



Strategic planning waste water treatment

Webinar-1

EXAMPLE-1: VILLAGE

SITUATION 2005:

- 5.000 people
- no waste water treatment
- hilly area with agriculture

PLANS:

- population growth to 7.000
- capacity waste water treatment plant 7.000 p.e.

REALITY 2016

- new industry developed 60 km
- population reduced to 3.000 people

EXAMPLE-2: CITY

SITUATION 2005:

- 100.000 people + 30.000 p.e. industrial waste water
- capacity waste water treatment: 100.000 p.e.

PLANS:

- population growth to 125.000 people
- industrial growth to 50.000 p.e.; concentrated water
- capacity waste water treatment plant 175.000 p.e.

REALITY 2016

- population growth to 135.000 people
- industry moved to other region
- climate change: overall less rainfall, incidental high rainfall
- lower load; wastewater characteristics changed, higher hydraulic flow

EXAMPLE-3: VILLAGE

SITUATION 2005:

- 15.000 people
- agriculture
- arid area

PLANS:

- stabile population
- capacity waste water treatment plant 17.500 p.e.

REALITY 2016

- population growth to 16.000 people
- increase of agricultural activities
- climate change: overall less rainfall, incidental high rainfall
- request for irrigation and nutrients

ANALASYS OF THE SITUATIONS

- The future is *ALWAYS* different
- The world is changing faster than ever
- “EXPECT THE UNEXPECTED”

WHAT IS DIFFERENT?

- Input: hydraulics, load,
 - Processes and innovation
 - Output: Effluent standards
 - Climate change
-
- Wastewater as source for nutrients, water and energy (other WEBINAR)
 - connection with agriculture, industry, households (other WEBINAR)

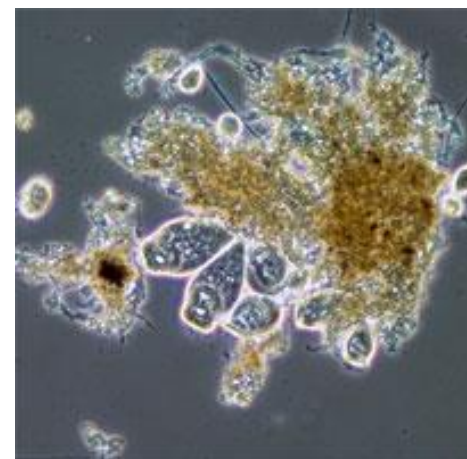
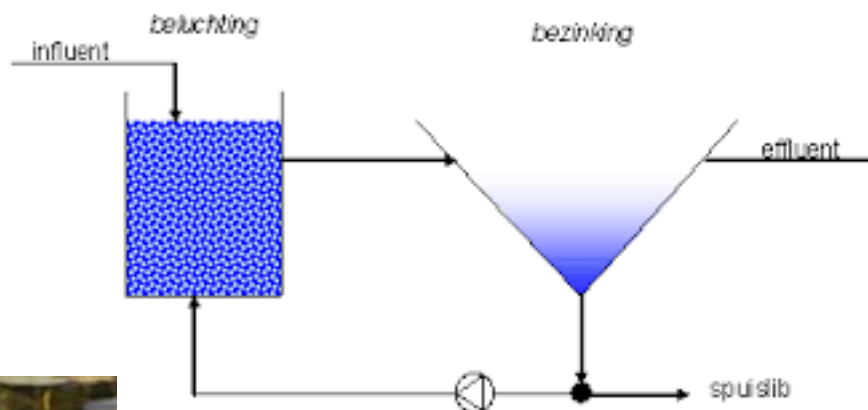
Impact conventional approach

Effective wwtp:

*treating all waste water (based on hydraulic design)
to effluent standards*

Efficient wwtp: lowest cost per

Traditional approach?



Traditional approach – Effective?

Development of effluent standards

(mg/l)	1975	1995	2016
C	100	50	30
N	30	10	4
P	10	2	<1



- Hygiene
- Surface water ecological standards WFD

Traditional approach – Efficient?

- Lack of flexibility
 - **Industrial waste water**
 - **Innovative technology**
 - **Climate change**
 - **Increase/decrease population**

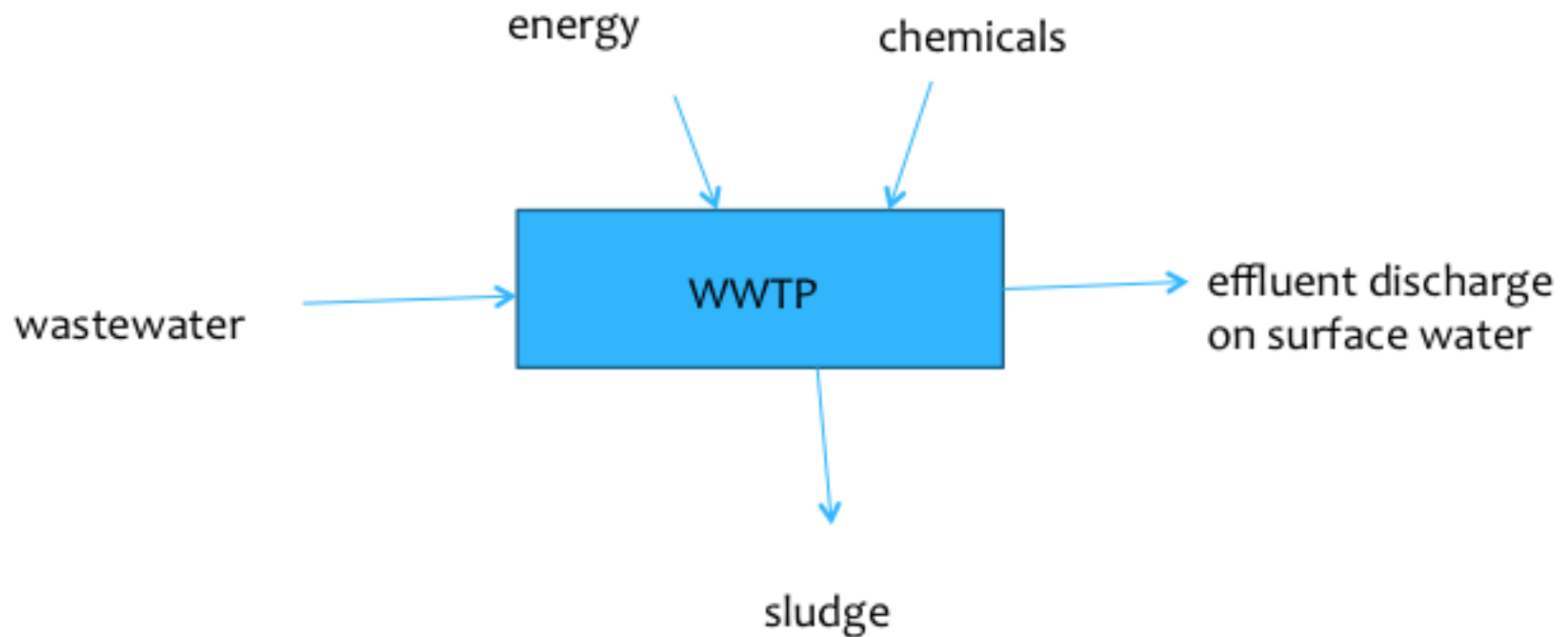


Traditional approach – Sustainable?

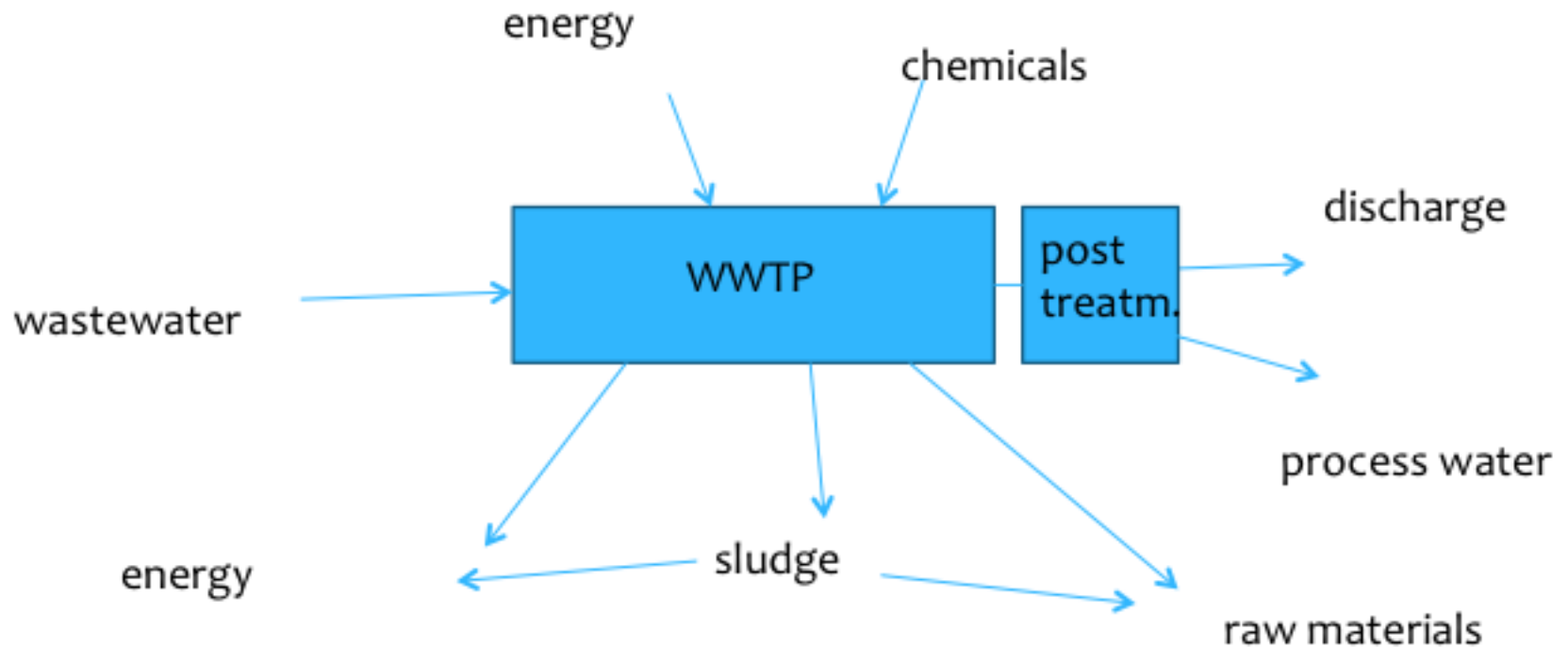
- **Reducing costs, energy, chemicals,...**
- **WWTP as a source for reusable water**
- **WWTP as a source for energy**
- **WWTP as a source for raw materials**
- **Industry and agriculture: client or partner?**



Traditional waste water treatment



Waste water as a source



Waste water as a source

- **Cost reduction**
- **Creating profits**
- **Increase of sustainability**
- **Combining existing and proven technologies**

Big concrete tanks

- **Depreciation \approx 30 years**
- **Technical life cycle $>$ 50 years**
- **Technological life cycle \approx 15 – 25 years**
- **Design parameters \approx 5-10 years**



Traditional approach

- Effective!
- Overcapacity and undercapacity
- Application cost efficient technology poor
- Application sustainable technology poor

CONNECTIVITY and FLEXIBILITY!!!!

Connected/integrated and flexible wastewater treatment plant

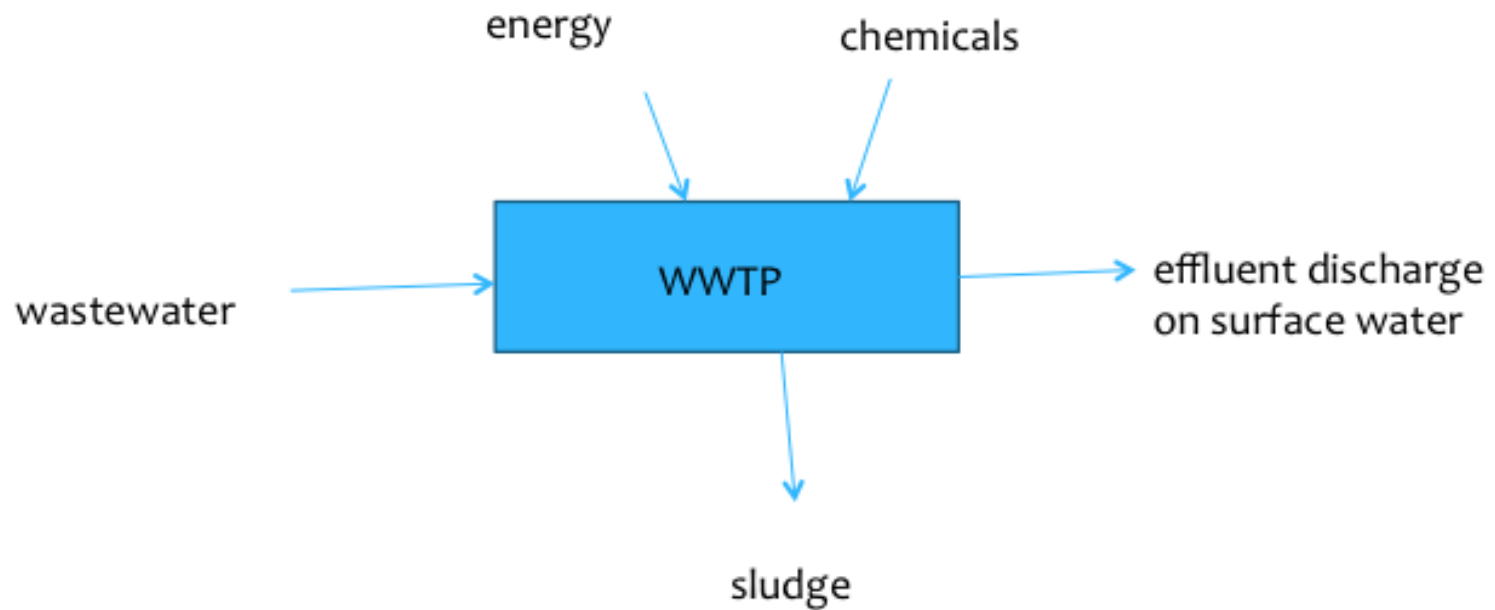
WHY?

- **Waste water = source**
- **Application innovative technology**
- **Complying with changing input (load,..)**
- **Complying with changing output (effluent standards)**

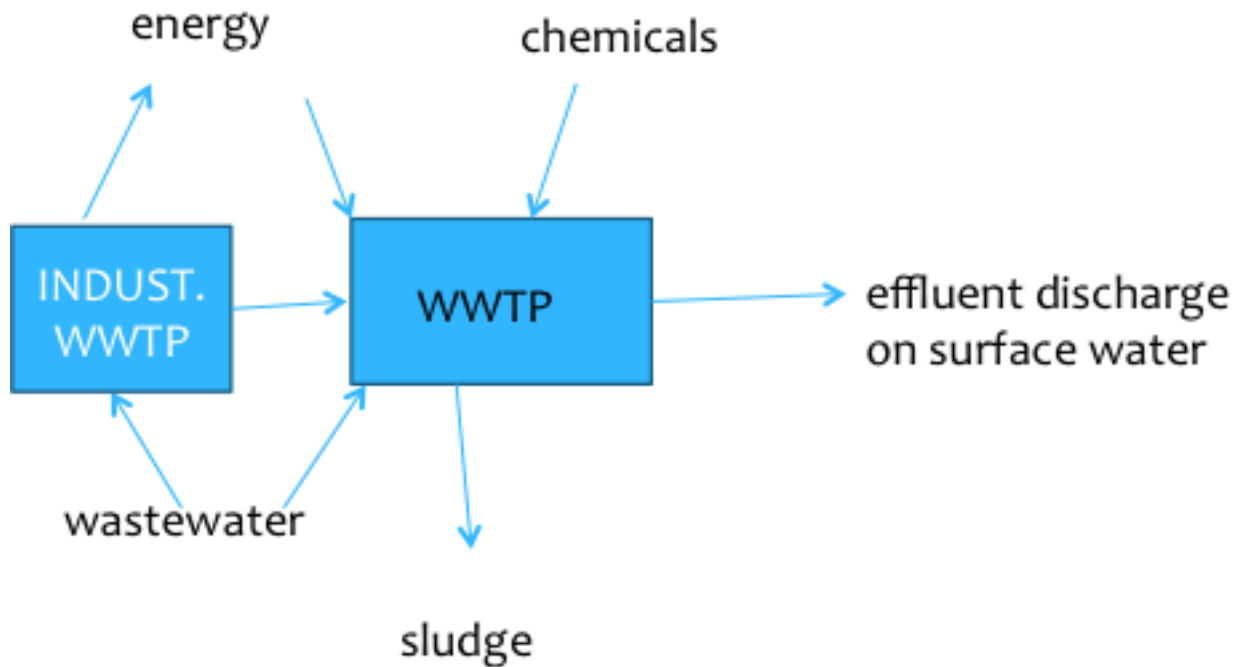
HOW?

- **Modular approach**
- **Interaction with industry, agriculture**

Traditional approach



Pretreatment industrial waste water



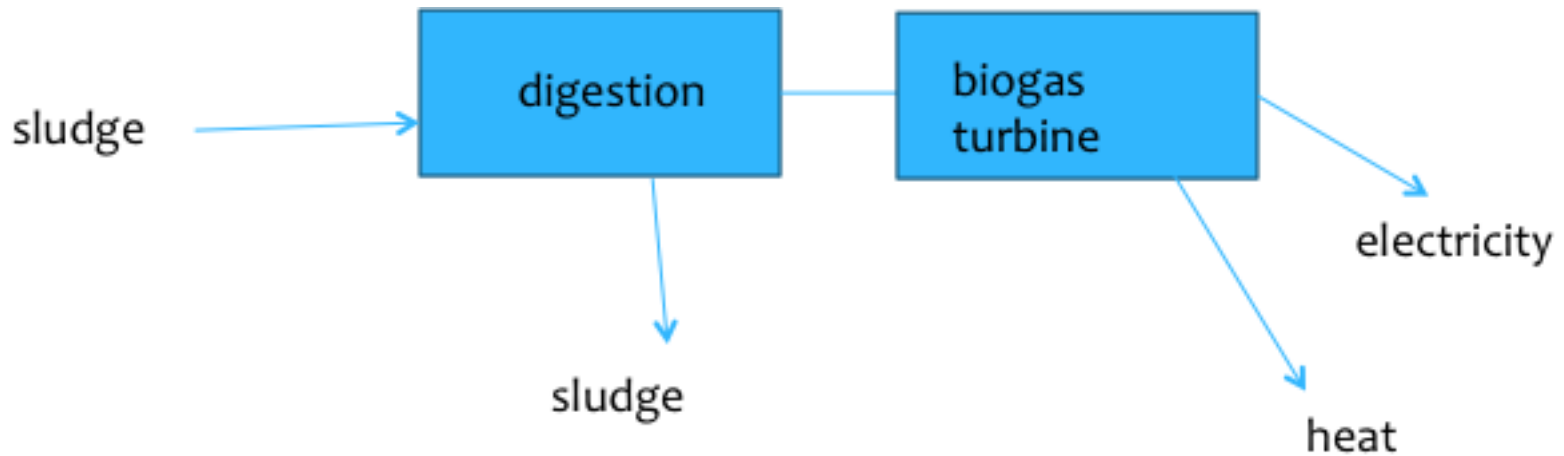
- Lower CAPEX and OPEX
- Higher sustainability
- Almost independent of changes in industrial loads

Waste water as source: ENERGY

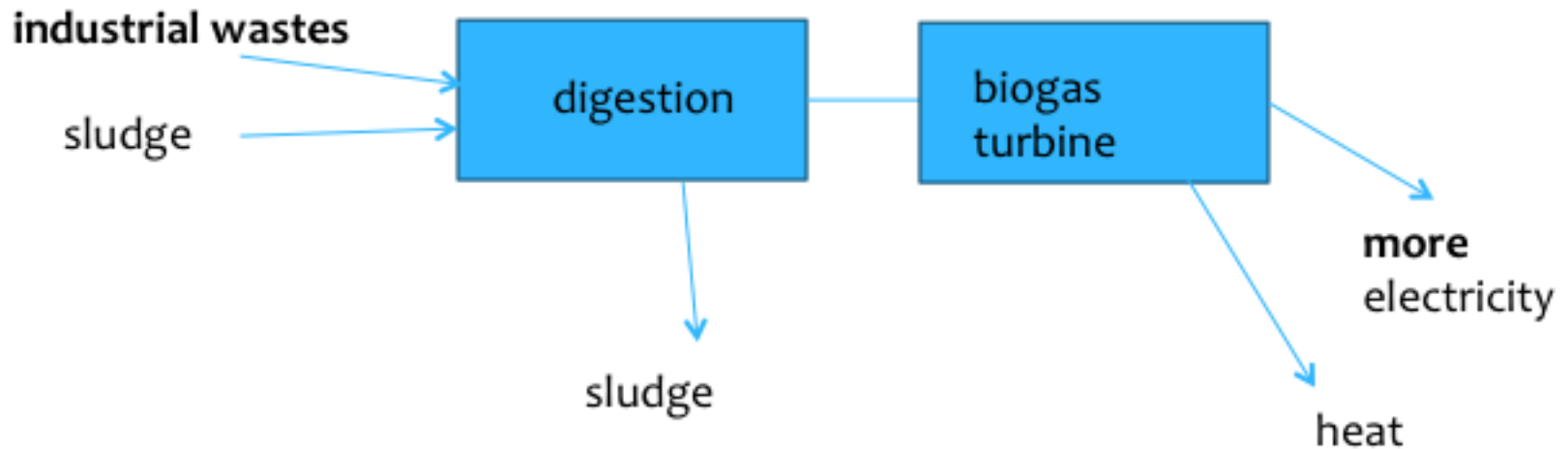


the online anammox resource
www.anammox.com
pioneering microbiology for a sustainable future

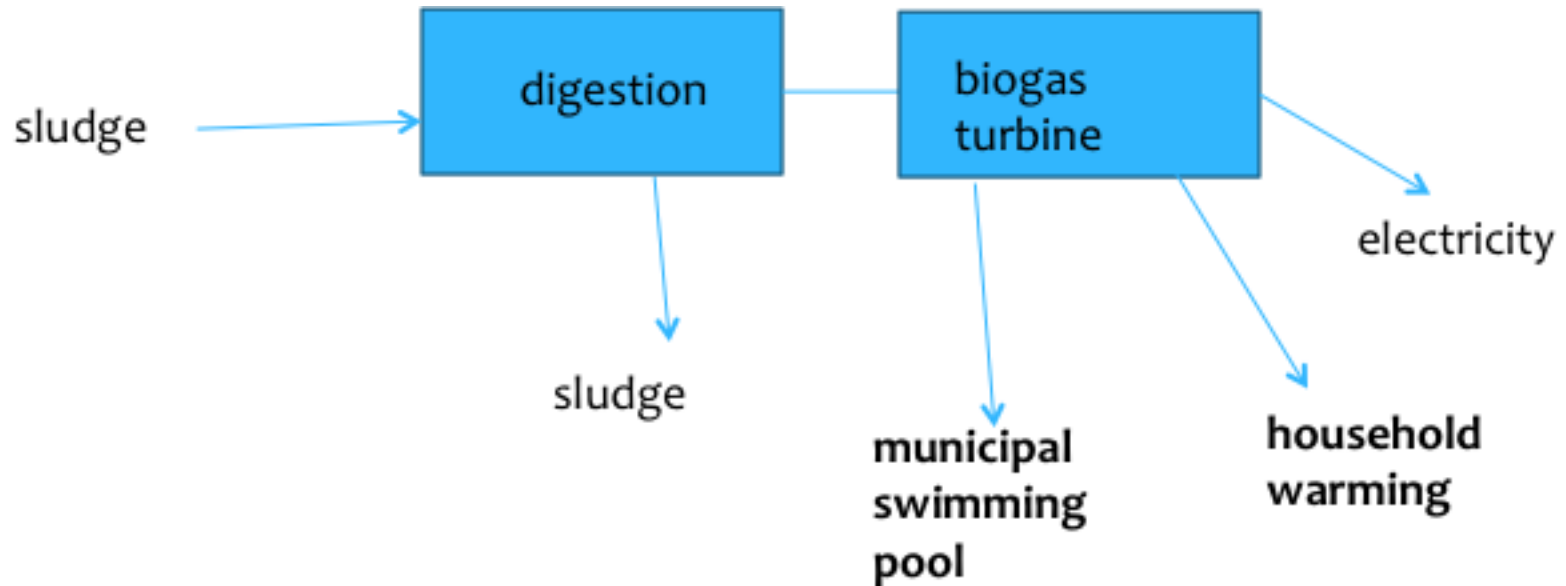
Traditional sewage sludge treatment



Treating biodegradable industrial waste



From excess heat to valuable heat

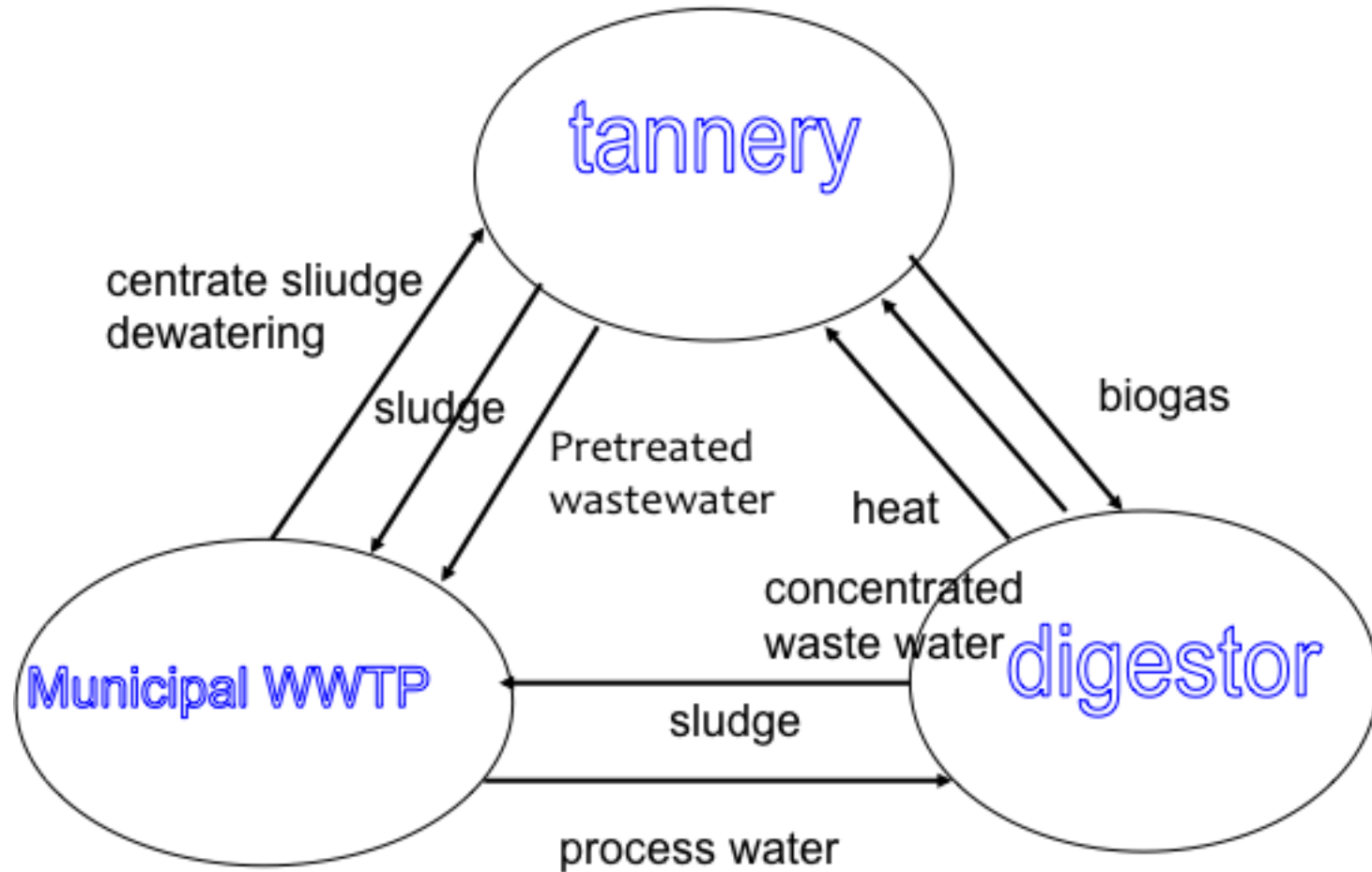


Waste water as source: RAW MATERIALS

	Technology	Value chain and regulations	Business case
phosphorous	+	+/-	-
cellulosis	+/-	-	+/-
bioplastic	+/-	+/-	-
reusable water	+	+	+ or -

industrial waste + industrial wastewater + municipal waste water



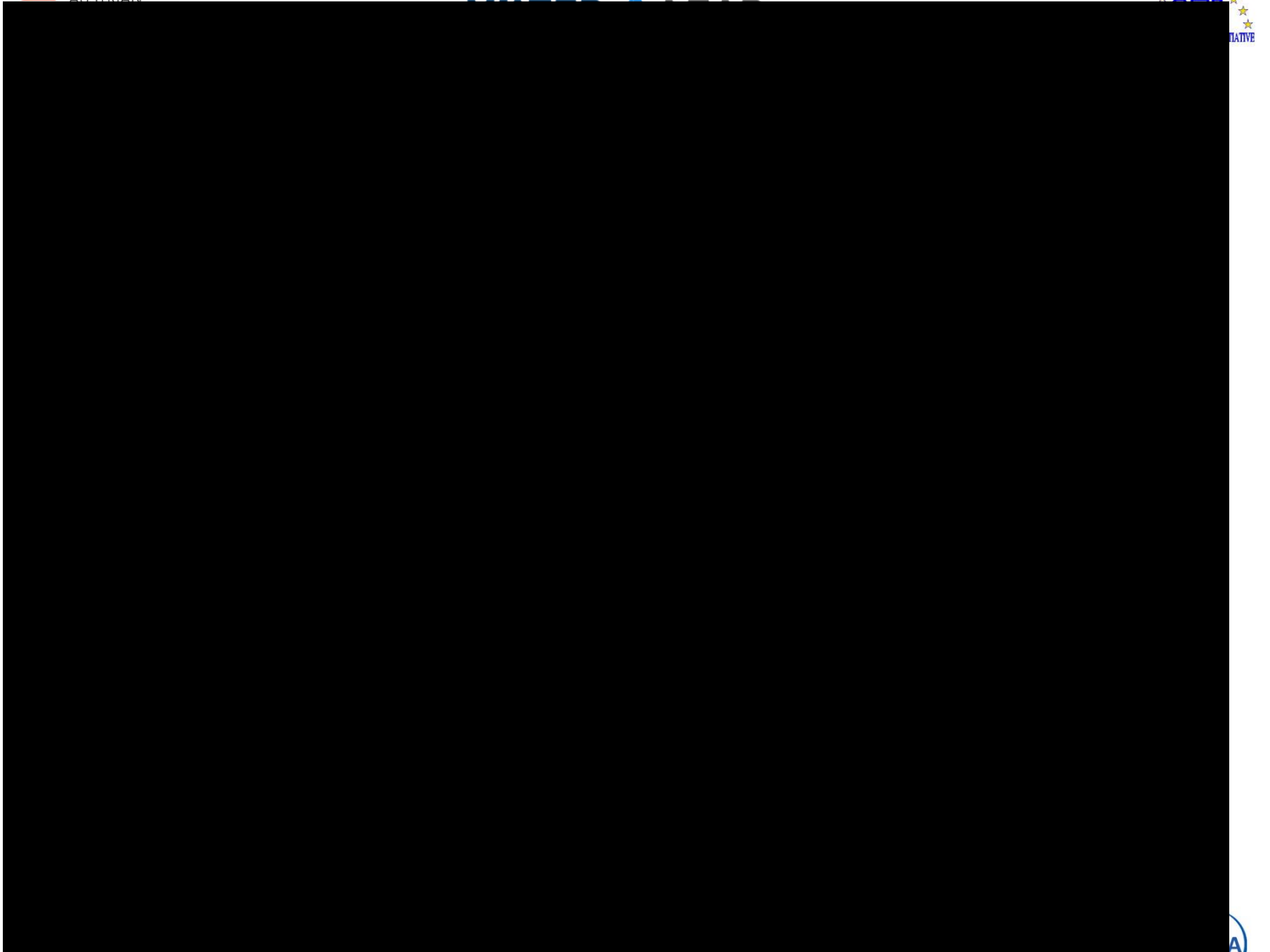


Flexible waste water treatment plant

- Modular approach
- Overground
- Plug and play

- Reduced construction time
- Reduced CAPEX and OPEX
- Rest value “old” module
- Easy to modify to maximize effectivity, efficiency and sustainability

- Leasing



PLEASE REMEMBER/CONSIDER THIS....

1. Wastewater is no longer a waste product but a **source** with value
2. The water world is changing fast. Be **flexible**
3. **Connect** with other entities and be more cost effective
4. **Do not copy** your neighbors

Questions and Answers



For contact details, visit:
www.waterleap.eu

This project has received co-funding from KEP AUSTRIA programme under the Central Europe Initiative Grant Agreement No . 1206.AF.067-15