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Title	**The ISWM approach to EcoSan: a research agenda**
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The ISWM approach to EcoSan: a research agenda

WASTE, in Gouda, the Netherlands, manages the Dutch-funded programme “Integrated Support for a Sustainable Urban Environment (ISSUE)”, which has an EcoSan focus. This programme builds on the experiences of WASTE and its network of Southern partners, some of whom are present in Durban. WASTE and the partners are committed to opening a space for poor people to make key decisions about the communities and the cities they live in, and how to maintain a healthy living environment. WASTE and partners focus on elaborating knowledge about the urban environment in the South and countries in transition, and in keeping that knowledge and capacity in the South, where it builds up institutional memory, credibility, experience, and the capacity to intervene to improve the urban environment and the lives of urban dwellers, especially the poorer ones.

WASTE has, since 2001, been developing a line of EcoSan projects and an EcoSan research agenda, based on the Integrated Sustainable Waste Management (ISWM) framework, as shown in Figure 1.

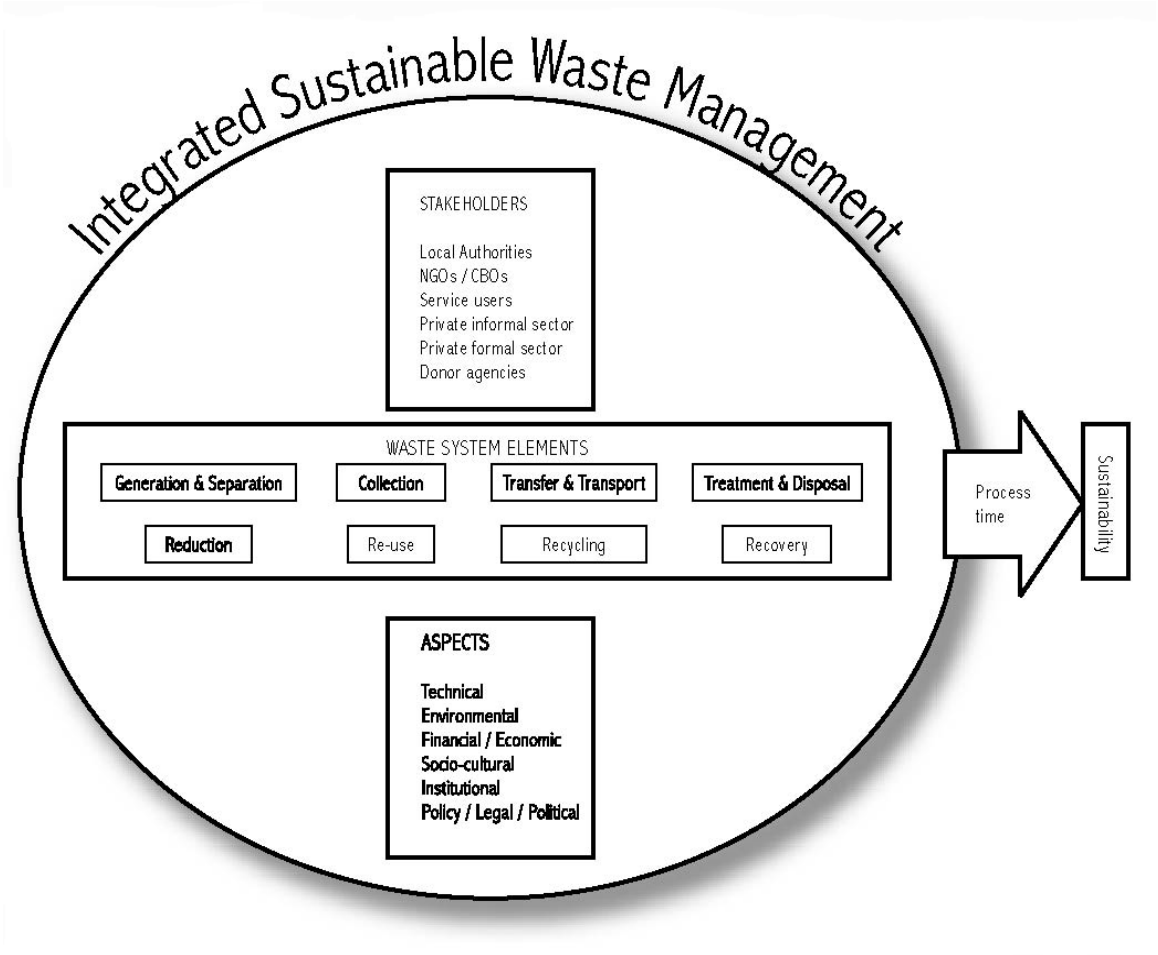

Figure 1. The ISWM Framework.

The ISWM framework gives a set of aspects to look at urban environmental management policy and practice. For EcoSan, the ISWM framework is useful for organising questions about the state of the art, and also for setting a research agenda. The key overarching question here is: **which parts of the research agenda are most critical for building a willingness to attempt ecosan at city or community level?** The range of issues includes the following topics, organised according to the ISWM framework. The discussion of critical path issues is just beginning, and we hope to pursue it further in Durban.

Stakeholders:

- What kinds of stakeholders are currently involved in sanitation?
- Which are key stakeholders, and where does the decision-making power lie?
- What kinds of institutional and bureaucratic claims reinforce conventional sanitation?
- What kinds of private sector stakeholders are currently involved, based on the prevailing paradigm of grid-based sewered sanitation? Who would be winners and losers in case there was a move to mixed, complex sanitation systems with a substantial component of non-sewered sanitation?

Sanitation System Elements

- Dividing the sanitation system into four basic element groups, one arrives at: (1) household practices, both current and potential, and the interface household-public domain; (2) collection, transfer, transport; (3) treatment and processing; and (4) beneficial reuse, markets, end-users of materials or nutrients.

(1) how is sanitation conceived and designed in various cultures? What is the cultural definition of “good” behaviour in relation to defecation, urination, and the space where this occurs? How do standards of *confort, cleanliness, and convenience* (as per Shove

1993) relate to facilities in and outside of the house? What kinds of interventions are used by mothers to train babies to urinate and defecate correctly? By analogy, what kinds of interventions are needed in households to trigger discursive attention to these processes, and to change behaviour?

(2) what are the implications of ecosan in terms of the necessary system of movement of liquids and solids to safe processing and reuse? Is there a case to be made for adapting the solid waste system to receive those materials, and what are the implications of this? Is there a potential to build a new logistical system, and if so, what are its characteristics? Should system designs be based on desired performance, or on local realities?

(3) which parts of the excreta stream, and the media used to transport it (e.g. water, sawdust, containers, etc), can be recovered, and at what level? What kinds of treatment are necessary to preserve health, especially of workers? What are the trade-offs between neutralisation and preparation for beneficial reuse?

(4) What are the technical limits for recovering and using the nutrients and materials in excreta? What limitations come with cultural ideas, preserving public health, religious practices? What are the large-volume uses that assure that there is a "market"?

Sustainability aspects

1. Is ecosan feasible in terms of **cultural and social life**, in specific places at this time? Who are the key early adopters, women, men, children? Where is the leadership?
2. What **policy and legal** steps are needed to break the monopolies enjoyed by conventional sanitation, and how can the key decision-makers be convinced to try something different?
3. How can key **institutional and organisational structures** be adapted to accept the idea of modern mixed or complex systems for sanitation? How do they need to change?
4. What is the measurement science for monitoring and measuring complex or diverse systems, that have an ecosan component? How can their impact on **the environment and health** be measured, especially in terms of macro-nutrients and cycling of carbon?
5. What criteria of comfort, cleanliness, and convenience must ecosan achieve to gain acceptance in terms of **technical aspects and performance**? What kinds of demands does the structure of the built environment in the South, that is, densely populated settlements on the periphery, and a centre of modest density, place on the concept of grid-based sanitation?
6. What are key **financial and economic** parameters for ecosan systems, either as stand-alone approaches or as part of mixed or complex systems? What are the units of research for this aspect? How does an ecosan approach affect planned investments, fee and cost recovery systems, and the like? Who pays for sanitation infrastructure when the grid-based centralised system dominates?