



Solutions in Sanitation

Planning Principles

with funding from

Austrian

 Development Cooperation





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Preface



Countries in Africa, Asia, Latin America and Eastern Europe are diverse in many fields, but one problem they have in common is a lack of basic sanitation for a majority of their populations. They are far from meeting the UN Millennium Development Goal (MDG) for sanitation, to halve by 2015 the proportion of people without sustainable access to basic sanitation. Therefore the UN General Assembly has declared the International Year of Sanitation 2008, recognizing the sanitation crisis as one of the most neglected health and environmental problems today.

This issue is not just about protection of natural resources and prevention of illnesses caused by insufficient sanitary facilities, but also about human dignity and the right to use a toilet without any fear and disturbance. This challenge cannot only be met by providing infrastructure. A thorough approach is essential for the improvement of people's sanitary conditions; Projects and programmes following a sustainable strategy, from planning, implementation to care and support after the final phase of a project.

The Austrian Development Cooperation supports the International Year of Sanitation to strengthen the dialogue and interaction between institutions and people, working towards the achievement of the MDG sanitation target.

Austria has collected a wealth of expertise supporting national water and sanitation projects and programmes in partner countries over the years. A substantial portion of Austrian development funds flows into water projects. In all its water projects, ADC makes sure that sanitation is improved along with water supply.

Ambassador Brigitte Öppinger-Walchshofer
Managing Director of the Austrian Development Agency



1. Introduction

The numbers are well known: about 2.6 billion people are living without adequate sanitation, the vast majority in India, China and Africa. Progress in provision of sanitation services is struggling to keep up with population growth, and Africa is lagging behind the most⁽¹⁾. Within 20 years, it is expected that an additional 2 billion will live in towns and cities demanding sanitation. The challenge is obvious, already today sanitation-related diseases and poor hygienic conditions cause 2.2 million deaths annual (mostly children under the age of 5)⁽²⁾. Other consequences are the massive pollution of water and soil, the loss of innumerable school-(mainly girls) and working days, losses in tourism income, prevention of economic growth etc.

There are many arguments for increasing investments in sanitation to meet the Millennium Development Goals (MDGs). For example, according to the Joint Monitoring Program mid-term Assessment⁽³⁾, Ethiopia has a sanitation coverage of just six percent. An economic analysis conducted in 2005 indicates that for every US dollar invested in sanitation in Ethiopia an economic societal benefit of over US \$20 could be realised.⁽⁴⁾ However it is not enough just to provide more toilets, but also to ensure the safe collection, treatment and reuse / disposal of human excreta and wastewater.

When discussing sanitation improvement, the focus is generally on developing countries. But in certain Central and Eastern European countries sanitation needs more attention and financial resources as well. In Albania for example, sanitation in terms of sewage and waste water treatment plants (WWTP) has been one of the most neglected fields of infrastructure. The result is that in 2006 only 2% of the population was connected to WWTPs. This fact makes Albania the least developed country in Europe in regards to sanitation, and is a major setback when trying to achieve its goal of tourism growth.

International Year of Sanitation 2008

The urgent need to focus on sanitation triggered the UN General Assembly to declare the year 2008 the "International Year of Sanitation" (IYS). Its aim is to heighten awareness and to accelerate progress towards the MDGs target to half the proportion of the 2.6 billion people without access to basic sanitation by 2015.

For the International Year of Sanitation five key messages have been formulated aiming to focus activities⁽⁵⁾:

1. Sanitation is vital for human health.
2. Sanitation contributes to dignity and social development.
3. Sanitation generates economic benefits.
4. Sanitation helps the environment.
5. Improving sanitation is achievable.

These messages will be used to stimulate action from the household to the international level, in order to tackle the global sanitation crisis.

Purpose of this brochure

Within the framework of the International Year of Sanitation the purpose of this brochure is to inform about the Austrian Development Cooperation's approaches, strategies, priorities and direction in the area of sustainable sanitation. Therefore this brochure will address policy makers, programmers and implementers alike.

2. Sanitation – appropriate, ecological, sustainable

The term "sanitation" comprises all interventions which aim to protect and promote human health by providing a clean environment and breaking the cycle of disease. It refers to the principles and practices relating to the collection, treatment, removal or disposal of human excreta, household wastewater and refuse as they impact upon people and the environment.⁽⁶⁾

... appropriate

Technologies and planning can be considered appropriate for a given situation, if they correspond to demand, the socio-cultural needs, the users' ability to afford the continued operation, to the available organisational and technical capacities and if they allow flexible expansion and adaptation possibilities ("acceptable, affordable, manageable and adaptable").⁽⁷⁾

... ecological

While the criteria for a sanitation system in general are the degrees of minimising health risks and environmental pollution, "Ecological Sanitation" moves a step further by applying an ecosystem view to the problems of sanitation. It relies on the perception of "wastes" as resources within the system. In this sense "ideally, ecological sanitation systems enable a complete recovery of nutrients in household wastewater and their reuse in agriculture."⁽⁸⁾ EcoSan systems are based on a (local) closed loop approach for the recovery of nutrients from human urine and faeces, greywater and organic waste to the benefit of agriculture, helping to preserve soil fertility and thus food security.



... sustainable

In order to be sustainable a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, it should also protect the environment and the natural resources.⁽²⁾ Thus, sustainability in the sanitation sector refers to five interrelated dimensions: Technical, financial, institutional, social and environmental.⁽⁹⁾ The Sustainable Sanitation Alliance (SuSanA)^{a)} links these sustainability criteria to the following aspects:⁽²⁾

- Health and hygiene: includes the risk of exposure to human pathogens and hazardous substances; hygiene, nutrition and improvement of livelihood; effects on the health of downstream populations.
- Environment and natural resources: involves the required energy, water and other natural resources; the potential emissions to the environment resulting from use; the degree of recycling practiced and their effects.
- Technology and operation: incorporates the functionality and the ease of construction, operation, maintenance and monitoring; suitability to achieve an efficient substance flow management; robustness as well as flexibility and adaptability of the system.
- Financial and economic issues: relates to the capacity of households and communities to pay for sanitation; economic benefits from the production of the recyclables, employment creation, increased productivity through improved health and the reduction of environmental and public health costs.
- Socio-cultural and institutional aspects: includes the socio-cultural acceptance and appropriateness of the system; convenience; gender issues and impacts on human dignity; the contribution to subsistence economies and food security; and legal and institutional aspects.

The main challenge is that sanitation systems have to consider all these aspects in order to be absolutely sustainable. Nevertheless, the concept of sustainability will be seen more as a journey rather than a stage to reach.⁽²⁾

“Sanitation is firstly about human behaviour; and to be successful, systems need to prioritise such things as affordability, comfort, dignity, privacy, odour control, ease of cleaning and user acceptance by men, women, elderly and children. To be sustainable, sanitation systems must build in all these aspects.” (Arno Rosemarin, Sanitation Now 2008)⁽¹⁰⁾

a) SuSanA is a network of organisations working in the field of sustainable sanitation, which decided to support the IYS aim to contribute to the achievement of the MDGs by promoting sustainable sanitation systems.



Implementation of an appropriate sanitation system in Macedonia/Krivogastani^{b)}

Following the rehabilitation of the water supply scheme in Krivogastani, the Austrian Development Cooperation (ADC) in close cooperation with the Macedonian Government and the relevant stakeholders, decided to further improve general living conditions and sanitation by supporting a waste water project, aiming to realise an appropriate sanitation system.

Based on previous studies, the project comprised the construction of a sewer system and a waste water treatment plant. Special attention was given to the selection of appropriate technologies, particularly regarding demanded treatment performance, available investment funds and preferably simple operation. To ensure sustainability, the focus was on low operation costs to establish moderate waste water fees to achieve the best acceptance of the intervention, high collection rates and operation cost recovery. Additionally, through capacity building measures, proper technical, administrative and economical operating procedures were established.

b) The project "Wastewater disposal Krivogastani, Macedonia" was implemented by Büro Dr. Lengyel ZT GmbH (Vienna, Austria) and financed by Austrian Development Cooperation.



3. How to achieve sustainable sanitation solutions

3.1 Framework conditions

Enabling environment

For a successful implementation it is vital to identify, understand and respect the local conditions, which influence the entire design of activities. They are the foundation on which each project is based. Therefore it is necessary to get to know the local frame thoroughly before starting any planning processes, which includes the political, legal, institutional, financial and economic, educational, technical and social conditions.⁽¹¹⁾

However in many countries the framework conditions are not supportive for the implementation of sustainable sanitation systems. If so, the aim must be to create an "enabling environment", which is especially vital when applying an innovative approach. This is a challenging task, because the high level changes in policies, financial instruments, and organisational arrangements etc. may require changes to legal and regulatory instruments.⁽¹²⁾ Clear impact can be made only if interventions aim at all relevant levels of stakeholders, through policy dialogue, capacity building, technical assistance etc.



Creation of demand through social marketing

Even when municipal authorities place emphasis on sanitation improvement, the level of demand among the population may be much lower, because sanitation is not always prioritised. Therefore, creating demand for sanitation services becomes of paramount importance for a successful and sustainable implementation.

To support awareness raising activities, social marketing has proven to be a successful tool – because marketing is about creating and satisfying people's needs and wants. The heart of the marketing task is to determine what consumers want and offer it to them in an attractive and accessible way⁽¹³⁾, aiming to encourage the commercial selling of products that match individuals' preferences. Social marketing uses marketing techniques such as advertising through mass media, demonstrations, special offers, word of mouth etc. to serve social objectives.

Why is social marketing of sanitation essential?⁽¹⁴⁾

- Marketing can ensure that supply is adapted to people's preferences and their willingness to pay.
- Good marketing can enhance long term financial sustainability.
- Successful marketing at large scale can be cost effective in the long run as demand and investments increase.
- Provision of hardware is not enough.

3.2 Subsidiarity – a household centred approach

Subsidiarity is the principle that issues ought to be handled by the smallest (or, the lowest) competent authority. This implies that nothing should be done by a larger (centralised) and more complex organisation which can be done as well by a smaller and simpler (decentralised) organisation. In other words, any activity which can be performed by a more decentralised entity should be kept at this level, but having always an effective goal attainment in mind.

A widely accepted planning approach that integrates the principle of subsidiarity successfully is the Household Centred Environmental Sanitation (HCES)⁽¹¹⁾ planning approach, developed by the Water Supply and Sanitation Collaborative Council (WSSCC). It is designed to respond to household needs and priorities, since the household is the level at which decisions are made and where behaviour change begins. Thus planning is focused on household demands and includes all stakeholders in the process from planning to implementation.

The HCES approach uses the concept of zones: problems are solved as close to the source as possible, aiming to limit the number of problems that are exported to the next zone. Problems are only exported from one zone to the next larger one if they cannot be solved in the first zone or if the matter can be solved more effectively on a centralised level.

3.3 Participatory planning

The need for participatory planning approaches is widely recognised. The involvement of stakeholders, their problems, priorities and points of view in any planning process is widely used to increase the chances of success of a project.

Through participatory planning, mobilisation and awareness raising the local population is enabled to make a profound decision, according to their needs and taking into account the technical and institutional preconditions. In this process it is important to consider the needs of the poor and especially that of marginalised groups such as women, ethnic minorities and the disabled. Participatory planning in sanitation is essential especially because hygienic improvement on a household level can only be achieved by the people who live, act and work in that household.⁽⁷⁾

Various methods of participatory planning have been developed, which are linked to each other respectively using similar methodological steps, examples are PHAST (Participatory Hygiene and Sanitation Transformation), Sanitation 21, Open Planning of Sanitation Systems, Household Centred Environmental Sanitation (HCES), Community lead total sanitation (CLTS), Participatory Rural Appraisal (PRA) and Methodology for Participatory Assessments (MPA).



3.4 Objective and transparent decision making

Methodologies to prioritise solutions, based on divergent criteria and their respective values are available, but widely unknown or rarely applied. Multi-Criteria Decision Support Systems (MCDSS) allow consideration of criteria and values of people concerned in a transparent way. This approach is in no way specific for sanitation programmes and projects but applicable for any type of decision making process. The decisive advantage of this approach in the sanitation sector is its ability to make decision criteria and their respective values transparent for all stakeholders involved in the process. While in water supply in most cases decision making criteria are valued in a comparable manner by different stakeholders, e.g. the planning team and the target communities, this is rarely the case in sanitation.

MCDSS is very suitable to facilitate a participatory approach since it allows the consideration of particular (local) conditions and problem perception.

The decision making process of a MCDSS planning approach can be highlighted in five steps:

1. Definition of the Problem, Goals and Objectives

Identify the problem of the current situation and develop a vision for improved future conditions (the goal).

2. Definition of Criteria

Define the criteria and boundary conditions that must be met in order to achieve the goal. These can be quantitative or qualitative criteria, but they must be measurable.

3. Definition of Alternatives

Define feasible options and measure their predicted performance against the criteria (generally done by use of a decision matrix).

4. Definition of Preferences

Assign weights to the criteria based on users and stakeholders preferences.

5. Decision Making

Decision makers must balance trade-offs and make the final decision.

Example for a MCDSS process (ROSA^{c)} project, Uganda)

Within the framework of developing a "Strategic Resource Oriented Sanitation and Waste Plan" for Kitgum Town, the following options were developed for the Town Centre and a MCDSS-process applied to identify the most appropriate solution within the given legal, social and economic framework conditions:

- **Option A:** collection of human excreta in septic tanks and lined pit latrines, transported to sludge drying beds.
- **Option B:** collection of human excreta + water in sewer lines, transport to treatment plant.
- **Option C:** collection of human excreta in dry urine diversion toilets, transport to treatment site for composting and reuse; decentralised grey water treatment units

The MCDSS was implemented twice – with the local planning team only and later with the target community, the only difference in this process being the values (preferences) of the respective groups for the various criteria. Figure 1 shows clearly the strong deviation of the preferences which ultimately leads to a different result.

The planning team, working for a project promoting resource oriented sustainable sanitation, emphasises environmental aspects, whilst for the target community a solution should be above all "western standard" and modern.

c) The project ROSA ("Resource-Oriented Sanitation concepts for peri-urban areas in Africa"; contract No. 37025-GOCE; duration: 1.10.2006 – 30.9.2009) is a Specific Target Research Project (STREP) funded within the EU 6th Framework Programme under the Sub-priority "Global Change and Ecosystems". Kitgum was selected for the EU project ROSA as it has Ecological Sanitation experience since many years under ADC financed water and sanitation programs.



These different preferences necessarily would lead to different solutions. The planning team preferred Option C, whilst the Target Community preferred Option B.

In the sense of the above mentioned, Option B (collection of human excreta + water in sewer line, transport to treatment plant) would be appropriate but not sustainable. As all stakeholders agree that the “Strategic Resource Oriented Sanitation and Waste Plan” aims at the realisation of sustainable sanitation solutions, it was commonly decided to emphasise “soft” activities in order to increase awareness for environmental aspects, thus increasing the attractiveness of sustainable solutions.

For the immediate next phase of the project it was therefore decided to create awareness, demonstrate and promote sustainable solutions prior to the implementation of sanitation hardware on a large scale.

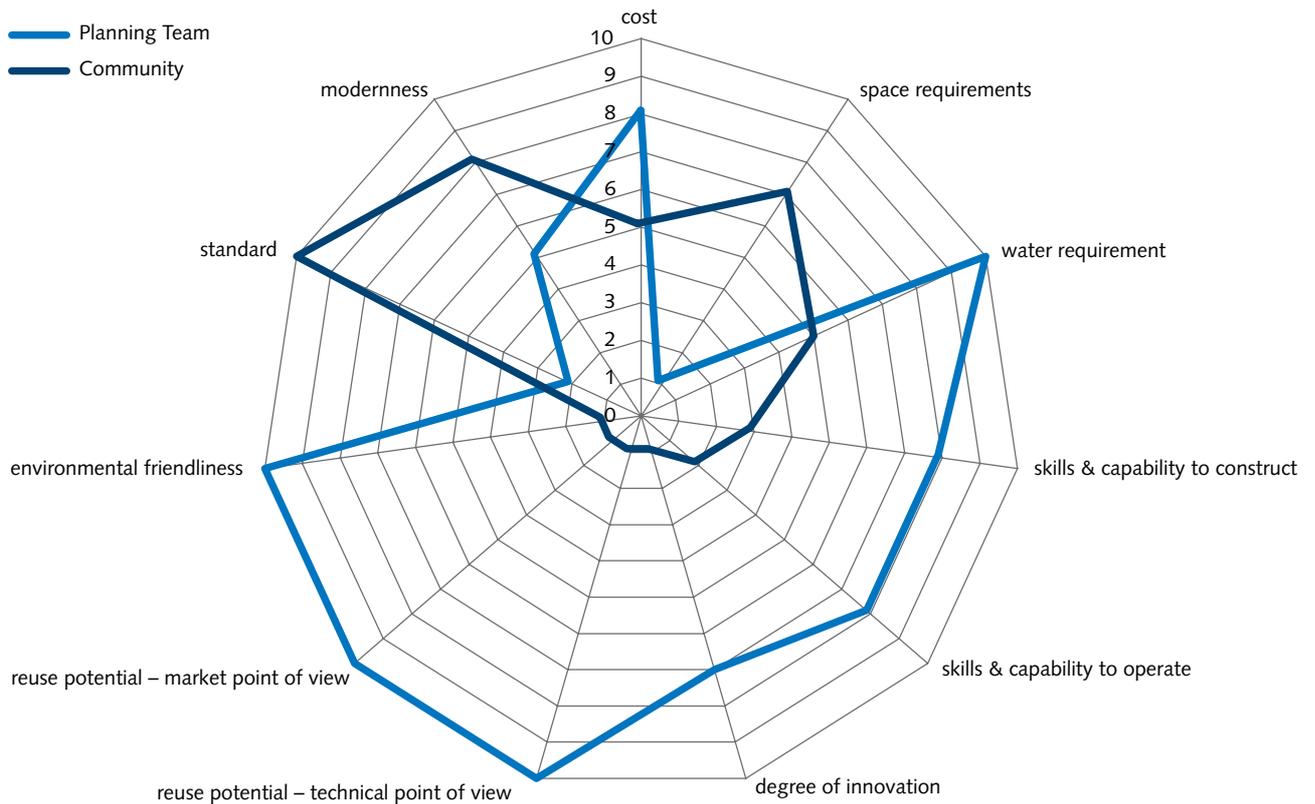


Figure 1: Comparison of set of values of different decision making groups



4. Way forward

The Austrian Development Cooperation is committed to further increase resources into the sanitation sector in line with international and national policies to accelerate scaling up interventions satisfying peoples basic sanitation needs. A new sanitation strategy, which will put further emphasis on basic principles towards sustainable sanitation, will follow.

Capacity development is regarded as essential on all professional levels – curricula have to be updated to include aspects of low cost solutions, water saving, groundwater protection and reuse of nutrients and energy.

Capacity development has to capture cultural reality and interest of people at all levels of the population and involve them in the planning, operation and management of systems.

The Austrian Development Cooperation supports efforts to harmonise international aid monitoring systems in order to facilitate the tracking of financial flows for sustainable sanitation and improvement of coordination. In particular, Austria supports efforts by the OECD-DAC^{d)} to split the existing water sector codes into the supply and the sanitation components.

d) The Development Assistance Committee (DAC) is the principal body through which the OECD (Organisation for Economic Co-operation and Development) deals with issues related to cooperation with developing countries.



Further reading

General links

- Austrian Development Cooperation (ADC): www.entwicklung.at
- Eawag/Sandec: <http://www.eawag.ch>
- Deutsche Gesellschaft für technische Zusammenarbeit (GTZ): <http://www.gtz.de/ecosan>
- International Year of Sanitation 08: <http://esa.un.org/iys/>
- IWA Specialist Group – Resources Oriented Sanitation: <http://www.iwahq.org>
- Stockholm Environment Institute (SEI): <http://www.sei.se>
- Ecological Sanitation Research (EcoSanRes): <http://www.ecosanres.org>
- Sustainable Sanitation Alliance (SuSanA): <http://www.sustainable-sanitation-alliance.org/>
- WHO – Water Sanitation and Health (WSH):
http://www.who.int/water_sanitation_health/en/
- Water and Sanitation Program (WSP) / World Bank: <http://www.wsp.org>
- Water Supply and Sanitation Collaborative Council (WSSCC): <http://www.wsscc.org/>
- Further links are on the SuSanA webpage:
<http://www.sustainable-sanitation-alliance.org/partners.html>
- AEE Intec: <http://www.aee-intec.at>
- EcoSan Club: <http://www.ecosan.at/>

Participatory planning

- The Household-Centred Environmental Sanitation (HCES) Approach:
<http://www.eawag.ch>
- Sanitation 21: <http://www.iwahq.org>
- Open Planning of Sanitation Systems: <http://www.ecosanres.org>
- Participatory Hygiene and Sanitation Transformation (PHAST): <http://www.who.int>
- Participatory Rural Appraisal (PRA): <http://www.worldbank.org>
- Methodology for Participatory Assessments: <http://www2.gtz.de>
- Community Lead Total Sanitation (CLTS): <http://www.livelihoods.org>



Notes

- (1) Lane, Jon (2008): Sanitation reaches the end of the beginning (perhaps). In: Outreach Issues, Monday, 12 May, 2008. Sustainable Development Issues Network (SDIN) and Stakeholder Forum (SF). http://www.wsscc.org/fileadmin/files/pdf/media/Articles/12may08_Stakeholder_Forum_Newsletter_at_CSD.pdf
- (2) SuSanA (2008): Towards more sustainable sanitation solutions. Sustainable Sanitation Alliance.
- (3) <http://www.wssinfo.org/en/welcome.html>
- (4) ERM (2005): Meeting the water and sanitation development goal. Environmental Resource Management, Department for International Development, London.
- (5) UN Water (2007): Tackling a global crisis: International Year of Sanitation 2008.
- (6) <http://www.ecosan.at/en/frameset.htm>
- (7) Federal Ministry of Foreign Affairs (2008): Wasser. Wasserversorgung. Siedlungshygiene. Ressourcenmanagement. Leitlinien der Österreichischen Entwicklungs- und Ostzusammenarbeit. Draft 2008.
- (8) <http://www.gtz.de/en/themen/umwelt-infrastruktur/wasser/8524.htm>
- (9) Mukherjee, N. and Wijk, C. (2003): Sustainability Planning and Monitoring in community water supply and sanitation. Water and Sanitation Program, The World Bank.
- (10) Rosemarin, A. (2008): Small systems best for many cities. In: SEI (2008): Sanitation Now. A magazine on the global sanitation crisis.
- (11) Eawag/Sandec and WSSCC (2005): Household-Centred Environmental Sanitation; Implementing the Bellagio Principles in Urban Environmental Sanitation – Provisional Guideline for Decision-Makers.
- (12) WSSCC and WHO (2005): Sanitation and Hygiene Promotion. Programming Guidance.
- (13) Outlaw, T., Jenkins, M. and Scott, B. (2007): Opportunities for Sanitation Marketing in Uganda. USAID Hygiene Improvement Project.
- (14) WSP (2004): The Case for Marketing Sanitation. Field Note, August 2004. Water and Sanitation Program.