1st European Forum on Regulation of Water Services (EFRWS)
3 December 2019 – Roma, Italy

Circular economy in water and wastewater: Exemples from Belgium and the need for regulation

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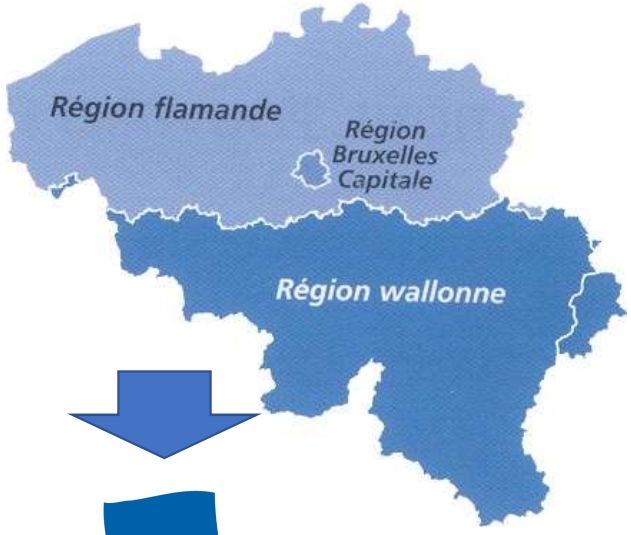


AquaWal

- Belgium is divided into three Regions which are responisble for water management : Wallonia/flanders and Brussels
- All water and wastewater companies are publicly owned.
- W&WW companies are part of the society and be aware of the context in which they operate.

Current challenges in the walloon water sector

Prices are blocked for political reasons. (100M³ : 550€)

Affordability concerns

Consumptions are decreasing while it is the only income source for operators. (120l/c.d – 90 for domestic)

Need for lowering the level of the debt of operators.

Lack of investments (renewal rate for mains (DW) : 0,4%.

How can circular economy integrate this situation ?

Based on evidences, we are convinced that :

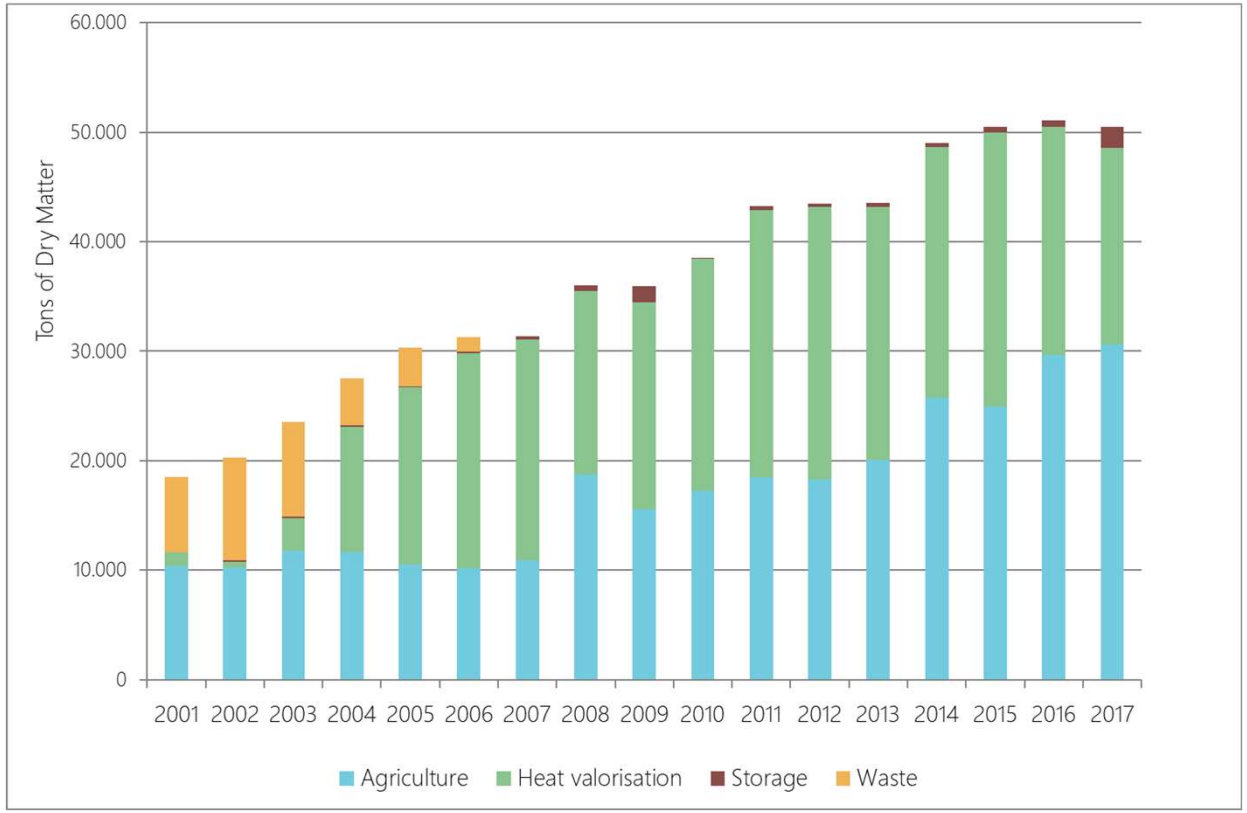
- ✓Circular economy is an opportunity.
- ✓It is part of the solution.
- ✓But regulations (both economics and legislative) must play their role.

3 exemples for illustration…

Sewage sludges in agriculture

Société Publique de Gestion de l'Eau

SPGE



- Sewage sludge used in agriculture or in heat recovery is the best known re-used material in the water sector.
- Includes interesting compounds (OM, P, N, K, Ca, Mg ..) as well as undesirable and maybe toxic ones (Cd, Pb, Hg …).
- Costs : Agriculture : 23€/TDM Heat valorisation : 58€/TDM
- Probable ban of this reuse in next years → Solutions ? Additional costs ?
- Regulators can facilitate this transition.

The necessary complement for circular economy : pollution control at source

- Sewage sludge is a emerging problem.
- There is one clear solution : control of pollution at source i.e : avoiding (micro-)poluttants to enter the water cycle instead of removing them from the water.
- Problem : lack of ambition forme the European Commission.
- But : never forget that MS can always be stricter that the EU…
- Polluter pays principle + EPR should apply.

Biomethanisation

- WWTP of Wavre : 200.000 eq.inh.
- Heating of sludges to 37°C.
- Production of Biogaz : 70% CH4 30% CO2.
- Inclusion of other intrants such as waste from the food industry (3.900T/yr).
- Cogeneration : electricity and heat production.
- Biogaz : **706.000 Nm³/yr -** Electricity **: 1,05 GWh/yr.**
- Autoproduction covers 38% of the electricity demand of the WWTP.

Biomethanisation

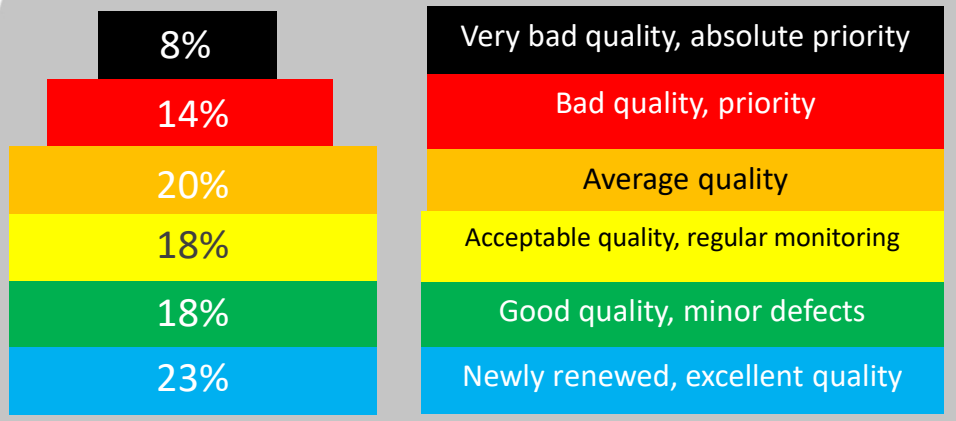
- Huge scope of qualitative and quantitative improvements.
- Possible treatment of more intrants (waste).

BUT :

- More intrants → more sludges.
- The valorization of sludges is a limiting factor for developping biomethanisation.
- Economic analysis necessary (cost of buying intrants vs savings in energy).
- The excess of energy could be sent in the electricity network. The operator will then have a high burden of taxes for using the electriciy network.

Heat recovery in brussels sewers

- Brussels sewers : 835km.
- In very bad state : 22% need a urgent renovation.
- Renewal rate : 25km/year.
- Sewage waters temperature : 20-25°C.
- Very dense network.



VIVAQUA

Heat recovery in brussels sewers

- Equip sewers with heat exchangers in order to re-use the heat for municipal buildings.
- Opportunity of the renewal program to equip the sewers with heat exchangers.
- Heat pump car recover calories and feed any other connected equipment with this warmth.
- **Current project :** reducing the airconditionning and heating consumption of the new administrative center in Uccle by 25%.
- If **20km/yr** of heat exchangers are used, this will represent a savings in CO2 emissions of **26.000 T/yr.**

VIVAQUA

Conclusions

There is a very wide range of possibilities and oppotunities in the W&WW sector for closing the circle

The added value of circular economy in the W&WW sector is both economic and environmental but :

1) We need to **levy barriers** : restrictions in the use of sewage sludges in agriculture is a true handicap for circular economy.
2) We need **incetivization** : the high level of taxes in electricity speeds down the development of electricity and gaz production from wastewaters.
3) The economic balance for producing more gaz/electricity can be improved by regulation on the price for WWTP intrants.
4) We need **policy** : pollution control a source is more than ever a necessity.
5) Circular economy is more efficient when public capital expenditures is first of all in favor of public services and buildings. It is the only way to make this new economy an improvement for everyone and not just for richer people. **Fairness** is needed.
6) **Governance** is much more important than **technology**.
7) We need first of all **ambition**