Valuing Water

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Policy regarding the remediation of industrial waste water

Klaas Vischer, Willem van Starkenburg, Ylberinë Baliu
YES L.L.C., Yuniko B.V.

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INTRODUCTION

- The industry in Kosovo generally discharge its waste water directly or indirectly to surface water.
- Together with the discharge of municipal waste water it causes that all the rivers and lakes in Kosovo.
- The challenge is to remediate the wastewater of the industry at feasible costs and with the highest environmental benefit.
- Years ago the industry in The Netherlands, were confronted with this same challenge.

INDUSTRIAL WASTE WATER

- Industrial wastewater can differ very much from municipal wastewater.
- Approach to deal with industrial waste water challenge is different and more complex
- Water pollution is a result of raw material/product losses in the production process
- Experiences in The Netherlands learned half of the pollution can be prevented
- When measuring the pollution degree of the waste water it is possible to estimate the product/raw material losses

SITUATION THE NETHERLANDS 1950

DUTCH WATER AUTHORITIES

Universiteit Utrecht

The situation in 1950

DUTCH LEGISLATION

- Surface Water Pollution Act into force December, 1970 (50 years experiences)
- Responsible organisations National Water Agency (NWA) and Regional water authorities (RWA's)
- A permit system for discharges of waste water in surface water
- A pollution tax for the discharge of waste water in surface water or on the sewage, for households as well for companies.
- Big(ger) companies pay on the base of monitoring, sampling and analysis of their waste water
- A subsidy system from the central government

DUTCH EXPERIENCES 1

- Dutch industry forced to pay a lot of money when discharging wastewater
- Incentive for finding economical solutions when reducing the discharge of wastewater
- First focus on treatment of wastewater with high costs and energy consumption
- To reduce costs, industry started to innovate production processes contribute mostly to the pollution

DUTCH EXPERIENCES 2

- Together with Universities, research to develop in-process measures to reduce the discharge of wastewater
- Agreements with government and industry about the time span to meet the standards
- Results, more than half of the pollution could be reduced through proper in-process measures
- Costs were relatively low and benefits because of selling extra product, by-products or energy recovery
- The pollution load in Dutch surface waters decreased with 60% and 10 years later 90%
- Within only 10 years the discharges of the industry halved

Steps in waste water pollution control

- Inventory of the sources of pollution
- The triple P-phase: Pollution Prevention Pays
- Inventory for needed capacity of end-of-pipe treatment
- Design, selection and construction of a wastewater treatment plant

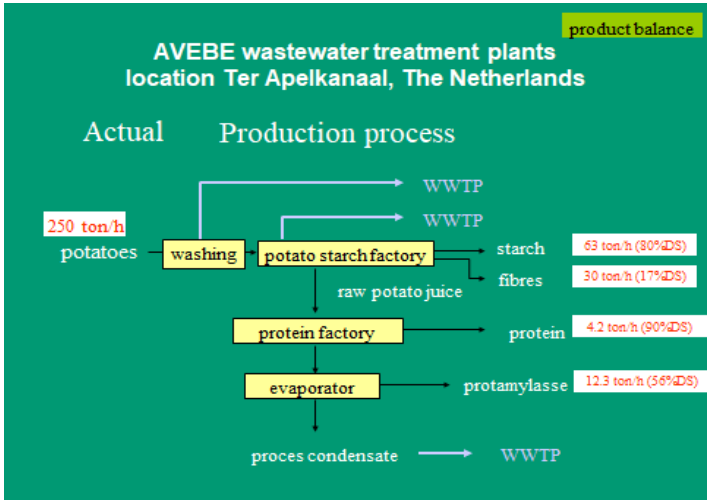
Example Dutch Potato Starch Industry

- Avebe is a worldwide operating company located in the North of The Netherlands which delivered now products based on potato starch and potato protein.
- In the past Avebe only produces potato starch and the remaining's like fibres and proteins where discharged at the canals in the North of the Netherlands
- The discharge of the waste water included a pollution of about 9 million p.e.
- The Surface Water Pollution Act 1970 meant that high pollution tax that the company could not survive
- With support of the Dutch Government the company started a research and development program to reduce the pollution immense by process integrated measures and production of additional products

Example Dutch Potato Starch Industry

DUTCH WATER AUTHORITIES Universiteit Utrecht

Scum on the water (1969)



Opportunities Dairy Industry Balkan

- Of all industrial activities, the dairy sector has one of the highest consumptions of water and is one of the biggest polluters of surface water
- There encouraging opportunities to reduce the quantity and quality discharge of waste water
- Besides the optimisation of cleaning procedures and water use, separation of whey from the waste water is the most effective way to reduce the discharge of waste water

Separation and new applications of whey

- Whey is a by-product of cheese production and very polluting
- Protein in whey can be recovered by sieves and added to the cheese production to increase the cheese production
- When whey is separated waste water treatment plant can be 2 to 3 times smaller
- Alternative economical feasible options for whey are developed and already implemented in Kosovo like:
  - Production of whey drinks
  - Use as cattle feed
  - Conversion to biogas

Separation and new applications of whey

Vibrating sieve separator

Biogas Plant KABI

Conclusions

- Waste water pollution in the industry is caused by the losses of raw material and product during the production process
- When analyzing the waste water, these losses can be calculated and estimated
- Reducing losses can save money by selling more products and reduction of waste water treatment costs
- Experiences in The Netherlands proves that significant reduction of the waste water pollution can be achieved by process-integrated measurements and recovery of by-products
- Separating whey at the dairy industry can reduce investments and annual costs waste water treatment significant

Recommendations

- Stimulate and support industrial companies in developing in-process solutions and recovering of by-products
- Stimulate cooperation industry and universities to initiate together research to support this development
- Stimulate and support industrial companies in developing wastewater treatment systems which can be designed and constructed by local consultants and constructors in Kosovo
- Elaborate setting tariffs for discharging industrial wastewater based on the degree of pollution (application of the Mogden formula).