



## About Covestro

Covestro is one of the world's leading manufacturers of high-quality polymer materials and their components. With its innovative products, processes and methods, the company helps enhance sustainability and the quality of life in many areas. Covestro supplies customers around the world in key industries such as mobility, building and living, as well as the electrical and electronics sector. In addition, polymers from Covestro are also used in sectors such as sports and leisure, telecommunications and health, as well as in the chemical industry itself. The company is geared completely to the circular economy. In addition, Covestro aims to achieve climate neutrality for its Scope 1 and Scope 2 emissions by 2035, and the Group's Scope 3 emissions are also set to be climate neutral by 2050. Covestro generated sales of EUR 14.2 billion in fiscal year 2024. At the end of 2024, the company had 46 production sites worldwide and employed approximately 17,500 people (calculated as full-time equivalents).

Covestro Inclusive Business primarily addresses the basic needs of underserved communities through sustainable innovation. We create sustainable business models with the aim of strengthening local economic development through the inclusion of all stakeholders/partners in the value chain.



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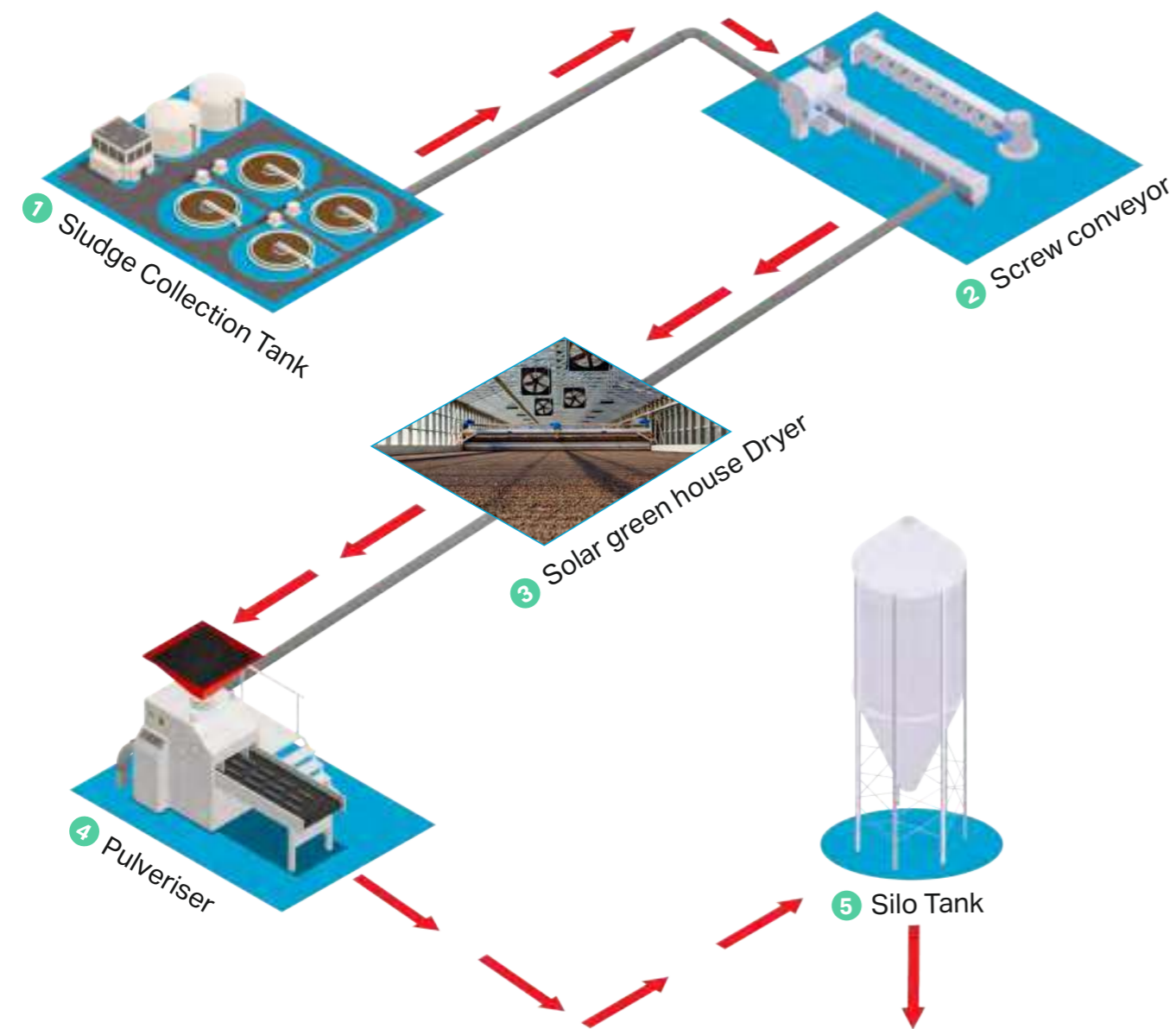
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# Waste to Wealth

Technology for Biosolids Management



# Process



- ✓ Moisture content - 12%
- ✓ Treated using solar radiations
- ✓ No odor
- ✓ Safe for environmental disposal
- ✓ Reuse options may be explored depending upon intended end use



**6** Treated sludge <10% moisture content

# Revolutionizing Waste Treatment with Solar-Powered Innovation



Covestro, a global leader in high-performance polymers, presents a cutting-edge Polycarbonate-based Solar Sludge Dryer—a sustainable solution engineered to transform sludge from Sewage Treatment Plants (STPs), Faecal Sludge Treatment Plants (FSTPs), Effluent Treatment Plants (ETPs), and Municipal Solid Waste (MSW) facilities into valuable, reusable resources. Utilizing the superior durability, UV resistance, and transparency of Covestro's advanced polycarbonate materials, the system harnesses solar energy for efficient, low-cost drying. Post-treatment, the dried sludge undergoes laboratory analysis to assess its composition, enabling safe, tailored end uses such as soil conditioning, biofuel generation, or construction material. This innovative technology not only reduces environmental impact and operating costs but also supports circular economy initiatives, offering a scalable, eco-friendly path to waste valorization.



# Converting Waste to wealth

## Waste

Currently, the sludge generated at Sewage Treatment Plants (STPs) in India is primarily disposed of in landfills, leading to social, environmental, and economic challenges for both people and the planet.

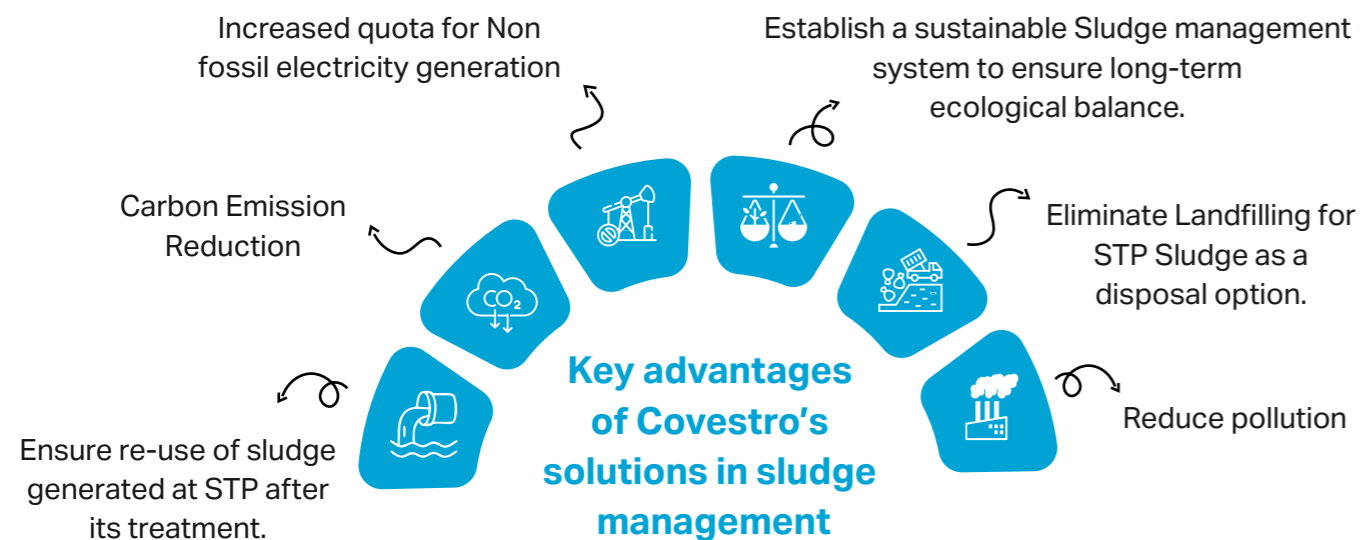


### UNTREATED SEWAGE SLUDGE

- Dewatered sludge containing up to 70% moisture content.
- Odor
- Inhumane to work with - Safety considerations w.r.t. operators involved.
- Direct dumping into environment poses serious risks.

## Wealth

To address these challenges, Covestro offers economical and sustainable sludge management solutions that enable the conversion of sludge into reusable commodities such as briquettes, pellets, and paver blocks. Our solutions ensure that sludge is effectively treated and transformed into valuable products for further use.



Soil conditioner



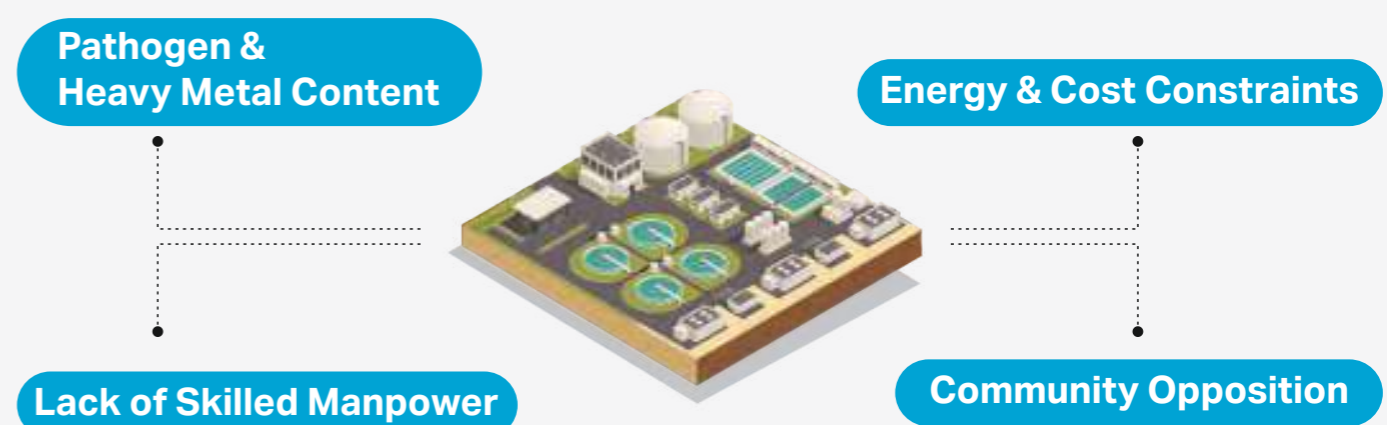
Paver Block



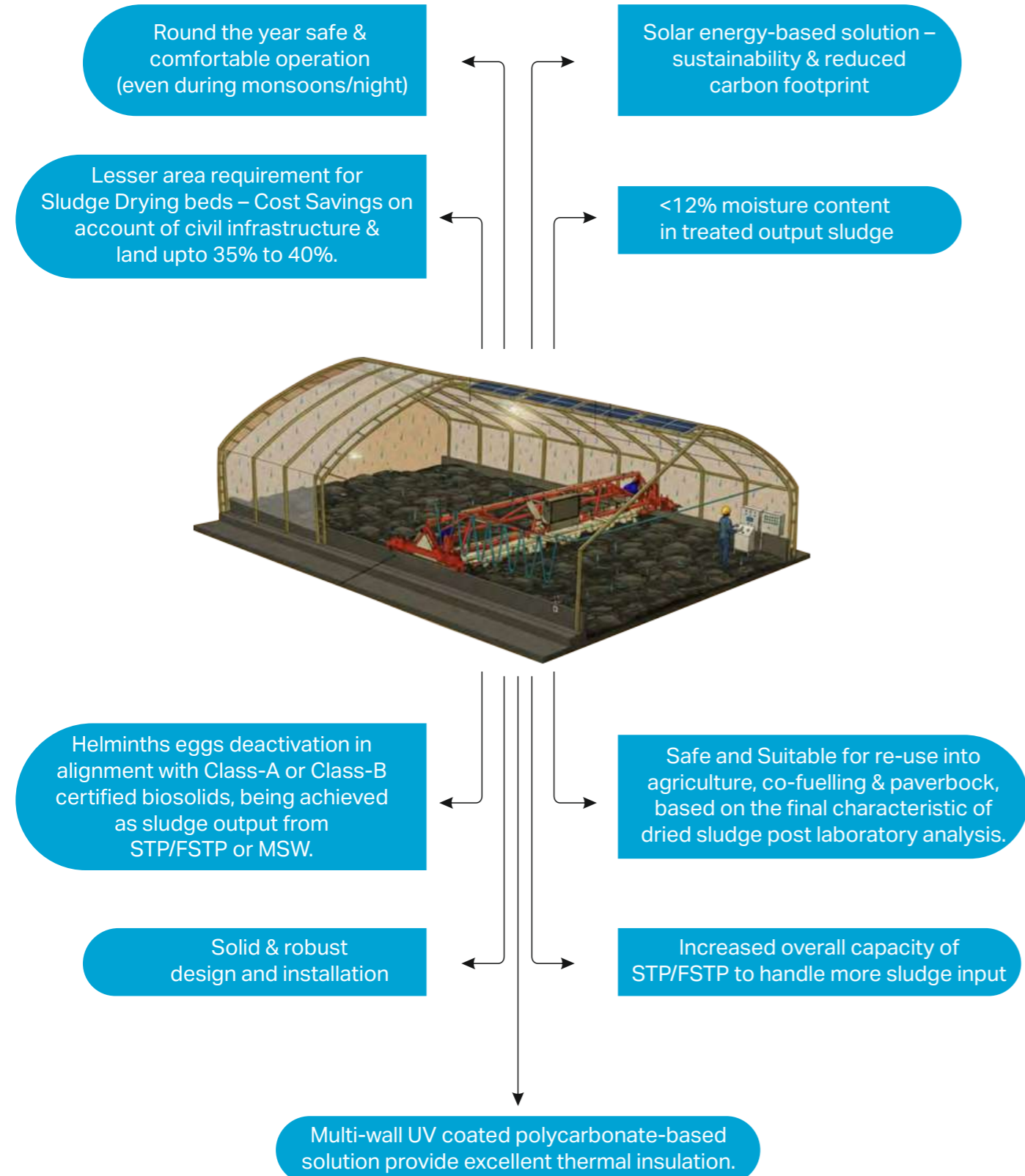
Briquette/Pellet

# Challenges facing in managing sludges generated at various STP/FSTP/ETP sites

CHALLENGES	VS	IMPACT
<b>High Sludge Volume</b> STPs generate large quantities of sludge, especially from primary & secondary treatment processes.		Requires significant space and infrastructure for handling, thickening, dewatering, and disposal
<b>Regulatory &amp; Compliance Pressures</b> Meeting increasingly stringent environmental norms on sludge disposal and reuse (e.g., heavy metals, pathogens).		Requires investment in monitoring, testing, and upgrades
<b>Odor &amp; Aesthetic Issues</b> Sludge can emit foul odors during storage, treatment, and transport.		Causes complaints from nearby communities and can lead to regulatory scrutiny.
<b>Inefficient Sludge Dewatering</b> Sludge often has high moisture content (up to 98%), making it difficult and costly to transport and dispose of.		Increases volume and weight, raising handling and disposal costs.
<b>Disposal &amp; Reuse Limitations</b> Safe and sustainable disposal options (e.g., land application, incineration, landfill) are often limited		Risk of groundwater contamination, legal restrictions, and high disposal costs
<b>Inadequate Treatment Infrastructure</b> Many STPs in developing regions lack modern equipment for advanced sludge treatment (e.g., digestion, composting, drying).		Leads to poor quality sludge, environmental pollution, and missed opportunities for resource recovery



# Benefits of proposed technology upgrade are as follows



BEFORE

## Laboratory Analysis Report (Moisture content >85%)

Sr. No	Parameters	Unit	Test Method	Range of Testing	Result
1	pH @ 25°C	-	CDD-SOP-M	0.1 to 14.0	7.51
2	Electrical Conductivity @ 25°C	µS/cm	CDD-SOP-N	-	674.2
3	Total Solids	%	APHA 24 <sup>th</sup> edition, 2540-G	-	18.08
4	Volatile Solids	%	APHA 23 <sup>rd</sup> edition, 2540-G	-	11.885
5	Nitrogen	mg/Kg	CDD-SOP-V-Total Nitrogen Test	-	535.2
6	Phosphorus	mg/Kg	CDD-SOP- VI- Total Phosphorus Test	-	1030.6
7	Total Potassium	mg/Kg	APHA 24 <sup>th</sup> edition, 3111-C	-	1214.98
8	Faeecal Coliform	MPN/g	EPA method 1681, 2006	-	1.54 x 10 <sup>5</sup>
9	E. coli	MPN/g	EPA method 1681, 2006	-	2.58 x 10 <sup>4</sup>
10	Helminth Eggs	Eggs/gm	CDD-SOP-33 Heiminth Eggs Analysis	-	2



AFTER

## Laboratory Analysis Report

Sr. No	Parameters	Unit	Result
1	pH	7.33	6.5-7.5
2	Conductivity (dsm•)	2.23	< 4.0 dsm <sup>-1</sup>
3	Moisture (%)	6.56%	Max 25.0%
4	Total Nitrogen as N (%)	0.96%	Max 0.8%
5	Total Phosphates as P205 (0/0)	0.2%	Max 0.4%
6	Total Potash as 1<20 (%)	9.57%	Max 0.4%
7	Total Organic Carbon (%)	13.62%	Max 12.0%
8	NPR	1:0.2:10	-
9	E.C01i (CFU/g)	0	-
10	Faecal Coliforms (CFU/g)	0	-
11	Total Coliforms (CFUig)	0	-
12	Color	Greyish Black	-
13	Odor	Absence of Foul Odor	-
14	Calorific Value (Cal/g)	1064.95 cal/g	-
15	Ash Content (%)	68.9%	-