



## **FLEXIBLE DIMETHYL ETHER PRODUCTION FROM BIOMASS GASIFICATION WITH SORPTION ENHANCED PROCESSES**



**Application to waste disposal, an example of circular economy**



# Who we are



- ▶ We research, design and develop new technologies

We have invested about **80%**  
of our resources in **R&D**

Autoclave system in ECONWARD's Industrial Plant  
Rivas Vaciamadrid - Madrid, Spain.



# Our technology



## Some keys



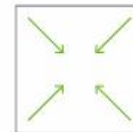
### High treatment capacity

From 63,000 t/year  
per module



### Scalable and modular

Adaptable, easy integration



### Small footprint

270 m<sup>2</sup> of area required  
per module



### Low operating costs

Rapid Return on Investment



### Optimised and compatible

With existing technologies





# What we do



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- ▶ We transform organic waste into a biomass with various certified applications

Hygienised, homogenous, biothermal stabilised, free from pathogens and chemically degraded.

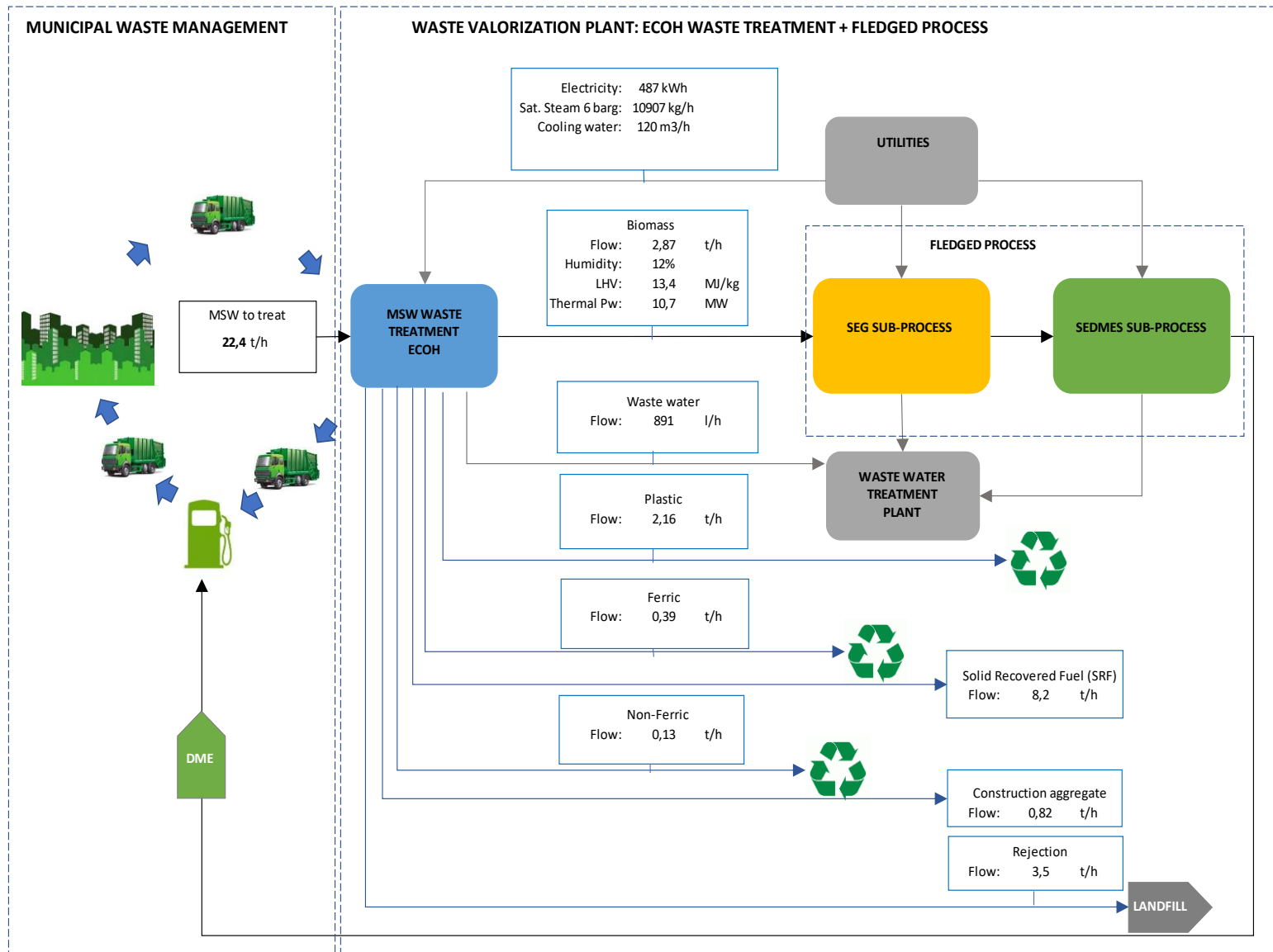




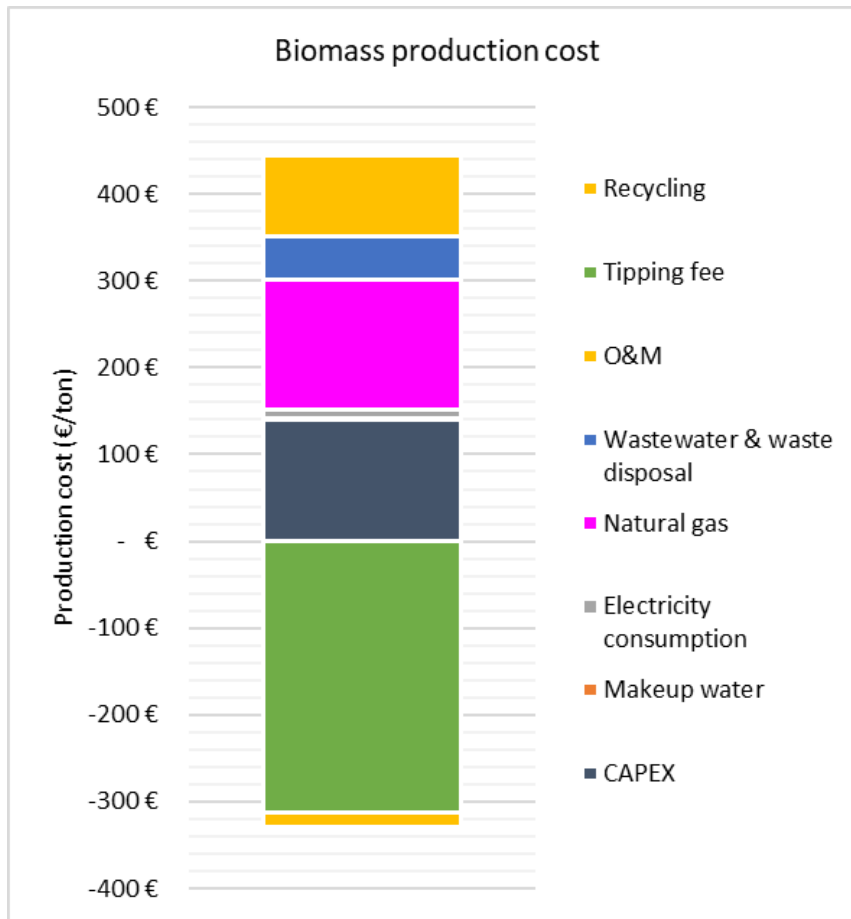
# **Municipal Solid Waste (MSW) as feedstock**

## **Business case - FLEDGED**

# Business case I- ECONW treatment plant



# Business case - Biomass Price – ECONWARD price



Tipping fee = 40 €/ton (Spain)

Biomass cost = 114 € / ton

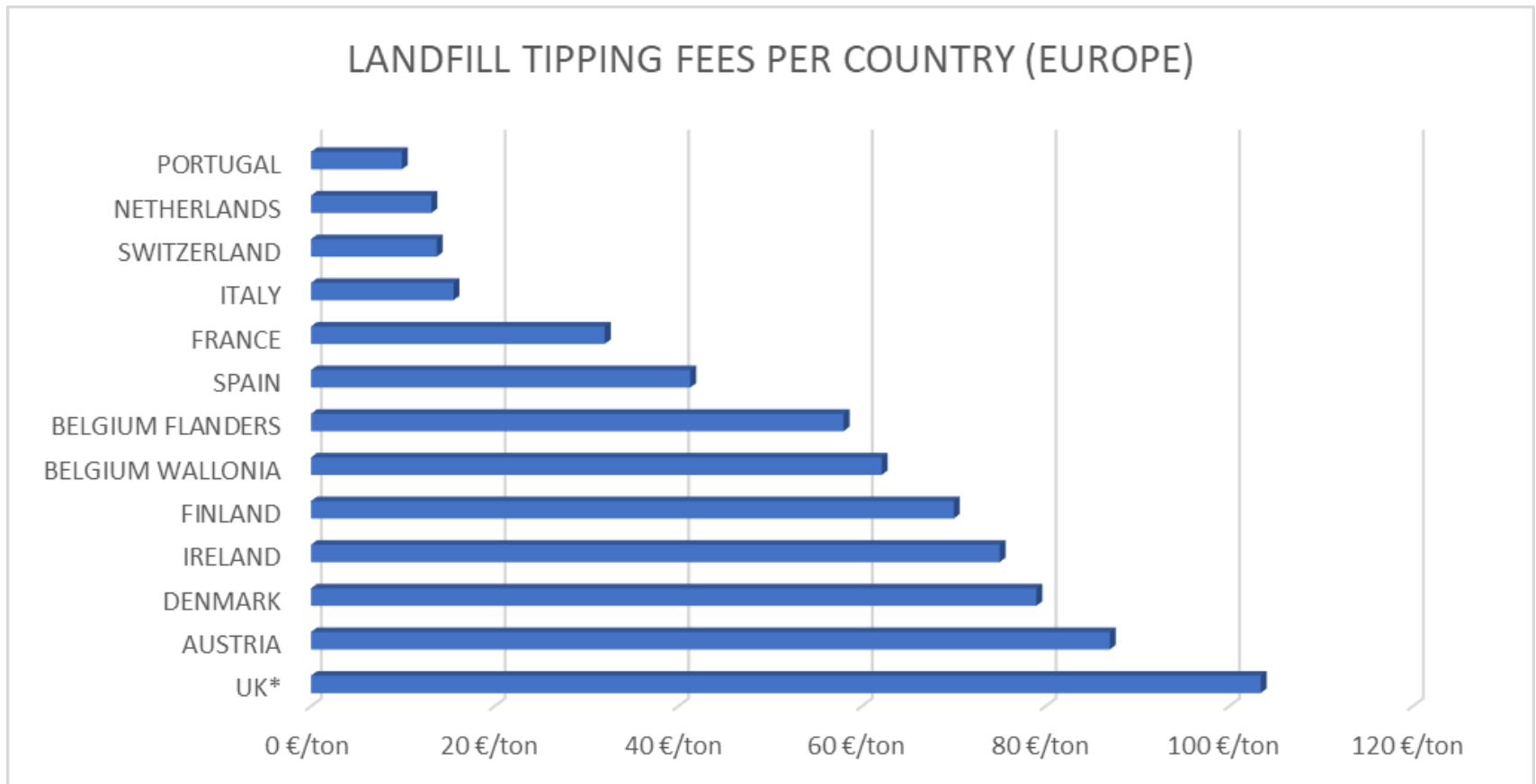
CAPEX = 68 %

OPEX = 32 %

Tipping fee reduces TCO 70 %!



# Business case - Tipping fee

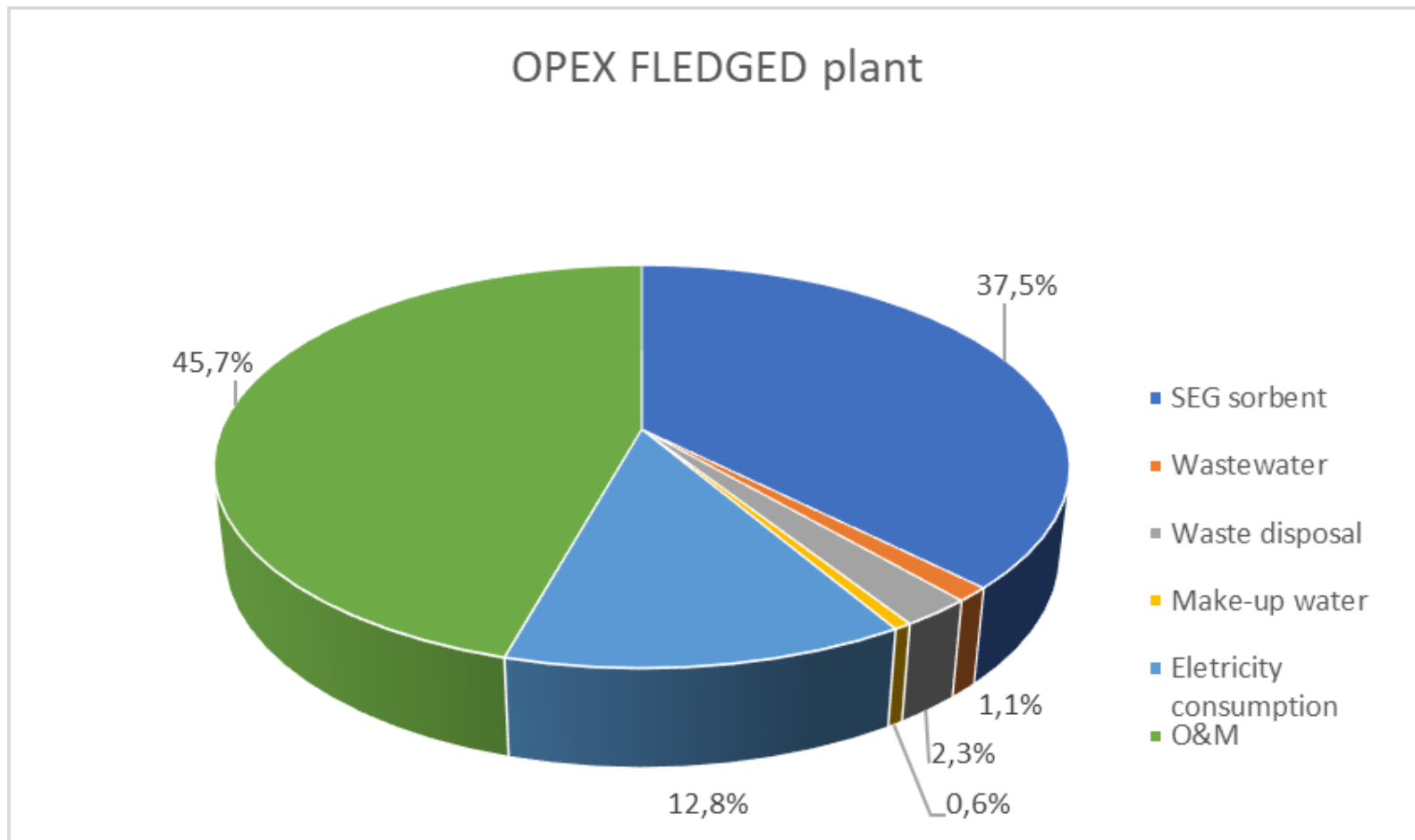


CEWEP: Confederation of European Waste-to-Energy Plants (15/12/2017)





## Business case - OPEX - FLEDGED plant



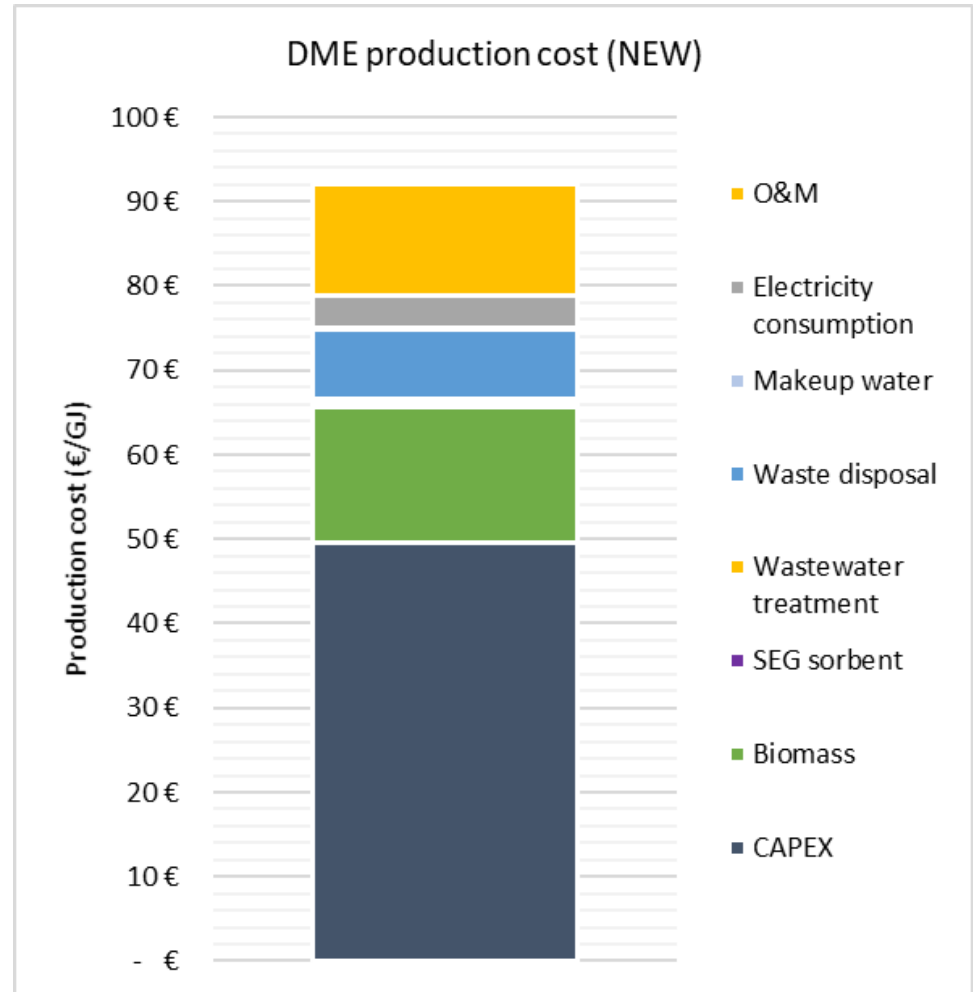
Tipping fee = 40 €/ton



# Business case - DME Price

## Conclusions:

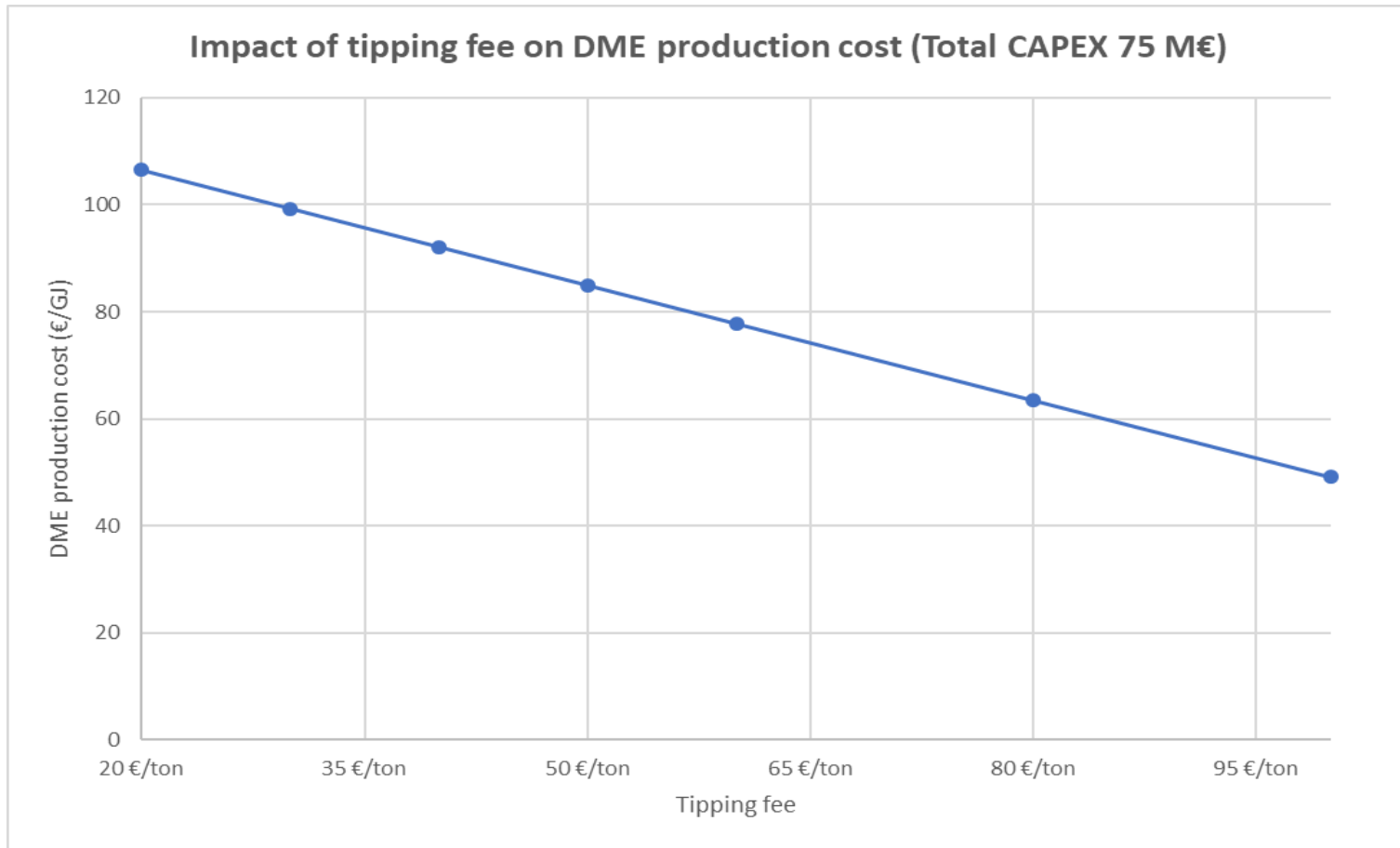
- DME production cost = 92 € / GJ
- DME production cost breakdown:
  - CAPEX (54 %)
  - OPEX (29%)
  - Biomass (17%)



Tipping fee = 40 € /ton (Spain)



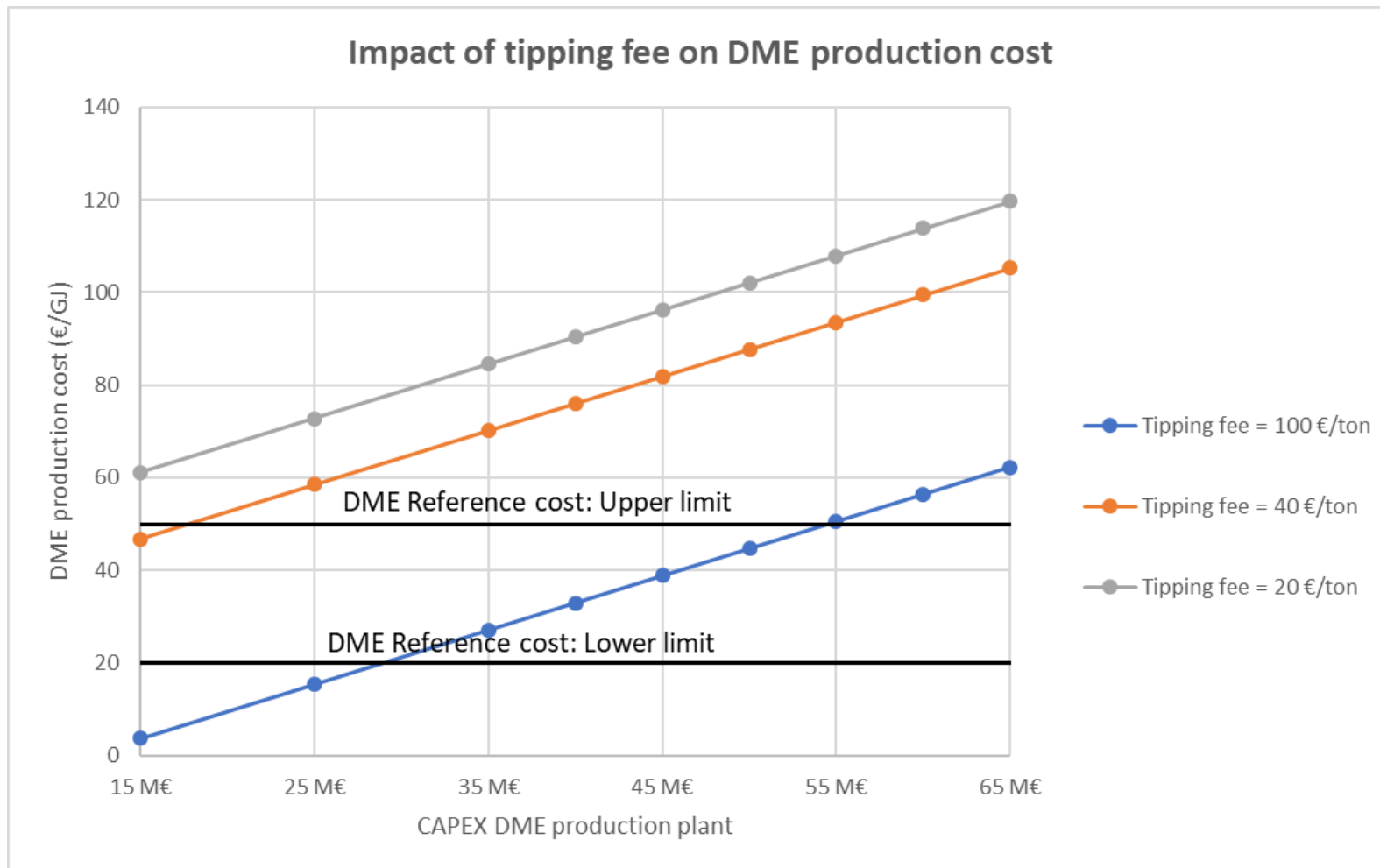
# Business case – Tipping fee vs. DME production cost



Impact of tipping fee on DME production cost



# Business case - CAPEX optimization



# Conclusions: Business model

Calculated DME sales price in this project: 92 €/GJ.

Commercial value: 20 – 50 €/GJ.

The most realistic possibilities to achieve this competitiveness are:

- **Reduce the CAPEX.**
- **Reduce the OPEX.**
- **Increase in the price of tipping fee.**
- DME becomes in an objective fuel and Authorities decide to **subsidize** its production.

**We are transforming a problem in an opportunity**





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