

Enhancing Agricultural Productivity through the Safe Reuse of Wastewater and Human Excreta

Leveraging the water, sanitation, and hygiene (WaSH) Sector in Burkina Faso

Key messages

Integrated management of excreta and wastewater is an important component of sustainable agricultural productivity.

When safely reused, these resources can improve soil fertility, reduce reliance on imported chemical fertilisers, and support more resilient farming systems. The nutrient value of human excreta generated in Burkina Faso is estimated at 100–221 billion CFA francs per year, exceeding current national use of chemical fertilisers. Experience from Ecosan, the Clean and Green framework, and biodigester initiatives in Burkina Faso demonstrate that such approaches are technically feasible but remain insufficiently mainstreamed.

Policy, regulatory, institutional and operational barriers hinder large-scale recovery of sanitation-derived resources.

Scaling up the recovery of excreta and wastewater in Burkina Faso is constrained by incomplete operationalisation of sanitation policies and regulations, limited recognition of reuse in agricultural policies and fertiliser programmes and weak coordination between WaSH and agricultural institutions. These challenges are compounded by incomplete technical standards and guidance, particularly for moving beyond pilot projects to wider implementation. There is also limited access to appropriate equipment, and a general lack of awareness and professionalisation among stakeholders involved in the management and utilisation of sanitation by-products.

The link between sanitation, health, and agriculture is essential for a successful One Health approach.

Promoting the safe reuse of sanitation by-products through coherent public policies in relation to WaSH, as well as agriculture, health and the environment contributes simultaneously to food security, public health, and the ecological resilience of rural areas.

Purpose of this policy brief

Two of Burkina Faso's greatest challenges are growing food insecurity, linked to increasing land degradation, and serious health threats due to a lack of clean water and safe sanitation.

Yet solutions exist to address both problems simultaneously, and this has been the focus of the SIANI expert group [One Health in Burkina Faso](#). In this policy brief, the group explores the untapped potential of recycling excreta and wastewater for use in agriculture. The insights build on the results of the report [Improving agricultural productivity in Burkina Faso – Policies, practices and pathways for the reuse of sanitation by-products](#) (Zongo et al. 2026).

Drivers of soil degradation in Burkina Faso

Burkina Faso faces growing land degradation, with nearly one-third of the national territory affected. Despite decades of soil conservation efforts, land degradation continues to threaten agricultural productivity and national food security.

The main drivers include increasing demographic pressure, unsustainable farming practices, deforestation, overgrazing, and the intensifying effects of climate change. These factors have led to a sharp decline in vegetation cover and organic matter, exposing soils to water and wind erosion, and reducing their fertility and structural stability.

Nutrient imbalances and agricultural constraints

Most agricultural systems in sub-Saharan Africa, including Burkina Faso, suffer from chronic nutrient imbalances—particularly in nitrogen, phosphorus, and potassium—due to continuous nutrient depletion and limited replenishment. Farming practices rarely compensate for nutrient exports caused by harvests, runoff, and erosion.

Food flows, urban consumption, and nutrient losses

Urban centres like Ouagadougou are major consumption hubs, heavily dependent on food inflows from rural regions and international imports. Yet, most of the nutrients contained in consumed food are not recycled. Research shows that only 7% of these

nutrients are returned to farmland, with the remainder lost in waste streams (Karg et al. 2018).

National policies and strategies for sustainable soil management

To combat land degradation and enhance agricultural productivity, Burkina Faso has adopted several national strategies, notably the National Strategy for Integrated Soil Fertility Management and the National Strategy for Soil Restoration and Conservation. These frameworks emphasise the use of organic amendments (compost, manure, biochar), local agro-mineral resources (like Burkina phosphate), and improved soil and water conservation practices. They also aim to foster a viable market for agricultural inputs. However, implementation is hindered by institutional instability, weak farmer–livestock integration, limited water resources, labour constraints, and reliance on costly imported fertilisers.

Management of excreta and wastewater

Policy, legal, institutional and programmatic frameworks for sanitation and resource recovery

Burkina Faso has several policy, legal, and programmatic frameworks related to sanitation, environmental protection, and agricultural development. Within the sanitation sector, the National Programme for Wastewater Sanitation and Excreta covering 2016–2030, and the decree on autonomous sanitation from 2023, provide an important basis for improving the management of excreta and wastewater and recognise the potential for reuse. However, implementation remains limited, as the decree still requires several ministerial orders (arrêtés) to be operationalised, including technical standards for treatment, safety and quality norms for reuse, accreditation of operators, and mechanisms for cost recovery at communal level. In the absence of national guidance, implementing organisations promoting reuse in Burkina Faso have often adhered to international health standards (WHO guidelines from 2006) and technical reuse guides such as those developed by EAA (formerly known as CREPA).

From an agricultural perspective, policies and fertiliser programmes continue to focus mainly on mineral inputs, with little recognition of sanitation-derived resources as part of soil fertility management. Institutional responsibilities for sanitation, health, environment, and agriculture are spread across several ministries, and coordination between the WaSH and agricultural sectors remains weak.

Resource potential of human excreta and wastewater for agriculture

Human excreta (urine and faeces) and wastewater represent a significant but largely underutilised resource for agriculture in Burkina Faso. They contain important plant nutrients, particularly nitrogen, phosphorus, and potassium, as well as organic matter that contributes to soil fertility. At national level, the fertiliser value of nutrients contained in human excreta is estimated at 100–221 billion CFA francs per year, depending on fertiliser prices, exceeding the quantities currently applied as mineral fertilisers in the country (Dagerskog et al. 2023).

Field experiments and pilot initiatives reviewed in the report indicate that sanitised urine and faeces can achieve agronomic performances comparable to mineral fertilisers when applied under controlled conditions and at appropriate rates. Treated wastewater has also demonstrated benefits in vegetable production by supplying both water and nutrients, particularly in peri-urban contexts.

Experiences in the recovery and reuse of human excreta in Burkina Faso

Ecological sanitation (Ecosan)

Since its introduction in Burkina Faso in 2002, ecological sanitation (Ecosan) has gained traction through the construction of over 13,800 double vault urine diverting dry toilets in both rural and urban settings. Projects such as Ecosan_EU2 and EU3 demonstrated the potential to link sanitation with agricultural production by combining reuse practices with soil and water conservation practices, attracting food security funding in a groundbreaking manner.

Project evaluations indicate that many Ecosan systems have continued to be used several years after project completion. At the same time a range of challenges has affected long term performance and wider replication. These include limited follow-up after construction, not enough emphasis on reuse training in some projects, practical difficulties related to urine handling and storage, and limited institutional ownership beyond project lifecycles. Social factors, such as changes in household composition and uneven awareness among users—particularly women and new household heads—have also influenced continuity. The report therefore highlights the need for sustained advisory support, simpler urine management practices, close integration with agricultural training and extension, and the use of more adaptable and cost-effective technical options.

The Clean and Green framework

Building on lessons from Ecosan and other sanitation initiatives in Burkina Faso the Clean and Green framework was developed and piloted by Stockholm Environment Institute, WaterAid-BF, and Eau-Vive International in 2020–2023. Unlike Ecosan, which often centered on a specific technology, Clean and Green emphasises a participatory process that links sanitation, waste management and agricultural productivity while allowing flexibility in the choice of technical solutions.

Clean and Green combines participatory diagnostics, diversification of sanitation and waste management options, training on safe reuse practices and a monitoring framework to follow up on progress on both risk (Clean) and resource (Green) management on both household and community levels. Pilot experiences suggest that framing sanitation in relation to soil fertility and agricultural needs can strengthen community engagement, although wider application will depend on sustained institutional support and closer integration with agricultural extension and policy frameworks.

Other types of reuse

Biogas production offers another promising reuse pathway. The National Biodigesters Programme of Burkina Faso (PNB-BF) supports the transformation of animal waste into biogas for household use and digestate as organic fertiliser. Despite its potential, expansion is hindered by financing constraints, irregular waste supply, and the need for behaviour change among households. Private actors such as 3T Service and Faso Biogas have explored similar initiatives, though operations are currently limited due to institutional and technical barriers.

Biochar, produced by pyrolysis of lignified biomass, shows strong potential for improving soil quality, sequestering carbon, and supporting sustainable agriculture. However, its use remains experimental, and the transformation of human excreta into biochar has not yet been explored in Burkina Faso.

These emerging practices highlight Burkina Faso's interest in waste-to-resource innovations. To realise their full potential, stronger institutional support, targeted financing, and applied research are urgently needed.

Opportunities for resource recovery and reuse in rural and urban settings

In rural areas, where 67% of the population lives, reuse can be organised through relatively short and local loops. Household- and community-level reuse of urine, faeces, wastewater, and organic waste can directly contribute to soil fertility when health risks are properly managed along the sanitation chain. In this context, key opportunities lie in increasing awareness of reuse potential, strengthening practical knowledge on safe handling, storage, and application, and integrating reuse practices into agricultural extension services and soil and water conservation programmes.

In urban and peri-urban areas, reuse involves more complex value chains, given that waste producers (households, institutions), service providers, and end users (farmers) are different actors. Here, effective reuse depends on organised systems for collection, treatment, and distribution of reuse products, as well as clear quality and safety standards. Without these elements, reuse remains informal and difficult to scale.

Recommendations

To support safe and effective recovery of sanitation-derived resources for agriculture, the following priority actions are recommended:

- **Strengthen the policy, legal, institutional, and programmatic framework.** Existing sanitation frameworks recognise the potential for resource recovery but remain incompletely operational. Priority should be given to finalising the ministerial orders (arrêtés) required to operationalise the decree on autonomous sanitation, including provisions related to treatment, safety and quality norms, operator accreditation, and cost-recovery mechanisms. At the same time, agricultural policies, fertiliser programmes, and soil fertility strategies could explicitly recognise sanitation-derived resources as complementary inputs.
- **Strengthen awareness, training, and advisory support.** Building awareness and practical capacity among re-users is essential, particularly farmers and local sanitation actors. Guidance on safe handling, storage, transport, and application of excreta and wastewater should be integrated into agricultural extension services, farmer field schools, and training programmes. Special attention is needed to risk reduction along the sanitation chain and to the different conditions in rural and urban contexts.
- **Promote applied research and systematic learning.** Further applied research is needed to improve the efficiency, safety, and acceptability of reuse practices under local conditions. At the same time, lessons from existing initiatives, should be systematically documented and shared to inform programme design.
- **Strengthen partnerships and cross-sectoral coordination.** Effective reuse requires closer collaboration between institutions responsible for sanitation, agriculture, health, and the environment, as well as engagement with research institutions, civil society, and private actors. Formal mechanisms for coordination and joint planning should be strengthened to support integrated approaches to sanitation and agricultural development.

- **Provide targeted financial and technical support.** Financial constraints remain a major barrier to adoption and scaling. Targeted financial and technical support is needed to facilitate investments in sanitation infrastructure, treatment systems, and equipment for safe reuse. Support mechanisms should be adapted to different contexts, recognising the importance of household- and community-level solutions in rural areas and more structured service delivery and value chains in urban and peri-urban settings.

Bibliographic references

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Zongo, A., Moyenga, M., Yameogo, M., Dagerskog, L. (2026) [Improving Agricultural Productivity in Burkina Faso – Policies, practices and pathways for the reuse of sanitation by-products](#). SIANI, SEI report.



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