

# 1. Institutional setting:

The framework conditions are mainly influenced by the political decisions of the city of Cologne. In the 80's in Cologne a **waste management concept** was created.

## **3 guiding ideas:**

- reduction and avoiding of waste
- planning and installation of high efficient recovery systems
- only the unavoidable rest of the waste has to be incinerated or disposed

## **the waste management concept based on:**

- EU regulations
- national legal requirements of Germany
- legal requirements of the federal state of North Rhine-Westphalia

Germany is **champion in sorting waste** and citizens are inspired to do their part for to be successful in recovery projects

For the biological part of the waste in 1996 a **composting plant with a capacity of round about 50.000 to/a** started to work. During the years the capacity was increased to round **about 100.000 to/a**. The output of the composting-process are products like potting soil and fertilizer for the farming.

The new planned process of **“fermentation” will produce “energy”**. So another way of recovery will be realized to comply the targets of the waste management concept of the city of Cologne.

The actors of the good practice project of “fermentation plant” are the city of Cologne and the AVG Köln mbH with their shareholders Stadtwerke Köln GmbH and the private shareholder REMONDIS.

**The planning, the realization and also the operating of waste management plants in Cologne are organized by public private partnership models .**

## 2. Starting point:

The main challenge was to assure the shareholders and some parts of the local political representatives from the need of the “fermentation project” for Cologne. Because of little operating experience in Germany with such kind of waste recovery lots of doubts were existing. Only a few pilot-project-plants are operating successfully until now. So it wasn't easy to persuade the shareholders from the “good practice” idea. But at the end we were successful in doing that.

Another challenge was to make sure that we don't get problems by financing the project.

=> investment costs:	11,0 Mio. €
=> ordinary useful life:	15 years
=> financing:	100 % loan capital
=> interest rate:	1%

=> The existing public-contract between the city of Cologne and the AVG Köln mbH for the waste management of the city works like a governmental guarantee to get the money from banking institutions to fair conditions.

Another important fact lies in the construction of the company AVG Köln mbH. The decision to realize the purposes of efficient waste management in Cologne by “ppp-companies” (public private partnership) guarantees the right to be heard for the members of the local political city council. Two committees were installed to rule and control the AVG Köln mbH. The more important committee to get a positive vote for the realization of the good practice project of fermentation was the supervisory committee. The majority of this committee is consisted of members from the city council. So the positive pressure from the local policy pushes the AVG Köln mbH to start the project.

### 3. Approach:

Because the city council had declared the intension to reduce the quantity of waste, which had to be incinerated, a massive pressure for the finding a good practice solution arises.

The reducing of waste produced in the area of Cologne encloses

./ paper

./ plastic waste

./ metal

./ glass

./ wood

./ biological waste (new!!!)

the result  less unavoidable rest of waste for in incineration and disposal

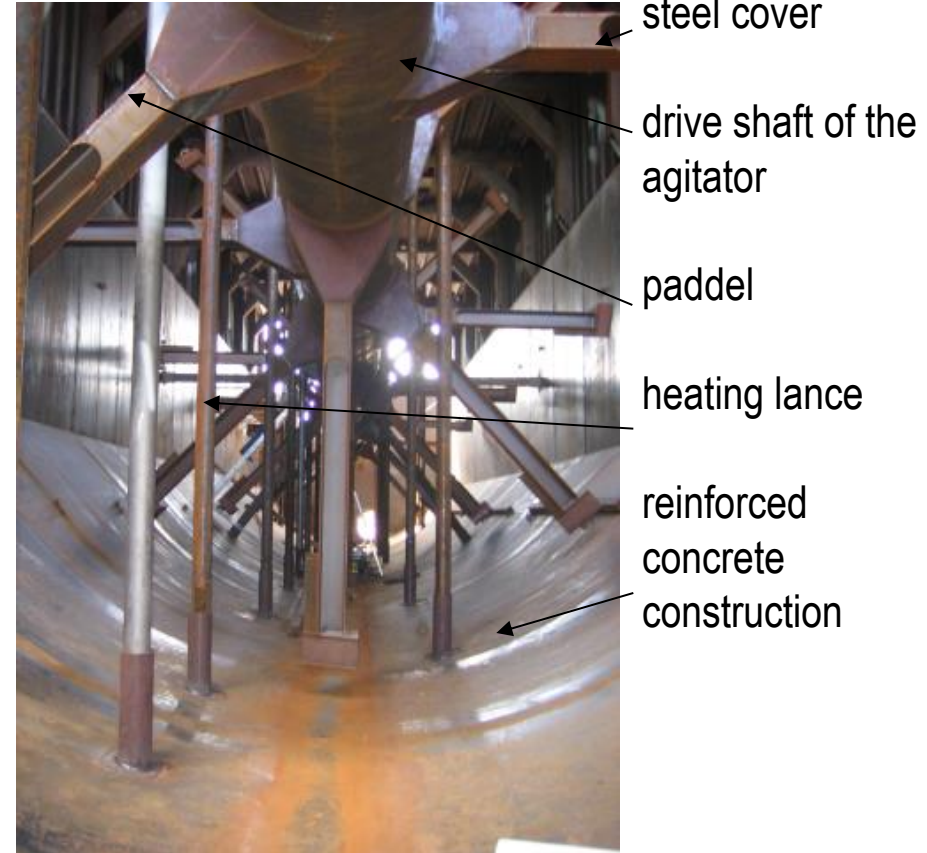
# 4. Outputs:

To take advantage of all possible ways to recover biological waste, the fermentation is a necessary part of the waste management system.

**INPUT**                      =>                      **OUTPUT**

biological waste           =>                      energy  
= fermentation plant [technology]

biological waste           =>                      products  
= composting plant [technology]



## 5. Lessons:

- There are not really open questions yet! But for the successful operating of the good practice you also need low costs. For this case it is important how the trend for prices of green energy and the cost for recovery and removal of industrial waste will develop.
- The refinancing is based on **the regulations for public prices** (not market prices)
- For the refinancing three facts are very important:
  1. **The costs of: the stuff, the maintenance and also the costs for the capital are refundable by the garbage fees who will be payed by citizens of cologne**
  2. **Earnings: the produced energy drops the part of garbage fees for the citizens of cologne, which they have to pay for the biological recovery**
  3. **The recovery of biological waste in the fermentation plant drops the quantity of the unavoidable rest of waste, which had to be incinerated. These reduction in the incinerator can be filled up by industrial waste. The influence of the costs for the incineration drops the garbage fees**

rough calculation of the „fermentation-process“			
		per year	total per year
costs	operating costs	-400.000,00 €	
	deprecation	-700.000,00 €	
	interest on captial	-106.500,00 €	-1.206.500,00 €
earnings	energy	770.305,00 €	
	garbage fees	400.000,00 €	
	margin 3% of the costs	36.195,00 €	1.206.500,00 €
incineration process: => profit contribution per ton industrial waste = 40 € / to			

## 6. Follow up:

At the current stand of the project, it seems to be, that there are no further questions or problems to be dealt with!

**fermenter in cross section**

