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**Productive sanitation in Burkina Faso and Niger – going beyond projects?**

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**Abstract**

**Productive sanitation in Burkina Faso and Niger – going beyond projects?**

Productive/ecological sanitation through the use of dry toilets with recovery and safe reuse of nutrients and other resources in agriculture has been implemented in pilot projects in many places in Sub-Saharan Africa (SSA) but there are few, if any, cases where dry toilet systems have been installed at large scale while maintaining a strong focus on safe excreta recycling. This paper provides an inventory of productive sanitation projects in Burkina Faso and Niger. It also surveys the current institutional environments of both countries and of past efforts to encourage cross-sectoral collaboration in support of productive sanitation, along with observations from officials and national experts.

Eleven projects were identified in Burkina Faso, with together more than 11,000 dry toilets installed between 2002 and 2015; the six largest projects had a total budget of EUR 9.5 million. Nine projects in Niger have led to the installation of 2820 toilets. Most of the projects have been relatively integrated, with involvement of agricultural professionals in farmer field schools and demonstration sites to build reuse capacity and stimulate demand for toilets and fertilizers. Over the same period, national sanitation strategies and programmes have been developed and implementation has started in both countries, but with limited focus on productive sanitation beyond including urine-diverting double-vaults toilets among the accepted toilet models in the strategic plans. Efforts to formalize cross-sectoral collaboration at national level have been unsuccessful, mainly due to lack of long term funding and leadership. In Burkina Faso, there is now a prospect of increased government engagement with a new mandate from the African Union to provide regional leadership on productive sanitation.

There is a need to go back to former project sites and identify key factors that have encouraged or discouraged sustainable toilet and productive reuse of excreta. The lessons learned could be useful to a wide variety of actors. There is also need for cross-sectoral policy analysis to identify gaps and barriers in the enabling environment for productive sanitation, as well as proposing solutions to enable upscaling of productive sanitation.

**Key words: Productive sanitation, cross-sector collaboration, up-scaling, Burkina Faso, Niger**

## **Productive sanitation in Burkina Faso and Niger - going beyond projects?**

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## Introduction

Productive sanitation – sanitation systems and practices that enable recovery and safe reuse of resources in human excreta and wastewater – was introduced in Burkina Faso in 2002 and in Niger in 2005, as part of a regional research and demonstration programme piloted by Water and Sanitation for Africa (WSA, formerly known as CREPA) with activities in 10 West African countries (CREPA, 2006). At that time it was referred to as ecological sanitation (*ecosan*)<sup>1</sup>. Since then there have been several rural and urban productive sanitation projects of different sizes with the twin goals of improving access to sanitation while also enabling the safe and productive reuse of urine and faeces. These projects have promoted different types of urine-diverting dry toilets that facilitate excreta treatment and reuse.

The projects have been of various size and mainly been led by NGOs in the WASH sector. Most of the projects have taken the reuse aspects seriously, involving agricultural professionals to support training, sensitization and demonstrations on the safe reuse of excreta. Some projects were also funded by the agricultural sector, and have had safe agricultural reuse as the primary objective.

There is a potentially rich source of experience of productive sanitation implementation in these two countries. However, only scattered information is currently available. This article thus presents an up-to-date inventory of productive sanitation projects in Burkina Faso and Niger. It also examines the enabling environment – including opportunities and obstacles – for implementing productive sanitation at larger scales: policies and programmes, past efforts to convene stakeholders from different sectors to encourage collaboration on productive sanitation, and the thinking of key governmental actors and experts, including on ways forward.

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<sup>1</sup> While the term *ecosan* is still widely used, including in many of the projects, programs and policies described, *productive sanitation* is used here as it emphasizes the productivity gains available. This can facilitate communication with households and policy makers. Furthermore, in West Africa *ecosan* has often been used as a synonym to urine diversion toilets and hence the term has come to describe a technology rather than a system or an approach.

## Overview of sanitation and agriculture in Burkina Faso and Niger

Burkina Faso and Niger are neighbouring landlocked countries in the Sahel region of Africa (see Virhe: Viitteen lähdettä ei löydy).



**Figure 1. Burkina Faso and Niger**

Both countries have mainly rural populations, and the majority of their workforces are involved in agricultural activities (see Table 1). Furthermore almost half the population of both countries is below the poverty line, and sanitation coverage is among the lowest in the world, with open defecation still the norm in rural areas. The average fertilizer application per hectare of arable land is still low, and efficient recycling of human excreta would annually add plant nutrients equivalent of 15 kg/ha in Burkina and 6 kg/ha in Niger – more than current fertilizer application in both countries (Table 1).

It is worth noting that the government subsidies for seed and fertilizer cost Burkina Faso an average of EUR 8.8 million per year in 2006-2010, while the investment in rural sanitation was only EUR 5.6 million in 2014 – and none of that investment targeted productive sanitation.

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**Table 1. Selected population, sanitation and agriculture data in Burkina Faso and Niger**

	Burkina Faso	Niger
Population, 2013 <sup>1</sup>	16.9 million	17.8 million
Rural share of total population, 2013 <sup>1</sup>	72%	82%
Share of workforce engaged in agriculture, 2014 <sup>4</sup>	92%	83%
Share of population with access to improved sanitation, 2012 <sup>2</sup>	19%	9%
Share of rural population practising open defecation, 2012 <sup>2</sup>	75%	89%
Share of population below poverty line (< 1.25\$/day PPP) <sup>1</sup>	45% (2009)	41% (2011)
Share of rural population below national poverty line <sup>1</sup>	n.a.	55% (2011)
Share of stunted children under five, <sup>3</sup>	35% (2010)	55% (2006)
Share of population undernourished, 2012-2014 <sup>3</sup>	21%	11%
Fertilizer application to arable land, 2012 <sup>4</sup>	14 kg/ha	1.4 kg/ha
Potential quantity of plant nutrients in human excreta available per ha. of arable land <sup>5</sup>	15 kg/ha/yr	6 kg/ha/yr
Annual state subsidies for agricultural inputs <sup>6</sup>	€8.8 million	n.a.
Total investment in rural sanitation, 2014 <sup>7</sup>	€5.6 million	n.a.

n.a. = not available

1. World Bank Database (<http://data.worldbank.org/>)

2. WHO/UNICEF, 2014, Progress on Drinking Water and Sanitation update 2014

3. FAO, Food Security indicators (release 15 Oct 2014)

4. FAO Stat (fertilizers as N+P<sub>2</sub>O<sub>5</sub>+K<sub>2</sub>O)

5. Own calculation: Nutrients in human excreta from Dagerskog and Bonzi (2010) (average estimate for 10 West African countries) coupled with data on arable land from FAO Stat.

6. FAO, 2013, Analysis of public expenditures in support of food and agriculture development in Burkina Faso 2006-2010. The sum given is the average for 2006-2010 and concerns mainly fertilizer and seeds.

7. BF Ministry of Agriculture, PN-AEPA Burkina Faso annual report 2014, <http://www.pseau.org/outils/biblio/resume.php?d=5496>

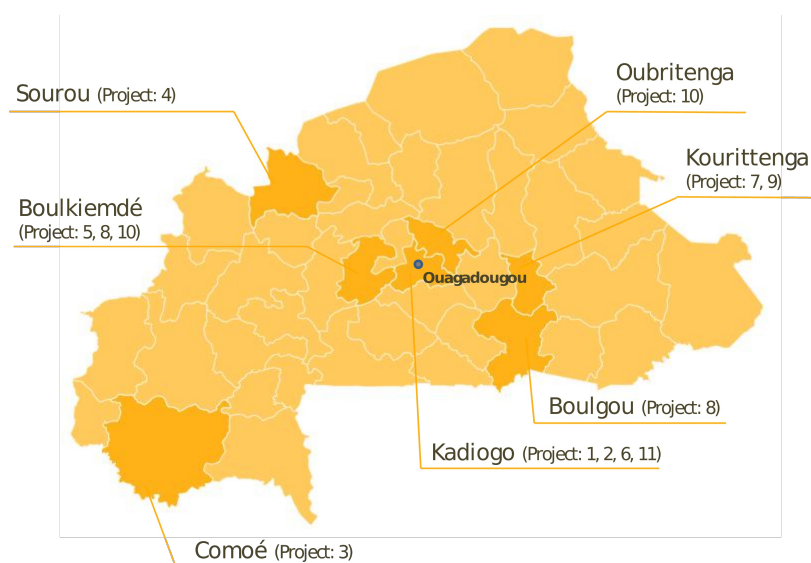
Dagerskog and Bonzi (2010) showed that from an agro-economic point of view, the subsidies for a “productive toilet” of USD 180 offered under the EcoSan\_UE 2 project in Burkina Faso and USD 50 under the AP-Aguié project in Niger could help an average-sized rural family to collect around USD 80 worth of fertilizer per year. However, for the full potential of productive sanitation to be realized, pilots need to be scaled up in a sustainable way and incorporated into national regulations, strategies and programmes. In Burkina Faso and Niger a “critical mass” of projects and experience is starting to accumulate that could trigger such development.

## Productive sanitation projects in Burkina Faso

We could identify 11 productive sanitation projects at some scale in Burkina Faso, with a total of more than 11000 toilets built over the last 13 years. Details of the projects are presented in Figure 2 and Table 2. Six of the projects had substantial European Union (EU) funding, totalling around EUR 9.5 million.

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**Figure 2. Map of Burkina Faso highlighting provinces with productive sanitation projects. The project numbers refer to the list of projects in Table 2.**

**Table 2. Overview of productive sanitation projects in Burkina Faso**  
**Project information key: 1. Where 2. When 3. Who 4. Gov. involvement 5. Toilets 6. Reuse**

Project	Project information
1. EcoSan Sabtenga	<ol style="list-style-type: none"> <li>1. Rural project in Sabtenga village</li> <li>2. 2002-2008</li> <li>3. WSA and village committee. Sida funding through WSA EcoSan programme</li> <li>4. Engagement of village leaders</li> <li>5. 100 household (hh) toilets. Double-vault UDDTs.</li> <li>6. A communal field was initially used for reuse experience.</li> </ol>
2. EcoSan Saaba	<ol style="list-style-type: none"> <li>1. Peri Urban project in Saaba,</li> <li>2. 2003-2006</li> <li>3. WSA. Funding from Sida</li> <li>4. Saaba municipality</li> <li>5. 50 hh toilets</li> <li>6. A researcher from the National Institute of Agriculture and Environmental Research (INERA) was linked to the project Saaba for the first agronomical research on urine/faeces recycling in Burkina Faso.</li> </ol>
3. EcoSan Tougan	<ol style="list-style-type: none"> <li>1. Urban project in the town of Tougan</li> <li>2. 2006-2008</li> <li>3. WSA and Tougan municipality. Sida funding through WSA EcoSan programme.</li> </ol>

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Project	Project information
	<ol style="list-style-type: none"> <li>4. Local authorities engaged in sensitization</li> <li>5. 50 hh toilets, 5 public toilets in EcoCenter, 2 blocks of school urinals in local high school</li> <li>6. Urine from school urinal was transported to a demonstration site at the EcoCenter where a women's association used sanitized urine in gardening.</li> </ol>
4. EcoSan Poa	<ol style="list-style-type: none"> <li>1. Semi-rural project in and around the rural town of Poa</li> <li>2. 2006-2007</li> <li>3. WSA, Poa Municipality. Sida funding through WSA EcoSan programme</li> <li>4. Weak engagement of local authorities</li> <li>5. 40 hh toilets. Double-vault UDDTs, both local materials and cement tested for superstructure.</li> <li>6. Some vegetable farmers were trained on reuse by WSA agronomist.</li> </ol>
5. EcoSan Banfora	<ol style="list-style-type: none"> <li>1. Rural project in villages around Banfora in southwestern Burkina Faso</li> <li>2. 2006-2010</li> <li>3. WSA. Sida funding through WSA EcoSan programme. Also some funding from Toilets Without Borders (TWB)</li> <li>4. Banfora municipality</li> <li>5. 55 hh toilets (TWB funds) and 100 hh toilets (Sida funds)</li> <li>6. Several reuse trainings were carried out with farmers around Banfora</li> </ol>
6. EcoSan_UE	<ol style="list-style-type: none"> <li>1. Peri urban project in 4 sectors in Ouagadougou</li> <li>2. 2006-2009</li> <li>3. WSA/GIZ/ONEA, with mainly EU funding. Total budget EUR 1 470 000</li> <li>4. Strong local government involvement on ward level</li> <li>5. 989 household toilets, 8 public toilets, 4 treatment centres. Toilets mainly double-vault UDDTs, but also trials with single-vault UDDTs with removable containers.</li> <li>6. More than 600 urban farmers sensitized and trained with more than 70 documented tests</li> </ol>
7. EcoSan_UE 2	<ol style="list-style-type: none"> <li>1. Rural project in 30 villages of Kourittenga province</li> <li>2. 2008-2011</li> <li>3. WSA/INERA/ONEA/Regional agriculture authorities implementing. Mainly EU funding, total budget of EUR 1 503 527. This funding was a obtained from an EU Food Security call.</li> <li>4. Strong involvement of local authorities, especially at sensitization stage.</li> <li>5. 1350 hh toilets, 2000 hh urinals, 16 urine storage centres. Double-vault UDDTs.</li> <li>6. Strong reuse focus with demonstration fields and guided visits. Reuse component led by INERA and local agricultural extension officers.</li> </ol>
8. EcoSan_UE 3	<ol style="list-style-type: none"> <li>1. Rural project in Koudogou and Tenkodogo</li> </ol>

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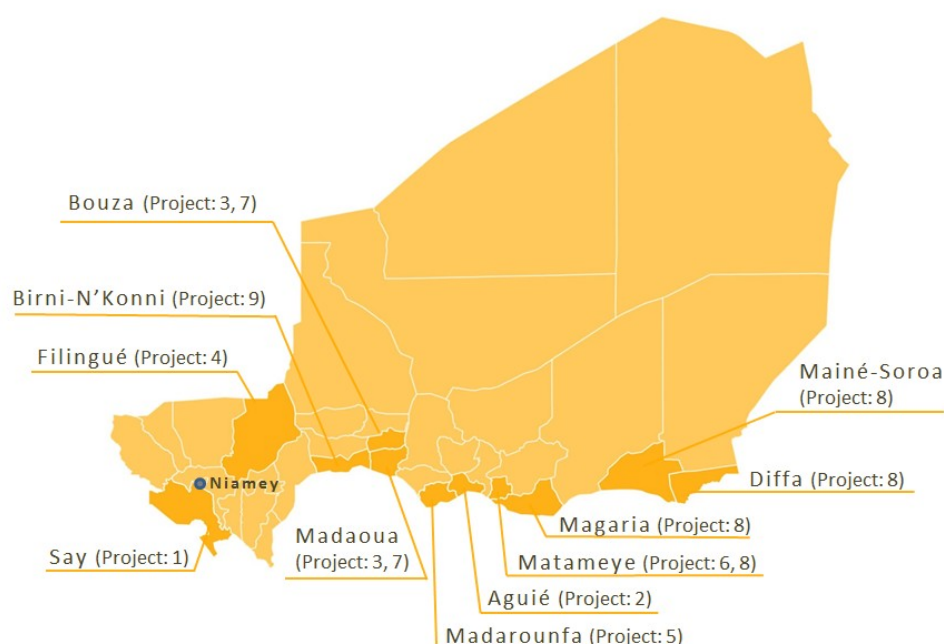
Project	Project information
	<ol style="list-style-type: none"> <li>2. 2010-2011</li> <li>3. WSA, Provincial Agriculture Office, local municipalities. Mainly EU funding: 2 100 148 Euro.</li> <li>4. Strong involvement of local authorities, especially at sensitization stage</li> <li>5. 1648 hh toilets, 1800 hh urinals. Double-vault UDDTs.</li> <li>6. Strong reuse focus (same as UE 2)</li> </ol>
9. EcoSan_UE 4	<ol style="list-style-type: none"> <li>1. Rural project in Kourittenga. The objective was to scale up ecosan in 20 of the villages that were targeted in EcoSan_UE 2.</li> <li>2. 2011-2014</li> <li>3. WSA, INERA, Koupéla municipality, Provincial Agriculture Office. Mainly EU funding: 1 621 841 Euro</li> <li>4. Strong involvement of local authorities, especially at sensitization stage</li> <li>5. 1000 hh toilets, 5000 hh urinals. Double-vault UDDTs.</li> <li>6. Strong reuse focus (same as UE 2)</li> </ol>
10. Household sanitation for sustainable development	<ol style="list-style-type: none"> <li>1. Rural project in 150 villages in 12 municipalities in Plateau Central and Centre-Ouest regions.</li> <li>2. 2010-2013</li> <li>3. LVIA, WSA, 12 municipalities. Mainly EU funding 1 946 844 Euro</li> <li>4. Strong involvement of local authorities, especially at sensitization stage</li> <li>5. 5012 hh toilets. Double-vault UDDTs.</li> <li>6. Demonstration fields, Provincial Agriculture Office strongly involved</li> </ol>
11. Support to EcoSan in Ouagadougou	<ol style="list-style-type: none"> <li>1. Peri-urban project in 10 sectors of Ouagadougou to strengthen part of the system put in place in the EcoSan_UE project and reach out to more households.</li> <li>2. 2013-2016</li> <li>3. ACF, Ouagadougou Municipality, ONEA. Mainly EU funding, 823 754 Euro</li> <li>4. Strong involvement of local authorities on municipal and ward levels</li> <li>5. 850 hh toilets, 800 shower areas</li> <li>6. Provincial Agriculture Office is involved and leading training and demonstration sites</li> </ol>

WSA led most of these projects, mainly due to the experience gained during the Sida-funded EcoSan R&D programme 2002-2010. However, since the end of core support from Sida in 2010, WSA has gone through a major reorganization and other NGOs such as ACF and LVIA have lately coordinated ecosan projects in Burkina Faso.



## Productive sanitation projects in Niger

There have been 9 productive sanitation projects (two of which are ongoing as of April 2015) in Niger at some scale with reuse either as the focus or at least included as a component (see Fig. 3 and Table 3). In total, 2820 UDDTs have been constructed. As in Burkina Faso, WSA was the pioneer, but other NGOs as well as the government have also included productive sanitation in some projects.



**Figure 3. Map of Niger, highlighting departments where productive sanitation projects have been implemented (n.b. in 2011 some departments shown in the map were further subdivided, but no updated GIS layer was found).**

**Table 3. Overview of productive sanitation projects in Niger**  
Project information key: 1. Where 2. When 3. Who 4. Gov. Involvement 5. Toilets 6. Reuse

Project	Project information
<b>1. Basic community services and EcoSan in Torodi</b>	<ol style="list-style-type: none"> <li>1. Peri-urban project in the municipality of Torodi (first ecosan demonstration project).</li> <li>2. 2005-2010</li> <li>3. WSA. Sida funding through WSA EcoSan programme.</li> <li>4. Some involvement of Tougan municipality.</li> <li>5. 100 hh toilets. Double-vault UDDTs.</li> <li>6. Involvement of Professor Baragé from the Agricultural Department at Niamey University for demonstration tests.</li> </ol>
<b>2. PS-Aguié</b>	<ol style="list-style-type: none"> <li>1. Productive Sanitation in Aguié (PS-Aguié) was a pilot research and demonstration project attached to a larger rural development programme (PPILDA), both financed by IFAD. Complete information in the Technical Advisory Note by CREPA/SEI (2010).</li> <li>2. 2008-2009</li> </ol>

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Project	Project information
	<ol style="list-style-type: none"> <li>3. WSA, Stockholm Environment Institute (SEI) and PPILDA. Funding from IFAD (USD 272 000)</li> <li>4. Strong involvement of district authorities in planning and execution.</li> <li>5. 210 hh toilets, mainly urine-diverting twin-pit composting toilets (see Figure 4). Subsidy of USD 50 for slab construction. 1100 hh urinals (simple jerry can + funnel).</li> <li>6. Farmer field schools in 6 villages, supported by local agricultural extension officers.</li> </ol>
<b>3. PGIRE-Tarka</b>	<ol style="list-style-type: none"> <li>1. The Niger part of this regional Integrated Water Resource Management (IWRM) project called Global Water Initiative (GWI) concerned villages in Madaoua and Bouza and productive sanitation was included at demonstration scale.</li> <li>2. 2009-2012</li> <li>3. CARE, CRS, IUCN, WSA (main responsible for ecosan component), Demi-E, PNE. Funds from Howard Buffet foundation.</li> <li>4. Local/national/regional authorities involved in the major regional project.</li> <li>5. 55 hh toilets (out of the 300 that were planned from the beginning). Double-vault UDDTs.</li> <li>6. Support from local agricultural extension officers with demonstration fields.</li> </ol>
<b>4. Food Security ARZIKI</b>	<ol style="list-style-type: none"> <li>1. Filingué and Illéla municipalities (Tahaoua and Tillabéri regions). Ecosan was one sub-component in this project.</li> <li>2. 2010-2014</li> <li>3. CLUSA, ICRISAT, Sheladia Inc., WSA, APOR SA.</li> <li>4. This project was under guardianship of the Ministry of Agriculture and implemented in collaboration with regional and district authorities.</li> <li>5. 105 hh double vault UDDTs</li> <li>6. Support from local agricultural extension officers with demonstration fields.</li> </ol>
<b>5. WASH Maradi</b>	<ol style="list-style-type: none"> <li>1. As part of a UNICEF's WASH project in Maradi region, productive sanitation was demonstrated in 6 villages</li> <li>2. 2011</li> <li>3. UNICEF</li> <li>4. Local authorities</li> <li>5. 200 hh double vault UDDTs.</li> <li>6. No information on reuse.</li> </ol>
<b>6. MDG-Kantché</b>	<ol style="list-style-type: none"> <li>1. Hygiene and sanitation project focusing on 4 municipalities in Zinder region (productive sanitation component as demonstration)</li> <li>2. 2011-2014</li> <li>3. WSA, ORK, Demi-E (mainly EU funding)</li> </ol>

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Project	Project information
	<ol style="list-style-type: none"> <li>4. Collaboration with local and regional authorities</li> <li>5. 50 hh double-vault UDDTs.</li> <li>6. No support for reuse.</li> </ol>
<b>7. PEA FEC – Water, Sanitation and Ecological Fertilization</b>	<ol style="list-style-type: none"> <li>1. Tarka valley in Madaoua and Bouza municipalities.</li> <li>2. 2011-2015</li> <li>3. CARE, WSA and Demi-E. Funding through EU and CARE Denmark.</li> <li>4. Involvement of local authorities in Madaoua and Bouza.</li> <li>5. 1000 hh double vault UDDTs.</li> <li>6. Local agricultural extension officers organized demonstration fields.</li> </ol>
<b>8. PASEHA II</b>	<ol style="list-style-type: none"> <li>1. Productive sanitation is implemented within the national rural sanitation programme targeting the Zinder and Diffa regions. Double-vault UDDTs being installed primarily in 24 villages, most with high groundwater tables.</li> <li>2. 2012-2016</li> <li>3. Government agencies, CETIC. WSA for feasibility study and trainings. Funds from Niger Government, Danida and Lux development.</li> <li>4. Local/regional/national involvement of government structures in this programme.</li> <li>5. Total target of 28 900 hh out of which 1000 hh will have UDDTs. 459 have been built and the remaining are under construction.</li> <li>6. Local agricultural extension officers organize demonstration fields in concerned villages.</li> </ol>
<b>9. Sanitation and Hygiene in Guidan Iddar</b>	<ol style="list-style-type: none"> <li>1. 10 villages in Guidan Iddar zone</li> <li>2. 2014-2017</li> <li>3. NGO GADR-RA. Funding through Swiss cooperation.</li> <li>4. Involvement of authorities in local villages and municipalities.</li> <li>5. 40 hh UDDTs finished and 160 under construction.</li> <li>6. Local agricultural extension officers organize demonstration fields.</li> </ol>

It is worth noting that the PASEHA II project implemented by the government primarily introduced the double vault UDDTs as a protection measure against ground water pollution in villages with high groundwater levels, rather than for the productive reuse potential, reflecting the core mandate of the Ministry of Hydraulics and Sanitation.

The urine-diverting composting toilet was an important technical development in the PS-Aguié project to reduce costs and allow for anal wash water to enter the pit (Figure 4). Urine diversion takes place on the slab, and faeces and anal wash water enter a shallow pit (around 1.5 m deep) together with plenty of organic matter as cover material. Two pits are alternately used, with at least one year of composting before emptying. The composting toilets were popular among users and have been adopted in several

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of the other projects. Urine collection using a jerry-can and funnel was also introduced as a quick and easy way to start up the project, get urine for demonstration fields and reach more households (Figure 4).

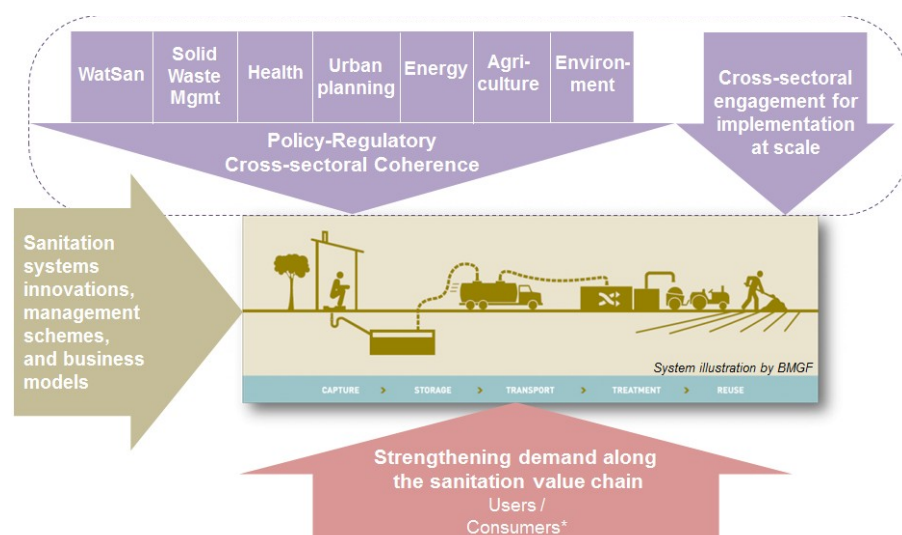


**Figure 4. The urine diverting composting toilet and simple urinals were introduced in the PS-Aguié project. Participative testing of urine as a fertilizer was done in all villages.**

## Enabling environment for productive sanitation

### *Policy and regulatory frameworks*

Globally there is currently an increased focus on the full sanitation chain from toilet to field. Many innovations in both hardware (for example the Gates “Reinvent the Toilet Challenge”) and software (new business models, ICT tools etc.) are emerging to stimulate supply and demand for productive sanitation. Less attention has been given to the need for a coherent regulatory framework to facilitate action beyond pilots (see Figure 5).



**Figure 5. The full sanitation chain from toilet to field. Efforts in system innovation and demand creation need to be complemented by an appropriate regulatory and institutional framework and involvement.**

Government policies and regulations can enable or hinder the mainstreaming of productive sanitation and the safe recycling of human excreta. Governments can also support productive sanitation on the ground through extension services and through the design and implementation of national sanitation and agriculture programmes, especially if productive sanitation is made an important component and provides substantial co-benefits across different sectors.

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However, the multiplicity of sectors concerned is challenging in many ways (see SIANI, 2012). Beyond the WASH and agricultural sectors, health and environment should also be interested in the fate of human excreta. summarizes the points of concern for these four sectors along with some steps these sectors could take to facilitate implementation of productive sanitation.

**Table 4. Importance of productive sanitation for key sectors, and potential policy/regulatory measures**

Sector	Aspects of concern in key sectors in relation to productive sanitation	Possible enabling policy/regulatory interventions related to excreta recycling
<b>WASH</b>	Construction of appropriate toilets and their sustainable use	<ul style="list-style-type: none"> <li>- Emphasize the systems approach to sanitation – including relevant treatment and handling of sanitation products – in policy and programmes.</li> <li>- Recommendations should preferably be technology-neutral, focusing on the function of the system to avoid stifling innovation.</li> </ul>
<b>Agriculture</b>	Keeping nutrients in the productive systems	<ul style="list-style-type: none"> <li>- Including sanitation products in soil fertility strategies and fertilizer regulations.</li> <li>- Providing guidelines on how to store or transform sanitation products before use as well as on how, when and where different types of sanitation fertilizers could be applied from an agricultural point of view.</li> <li>- Research on the reuse of various sanitation fertilizers to refine recommendations.</li> </ul>
<b>Health</b>	Minimizing risks to human health	<ul style="list-style-type: none"> <li>- National research and advice on treatment options and protection measures along the sanitation chain from toilet to field to consumption.</li> <li>- Adaptation of the WHO guidelines on reuse of excreta and wastewater (published in 2006) to the national context.</li> </ul>
<b>Environment</b>	Protection of water bodies Reducing need to exploit non-renewable resources	<ul style="list-style-type: none"> <li>- Regulations that emphasize minimizing negative environmental impact from sanitation systems as well as encouraging resource conservation.</li> </ul>

This section outlines progress in creating an enabling institutional environment for productive sanitation in Burkina Faso and Niger.

### ***Burkina Faso***

In Burkina Faso the double-vault UDDT, often referred to as the “ecosan toilet”, was included as one of the possible technologies in the national water and sanitation strategy (PN-AEPA) adopted in 2006 (MAHRH, 2006). Water and sanitation is under the responsibility of the Ministry of Agriculture and in 2008 the Directorate of Sanitation, Wastewater and Excreta (DGAEUE) was created as part of an effort to place more emphasis on sanitation. The tools for operationalizing the PN-AEPA were finalized in 2009. In the technical report (MAHRH, 2009), the “ecosan toilet” (double vault UDDT) received the highest evaluation in a multi-criteria analysis based on 14 criteria.

However, as the government is now implementing the national rural sanitation programme, the “ecosan” option has not been included. Focus has instead been on san plat (pit-latrines), to minimize complexity and costs (Ouédraogo, pers. comm.<sup>2</sup>).

To deepen the understanding of the enabling environment for productive sanitation in Burkina Faso, opinions were collected from representatives from four key government sectors (see Table 5) and three national productive sanitation experts (see Table 6) by means of a short questionnaire.

<sup>2</sup> Director of DGAEUE, 25<sup>th</sup> of May 2015.

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**Table 5. Synthesis of opinions of representatives of four key government sectors on institutional issues related to productive sanitation.** Note that the term *ecosan* was used in the questionnaires and is thus retained here.

Sector	WASH	Agriculture	Health	Environment
<b>Question</b>				
<b>Importance of ecosan</b>	It is a good option considering the recycling possibility	It is a tested technology with concrete results in the field and well adapted to the rural environment.	The Ministry is not against it, but there needs to be assurance that the products are used in a safe manner	We encourage waste recycling and the avoidance of environmental pollution
<b>Regulatory frameworks where excreta recycling could be addressed</b>	No specific regulations exist for recycling, apart from the general WHO guidelines. A national sludge management strategy is under way which will also include urine and faeces.	Possibly the Economic Communities of West African States (ECOWAS) framework and a national law from 2007 that regulate fertilizer quality.	We would like to have better control over recycling activities. The WHO guidelines have not yet been adapted to the national context.	Decree 2001/185 regulates discharge to soil, water and air. The WHO guidelines are also appropriate.
<b>What are the main barriers to further uptake in governance structures?</b>	Socio-cultural barriers	The general prejudice that people have against human excreta. Difficulties in monitoring and controlling recycling activities	Socio-cultural and socio-economical barriers	There is a lack of expertise at national level
<b>What would be a key action to tackle such barriers?</b>	Primarily information and sensitization on benefits and how to handle risks. For ecosan to work, all links in the chain from toilet to field need to function.	Evaluate the current fertilizer regulations and see how ecosan fits in. Sensitize all actors on the benefits of ecosan. Strong involvement of Ministry of Agriculture to mainstream the concept.	More emphasis on monitoring and follow-up on the use and maintenance of toilets. Inclusion of the communities – keep in mind socio-cultural and economic aspects. Don't impose projects or strategies, exchange with all actors on how to proceed. Involve the private sector along the sanitation chain.	Proposed regulations need to be of a general order to guide towards desired outcomes.

**Table 6. Synthesis of opinions of productive sanitation experts in Burkina Faso**

Question	Synthesized answer
What is the most relevant change needed in policy/regulatory framework to enable ecological sanitation?	It is positive that ecosan is mentioned in the national water and sanitation plan (KS). However, this has not been followed up with enough advocacy, partly due to the lack of documentation and sharing of experiences on national level. We also don't know enough on the sustainability of efforts in previous projects. (LB) On the basis of research and experience in Burkina Faso to date together with the WHO guidelines from 2006 it should be possible for the Ministry of Agriculture to elaborate national guidelines on safe excreta recycling. (MZ)
What would be the most relevant change in government implementation of the PN-AEPA to enable ecological sanitation?	Emphasize the link between sanitation and crop production/food security. If this link was clearly understood, the PN-AEPA should privilege ecosan in rural areas. (KS) But this needs to be accompanied by high capacity of masons and local facilitators. (LB)
How could such changes be induced?	There is a pressing need to take stock of the experiences and learnings to date, see how previous project sites have developed and share this widely with stakeholders across sectors. (KS, LB) A national ecosan committee could be formed to facilitate learning and sharing. (KS)

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	It could be appropriate to make a technology choice for rural areas – in a country with more than 80% working in agriculture, neglecting an important local nutrient and organic matter resource like human excreta is a real pity. (MZ)
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KS = Karim Savadogo, engineer; LB = Leocadie Bouda, sociologist; MZ = Mireille Zongo, agronomist

An attempt to draw up a framework for a more coordinated effort to support productive sanitation development in Burkina Faso was carried out in a multi-stakeholder workshop organized by the EcoSan\_UE project in 2009 (EcoSan\_UE, 2009). 21 key actions on operational, strategic and political levels to enable large-scale adoption of productive sanitation in both rural and urban areas were validated and the responsible structure for each action was identified in a participatory way. Each organization presented the constraints, opportunities, means needed and next steps if they were to assume their proposed responsibilities. DGAEUE was selected to be the coordinating body. However, without any further funding and lack of leadership, this strategy has not been further developed.

Momentum might be boosted in Burkina Faso by the African Union's (AU) identification of the country as a regional "champion" in a renewed drive to promote productive sanitation regionally. The AU Department of Rural Economy and Agriculture's (DREA) 2014 Water and Sanitation sector report (DREA, 2015) includes a recommendation is to "increase investment in Member States to improve access to basic sanitation in Africa while promoting productive sanitation solutions in Africa and, indeed, looking at waste differently". It also recommends that the government of Burkina Faso be nominated to "champion initiatives for engaging the continent in large-scale actions for innovative technologies for water, energy and nutrients recovery by transforming waste into resource for agricultural use and biogas production, of which some successful pilot experiences exist in Burkina Faso". These recommendations were validated by African ministers at the AU Summit in January 2015. According to the report, the focus should be on "(i) instituting mechanisms to facilitate the use of waste as a resource in agriculture; (ii) upscaling productive sanitation programs; and, (iii) raising the profile of the utility of productive sanitation to, on the one hand, turning the tide against the pollution of Africa's water and environmental resources, and on the other hand, sustainably and ecologically increasing agricultural production" (DREA, 2015).

## **Niger**

In Niger, the Ministry of Hydraulics and Sanitation has the main responsibility for sanitation. In December 2011 the government adopted the PN-AEPA (National Plan for Water and Sanitation) for the period 2011-2015 (MHA, 2011). According to this plan, the double-vault UDDT (again referred to as "the ecosan toilet") was among the types of toilet to be implemented as demonstration toilets in the period 2011-2015, and projected to account for 10% of the 200 000 demonstration toilets built outside of the capital Niamey.

However, the visions and goals of the PN-AEPA proved difficult to translate into concrete action, which led the Ministry of Hydraulics and Sanitation to develop an "Operational Strategy for Basic Sanitation and Hygiene promotion in Niger 2014-2018" (MHA, 2014). This contains only one reference to excreta recycling, as a possible selection criteria for state subsidy of municipalities for public toilet projects. Otherwise, the new strategy is mainly focussed on a large scale roll-out of Community Led Total Sanitation (CLTS).

In Niger expert opinions were also surveyed, and are synthesized in .

**Table 7. Synthesis of opinions from Niger productive sanitation experts. Kailou Hamadou (engineer) and Timbo Abdel Kader (Sociologist)**

Question	Synthesized answer
What is the most relevant change in policy/regulatory framework to enable ecological sanitation?	In the current process of decentralization, municipalities will have more responsibility for sanitation. They should be encouraged to include productive sanitation in their local water and sanitation plans. Another angle would be to strengthen ground water protection through the IWRM platform, where dry toilets and productive sanitation would be part of the solution.
What would be the most relevant change in government implementation of the PN-AEPA to enable ecosan?	Allocation of a budget line in the programme for further research and promotion of productive sanitation systems.
How could such changes be induced?	<ul style="list-style-type: none"> <li>- The demand should come from the regional and municipal level.</li> <li>- Better knowledge on the state of groundwater and the risk with pit-latrines.</li> <li>- Refine the arguments for productive sanitation both as water protection and increased household resilience (improved local resource management).</li> </ul>

In Niger a cross-sectoral working group was formed in 2012 as a spin-off from a research project on urine recycling carried out by the Stockholm Environment Institute (SEI) and the University of Niamey. The working group was hosted by the Ministry of Agriculture, and WSA was responsible for coordination. The aim was to share knowledge and identify key activities to enable further uptake of productive sanitation. Available documentation on productive sanitation in Niger was collected and put on the SEI website to make it available for all<sup>3</sup>. The working group served well for information sharing and capacity building but a ministerial decree that would have made the working group an official task force within the Ministry of Agriculture was prepared but never signed, due to the lack of long-term funding availability.

## Discussion

The inventory of projects presented here has provided a quantitative and spatial overview of productive sanitation experiences in Burkina Faso and Niger. However, it does not reveal the actual outcomes on the ground and if they have been sustained post project. The experts in Burkina Faso strongly recommend going back to some of the former project sites to investigate post project outcomes and identify factors that either has encouraged or discouraged continued use of toilets and reuse of sanitation products. This learning could be useful to a wide range of actors inside and outside the country, and should thus be shared widely and effectively, possibly in the type of national working group that was initiated in Niger. There are also lessons and best practices to be shared between the two countries. Burkina Faso has gained some important urban experience, and Niger has been experimenting more with different type of toilets and brought down costs substantially.

In both countries there is an understanding on the importance of cross-sectoral collaboration when implementing productive sanitation projects. Agricultural extension officers have in most projects been involved with demonstration fields or farmer field schools, which are important ways to create demand as well as increase the chances of sustainability after the project officially ends.

However, this insight has not translated into formalized collaboration between sectors on national level and efforts to trigger engagement have not succeeded. This is partly due to lack of long-term support and funding, but also due to a lack of leadership at government level. Preferably such leadership would emerge from the agriculture sector, since acceptance and demand for various sanitation fertilizers can “pull” the rest of the sanitation chain along. In Burkina Faso, there are

<sup>3</sup> For documentation see <http://www.sei-international.org/projects?prid=1720>.



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prospects for increased government engagement with the new mandate from the AU to provide regional leadership on productive sanitation.

Both countries are still lacking a supportive policy and regulatory framework that would enable and stimulate up-scaling of productive sanitation. A detailed analysis would be useful to identify possible gaps or barriers and make relevant recommendations for change in the key sectors of WASH, agriculture, health and environment.

Productive sanitation has great potential for the rural smallholder farmers in both Burkina Faso and Niger. The challenge still remains however to take the long step from individual projects to mainstream and scale, as, in the words of Gebauer (2014) “pilots never fail but also never scale...”.

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**Autobiography**

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