

## **Concept Note**

### **Consultation Meet on “Transforming Biosolids into Manure through Co-composting with organic municipal waste”**

**Date: 27<sup>th</sup> September 2024**

**Venue:**

#### **Background:**

Biosolids, the byproduct of wastewater treatment, can serve as highly effective manure if properly treated and tested before reuse. The 2017 amendment to the Environment (Protection) Rules, 1986, not only revised the standards for effluent from sewage treatment plants but also encouraged its recycling. In national-level programmes such as Swachh Bharat Mission 2.0 and AMRUT 2.0, cities are guided to adopt Faecal Sludge and Septage Management (FSSM) and its co-treatment with sewage at STPs. (Guidelines [AMRUT 2.0](#), [Swachh Bharat Mission - Urban 2.0](#))

The semisolids generated from these processes are subsequently converted into dried or dewatered sludge. Currently, there is a lack of comprehensive information regarding the safe resource recovery and reuse of this sludge for sustainable agricultural practices. Since the implementation of the National FSSM Policy in 2017, many states have made significant progress by enacting policies, establishing legislative frameworks, issuing guidelines, and leveraging funding for sanitation through national programs initiatives such as SBM, NMCG etc.

There are also recommendations prescribed for managing various types of sludge coming out from sewage treatments in the Manual on Sewerage and Sewage Treatment Systems, 2013, published by the Central Public Health and Environmental Engineering Organization (CPHEEO). Furthermore, the United States Environmental Protection Agency (EPA) classified the biosolids into categories A and B, where class A is the best quality organic manure that comes out from different processes like co-composting with municipal organic waste, lime stabilisation, and solar drying. According to estimates by Energy Alternatives India, a private organization based in Chennai, approximately 0.12 million tonnes of fecal sludge are generated daily in India. If this substantial quantity of biosolids is not properly managed, it will accumulate into a veritable sea of sludge. Consequently, this issue must be addressed in a scientific manner and with strict adherence to standards and regulations.

Reusing end products: As per WHO, treated effluent and biosolids for agriculture purposes enhance crop yields, reduce chemical fertilizer use, benefit farmers economically, and advance resource recovery in alignment with circular economy principles. However, it is essential to carefully oversee recycling activities to strike a balance between their environmental benefits and potential public health risks. The informal markets have thrived, enabling cesspool operators and small-scale farmers in the urban and peri-urban areas of cities to build connections and establish linkages for dewatered sludge usage in low and middle income countries. (Taron, A., Singh, S., Drechsel, P., Ravishankar, C., & Ulrich, A. (2023). Sewage sludge: a review of business models for resource recovery and reuse. *Resource Recovery and Reuse Series 23*.) Therefore, effective regulations and policies are required to ensure that recycling processes are both safe for public health and beneficial for the environment.

Rapid urbanization, population increase, and industrial expansion automatically lead to an increase in both solid and liquid waste generation in all parts of India. Uttarakhand, as a tourist state, experiences a significant load of population throughout the year. Also, being a difficult hilly terrain, there's a lack of space and land availability for constructing new sewage treatment plants

(STPs). With the expansion of sanitation coverage in urban areas through the use of septic tanks and pit latrines, a considerable increase in faecal sludge volume is anticipated. Without the development of adequate collection and disposal systems, there is a risk of serious environmental degradation and associated health hazards. Envisioning the projected situation and in line with national scheme guidelines, the State Government of Uttarakhand is advancing decentralized used water management and fecal sludge and septage management (FSSM) across the state, establishing sewage treatment facilities with co-treatment, a fecal sludge treatment plant, and planning with additional co-treatment facilities. This highlights the need for considerable effort in this area and also shows that the Government of Uttarakhand intends to explore the potential of co-composting sewage sludge with municipal organic waste.

The need for this consultation meet is to discuss the safe management of by-products from STPs including co-treatment in Uttarakhand, which renders a huge opportunity for the state to showcase a circular economy of waste. The policy guidelines for managing biosolids are a pressing necessity. In the recent past, several researchers reported the application of co-composted manure in the soil amendment and cultivation of agricultural crops globally. co-composting sewage sludge with municipal organic waste offers a promising solution to address these challenges while enhancing soil health and reducing waste.

**Key Stakeholders:**

The consultation meet will bring together key stakeholders ranging academicians and researchers, Uttarakhand state government officials, multilateral agency experts, NGO's as well as private companies working in Uttarakhand.

**Objectives:**

1. To discuss the challenges and potential opportunities for Biosolids management and achieving inclusive sanitation along the safe disposal of waste.
2. Improve institutionalization and inter-departmental coordination in the state to mainstream Biosolids management.
3. To identify capacity-building needs and opportunities for training, education, and skills development in biosolids management for the relevant state department officials, viz Jal Nigam, Jal Sansthan, and Urban Development Directorate, which are closely dealing with the sewage sludge and municipal organic waste.
4. To facilitate knowledge exchange, research findings, and best practices related to biosolids management through co-composting which can be replicated in other hill states.

**Outcome:**

1. Understanding the importance and viability of co-composting in the state.
2. Identify roles and responsibilities of the existing stakeholders in waste management, need assessment of resources to widely adopt the co-composting practices in the state and thus develop effective strategies and state action plan.
3. To support the government of Uttarakhand to constitute a working group for developing and implementing a state level strategy on Biosolids management.

## Tentative Agenda:

Time	Session	Speaker
09:30-10:00	<b>Registration and Tea</b>	
10:00-10:15	Welcome and Context Setting of the meeting	Dr. Debolina Kundu, Director (AC), NIUA and Shri. Rajiv Ranjan Mishra, (Former IAS), Senior Advisor, NIUA
<b>Issues and Challenges on Biosolids Management</b>		
10:15-12:15	<p>Address on Biosolids Generation at STPs in Ganga towns: Challenges and Opportunities (15 Min) - Shri. Er. R.K. Jain, General Manager, Namani Ganga</p> <p>Municipal organic waste generation: Challenges and opportunities (15 min) - Shri. Ravi Pandey, Superintending Engineer, UDD</p> <p>Initiatives and studies taken up by Think Tanks and Academia at the state level highlighting the opportunities to be worked on in collaboration with state and non state actors -</p> <ul style="list-style-type: none"> <li>- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) India</li> <li>- United Nations Development Programme (UNDP)</li> <li>- Centre for Science and Environment (CSE)</li> <li>- IIT Roorkee (</li> <li>- Gurukul Kangri University, Haridwar</li> <li>- GB Pant</li> <li>- NIUA</li> </ul> <p>Open discussion among the participants to collect the maximum information on the topic of the discussion varying from hills, terai and industrial regions</p> <p>Moderation of the discussion - Shri. Rajiv Ranjan Mishra, (Former IAS), Senior Advisor, NIUA</p>	
12:15-12:30	<b>Tea Break</b>	
<b>State action plan on Safe Biosolids Management</b>		
12:30-14:00	<p>Research studies and data to be collated - IIT Pallakkad will be presenting steps taken so far at the national level</p> <p>Allocation of roles and responsibilities of the institutions and formation of a consortium</p> <p>Frameworks and advisory to be developed</p> <p>Final output: State level Protocol</p> <p>Setting timeline for the state action plan</p> <p>Moderation of the discussion: Shri. Alok Uniyal, Assistant Director, UDD</p>	
14:00-15:00	<b>Lunch</b>	
15:00-16:00	Summary and Closing Remarks	SCBP, NIUA

