

EcoFert – Integrated nutrient and water recovery system

Samudhyoga Waste Chakra

The Problem

60% of population lack access to safely managed sanitation.

The lack of functioning toilets has led to poor sanitation condition in India. The primary reasons are poor maintenance, lack of water, inefficient treatment. On the other hand, water treatment plants release valuable nutrients into water bodies causing eutrophication.

Our Technology

Process: Steam Distillation in a packed column.
Struvite precipitation reactor, Salt removal system.

Efficiency: Recover 100 L 3-4% ammonia and 1 kg struvite from 1000 L urine.

Chemicals required: Soda Ash/Alkali, Magnesium salt.

Prototype capacity: 220L/day (8 -our operation)

The Solution

Recovery of nutrients and recycling of water from urine

SWC has developed EcoFert process to recover ammonia and struvite from urine and to convert the left-out urine to usable flushing water. The recovered products generate revenue enabling operation and maintenance of clean toilets.



Why EcoFert Unit?

Meet your water demands
and save operational
expenditures

Generate revenue from
the sale of green
chemicals and maintain
clean toilets

Meet regulatory
requirements set by
pollution control
board

Our USP



Decentralized System



Energy Efficient System



Profitable business model



Scalable and safe

Our Impact

Commercial complexes, Educational institutions, Rural areas.	Clean-toilets with recovery system Onsite treatment in places where there is no sewer network
Fertilizer Industry	Green Fertilizers-Reduces the import cost of phosphorous ores Produces green chemicals-Low carbon emission
Municipalities, Smart cities	Treated urine-Reduced load to STPs Reduction in water usage for flushing
Commercial complexes/ office buildings	Helps generate revenue from sale of green chemicals. Increases brand value due to water savings and increased carbon credits

Social Impact				
Input	Activity	Output	Outcome	Impact
“The world is not on track to achieve SDG 6” “Globally, the most prevalent water quality problem is eutrophication, a result of high-nutrient loads (mainly phosphorus and nitrogen), which substantially impairs beneficial uses of water” -UN	Development of decentralized, efficient water recovery technology	Setting up decentralized systems across 1000 large scale public toilet's in India	Reduced dependency on ground water and tanker supplies	Ecosystems recovery (SDG 6.6)
	Establishing network with government, contractors and community for implementation	For each unit recover : 1 ton of Nitrogen per year 0.2 ton of Phosphorous per year	Control of diseases caused due to open defecation in the absence of public toilets	Improved water use efficiency (SDG 6.4)
Reason for non-functioning public toilets” a) Lack of water b) Lack of operation and maintenance c) Lack on on-site treatment	Developing and marketing the produced green chemicals	Supply 36500 L of green chemicals per y	1400 m3 of water per year can serve water consumption of 10000 people a day	Ensure healthy lives and promote well-being for all at all ages (SDG 3)
	Capacity building, advocacy, awareness, product development	Save 1400 m3 of water per year per unit	Reduce 70 tons of CO2 emitted due to presence of nutrients in waste water	Ensure sustainable consumption and production patterns (SDG 12)

Accolades

- Winners of IIGP 2.0, a unique tripartite initiative of the Department of Science and Technology (DST), Government of India, Lockheed Martin and Tata Trusts. Obtained funding of INR 10,00,000.
- Underwent intensive 8-week customer discovery process with Gopala Krishna-Deshpande-Centre for Innovation.
- Bagged second prize in E-summit competition organized by IIT Madras and won a prize money of INR 40,000
- Finalists of Carbon Zero Challenge (2018-2019), a South India renewable energy contest conducted by IIT Madras and Industrial waste management association (IWMA) in collaboration with U.S. Consulate General Chennai and Polaris. Obtained funding of INR 5,00,000.
- Finalist of Climate Launch Pad 2019, Netherlands, a worldwide green business ideas competition to unlock the world’s cleantech potential that addresses climate change.
- Winner of Kolhapur Startup mission – 6 lakhs, 2021.
- Winners ot TANSEED Tamilnadu Government start-up grant 10 lakhs, 2022