) as well as for long-term quality assurance of the end-product and the monitoring of environmental and hygiene standards by both the users and the authorities.

As monitoring and evaluation is a comprehensive process itself, again a careful plan of activity should be set up in discussion with all stakeholders.

Questions to be discussed are:

- What is the objective of the Monitoring and evaluation process, what and why should certain issues be monitored and evaluated?
- Over what period of time should the monitoring and evaluation process take place?
- Who will conduct the monitoring and evaluation?
- How and how often should data be collected (questionnaires, simple observations, etc)?
- Should the ecosan user be involved in the monitoring process (self monitoring)?
- What methods should be used (statistics, reports etc)?
- What will be done with the information (publishing, including results and lessons learned in further ecosan activities, etc)?

In general the following steps for monitoring should be undertaken:

- Identify information needs to guide the project strategy, ensure effective operations and meet external reporting requirements.
- Decide how to gather and analyse this information and document a plan for the monitoring and evaluation process.

Implementing the monitoring and evaluation program means gathering information. It can be done through informal or structured approaches. Information comes from tracking which outputs, outcomes and impacts are being achieved and checking projects operation such as activity completion, financial management and resource use

Once information has been collected, it needs to be analysed and discussed with the stakeholders. This may happen formally in community meetings or informally, when talking with the beneficiaries about their ideas during weekly field visits. In these reflections and discussions, information gaps might be noticed. These can be trigger adjustments to the monitoring and evaluation process to ensure the necessary information is being collected.

Ultimately the results from the monitoring and evaluation- both the communication process and the information will improve the project strategy and operations. Senior management is responsible for seeing to this with support of the monitoring and evaluation team.

The monitoring and evaluation of an ecosan project should consist of:

Technical monitoring	Social monitoring
Quality of design: convenience for uses, convenience to maintain..	Health impact: diseases in the family?
Quality of construction: blockages in pipes, vaults, odour, flies, and insects...	Use of the toilet: frequencies regarding the family members
Quality of materials: is the material chosen appropriate?	Reuse: urine and faeces, treatment, application
Toilet bowl: use, cleaning, resistance against urine, spillages	Perception: family and neighbours Problem analysis: improvements, comfort, convenience

A comprehensive designed monitoring and evaluation program should focus on whether the ecosan facilities are being used and managed accurately. Problems should be identified on the household level and then should be reflected in future project plans along with technology modification and hygiene education. An example for a monitoring and evaluation questionnaire is shown in Appendix P.

Box 1: Lessons learnt Monitoring and evaluation

- Creating a monitoring and evaluation program can be time consuming in preparation, however, a well prepared design and schedule will help to run the process smoothly.
- The partner households should be aware of their role in the monitoring and evaluation process.
- And evaluation form and an analyzing tool for the collected data's should be developed.
- Prepare a monitoring sheet for the monitoring of the new facilities
- Prepare a concept for information and education campaigns
- Follow a regular schedule for the monitoring and support activities

Encourage users to talk openly about problems with the new facility and respond quickly to such problems. Often slight changes in the behaviour can solve the problem.)

Discuss the findings from the monitoring with the users

Documentation

The various outputs of the different steps ensure documentation throughout the project process. It is recommended to summarize the lessons learnt for future projects.

Promotion of ecosan

Pilot sites of ecosan will show the advantages and benefits of the technology. However, changes of hygiene and sanitation practices take time and have to continue and should be extended after the first facilities are in use. Furthermore the next goal should be to promote those facilities to other municipalities, user groups and other related agencies.

Further reading material and ecosan resources are listed in Appendix Q.

Output

Reports about monitoring,

Support and IEC campaigns

References:

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United Nations Educational, Scientific and Cultural Organisation (UNESCO) – International Hydrological Programme (IHP) and the **Deutsche Gesellschaft für Technische Zusammenarbeit** (GTZ) GmbH (2006): Concepts for ecologically sustainable sanitation in formal and continuing education

Werner, Christine et al (2004): Planning and implementation of ecological sanitation projects. Draft version 08/04. Deutsche Gesellschaft fuer Technische Zusammenarbeit GmbH. Eschborn, Germany. www.gtz.de