Proceedings from SEI/EcoSanRes2 Workshop:

Sanitation Policies and Regulatory Frameworks for Reuse of Nutrients in Wastewater, Human Excreta and Greywater

Stay At Hotel, Bromma, Sweden

August 24-25, 2009

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Summary of Workshop Discussion and Conclusions

Sanitation policies and regulatory frameworks are important tools and key elements when promoting and implementing sustainable sanitation including reuse of nutrients in wastewater, human excreta and greywater. The workshop participants represented all parts of the world and a major experience in the field of sustainable sanitation. This led to presentation of many interesting case-studies and elaborated discussions during the workshop.

Sanitation policies in different forms and at different levels are in place in most countries. Very few of these policies contain the concept of closing the loop and formulate requirements regarding the reuse of nutrients from human excreta and wastewater. The countries where closed-loop approaches have reached all the way into legislation are easily counted.

Many countries, NGOs, scientists and donors are currently working in the field of policy and legislation. but there is a lack of examples of implemented policy where the reuse aspect is fully integrated in policy and advocacy. As the interest for sustainable sanitation is growing and the reuse aspects are gaining ground it is important to learn from some of the ongoing and upcoming initiatives. This has to some extent been done in the workshop that is documented in these proceedings and the picture materials that is associated.

During this workshop, presentations and discussions were mainly focused on the following themes;

- What are the national , international drivers for policy change
- What are the components of a successful sustainable sanitation policy contemplating safe use of nutrients from Wastewater and Human Excreta
- Informal processes influencing policy change and policy implementation.
- Analyses of the cycle from policy development to policy implementation
- Exchange of experiences in different policy development processes
- Necessary requirements for policy enforcement
- WHO Guidelines for the Safe Use of Wastewater, Excreta and Greywater in Agriculture and Aquaculture guidelines and their influence on national legislation process.

All presentations made during this workshop have been saved in a USB memory stick/CD? which will be distributed to all participants.

Strategically, the workshop programme was spread out into two full days. Presentations and deliberations during Day 1 were focused on understanding the existing situation, and Day 2 on existing strategies and recommendations for strategy development. The aim was to permit participants understand the existing sanitation policy situation before delving into in-depth discussion and recommendations on sanitation policy and strategy development.

The expected outcomes of this workshop were as follows:

- Personal contacts and dialogue between the regional nodes will be established
- Workshop proceedings will be documentated, developed and sent out to participants

- A policy brief building on the discussions will be produced by Ecosanres / SEI
- Continued activity in and between the nodes

Aside from the lessons learned in the discussions a few more general conclusions could be drawn from the workshop presentations and discussions:

- Revising legislation does not necessarily lead to functioning reuse systems
There is a gap between national legislation and policies at national level and local enforcement - strategies and activities needed to bridge / interconnect these levels and to ensure that policies on national and regional level can be useful and creating incentives on the local level.
The enabling legislation as the one in place in Sweden does not alone steer towards sustainable sanitation systems. There is a need to make the legislation and the policy understandable both for regional and local authorities and for common people.

Legislation that promotes reuse exists in Sweden, but it is seldom used. Is it due to bad understanding on the upside of ecocycling, the difficulty to motivate costs, or a belief that reuse of nutrients has a lower rank that health and environmental protection? We need to understand the processes of poor enforcement of existing regulations better!

Urbanisation is another challenge lifted by many participants at the workshop – how to reuse in urban areas, costs increase due to transport. The recycling process is more complicated (collection, treatment, storage, transport) in urban settings.

The challenges are huge when existing legislation do not allow for reuse as for example in Mexico where human excrement is not applicable for crops for human consumption. One can in local/minor "work under the radar", but need to start exploring other reuse opportunities such as agro-forestry and non-edible agriculture crops. In China, there is history of reuse and even policy that could support it, but problem is creating priority to actually do it!

- Important to describe the "institutional landscape" and involve all actors
A thorough knowledge of the legal, financial and social settings is needed to get an understanding on how different policy alternatives might function or not. One needs to have a clear picture of the "institutional landscape". A common barrier is that all important actors are not involved in the policy development and in the implementation and financing. To mitigate this, an analysis of relevant actors and persons must be performed at an early stage.

The case from Norrköping municipality shared the importance of finding the right questions and drivers to building reuse policy. The municipal working group on introducing UD toilets in areas served by centralized sewerage failed in their mission and disagreed widely on how to achieve the politically set objective. This was partly because the wrong questions was asked – they focused the discussion on how to get people and housing companies to change to UD toilets instead of discussing the different available options for the municipality to over time steer towards and promote reuse-systems.

Implementing a reuse program is complicated. There needs to be a driver (agriculture as in Burkina or a business opportunity), there must also be quality control (education and certification, barrier approaches), an enabling environment (i.e. legal documents that support reuse activities), and the economic responsibilities (who pays) must also be clearly defined.

One of the main conclusions from the Ugandan case is that with politicians not wanting to enforce laws because they will not get elected again, then the implementation of national policy never will get to municipal / local level. This leads to a conclusion that one also need to develop ways to change the norms among people on the local level, and creating demand which in turn makes it easier to enforce the policy.

- Initiate parallel processes

Policy development is needed at national, regional and local level. This is often developed as a top-down or bottom-up process. Much can be won by initiating parallel policy development at several levels at the same time. This will also help creating better policy at all levels and experiences can be shared in between these levels.

An important lesson learnt from working with reuse systems in a variety of contexts is that they are more complicated and have much more social interaction than conventional small scale and large scale sanitation systems. This point out the need to keep all communication channels in mind when making policy aiming at implementing reuse systems.

- Country specific strategies and approaches needed

A very clear result from the workshop is that as the country specific settings are very different there is not a “one-solution” feasible for developing legislation and policy. Hence different strategies and approaches are needed in different countries when wanting to change policy. On the other hand many experiences and steps in the policy development process can be similar and therefore knowledge sharing and networking are important support for countries or organisations wanting to develop new policies and legislation.

When policies are in place there is still a need to create ownership and user acceptance for the techniques promoted or needed to meet the targets. Experiences from South Africa show that the promotion of free services leads to the problem of lack of ownership – which in turn leads to lack of operation and maintenance. Thus there is a need to consider both the social and economical contexts and the different steps in implementation when drafting policies.

- Strategy supporting newly developed policies

A strategy for supporting the enforcement of a newly developed or revised policy can in many cases be an important tool when starting to implement / enforce the policy or new legislation. Such a strategy could for example include a description of the roles for all involved actors when implementing the policy, description of incentives on different levels, a platform for discussion between key actors and the strategic communication of key messages and facts to target groups. Stimulating knowledge sharing between actors and ongoing projects could also be part of such a strategy.

It is important to develop policies that are technology neutral and this way allow for innovation and development. However, it is important to think of the possible technologies when drafting the policies. For example, Norrköping preferred UD toilets so they developed financial incentives to direct what people use. Another lesson learned is to stress that it is not about just having the possibility to recycle, they should actually do it!

The Philippine case highlighted the need for a communication structure that can prioritise and spread messages about the positive effects of a reuse-oriented policy among relevant actors. Actively seeking champions and spokespersons for the messages are important. It is very important to convince politicians and stakeholders to promote sustainable sanitation and reuse “within” the existing water and sanitation sectors and hierarchies. It is strategic to work within established institutional and organisational structures as the ones developed for the management of water shed areas in the Philippines. If you achieve a clear vision/roadmap and develop cooperation with all stakeholders you can develop knowledge among target groups. If you also find champions you have some of the key drivers for moving towards reuse policy.

One important aspect is semantics and how the preferred solutions are defined and categorized in the legislation and regulation. For example, in Colombian policy Ecosan is included, but UDDT is categorized as similar to latrines which gives it a bad impression. The idea to get treated urine and excreta labelled as "organic fertilizer" might be one way to a more positive image on the reuse systems.

Outline of Workshop Presentations and Discussions

The workshop on Sanitation Policies and Regulatory Frameworks for Reuse of Nutrients in Wastewater, Human Excreta and Greywater was a two-day event held at the Stay At Hotel in Bromma, Sweden from 24-25 of August, 2009.

This outline summarises what was presented and discussed in each of the sessions, and refers to the PowerPoint presentations as well as additional reports or web-pages for additional information (to be distributed to all workshop participants).

Day 1

The theme of the first day of the workshop was ignition for policy change with presentations and group discussion focusing on drivers and necessary ingredients for policy change.

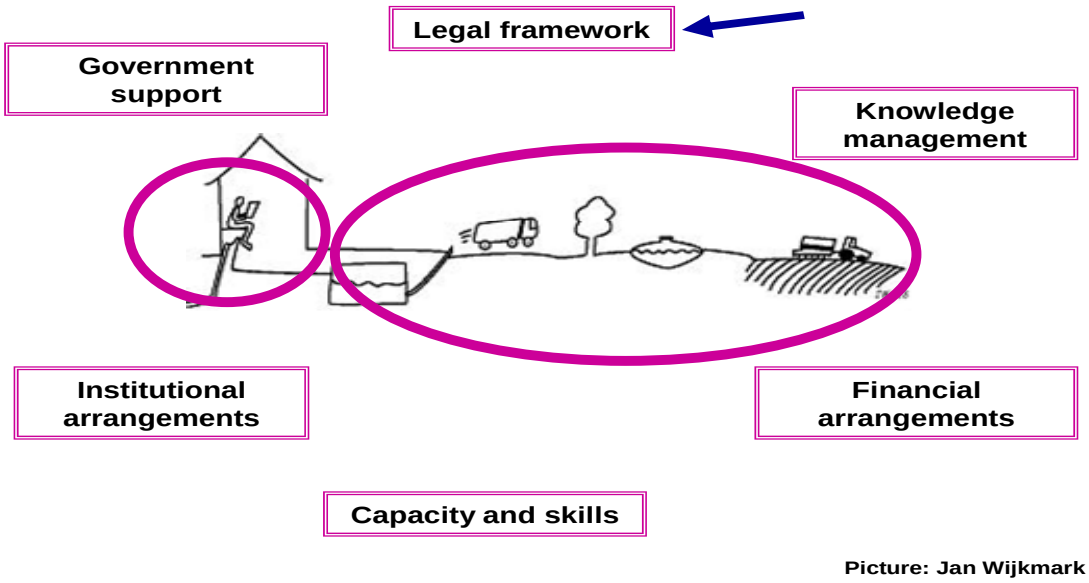
Welcome, Introductions and Objectives of the Workshop

Gunilla Brattberg, Programme Director of the EcoSanRes Phase II at the Stockholm Environment Institute (SEI), welcomed the participants and gave a brief introduction of the EcoSanRes Programme. The program is a *Pro-Poor Capacity Development Programme* in the area of *Sustainable Sanitation.* Over the last three years EcoSanRes has worked to establish knowledge nodes to act as regional centres of excellence in sustainable sanitation around the world. All eight of the nodes are now up and running and represented at the workshop.

Gunilla hopes that the workshop will be useful for the participants and that the results of this workshop can lead to the publication of a policy brief.

Elisabeth Kvarnström then gave an introduction to the topic of this workshop and the need to discuss policy. One of the keys to achieving sustainable sanitation is the recognition that sanitation is the entire system from the user interface (toilet) through collection, treatment and disposal of sanitation products. In order to properly manage this entire chain of infrastructures and services an enabling environment is needed. Even the process of installing toilets needs a supporting environment, and if we are to attain the MDGs in a sustainable manner then it becomes even more important. This enabling environment includes government support, *legal frameworks*, knowledge management, financial arrangements, capacity and skills, and functioning institutions (See Figure 1 below). This workshop will focus on the legal framework. It is hoped that the outcomes and discussion in this workshop will help the nodes meet their objectives.

Figure 1.



As the moderator of this workshop, Mats Johansson asked the participants to introduce themselves and their interest in this workshop (see list of participants in Appendix). He then introduced the workshop programme: Day 1 will focus on how to establish policy and the drivers and the barriers for this; Day 2 will shift the focus to how to implement policy and set relevant targets.

Sound Policymaking and the Cornerstones of Environmental Law

Jonas Christensen is a Swedish lawyer with environmental background and specialized in the relation between legislation, policy and the reuse of nutrients. He introduced the Swedish Environmental code and how the Swedish legislation is written regarding reuse. There are three generations of legislation regarding sanitation and wastewater flows in Sweden. The first was established in 1870 with the Health Care Act that was aimed at keeping well water away from dunghills. In 1942, this act was updated with the Environmental Care Act that was a part of the old Swedish Water Act. Finally, in 1999 the Environmental Code which specified resource management and energy as priority aspects, although the discussions leading up to this code started even before the Brundtland report. Looking at the overall aims and the parts in place in the legislation, Sweden is leading the way, but these aspects are rarely enforced by national, regional and local authorities. It is important to ask why?

Sewage treatment plants in Sweden can very roughly be grouped into small, medium and large. The large scale treatment plants are run by municipally owned companies or companies or run by municipalities, the medium plants are generally private associations, and the small are single family treatment systems (about a million of these in Sweden). Legislation of these plants are

governed by the Environmental Code, the Public Water Supply and Wastewater Systems Act and the Planning and Building Act.

The Environmental Code states that responsibility for water/sanitation is on the households if they are not connected to centralised/municipal systems. It includes standards and need for licences and notification for on site sanitation.

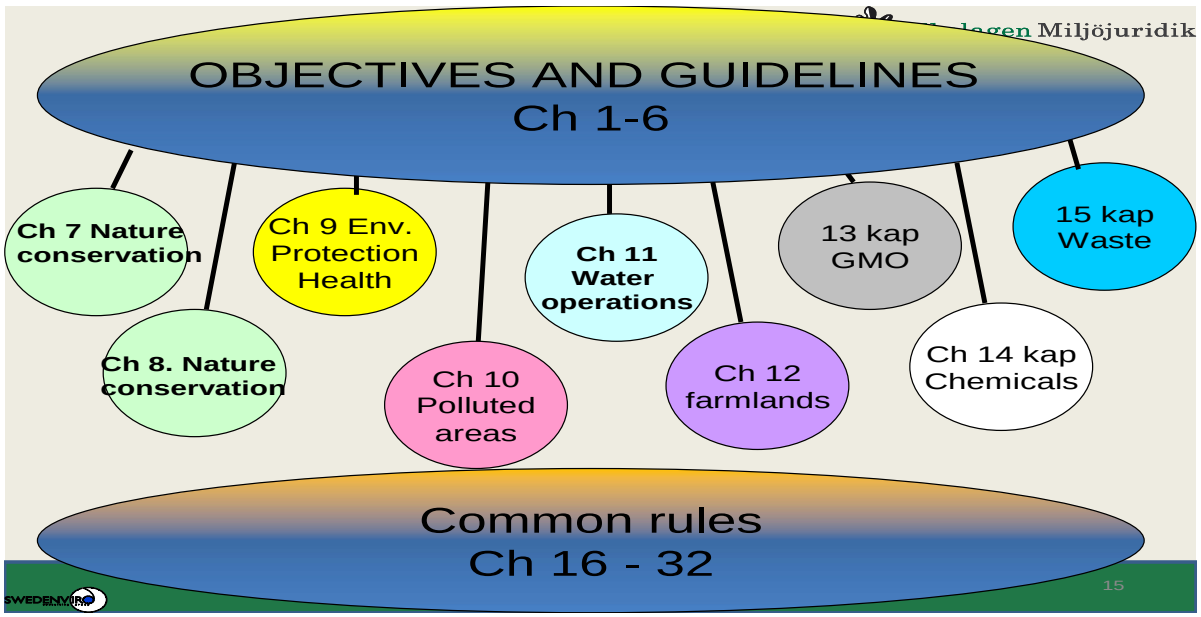
The Public Water Supply and Wastewater Systems Act outlines when the municipalities is responsible to supply water/sanitation services, e.g., inside the municipal area, or if in a larger context (over 20-30 houses within a smaller area) there is a need according to human health or environmental protection (including use of natural resources). The requirement on environmental protection is new and has not yet been legally tested. There is currently no ban on having a private on-site system within public areas, but the owners may have to pay all the fees as if they were using the system.

The Planning and Building Act contains no compulsory water/sanitation planning neither on municipal or regional level. However water/sanitation should according to the Planning and Building Act be included in all comprehensive plans on municipal level that are decided upon by the municipal board of planning and building. Just because sanitation planning is mixed in with other planning does that means it is forgotten?

The Swedish Environmental Code (EC) which entered into force in 1999, is a mixture of three older codes so some of it is outdated. It includes a broad spectrum of environmental aspects, such as biological diversity, dumping, liability of environmental damage, etc. The EC is laid out with chapter 1-6 covering common objectives and followed by guidelines in separate chapters on certain issues.

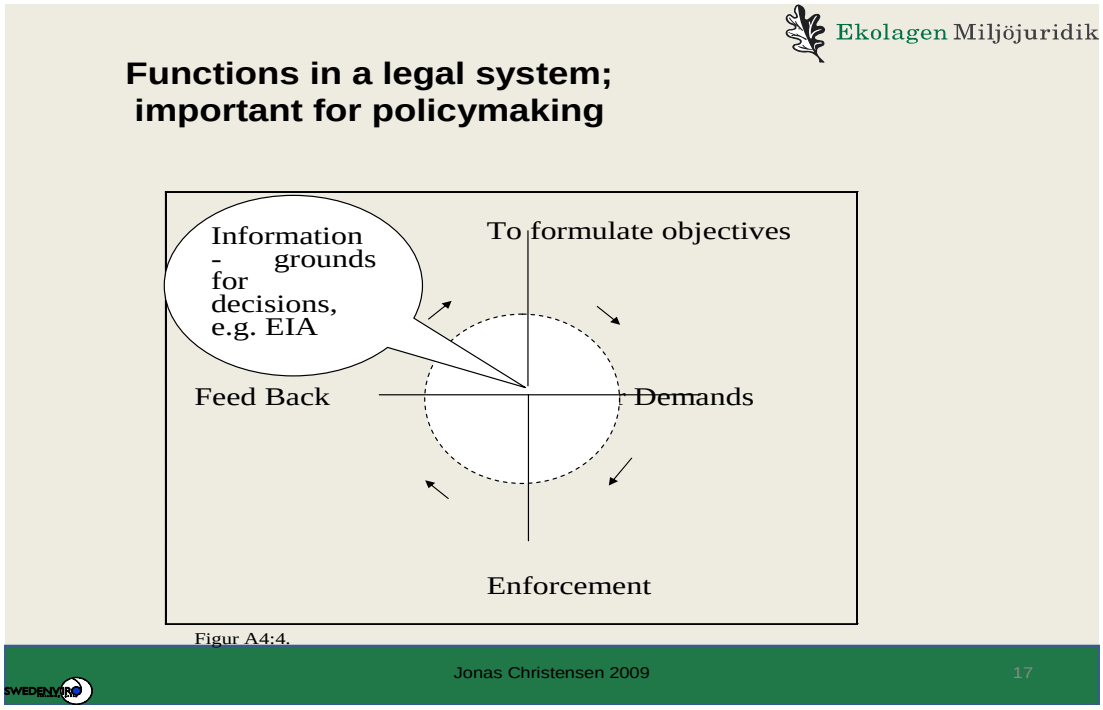
The aim of the EC is to promote sustainable development for present and future generations. The EC shall be applied in such a way as to ensure that (wording means it is legally binding) reuse and recycling are encouraged with a view of establishing and maintaining natural cycles. There are 16 quality objectives, but none are focusing on reuse, recycling or energy consumption. However there are sub-objectives linked to these matters. See Figure 2 below.

Figure 2.



To be efficient and long-term acceptable Code needs to outline how people are expected to act in order to meet the formulated objectives that are based on demands From this then enforcement measures and also feedback systems are outlined (See Figure 3 below).

Figure 3.



The responsibility for supervision lies on the municipalities, the county boards, and national legal authorities (the Swedish EPA). There are 290 municipalities in Sweden, mostly controlling small sewage treatment plants. These authorities generally have their own lawyers and are in charge of licenses that are required for wastewater treatment plants.

Chapter 2 of the EC provides general rules that can be applied to all kinds of activities. However, it is hard to read the first general parts of the law and apply it to specific cases. It includes BAT (best available technology) requirements for commercial activities (not households). The cornerstone of the code is the *Reversed burden of proof* where operators have to show to authorities that they are following the rules, and the *Burden of knowledge* also falls on the operator. The general rules also follow the principles on careful management of natural resources and the concept of ecocycling in which preference is given to renewable energy sources. The EC text reads "Persons who pursue an activity or take a measure shall conserve raw materials and energy and reuse and recycle them wherever possible" and "Preference shall be given to renewable energy sources" (Chapter 2, Section 5).

One last part of the general rules in the EC (Ch. 2 Sect 5) is new and may be the most important code for reuse. However, there are hardly any interesting legal cases on it. There has been one old case that *indicates* that that it is not possible to claim ecoloop if there is no obvious use for the product. For example, Cementa AB, Swedens major cement industry was given okay to burn wastewater sludge (instead of reusing phosphorus) as long as they looked at the energy efficiency of the system. However, it is interesting to question why this code and especially the reuse parts has not been used more widely. Is it lack of incitements, lack of knowledge, difficult to balance resources and economy (costs), or that environmental protection ranks lower (less priority)? It is a question of balancing norms, a single person would have trouble reading the code, and would need a lawyer to help! Since operators are supposed to self control it is hard for individuals to know this legislation and conform to it.

Q: What is encouraged versus mandatory regarding reuse in Chapter 2, section 5 ?

A: If it is not too expensive households must follow reuse principles, but most people do not as the local authorities seldom is enforcing reuse-systems and the municipalities are not building / organizing these rather technically uncomplicated systems for reuse..

Q: Is there a way to start forcing municipalities to follow the environmental code?

A: The question is where to start with enforcing the law: Supervision from county board? Lack of trickle down in enforcement? The trouble is politicians do not like to enforce regulations that might be unpopular. There should also be a difference between politicians and law.

Case 1 – Experiences of Local Policy for Sewage Nutrient Recycling

Jane Hjelmqvist is an environmental health inspector for Norrköping Municipality, Sweden. She presented the municipal experiences of nutrient recycling. Norrköping is coastal municipality and has seen the results of eutrophication in the Baltic Sea. In 2002, they implemented a policy that placed a demand on households to comply with a 50% reduction of N/P released and to reuse nutrients to arable land (policy revised in 2009). The policy didn't include technical specification, and instead the municipality worked close to the people to understand what they would prefer or look for when picking a technology that can meet the tough municipal requirements (NB it is often UD toilets that can meet up to the policy). However, it is important to think of possible future technologies when drafting the policies. While making the policy, they started working with service providers to establish a collection system. The aim was to keep costs low so it would not be more expensive in the long run. Part of the policy was that there should be no cost for urine collection (collected 1-2 times/year) and reduced costs for sludge collection. This means that people with UD toilets pay less for waste collection than those with conventional toilets.

In 2007, they encountered the problems that the supply of UD toilets could not keep up with demand due to the housing boom in the area. The year before that, in 2006, a new interpretation of policy came from the Swedish EPA. This opened up for with new technologies available that were not only UD toilets. This led in 2009 to a revision of the policy which required nutrients reduction in all houses near watercourses and most (at least 50%) of the nutrients in the wastewater must be reused. With the new policy on-site treatment plants are now accepted, with on-site or collected composting of sludge. Other new technologies can also include "P-traps" and low-flush toilets such as vacuum toilets.

Norrköping has seen results of their policy in reduced nutrients in water bodies and they have learnt several lessons on policy implementation. It is important to be non-tech specific, but there are of course preferred solutions and local policy can direct the development and action through financial incentives, information and not to forget investing time in talking to property owners. For example, Norrköping preferred UD toilets so they developed financial incentives. They justify this based on their earlier experience with small scale treatment plants that did not work in the long run. Their advice for closing the loop is to be open for new technologies but at the same time restrictive e.g. keeping fewer fractions to recycle. Close co-operation between the technical service department and the health and environmental department is beneficial and helps both parties in solving problem. It is also important to provide the property owners with information and allow them to make a choice; but also stress that that the requirements are not about just having the possibility to recycle, they should actually do it!

Jane also shared Norrköping's experience with trying to develop a policy steering towards urine diversion in areas within the centralised systems. From 2006-2008, they had a working group within the municipality to investigate the possibility of UD dual flush toilets within the sewered areas. However, it was difficult work, and lacked support from the water company as they saw it as a criticism to their own system for treating wastewater. This was partly because the wrong question was asked – how to get people to use UDDTs instead of how to make people reuse!

Successful policy needs political support with shared visions and goals. The Norrköping policy for onsite systems has been successful and there have been no appeals to regional council (maybe since it only applies to new houses). They have 400 properties with UD toilets and 25% of new applications are for UD. However, the current legislation that came in 2006 is slowing down the progress. Still they will continue to encourage urine diversion and other closed loop systems in Norrköping.

Q: Municipalities in Sweden are not allowed to have general norms, is that a problem from a legal point of view?

A: The policy is not used for giving advice to property owner, they can't use the policy legally to stand one. However, homeowners have more problems with how toilets look than what the policy says. An additional problem is that consultants earn more money from proposing small-scale treatment plants so they push them on people instead of more sustainable solutions. Money talks.

Comment: Households are often quite weak actors and are very seldom appealing to court over municipal decisions regarding their toilet.

Q: What are the other technologies that could be seen as sustainable?

A: Composting toilets (but people want to flush)

(See presentation)

Case 2 – Philippines Clean Water Act

Dan Lapid works for the Center for Advanced Philippine Studies (CAPS), the EcoSanRes node of South-East Asia. He presented the Philippines Clean Water Act (CWA). The Act was enacted in 2004, and the implementing rules and regulations (IRR) went into effect 2005. The primary application of the Act is to abate and control pollution from land to water, however there is one provision related to sanitation. The conceptual framework is to create water quality management areas (WQMA) based on physiographic basins, not municipalities. The WQMAs are governed by boards that are voluntary, although are funded through fines, discharge fees, and grants without allocation from national government. There are some questions of its effectiveness however, since it is not funded. The law needs funds.

Other applicable legislation: There is also a National Sewerage & Septage Management Programme that prioritizes a listing of sewerage, septage and combined systems. It is a highly urban focused legislation and therefore covers only a section of society. The Domestic Sewage Collection, Treatment & Disposal states in Section 8 that within 5 years households should connect their sewage lines to centralized sewerage. The pit fall of law is that there are very few existing sewerage systems, so where will they connect even if it is specified in the law? (Only 10% connected to sewerage now). The law said nothing about ecosan, but when there was a public consultations the IRR Ecosan club got involved and influenced it. So ecosan is now included. So the IRR Section 7 Item 7.2 exemptions from wastewater charges and liabilities if

ecosan is used. It is an important selling point and convincing for politicians that we can say it is within the law!

There are a growing number of regional governments using and piloting ecosan. An off-shot of CWA was an Administrative Order on October 26, 2007 that give guidelines on procedures and technical requirements for a certification process for reuse of wastewater for irrigation and other agricultural purposed (but sanitation sector has not been very involved in this yet). The latest development has been the formulation of a Philippine Sanitation Roadmap supported by the WHO. It is a basis document to guiding sanitation policy and programs. It had ten principles which include: sanitation as a right, health, participation and stakeholder involvement, polluter-pay principle, financial affordability (important to overcome CWA focus on sewerage!), sustainability, appropriate technology, reuse, social acceptability, and gender equity.

(See presentation)

Q: Ecosan is not in recent policy documents on sludge treatment?

A: Not all national government initiatives are informed. Communication is not perfect. But there is now a Philippine development forum (multi-agency and donors) which should help.

Q: What are wastewater fees?

A: If a municipality registers that they will implement ecosan they do not have to pay the fees to CWA. The fees paid remains and can be used for activities within the watershed.

Q There are strong social movement in the Philippines, to what extent are you involving them?

A: We are part of a Philippine national network. We hold national conference to generate interest and work with WSP on formal/informal programs on ecosan. We work with UNICEF with WASH activities. In general, we try to integrate into all the key stakeholders.

Case 3 – National Policy for Ecological Sanitation in Uganda

Brenda Achiro works for the Network for Water and Sanitation/Uganda (Netwas), the East African node for EcoSanRes2. She presented the national policy in Uganda regarding ecosan. In Uganda sanitation is under three main ministries, Water, Health, and Education. The Public Health act is main law that governs sanitation sector – requires every citizen to have access to latrines. However, the law is silent on reuse of faecal matter for nutrients.

The main problem is with politicians not wanting to enforce laws because they will not get elected again. The decentralization policy has pushed responsibility for sanitation by-laws to local government. But this takes too much time and it is a long process for each local government to form a policy! Lots of districts are working with policies that have not actually been passed

yet. Then there are also the enforcement problems, e.g. they take your goats if you have no latrine, but if you build one then can't get goats back. Not very legal.

There are other laws that could possible be used to support sanitation action: National Environmental Health Policy and National Health Policy could be open for ecosan since health policy points to research needed in waste management and disposal; Sewerage Regulation contains no mention of reuse (yet); Water Waste Discharge Regulation and Environment Management Statute stipulates an allowance for reuse.

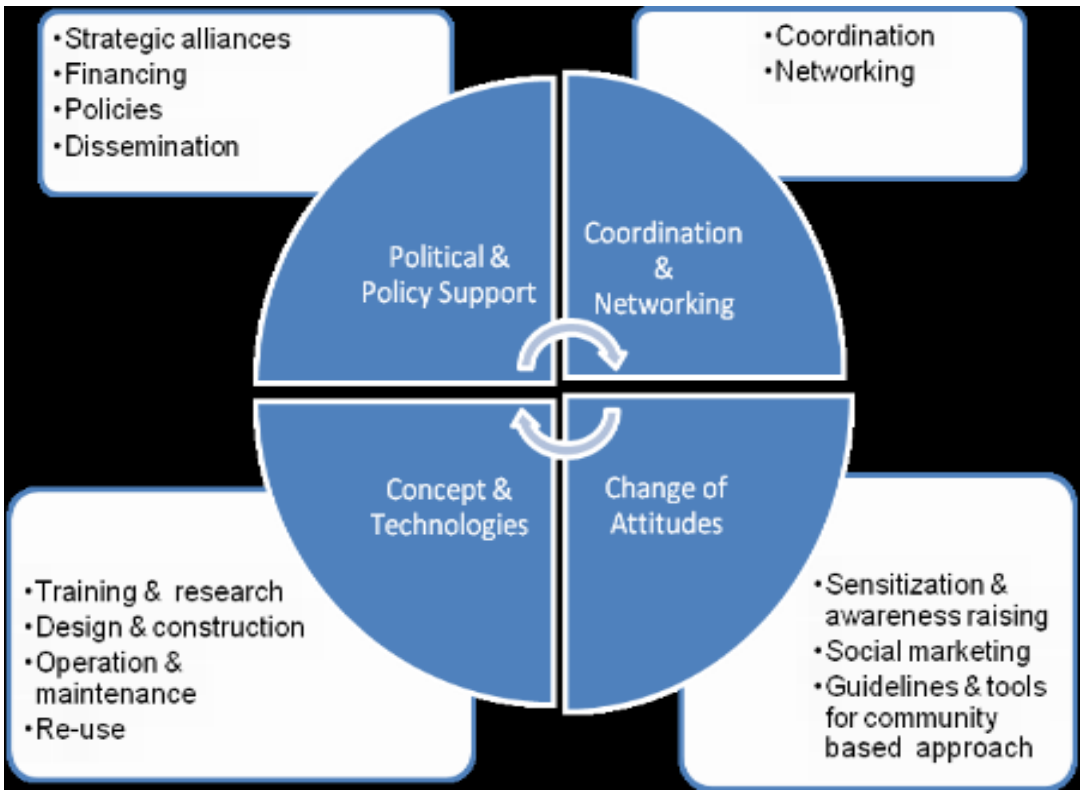
Problems are that many industries already complain about strict legislation (especially waste discharge regulations) and Uganda sanitation coverage is stagnant. We need to raise the sanitation profile. So in 1997 there was a forum to do this which resulted in the Kampala declaration on sanitation, a 10-point strategy over ten years. It worked in some areas but not in others. The challenge was often financial mechanisms missing.

The recent policy initiative (MoU 2001) established institutional roles in sanitation. But there are still challenges and bottlenecks. For example, they forgot to include the Ministry of Gender and Local government. It also did not un-package sanitation, i.e. what it is and define it clearly. Ecosan was not involved.

In 2006, the Improved Sanitation and Hygiene 10-year financing strategy (ISH) was elaborated based upon 3 pillars; supply, demand and enabling environment. The ISH recognizes UDDT as an option and states that ecosan demands demonstrations, creating options through the supply chain with supportive policy and innovative options, and funding to overcome barriers. It included working on a budget that was ear-marked for sanitation (so far it has been approved by ministry of finance).

The latest development is a 10-year strategy on Ecosan which focuses on coordination and networking, change of attitudes, concepts and technologies, and political and policy support. The ecosan coalition committee has been formed to coordinate this group. They are working to bring down costs of UDDT in relation to VIP, but will also introduce other options like the arborloo. They are exploring public-private partnerships as well. (See Figure 4 below).

Figure 4



Q: Where is Uganda in MDG terms?

A: We are doing badly (47% sanitation coverage), but will continue working.

Q: To what extent are you working with IWRM actors?

A: IWRM is still a new concept in Uganda. There are many workshops and they are active in influencing permits. It is gaining ground.

Q: From the agricultural side, would reuse be allowed currently?

A: There is legislation on using compost, but it is silent on use of faecal composting. There is also silent legislation on faecal sludge.

Q: With so many partners involved, is there an overseeing body that will help ensure implementation?

A: National Sanitation Working Group is the coordinating group, but they have no mandate to enforce (they do not bite!). But they are a very strong and influential group.

Comment: Ecosan is getting into legislation, but there is still no framework for implementation (national, regional, local).

Comment: Need to bring in ministry of local government

Q: Is there a difference between urban and rural?

A: Same groups responsible for both

Q: Fascinating that local governments taking action without full policy in place and taking initiatives. How does national government react?

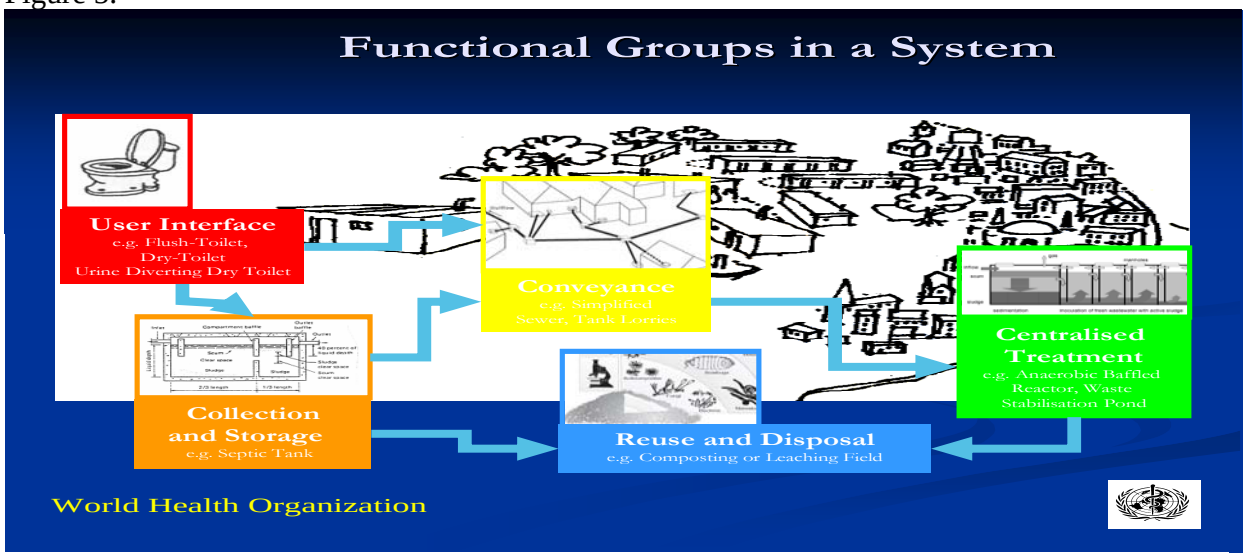
A: The problem in Uganda is that they take too long with decisions, which leads to inflexibility at national level. But this is a recognized problem so they are positive to local initiatives.

WHO Guidelines for the Safe Use of Wastewater, Excreta and Greywater

Thor-Axel Stenström is an advisor to the World Health Organization (WHO) and a senior research fellow in health and hygiene with SEI. He presented the WHO guidelines for safe use of wastewater, excreta and greywater. The guidelines are meant to be tools for planning and implementing frameworks, doing assessments and evaluations of health impacts, and designing management strategies. The objective of the guidelines is to protect the health of individuals and communities by recommending minimum safe practice requirements and supporting the development of risk management.

The Volume 1 of the WHO guidelines covers policy and regulatory aspects, including how to create institutional arrangements, map sectors of relevance, organize national events, etc. The Volume 4 focuses on excreta and greywater reuse in agriculture. In this guideline the key issues are exposure assessment and the handling chain, as well as risk management. It is important to consider the transmission pathways, exposure, and types of organisms when designing barriers to prevent disease (and this is what sanitation is all about). The functional groups in a sanitation system are represented in the Figure 5 below.

Figure 5.



The WHO Guidelines have teamed up with the Eawag Compendium of Sanitation Systems and Technologies to identify exposure points within the sanitation system. The new guidelines will add a health evaluation aspect to the design of robust sanitation systems. It is a tool for developing an evaluation system based on critical points of exposure, barriers to reduce risk, and behaviours/operations that could affect risk. Critical elements to the evaluation are establishing a documentation system and monitoring requirements. From there the evaluation can be implemented to identify different diseases in the local context, treatment efficiency, and exposure rates. This information will help to identify which technology can perform best to create the appropriate barriers along the sanitation chain.

Case 4 – Colombia towards Reuse-Oriented Sanitation

Kim Andersson is a consultant working in Colombia with ecosan issues. He introduced the situation in Colombia regarding reuse-oriented sanitation. The population is very poor and there is a strong urbanization trend, partly driven by internal conflicts that result in disposed people. There are 4.3 million internal immigrants which leads to social problems. The drivers for reuse-oriented sanitation are a deficient water supply (means water-borne sewerage is difficult to build), low sanitation coverage and treatment, and nutritional deficiencies.

There is need for change in the sanitation sector. For example, it was found that higher investment in water/sanitation can led to increase in diarrhoeal disease, through water investment that does not consider sanitation (increase in wastewater produced). It is not common to use wastewater in irrigation, but people use polluted streams so it is the same thing. There are deficiencies in design/project investment, e.g. a project where families needed help to service/empty containers, lack of management capacity and experience within organizations. There is also major difference between rural and poor and projects frequently have technical and social deficiencies in how they deal with the local context. Concerning ecosan projects, it has

been found that reuse has rarely been the entering point, but there is still general acceptance. However, low management and social/tech deficiencies have slowed down results.

There has been interest within national and local institutional structures (e.g. Ministry of Environment, Housing and Territorial Development and Ministries of Social Protection) for promoting ecosan as alternative sanitation. However, they are mainly interested in the toilet system, not reuse. There are several policies and laws regarding reuse, specifically the technical regulations for the water and sanitation sector (RAS-2000), which give technical solutions for specific conditions. RAS-2000 considers waterborne as the ultimate option for urban and sub-urban areas and any other alternative is considered temporary. Dry toilets and composting options are only recommended for rural (less than 100 people) areas. Greywater reuse is permitted in rural areas and water harvesting in dry areas. Still, reuse is promoted and there is political will to reduce contaminants. However, "excreta" is not mentioned in any policy document, and there are no norms for contamination levels, so the legal framework is still quite low.

A national group is working on Alternative Sustainable Sanitation with the objectives to inform and exchange knowledge, provide technical support, standardize technical aspects, and diffuse ecosan. They are working with ongoing policy development for alternative sanitation in rural and peri-urban areas. Ecosan is included, but the information is at the end of the document and UDDT is categorized as a latrine which gives it a somewhat bad impression. Advancements have been made, but the potential of reuse is not being fully exploited and there is no categorization that supports dry sanitation. The document needs revision. Future work will aim for flexibility of technical solutions, involve other sectors (housing, environment), adjust terminology around sanitation, and combine with capacity development.

Presentation of Morning Discussion Groups

During the morning session the participants broke out into five smaller groups to discuss the following questions:

- What drivers are there for a policy change towards reuse on national / regional / local level?
- What are the necessary ingredients in a sanitation policy on national level towards nutrient reuse
- What can be learnt from case 1 - 3? Reflections and conclusions.

The discussions lasted for one hour and each group submitted a summary of their results. These were then compiled into the following reflections:

Drivers for Policy Change

- Knowledge
- Champions (individuals, institutions)

    - Example (CREPA): National Water and Sanitation Agency convinced. Ministry of water and agriculture: Ecosan declared as a part of national watsan programme (MDG frame). Collaboration with minister, who has an ecosan toilet himself!!
- Drivers at national level
    - Grass-roots actions (leads to national policy)
    - EU directives, MDGs
    - Sustainable development (systems approach, climate change) – wanting good national image
    - International responsibility – green thinking e.g P depletion
    - Sanitation as human right/ responsibility
- Drivers at local level (and others)
    - Serving citizens (election benefits, health)
    - Environmental and economic cost/benefits (resources (N/P), agriculture, food security, health)
    - Business models (farmers, fertilizers, entrepreneurs)

Necessary Ingredients in a Sanitation Policy

- Setting a clear vision that all can understand
- Development of necessary capacity to implement and manage the system
- Implementation roadmap (overcoming inefficiency, feedback, capacity to change, resource plan)
    - integrated and holistic planning
    - need to capture the full environmental impact in closing the loop
- Cooperation between government bodies, NGOs and other agencies; involvement of public
    - Including all institutions (water, agriculture, culture, finance, local government, etc)
    - Recognition of institutional silos
    - Devolvement of responsibilities
    - Collaboration and transparency in communication process
    - Interdisciplinary knowledge exchange of benefits
    - Institutional memory
- Champions and Political will
- Scientific evidence prerequisite for a policy (guidelines, standards)
- Stipulate how to maximize use of available resources (rationale) and mobilize human resources
- Enforcement mechanisms (legal framework, incentives, penalties)
- Advocacy -Raising the sanitation profile (awareness-raising, demo projects, guidelines)
- Ensure participation and ownership
- Appropriate technology (innovations, up-scaling, up-grading, flexibility)
- Not tech specific, but target specific. Promoting individual choices
- Shaping cultural habits and values (driving acceptance, gender sensitive)
- Financial instruments (subsidies)

Reflections and Conclusions on the Case Studies

- Knowledge and feedback important for reinforcing a system of collaboration
- Take opportunities to do the right thing in new settlements – cheaper than reconstruction.
- Political will needed and understanding at all levels
- Well written policies with poor implementation make slow progress
- Important to have key persons – champions that know about reuse. Otherwise it won't work
- Capacity development is key
- Laws and policies need to be clear - Speak the same language
- Control over the whole legal change –goal, demand and enforcement, without that you don't get change
- Sensitize the stakeholders
- Trying new approaches and doing things differently
- Lack of legal instruments in the agricultural sector!
- Supply line important! Private sector cooperation necessary
- Advocacy -Nutrients are more than phosphorous.

Open Café – Input to Regional Nodes

In the afternoon of Day 1 there was a second round of group discussions, this time focusing on specific input to five of the EcoSanRes2 knowledge nodes. These nodes had prepared a specific question or problem on which that they wanted to get input from the workshop participants. The participants worked in the same five groups from the morning session and rotated through the five "countries" to provide advice and give feedback. Each group spent 20 minutes with 3 different nodes. The focus questions for the five countries and summaries of feedback are presented below.

Colombia – *Which strategies to change from waterborne focus to more reuse?*

- Get away from technology focus
- Find other drivers – win-win solutions instead of sending all water to rivers

Burkina Faso – *How to transfer the information/knowledge to ensure sustainable process when municipal leaders have a limited mandate? How to ensure an institutional memory?*

- Invite citizens to participate in the planning process – the citizens will then hold politicians responsible to agreed terms
- Convince the population of the benefits of reuse (through proper implementation and use) and they will influence politicians
- Put the nutrient reuse question on to the election agenda
- Target technical staff that don't change with elections
- Do a sanitation planning exercise that could be institutionalized
- Work towards reuse-oriented national policy

Honduras – *What could be the first steps for developing a strategy for promoting a regional policy towards nutrient reuse?*

- Promote development of strategic workshops (local-regional)
- Find key actors and champions to promote initiatives at national levels
- Comparative regulation study to understand what is in place and gaps
- Regional platform in place, we should work as catalytic organization within this
- Demo project to show sustainable sanitation – awareness-raising and building on existing sustainability trends
- Advocate for including sustainable sanitation on national agendas
- Use IWRM strategies – there are books on alternative practices/situational analysis
- Identify target audiences
- Internet-based exchange and building grass-roots

Bolivia – *What strategies exist for promoting use of wastewater of small/medium urban areas? How to get farmers interested?*

- Importance of measuring water quality before using
- Pilot studies to awaken awareness of benefits for agriculture
- Link pilot projects to university for scientific sharing and documentation
- Get contacts with government (to access bi-lateral donors) and reinforcement of role of NGO as mediators
- Look to USA/China/WHO guidelines for legislation examples
- Separate waste if it can not be treated or monitored properly
- Must be cheap and easily operated for farmers
- Explore wetlands or agroforestry options if the water quality is unsure
- Incorporate organic solid waste into composting

Nepal – *How do you ensure that sustainable sanitation is reflected in agriculture policies, plans and programmes?*

- Talk to the agricultural people.
- Demonstration sites in both central and local level through agricultural extension process
- Work with agricultural university to do research on economic potential of nutrient recycling and verify the yields achieved by using urine/feaces.
- Tell the agricultural people about nutrient value & safety of reuse
- Select and use champions
- Be careful about consumer backlash
- Important to have leaders/champions from the agricultural sector
- Follow up programmes are necessary
- Trigger demand from farmers
- Capacity building on the whole process, including safe use
- Demonstration projects
- Mention different factions (greywater, urine, rain water etc.) that can be used and have standards to regulate the quality of products that are used.
- Link with livelihood and food security, and use issues such as poor soil and cost of fertilizer to start a dialogue. Organizations such as IFAD may be good for creating a resource base.
- Use the right language. IFAD for example uses “productive sanitation” instead of “ecological sanitation”
- Use both “Top down” and “Bottom up” approaches
- Come up with an evidence base – quantify economic benefits; assess perception of users
- Create space for multi-disciplinary dialogue with sector professionals
- Build capacity through training and exchange visits
- Work on existing agenda or projects. One or two workshops can get the dialogue going.

Day 2 - Policy Implementation and Targets.

Day 2 of the workshop was mainly focused on case study presentations and discussions on Policy Implementation and Targets.

Case 5: South Africa: National Legislation and National Targets on Sanitation in Relation to Local Implementation (Ditshego Magoro & Rivka Kfir)

Rivka Kfir from the Water Research Commission, a funding institution in South Africa stressed that due to South Africa's semi arid conditions, water is scarce in most parts of the country. The water scarcity problem is exacerbated by pollution which causes algal bloom. Rivka reported that much of the water used in the country is surface water, but the quality remains a problem (nutrient enrichment and eutrophication). Only 8.6% of rainwater is available as surface water and groundwater. There is large investment in water storage: 77% of water is from surface water, 14% from return flow, 9% from groundwater.

In addition, the country has a large rural population, i.e. 40% of population live in rural areas. Half of this rural population are unemployed and most of them live on state grants. The fast growing rural poor population require sanitation. Basic sanitation covers 73% of households (they will meet MDG). In South Africa, Water is governed by National Water Act (IWRM basis). The highly contested Right for water is in the constitution (dignity, safe environment and health care). The Water Services Act 1998 – includes right to basic sanitation. The 1994 Constitution defines sanitation as the basic level of hygiene, etc.

Case 5 Continues – Ditshego Magoro: Sanitation Policy and Framework, South Africa

Ditshego Magoro continued the presentation of Case 5 and her focus was mainly on sanitation policy and framework in South Africa. According to Ditshego, water and sanitation policies exist in South Africa but the main problem is implementation of these policies. The 1994 White Paper on Water and Sanitation – highlights the need for a national policy. The 2001 White Paper on Basic Household Sanitation governs the sector. The national policy uses community participation in decision-making process. The Strategic Framework of Water Services is guiding document for the sector (includes M&E indicators and framework) and is approved at cabinet level. South Africa has a Free Basic Sanitation Policy which is still under development (targets shifted from 2010 to 2014). The promotion of free services leads to the problem of lack of ownership thus households are encouraged to participate and take ownership even though the services are free. The central government provides funding for sanitation to municipal authorities. So there is no funding problem for sanitation. Funding is done in the form of grants through the fiscus or treasury. Local politicians, however, need to prioritize sanitation more and not continue to channel majority of funds to water. Sanitation has for along time been part of the water department but has recently been pushed to the department of Human Settlement. There is a strong civil society in South Africa working with the government. Some of the challenges reported by Ditshego include: lack of choices; supply driven approach instead of demand driven approach; more focus on hardware than software; no gender mainstreaming; ignoring disabled, poor community participation and therefore not everyone is brought on board; no long-term planning on how to do O&M (what to do when VIPs are full - monitoring of quality not well

established, no room for innovation e.g. problems with VIPs, UDDTs,); no or limited supply of water for waterborne systems that were built; municipalities unable to cover O&M costs; consultants selling expensive systems to municipalities (lack of knowledge within municipalities to make rational choices). Ditshego reiterated that the reuse policy should allow for activities that would not harm people or environment. Regulations for reuse – stipulates that the environment should be protected. There is no specific legislation for nutrients and excreta in South Africa. Reuse is guided by legal documents, e.g. for wastewater sludge disposal which covers issues that are also highlighted in WHO guidelines. Cost/benefit analysis of use of sludge in making bricks – shows savings (more than nutrient reuse). Cape Town saves about 18 million Rands by reusing. Thus, demonstration projects showing crop improvement with reuse in different municipalities will make people see savings from reuse (see and believe).

Some points to note

- Grants are not usually well used
- Problem of tenure ownership
- Maybe a golf estate with ecosan will influence a change in legislation

Q: Role of WRC

A: To share knowledge, identify needs and who is doing what, facilitate exchange. Have done a lot of work in water sector (IWRM, etc). Faciliating network

Q: Funding – is it separate for sanitation or both?

A: For municipality infrastructure it is mixed funding. Grants not always used properly and sanitation gets lost. Basis sanitation is just the beginning and we will continue. There is no legislation for excreta and they can not use it. UDDT is not yet legal to reuse. Need to prove composting of sludge before reuse.

Q: How are you working with home gardening?

A: Nothing to do with sanitation. Introducing rainwater harvesting in-field and now expanding to croplands.

Q: Could it be an opportunity for pro-poor to include urine/feces reuse

A: Minister trying to push, but people don't understand yet. Poor want flush toilet. Need to make it prestigious to have UDDT

Q: Disagregating water from sanitation…

A: Research and department don't see eye-to-eye. Not easy to do. How to deal with rural development and sanitation opportunity? Have champions in politics

Case 6 – National Legislation and National Targets in Relation to Local Implementation (Zhifu Li)

Zhifu Li reported that in China a 5-year plan is done after every 5-years. This plan includes: the use of circular economy (recycling resources) and harmony between man and nature. There is a long history of excreta reuse in rural China (as far back as 3000 years). China produces and consumes more chemical fertilizer than any other nation in the world. In China, reuse is done in 3 ways – after fermentation for some period in septic tanks, after fermentation with crop straws, use as food for fish in ponds. The application method is usually manual, labour intensive and poor-hygienic conditions. Poor hygienic conditions surrounding reuse is a problem. Urbanisation is another challenge – how to reuse in urban areas, costs increase due to transport. 17 million people are urbanized by upgrading their settlement areas. The recycling process is more complicated (collection, treatment, storage, transport) in urban settings. Acceptance is not a big barrier in China. In 1960s and 1970s, the use of organic fertilizer was very popular, but with fast development of industrial fertilizer in the 1980s, the use of organic fertilizer decreased (now less than 30%). There are national sanitary standards for water and wastewater use, organic fertilizer standards, old standard on non-hazardous treatment of night soil, standards for urban agriculture reuse and pollutants discharge. Local standards also exist in different regions. The wastewater standards define max flush volumes, surface water quality standards, pollutant discharge, water reuse for landscape. There is increasing demand for organic fertilizer and organic products e.g. fruit exporters want eco-label. Urban centralized systems hinder nutrient reuse. There are some relevant regulations that could permit reuse, but this is not prioritized. Demonstration projects are being done with eco-san concept: Erdos, Olympic Forest Park. Since recycling is still being ignored by the Chinese government, there for need public awareness-raising and technology research.

Q: Targets for improved sanitation in the 5-year plans?

A: In the different ministries they have such targets, e.g. in the tourism ministry wants to set up star-rating system for toilets; ministry of agriculture subsidy to household to replace/reconstruct toilets.

Q: Ideas on how to solve problem of centralized sewerage systems?

A: centralized system is robust and has lots of experience, so it is easy for officials to implement and people want it. In rural areas separate treatment is no problem, but in cities. Discussing the idea of eco-city and committee existed to introduce new innovations and integrations.

Q: Organic classification of excreta. EU will not allow it, how work with international Trade Organisation with conflicting rules.

Q: Subsides for fertilizers?

A: Co-composting with animal and human excreta. Many small start-up companies.

Discussion Start-Up: Anna Richert and Ron Sawyer

Institutional Strategy for Implementation of Ecosan in Urban Ouagadougou, Burkina Faso – March 2008, Anna Richert

Anna Richert opened the discussion start up with a presentation of the institutional strategy for implementing ecosan in urban Ouagadougou, Burkina Faso. She stated that there is a system in place, but this system is lacking institutional support. There has to be support to carry out the municipal functions in a responsible way. In addition, the approach be should criteria-based, not technology-based, and people should go for simplicity, not complex systems. Even though agriculture is a driver (create demand and business opportunities), it is important to note that quality control needs to be assured (education and certification), and the barrier approaches. There is also need for an enabling environment i.e. legal documents that support reuse activities. The economic responsibilities (who pays) must also be clearly defined. In Ouagadougou, Municipalities have agreed to partly finance the collection system (household contribution is too low to run the whole system). Municipality will also monitoring the whole system. The Ministry of agriculture has agreed to monitor the extension workers and train the farmers. Furthermore, the Ministry of health agreed to use its health workers for quality control and will monitor and assess the health risk for the farmers and the final products. One of the biggest challenges faced by CREPA field workers in Ouagadougou is how to store the large volume of urine collected. Is it keep in compost to reduce volume, or apply directly to field during dry season, or turn from liquid to solid phase? Logistical challenges.

Q: What is needed to get the institutional situation right?

A: Depends on national context. In Burkina the authority and ministries are supportive and willing to push it.

Q: Can you build a business model around it? Franchise will provide quality control and give larger infrastructure. Government could contribute to set-up?

Mexican experiences, Ron Sawyer

Ron Sawyer reported that human excreta are not well defined in the law in Mexico. Mexico is large and complicated country with a big divide between the water and sanitation sector. Human excreta are considered as hazardous waste because of the pathogenic content. No specifications exist that regulate composting processes. There is need for a specific regulation to create space for ecosan. A new law was passed in 2006 for bio-resources/solids (animal waste was mentioned, but nothing about human excreta). Animal manure which is not well processed can not be used in crop production for human consumption. Fertilizers and soil conditioners – can be used after appropriate dilution (animal urine). There are a lot of dry toilets in Mexico and a lot of work is being done on wastewater sludge management. Exports to USA are influencing a lot – certification process is limiting wastewater reuse. There is an interesting discussion around the issue of hormone and pharmaceutical contents in fruit tree crops. Work is ongoing in schools where there is a good opportunity and niche for ecosan. Demonstration projects are also

important here because they show how things are done on the ground. There is need for education to show people the risks and identify barriers.

Q: Rules seem very strict … "unprocessed animal manure only on non-edible crops". How will organic farmers cope with this? Doesn't match FAO

A: Don't know, don't know who is behind this.

Group Discussion 3 – Regional Groups

In this part of the workshop the participants were divided into regional groups and the aim was to discuss with the starting point in these questions:

How to implement sanitation policy including nutrient reuse?
- What are the necessary requirements for policy enforcement?
- What are the drivers and incentives for action and implementation?

Below are the major points lifted in the plenary discussion that followed the group discussions. In each group there were persons responsible to document the discussions, but that is not included in the proceedings.

China

- Context: circular economy and harmony are key principles that are opportunities
- Challenges: going too fast towards centralised system
- Way-forward: context sensitive sanitation policy

Philippines

- Need to have a clear policy on reuse – govt adopted
- Formulating a sanitation roadmap = opportunity
- There are barriers, especially on acceptance and reuse
- Need research, especially on how to apply urine to rice
- Increasing demand for organic produce, opportunity for reuse

Nepal/India

- Opportunity: Linking with food security
- Barrier: current targets for sanitation are focusing on toilet construction MDGs, build build build!
- Need policies based on evidence = demonstrations followed by policy

Latin America

- Necessary to have a working group, identify stakeholders, promote dialogue and demonstration projects
- Political advocacy – nationally and locally
- Alliances are important so all target same goal

South-East Africa

- Issues should be context specific – is it relevant to be talking about reuse?
- Define issues within sustainable sanitation
- Develop appropriate knowledge
- Impact-assessments around social-economic factors
- Public partnership within business models, opportunities for job creation

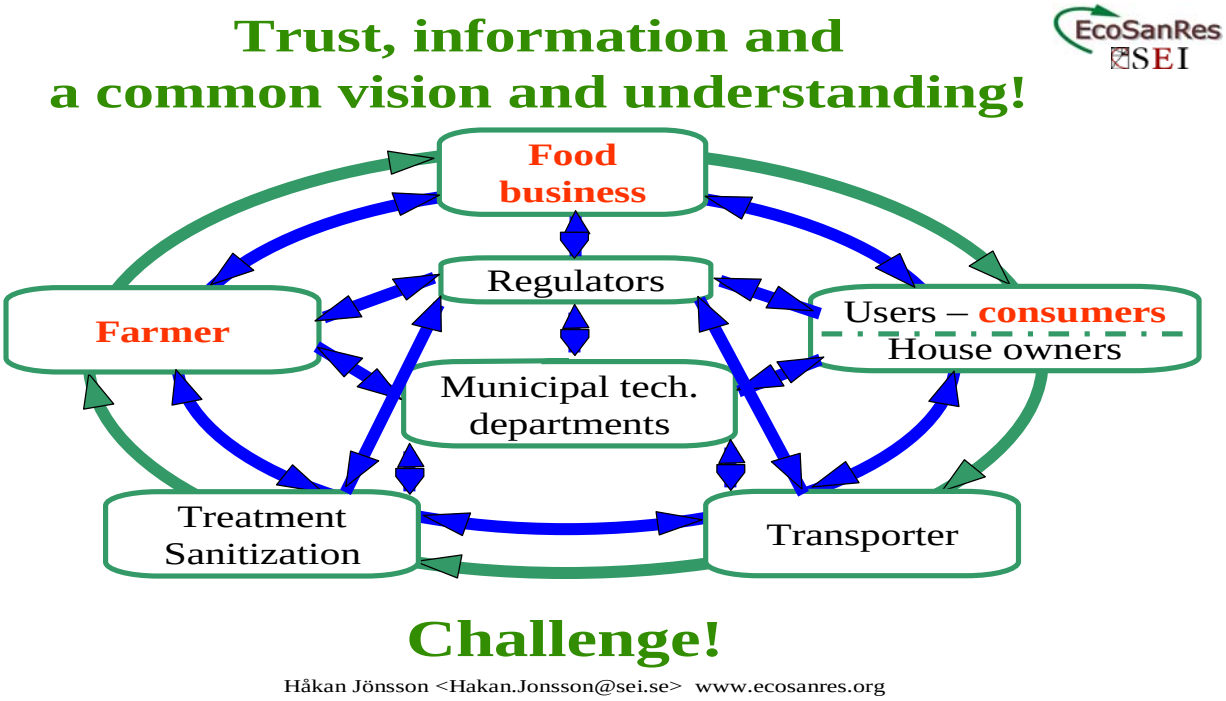
Note: Ecosan should not always be presented as a pro-poor solution. We need to make sure that we are class-less and that ecosan and sustainable sanitation makes sense to all.

Sanitation policy and safe food production (Håkan Jönsson)

According to Håkan, safe nutrient reuse is not necessarily UDDT. Nutrient from black water (vacuum system being promoted by the Germans), or wastewater can also be reused. The multi-barrier approach is very important. Much social interaction is needed during reuse and information flow has to be ensured. Conventional systems are often controlled by many operators. Subsistence farming is easy since the farmer takes on most of the roles

It is important to build trust and common vision, promote ownership, involve farmers initially and minimize stakeholders. It is important to set good examples to maintain trust, and promote reuse in municipalities, parks and schools. However, communication within the municipality can be great challenge. See Figure 6 below.

Figure 6.



Discussion: Identify farmers (target), and drivers (which drivers to use)

- Which type of farmer are we targeting?

    - Commercial/large-scale – easier to communicate with, often motivated by organic markets
    - Communal/cooperative farms
    - Peri-urban vegetable farmers
    - Greenhouse farmers (largely supplying urban market)
    - Subsistence – more diffuse target, more cultural baggage?
- What are the Drivers?
    - Substitute for commercial fertilizers
    - Livelihoods and food security
    - Organic fertilizer, esp. if it will lead to organic certification
    - Putting a figure on the value

The farmer is an "economical man" or an entrepreneur who is driven by costs**.** Getting extra pay for doing collection/transport is an important driver even though the equipments needed and time to do the job may be a challenge. It is important to involve and engage farmers right from beginning and know that priorities (desires, drivers, needs, etc)

Håkan gave the following points on how to target national level agriculture:

- Show economic figures on saving/benefits gained, not just as a fertilizer and increased crop value
- Household health gains, malnutrition and lack of food, etc
- Irrigation markets, potential solutions for handling/distribution – increase efficiency if water/nutrients distribution is combined
- Increasing concern on soil quality – soil amendments is big argument with micronutrients
- Alternatives or complement to slash-burn tactics?

According to Håkan, some of the questions that are worth asking and that could serve as possible entry points include: Who is responsible for fertilizer supply and subsidy? Who is responsible for food security and malnutrition? Who is responsible for sanitation in emergency situations and difficult areas? What about mountain communities, sloping terrain, loss of soil? Håkan concluded by stating that institutions working with sanitation and agriculture should support research in this area. The use of extension workers is absolutely necessary to influence policy at the national level.

Case 7 – Lessons learned from working within GWP – adding value to sanitation (Björn Guterstam & Milan Matuska)

Björn Guterstam started by saying that Global Water Partnership (GWP) is an organisation which acts as a facilitator in IWRM and supports the sustainable development and management of water. GWP brings stakeholders together and establishes platforms across disciplines (hydrology, water, irrigation, sanitation, energy, etc). The role of GWP in water and sanitation is to support countries in IWRM planning, publishing/knowledge dissemination, and inter-organizational

cooperation. GWP is active in five countries in Central Asia., among others around the world. The water supply and sanitation in the Caucasus is in deplorable state. Sanitation drive came from IWRM and water demand. A workshop was held last year which led to a consensus – goodwill was expressed in consensus but there are no commitments.

China's policies include:

- Building a Water Saving Society
- New Countryside Development (try to make internal market, creating a new middle class of consumers, getting away from export-reliant economy)

GWP will soon publish a book on sustainable sanitation in Chinese. GWP is adding value through publications, expertise, online tools help governments, students, decision makers, etc.

Case 7 Continues – Sustainable Sanitation in Central Eastern Europe Region (Milan Matuska)

Milan Matuska continued the GWP presentation on sustainable sanitation in the Central Eastern Europe Region (CEE). Matuska reported that majority of wastewaters are treated with cesspools. About 150 million people are connected to sewerage systems. People want to be at the same standard as the larger towns. GWP has produced a book on sustainable sanitation in CEE (this is available on the website www.gwpceeforum.org under publications). Included in the book are policy/legal analysis and what difficulties can be expected from legislation point of view. This book also brings out things that are useful for implementation in small settlements. GWP is using this book to train trainers (esp. on open sanitation planning), distance course, pilot projects, etc. Seminars on the open sanitation planning process were also organized for mayors and other authorities. GWP is closely working with associations in towns and villages in Slovakia and has established a working group on IWRM. The experience from this working group as Matuska reported is that it is not easy to transfer knowledge about IWRM. The Richnava case study was also presented. Villages requested help on wastewater treatment from GWP. GWP carried out a feasibility study on open planning process and provided all alternatives which could be taken into consideration. The Roma ethnic group (considered as minority) live in areas that are not permitted by law and not registered. There is need for an ecosan demonstration or pilot project support (identification of pilot projects and location).

Q: Advise from European context to the nodes?

A: Regional partnerships in the region function as NGOs. We open doors and would be willing to collaborate. It is interesting for us on what should be monitored, assessing the economics.

Concluding Remarks and Reflections from the workshop participants

Mats Johansson asked all participants to fill in an evaluation of the workshop and to make a short reflection on the workshop discussions. Some of these reflections are presented below.
Overall were the participants very pleased with the workshop and the chance to go into depth on the regulatory aspects.

About the workshop

- The discussions and presentations have been an eye-opener on personal level. Motivation has increased to open dialogue on reuse.
- Many good arguments for promoting change in policy and regulation on local, regional and national level to bring back and use at home
- Interesting to hear about regulatory frameworks from so many different countries
- We are not alone in this effort, we have colleagues around the world and have access to a big and growing experience in the regional Ecosanres nodes. Looking forward to the possibility to learn from other regions
- Why not rotate future workshops among the regional nodes?

Reflections on future work

- The importance of including farmers and the agricultural actors early in the dialogue
- Renew efforts on working towards agricultural sector which is a challenge
- Don't try to do everything at once. To
  1. Develop an allowing legislation/regulatory environment
  2. Build demo installations and systems
  3. Build local capacity and an organisation that can ensure the O&M for the system
- The challenge is to build the capacity that is needed within the projects on sustainable sanitation
- Need for collaboration between nodes
- Incremental steps towards better sanitation policies. Better to have some progress and upgrade it along the way.

Priority aspects

- "Put the reuse into Sustainable sanitation for good"
- There is a driver for reuse as nutrients are expensive and not abundant
- There is a need for strategies and methods to include the important "missing actors" in the project and policy development
- Important to push the ecosan ideas on the national level.
- The importance of building capacity of key stakeholder, and to get closer to agriculture at a national scale

Closing Remarks

Gunilla Brattberg thanked all participants and people involved in organizing the workshop and she was very pleased that so many good ideas had been produced that we all could take back home. It was also the first face to face meeting of all node partners and it gave us all a good possibility to get to know each other better.

Appendices

Workshop Invitation

Invitation to a Knowledge Node Workshop Focusing on Sanitation Policies and Regulatory Frameworks for Reuse of Nutrients in Wastewater and Human Excreta .

A growing world population with a rapid urbanization, increasing scarcity of good quality water resources and rising fertilizer prices are some of the driving forces behind an accelerating upward trend in the use of wastewater, excreta and greywater for agricultural and aquacultural use.

Human wastes have been and are still a widely used resource in agriculture in most parts of the world. The health risks associated with this practice have been recognized, and regulatory measures were in some cases, until recently, based on rigid guideline values not applicable within the socio-economic settings where most wastewater use takes place and ignoring risks of disease transmission through other pathways in society in relation to the reuse of nutrients in wastewater/human excreta.

Sanitized human excreta and reuse in agriculture implies activities that involves more sectors in the society than conventional sanitation and consequently makes it subject to different sets of regulations at national level. The weak and sometimes even non existing legislation makes it difficult to implement and scale up sanitation solutions with reuse.

National policies for sanitation are still not in place in many developing countries and much less is there an existing legislation for reuse of wastewater and excreta in agriculture. For facilitation of implementation of large scale sustainable sanitation installation with a component a reuse of nutrients and/or water there is need for a legislative framework that at least not prohibit reuse of sanitized excreta/wastewater/greywater and that does not prohibit sanitation technologies facilitating reuse.

Even in countries where a policy change has taken place and the legislation is encouraging the reuse of wastewater and human excreta, the implementation might be impeded by the lack of political endorsement and support, weak institutional structures among other factors.

The 3rd edition of WHO Guidelines for the Safe Use of Wastewater, Excreta and Greywater in Agriculture and Aquaculture has been developed to address these challenges. The guidelines envisage a realistic approach to use of treated wastewater and excreta based on most recent epidemiological evidence. Currently the guidelines are tested with the ultimate goal of documenting the experiences, the opportunities and constraints associated with the Guidelines' implementation by national authorities.

Policy change is in many cases and countries necessary for the scaling up of sanitation solutions where nutrients are reused. At the same time it is important to recognize that in many countries permitting policies and legal frameworks are in place but not effectively implemented.

Acknowledging that many of the EcoSanRes knowledge nodes are working towards policy change favoring conditions for sustainable sanitation with reuse of wastewater and excreta the EcoSanRes program would like to cordially invite you to come and share experiences and develop more knowledge on policy development and implementation processes in workshop in Stockholm on the 24-25th of August 2009. A more detailed program with logistical arrangement to follow.

Looking forward to your participation and contribution
Gunilla Brattberg
EcoSanRes Programme Director

Workshop Programme

Day1. Ignitions for policy change

Time		
8.30	Welcome / Introduction	Gunilla Brattberg & Elisabeth Kvarnström, EcoSanRes/ SEI
8.40	Introduction of the workshop programme	Moderator Mats Johansson, Verna (MJ)
9.00	Sound Policymaking and the Cornerstones of Environmental Law	Jonas Christensen Juris. Dr. Environmental Law Ekolagen Miljöjuridik
9.20	Case 1 - The Legislative Environment for Sanitation in Sweden and the local Implementation.	Jonas Christensen Jane Hjelmqvist Municipality of Norrköping
9.50	Case 2 – Philippines Clean Water Act	Dan Lapid Center for Advanced Philippine Studies. EcoSanRes Knowledge Node SEA
10.00	Case 3–National Policy for Ecological Sanitation in Uganda	Brenda Achiro Network for Water and Sanitation / Uganda EcoSanRes Knowledge

		Node , East Africa
10.20	Questions and discussion	Facilitated by MJ
10.35	Break	
10.50	1. Group discussion - Drivers for a policy change and necessary ingredients in a sanitation policy	Facilitated by MJ
11.45	Round with comments and reflections on the cases and the group discussions	Facilitated by MJ
12.00 – 13.00	Lunch	

Time		
13.00 – 13.30	WHO Guidelines for the Safe Use of Wastewater, Excreta and Grey water in Agriculture and Aquaculture as a support in National Policymaking	Thor-Axel Stenström EcoSanRes/ SEI
13.30 – 14.00	Case 4 Colombia towards reuse-oriented sanitation; review of experiences, national policies, legal and institutional framework"	Kim Andersson / Consultant
14.00 - 14.15	Presentation of synthesis from the group discussions	Jennifer McConville/ Nelson Ekane
14.15	Introduction to Group discussion 2 – Open café with input to regional nodes Short presentation from Nodes of the principal questions and problems within the field of sanitation policy making taking account reuse of nutrient	Mats Johansson and Representatives from the EcoSanRes Knowledge Nodes
14.40 - 15.00	Break – coffee and fruit	
15.00	Open café with input to regional nodes All group moves round and visits and discusses with 3 nodes each giving input to their question / problem	
16.10	Round with comments on the cases and the group discussions	
16.30	End of day 1 – Summary	Mats Johansson
18.00	Dinner	

Day 2. Policy implementation and targets

Time		
8.30	Introduction day 2	Mats Johansson
8.40	Case 5 – South Africa – National Legislation and National Targets on Sanitation in Relation to Local Implementation	Ditshego Magoro Water Informaiton Network South Africa Rivka Kfir Water Research Commission
9.10	Case 6 – China – National Legislation and National Targets in Relation to Local Implementation	Zhifu Li University of Science and Technology Beijing. James Gao Clean Water Alliance
9.40	What to do when Institutions have difficulties with policy implementation	NeilPowell, Stockholm Environment Institute
10.10	Questions and discussion	
10.30	Break	
10.45	Group discussion 3 - Regional groups How to implement sanitation policy including nutrient reuse? - What are the necessary requirements for policy enforcement? - What are the drivers/incentives for action and implementation	Group discussion
12.00 – 13.00	Lunch	
13.00	Group discussion 3 - Regional groups – continued	Group discussion
14.10	Round with comments on the group discussions	
14.30	Break	
14.50	Sanitation policy and safe food production	Jakob Lundberg, FAO Norden
15.10	Case 7 – Lessons learned from working with sanitation policy in Ukraine and Eastern Europe	Milan Matuska GWP /CEE & Björn Guterstam GWP
16.00 – 16.30	Summary and wrapping up – what will come out of this workshop?, Evaluation	Madeleine Fogde+ Mats Johansson + Gunilla Brattberg

Participating Organizations

ESR Knowledge nodes – NETWAS - Uganda, WRC – South Africa, ENPHO - Nepal, CREPA - Burkina Faso, RRAS-CA – Central America, SNV – Bolivia, University of Science and Technology, Beijing, Clean Water Alliance (CWA) - China, CAPS – Philippines, GWP, ESR staff,

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Jennifer McConville and Nelson Ekane took notes during the workshop and compiled these proceedings with the help of Mats Johansson.

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