The following section gives an overview of some existing participatory sanitation planning tools (PSPTs), which illustrates the common methodologies employed in the various frameworks

**Participatory Hygiene and Sanitation Transformation (PHAST)**

Participatory hygiene and sanitation transformation (PHAST) is an adaptation of the SARAR (Self-esteem, Associative strengths, resourcefulness, Action-planning, and Responsibility) methodology of participatory learning to the specific context of sanitation issues (Wood, 1998). It seeks to empower communities to improve hygiene behaviours, prevent diarrhoeal disease, and encourage community management of water and sanitation facilities. It uses a participatory approach to community learning and planning that follows a seven step framework: (i) problem identification, (ii) problem analysis, (iii) planning for solutions, (iv) selecting options, (v) planning for new facilities and behaviour change, (vi) planning for monitoring and evaluation, and (vii) participatory evaluation. The community is involved at each step in the process and there is recommended participatory tools to assist in implementing each step.

**Open Planning of Sanitation Systems**

The framework recommended by the EcoSanRes Programme (Kvarnström and af Petersens, 2004) is based on the Open Comparative Consequence Analysis (OCCA) methodology (Ridderstolpe, 2000). This planning process is performed in five steps: (i) problem identification, (ii) identification of boundary conditions, (iii) terms of requirement, (iv) analysis of possible solutions, and (v) choice of the most appropriate solution. The first step requires identification of the stakeholder groups and their roles. The problem identification process can then be performed using participatory methods such as the logical framework approach (Örtengren, 2004) or PHAST. Identification of the boundary conditions should define the technical limits of the sanitation system (community served, water supply, agriculture), but also potentially limiting socio-economic patterns, natural environments, and political conditions. After the first two steps, planners should be able to define the Terms of Requirement (ToR) for the sanitation system. The ToR should be comprehensive and include factors on health, water and natural resource protection, costs, reuse possibilities, technical reliability, user satisfaction, and management issues. The analysis of possible solutions is than based on how well potential

technologies meet the ToR. At least three options should be selected and presented to the stakeholders for evaluation and selection of the most appropriate solution.

**Sanitation 21**

The framework proposed by the International Water Association task force for the analysis and selection of appropriate sanitation systems is called Sanitation 21, (IWA, 2006). This framework defines three parts to effective sanitation planning: (i) defining the context, (ii) identifying technical options, and (iii) determining the feasibility of the options. These three phases are broken into nine action steps (Table 2). Analysis of the context recognizes that different domains exist within a city and that the stakeholders in each of these domains will have different objectives with regards to sanitation. The domains can be broken down as household, neighbourhood, district, city, and beyond city. The context within each domain will include a set of interests, external drivers, and management capacity that are identified through a participatory process with the stakeholders. During the second step, a range of technical options is identified and listed according to their treatment capacity and level of management required. At this stage a generic list of sanitation system types can be used that include both on-site and centralized systems. The purpose here is more to look at the functionality, operation, maintenance, and basic management requirement of the systems than to outline specific costs and design requirements. The key step in the framework is finally to select a technology based on its ability to meet the objectives defined by the stakeholders. At this stage the important questions are to determine if the management requirements match the community capacity, basically will the system work? It is important to realize that it is possible to apply different technical options at different domains within the city in order to adequately meet the needs and institutional realities of everyone.

Table 2: Sanitation 21 Framework

| | Assessment | Step | |
|---|---|---|---|
| Context | Institutional Mapping | 1 | Identify the Key Actors in each Domain |
| | Interests/Objectives | 2 | Identify the interests of the key groups |
| | External Factors | 3 | Understand the external factors driving decisions on sanitation |
| | Capacity | 4 | Identify the capacities which exist for implementation and long-term management of any system |
| Sanitation System/Options | Sanitation Elements | 5 | Analysis of existing systems and potential new systems |
| | Management | 6 | Identify in detail the management requirements for the systems |
| Fit for Purpose? | Does it meet Objectives? | 7 | Assess whether the proposed/existing system meets the objectives in each domain |
| | Do Management requirements match? | 8 | Assess whether the system can be managed based on the capacities of each domain |
| | Will it work? | 9 | Taking into account all the previous steps and technical considerations, ask the question 'will it work?' |

## Household-Centred Environmental Sanitation Planning Approach (HCES)

Household-Centred Environmental Sanitation (HCES) was developed by the Swiss Federal Institute of Aquatic Science and Technology (EAWAG, 2005) in response to the Bellagio Principles. Like many other frameworks, HCES recognizes the importance of management zones within the urban environment. The ten-step HCES process follows a project cycle framework (Figure 1), from project identification, pre-planning and preparation, to implementation and monitoring. The process is built on identification and assessment of sanitation needs by the local stakeholders. Steps 1–4 establish the participatory communication channels and define local sanitation priorities based on an understanding of the current situation and system boundaries. Steps 5-6 identify and assess the feasibility of a wide range of technologies, as well as, the institutions and financial arrangements for providing these technologies. The final steps of the HCES process involve the stakeholder in the selection of appropriate solutions and the development of an implementation program, complete with methods for monitoring and evaluation. EAWAG also emphasizes that the successful application of this planning approach is dependent on the preconditions of an enabling environment.

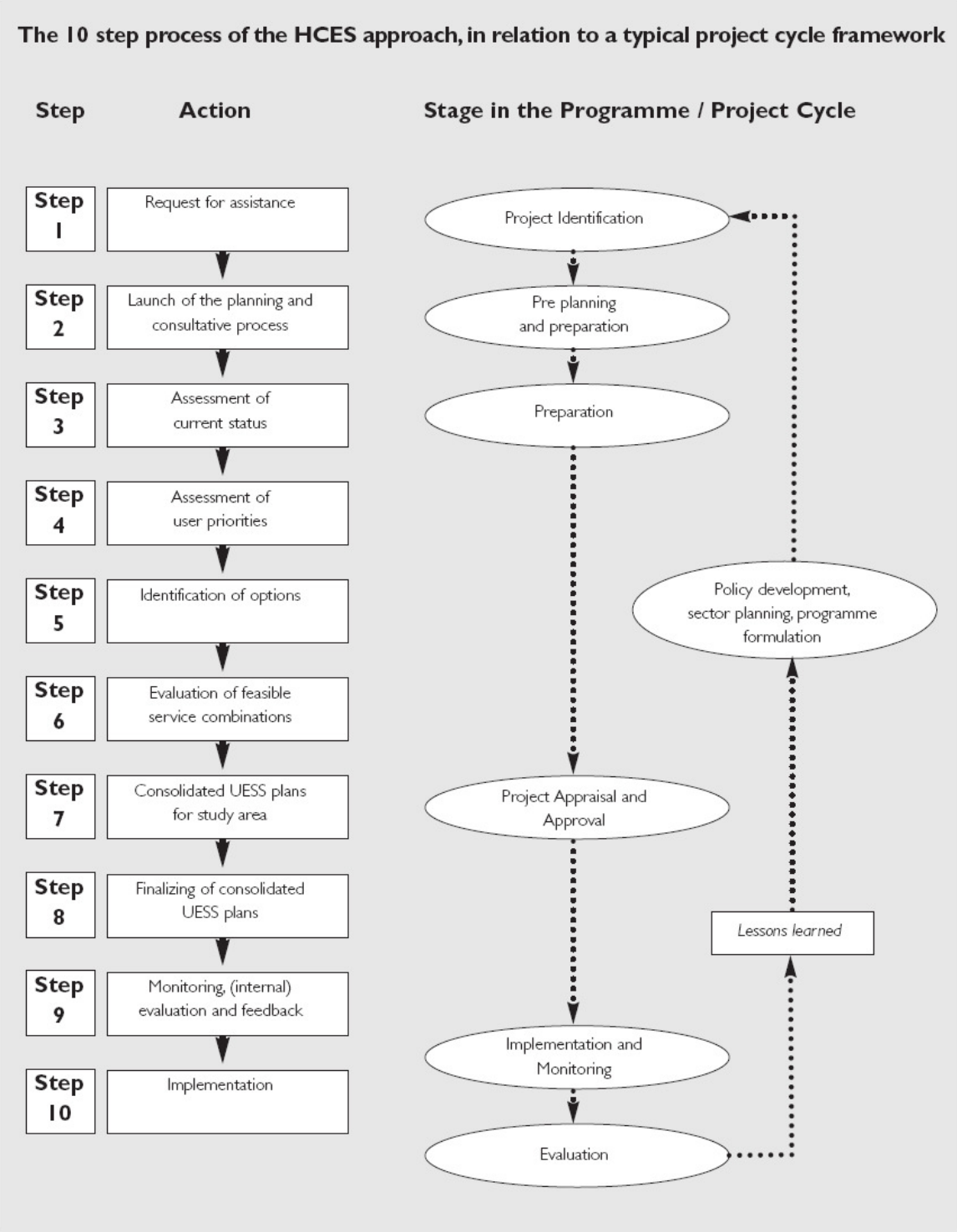


Figure 1: Schematic of the HCES planning approach (Eawag, 2005)

## Multi-Criteria Decision Support Systems (MCDSS)

Decision Support Systems (DSS) are derived from the theory of decision analysis and designed to help decision makers resolve issues of trade-offs through the synthesis of a variety of information (refer to Annex 7.5 for further details). Multi-Criteria Decision Support Systems (MCDSS) are used when there is a need to identify trade-offs between of a variety of information, often including both quantitative and qualitative data, as is the case with sanitation. The advantages of using MCDSS in decision-making are that it can increase transparency, stakeholder participation, and optimisation by application of several criteria in the decision process. It is also easily adapted to consider the local conditions. Although the components of each MCDSS will vary depending on the situation, the framework used for developing it is derived from a structured approach to problem solving. In a planning situation, it is useful to apply the same guidelines as those used in the MCDSS process. Since each step in the process requires defining the situation, criteria or ground rules for making trade-offs, it is highly compatible with other participatory tools (Wiwe, 2005).

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

1. **Definition of the Problem, Goals and Objectives**

Identify the problem with current situation and develop a vision for an improved future condition (the goal).

2. **Definition of Criteria**

Defines 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**

Design technically 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 stakeholder preferences.

5. **Decision Making**

Decision maker(s) must balance trade-offs and make the final decision.

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