




# Wastewater treatment today: no recycling


## Agriculture :

 Phosphate fertilisers contain heavy metals e.g. cadmium or uranium.

 All mineral fertilizers are imported and energy-intensive to produce.

## Wastewater Treatment :

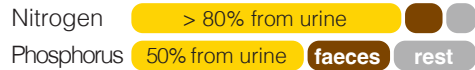
 Sewage treatment plants remove nitrogen and phosphorus using a lot of energy.

 Pharmaceuticals & hormones reach surface waters due to limited treatment.

Vuna closes the loop by producing Aurin from urine. Urine is the richest source of nutrients.







Origin of nutrients in wastewater:



1.5 litres of urine person/day



Recycling works with:

-  Paper
-  Metal
-  Glass
-  PET

Now also with

Urine 



## 7 good reasons to use Aurin



**Nutritious**  
Aurin contains everything your plants need to grow.



**No heavy metals**  
Aurin does not contain any heavy metals.



**No medication**  
The production process removes all pollutants.



**Efficient**  
Less energy consumed to treat wastewater.



**Globally local**  
Urine is a local resource, anywhere in the world.



**Approved**  
Aurin is officially licensed as a fertiliser for all plants.

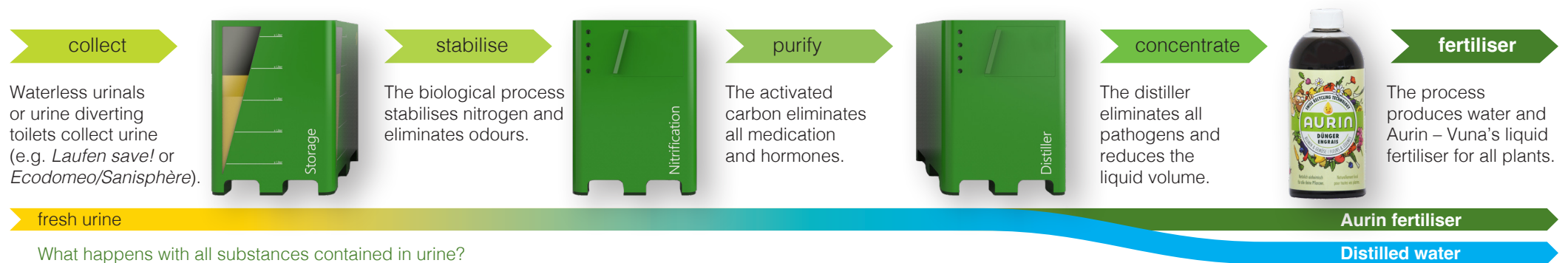


**A natural fragrance**  
Aurin does not smell like urine.

Naturally local for all your plants.

The fertiliser of the future  
vunanexus.com  
www.vuna.ch

# The Vuna Process for a safe and efficient nutrient recycling.



What happens with all substances contained in urine?

✗ heavy metals – not present in urine.

bad smell & volatile ammonia

medication & hormones

pathogens

primary nutrients (nitrogen, phosphorus, potassium etc.)

secondary nutrients (e.g. boron, iron, zinc)

✓ treated, concentrated, and preserved: the essence, which boosts your plants.

## Implement urine recycling at your place



Permanent urine treatment plants in large buildings  
Produce your own fertiliser in your residential or commercial building to close the loop locally.

### Some numbers about urine recycling



One person produces 500 L of urine per year.



From 500 L of urine, about 35 L of Aurin fertilizer are produced.



Urine treatment with the Vuna system takes 2 to 3 days.



As a “by-product”, 465 L of water are generated.

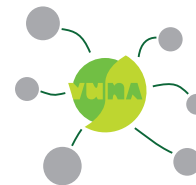


Processing 500 L of urine uses 75 kWh (equiv. to driving 100 km/year).



The Aurin production of one person is sufficient to fertilize 500 m<sup>2</sup> of land.

## Vuna: your expert for water & wastewater



Vuna designs and builds all types of decentralized wastewater treatment plants

In addition to VunaNexus urine recycling systems, Vuna offers you an up-to-date overview of drinking water, sanitation and reuse systems. We design, plan and build the system that best suits your situation, from toilets to end-of-line recycling.



The history of Vuna and VunaNexus

Vuna means ‘harvest’ in isiZulu, the language of the Zulu people in South Africa. The VUNA project was launched in 2010 in Durban, as the city was seeking a suitable treatment for large quantities of urine. In 2016, Vuna was founded as a spin-off of Eawag. Since 2022, VunaNexus AG has been developing and marketing urine recycling systems.

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