UN Report Highlights the Value of Wastewater as a Resource

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... From Irrigation, to Fertilization, to Generating Electricity

The
330 km3 of municipal wastewater produced globally each year is enough to irrigate 40 million hectares - equivalent to 15 per cent of all currently irrigated land - or to power 130 million households through biogas generation, concluded a UN report released on October 22.

The
report, titled "Sanitation, Wastewater Management and Sustainability: From Waste Disposal to Resource Recovery," published by the United Nations Environment Programme (UNEP) and the Stockholm Environment Institute (SEI), gives an overview of current knowledge and practice in wastewater management and demonstrates the opportunities for recovery and reuse of the resources found in domestic waste flows: in agriculture, energy production and other applications.

Globally
produced municipal wastewater contains the equivalent of 25 percent of the nitrogen and 15 per cent of the phosphorus applied as chemical fertilizers. It can also carry large amounts of iron, chloride, boron, copper and zinc. In just one day, a city of 10 million flushes enough nitrogen, phosphorus and potassium to fertilize about 500,000 hectares of agricultural land. A more circular approach to wastewater would significantly contribute to achieving the recently adopted 2030 Sustainable Development Agenda. In addition to accelerating progress towards the Sustainable Development Goal 6 of ensuring water and sanitation for all, reusing and recovering wastewater resources could bring vast economic and social benefits, advancing many other goals. For example, in India, the World Bank estimated that adequate sanitation could bring savings of US dollars 54 billion annually through cutting the costs of healthcare and water provision. In the Lao capital of Vientiane enough biogas could be produced from wastewater to allow 10,000 km of bus drives per day. The daily value of nutrients in wastewater produced by Indian coastal cities has been estimated at US dollars 17.5 million. Another study calculated that elements found in urban wastewater in the United States, including silver and gold, had an economic value of US dollars 280 per tonne of sludge.

The UNEP/SEI report recommends that sustainable
sanitation and wastewater management systems be created that are technically, culturally and institutionally appropriate, economically viable and resilient to disasters. The study also demonstrates how cultural and emotional challenges including the "yuck factor" - can be resolved. For example, in Ouagadougou, Burkina Faso, urine was renamed and repackaged after storage, in order to clearly show that the product had changed from a waste product to a safe fertilizer. In El Alto, Bolivia, herbs were added to the treated urine as a colouring and reodorizing measure. In HÃ¶lÃ¶, Sweden, low population-density has made

centralized wastewater treatment financially unfeasible, so a unique cooperation between the utility, the local authorities, the research society and the farmer community developed a cost-effective recycling policy that produces fertilizers and reduces pollution using a mix of infrastructure, patented black water technology, social awareness and certification.

Other innovative solutions of reusing wastewater, highlighted by the report, include using duckweed to clean water in Niger, using sludge as construction filler material in Sweden and even a proposal to use the organic waste matter for producing protein feed for livestock through the controlled harvesting of insects.

UNEP - United Nations Environment Programme

SEI - Stockholm Environment Institute