



FLEXIBLE DIMETHYL ETHER PRODUCTION FROM BIOMASS GASIFICATION WITH SORPTION ENHANCED PROCESSES

**An example of circular economy: municipal waste
collection, recycling process and DME synthesis
integration**



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



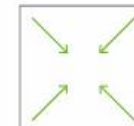
High treatment capacity

From 63,000 t/year per module



Scalable and modular

Adaptable, easy integration



Small footprint

270 m² of area required per module



Low operating costs

Rapid Return on Investment



Optimised and compatible

With existing technologies



What we do



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

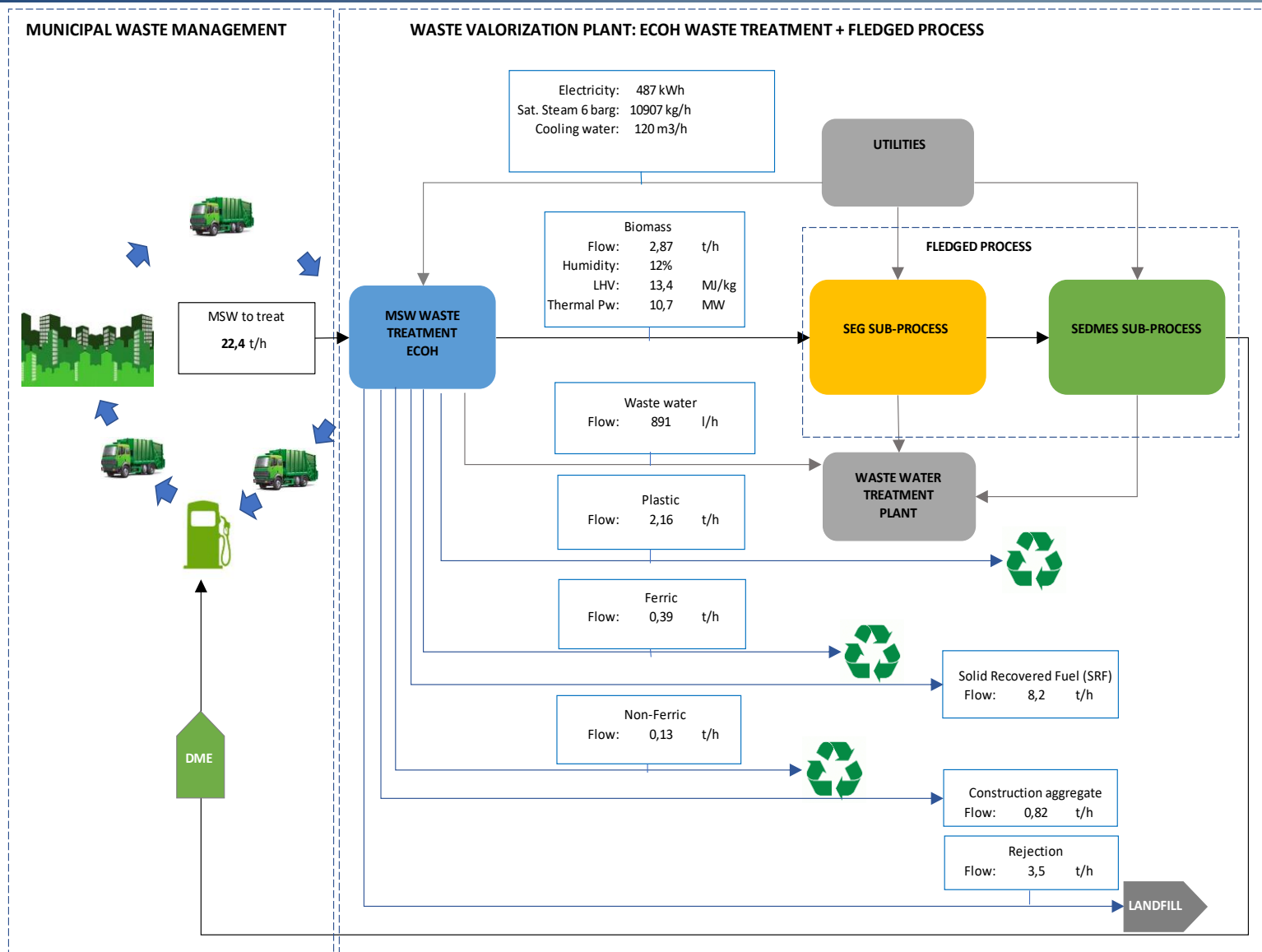
Hygienised, homogenous, biothermal stabilised, free from pathogens and chemically degraded.



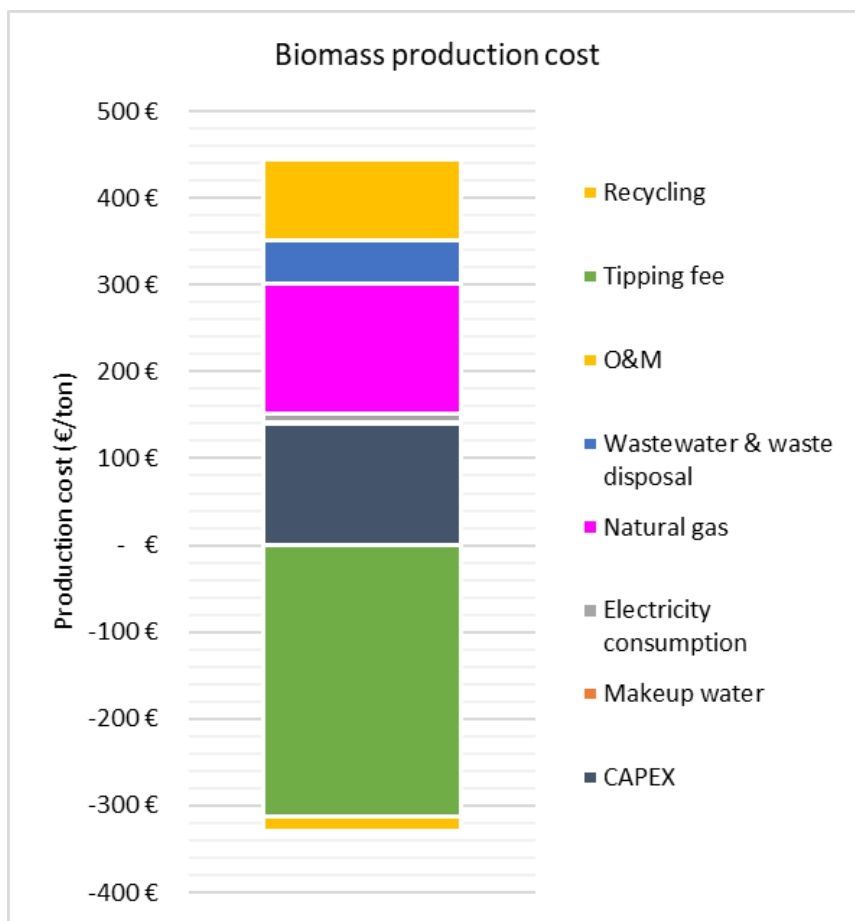


Municipal Solid Waste (MSW) as feedstock Business case - FLEDGED

Business case I- ECONW treatment plant



Business case - Biomass Price – ECONWARD price



Tipping fee = 40 € /ton (Spain)

Biomass cost = 114 € / ton

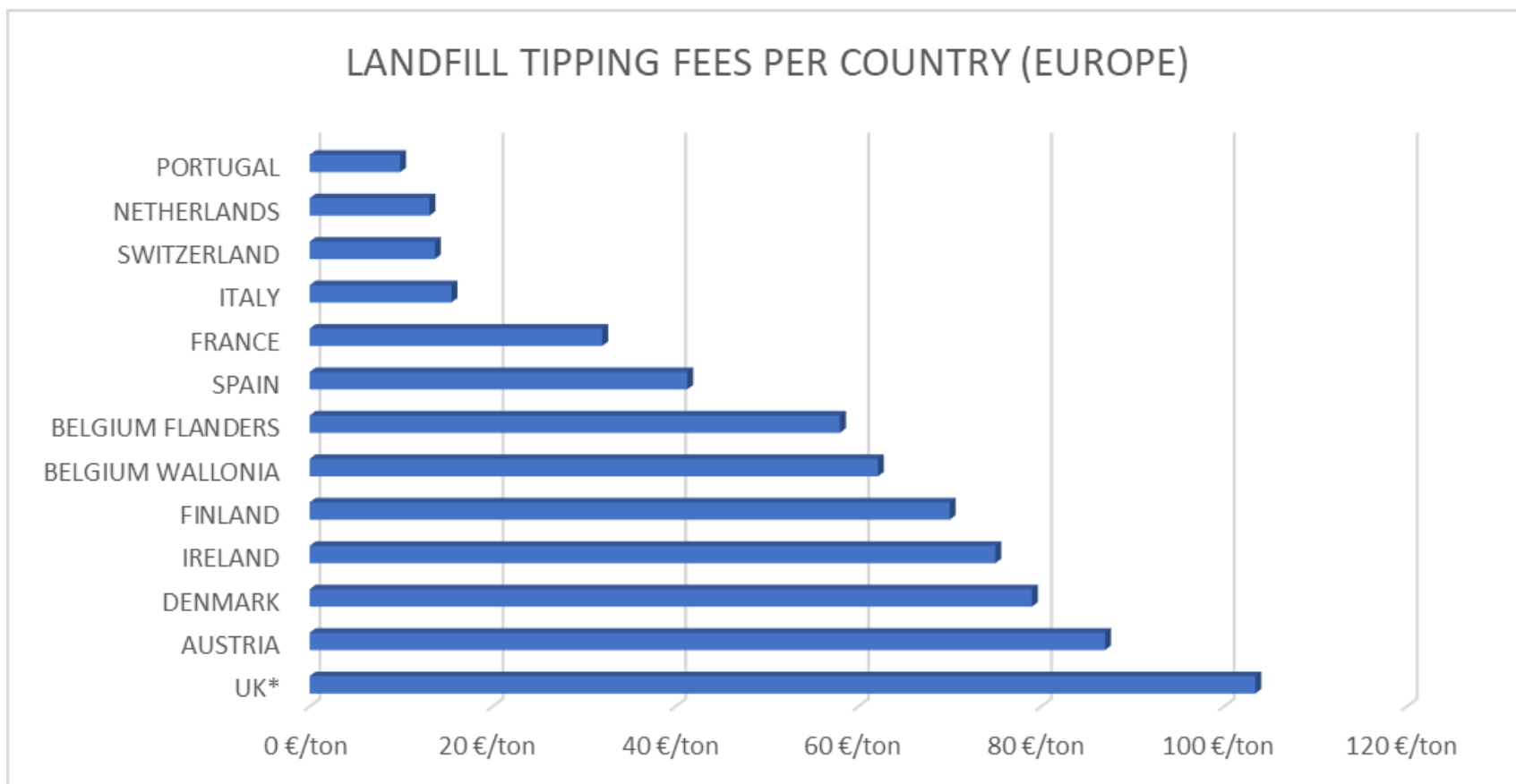
CAPEX = 68 %

OPEX = 32 %

Tipping fee reduces TCO 70 %!



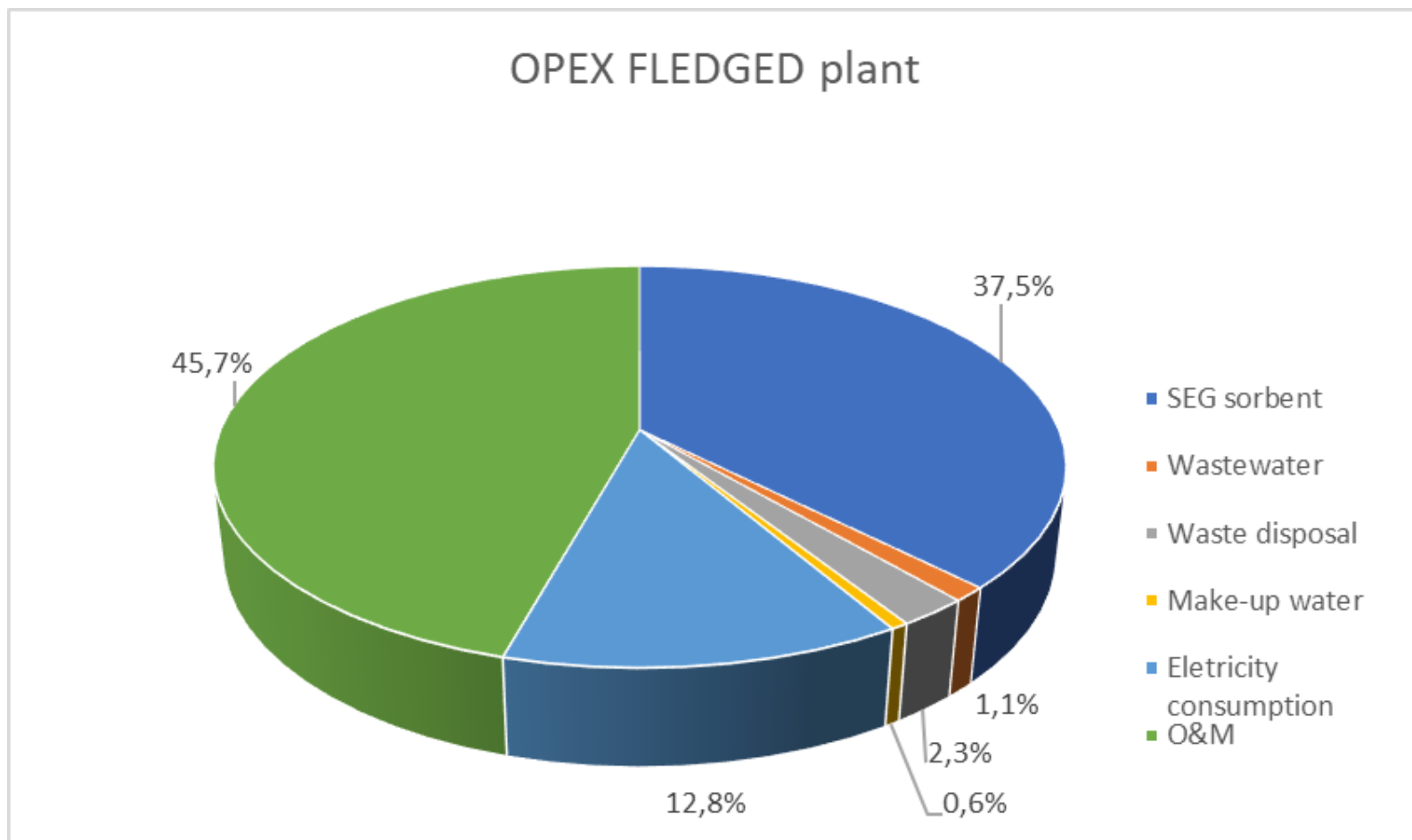
Business case - Tipping fee



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



Business case - OPEX - FLEDGED plant



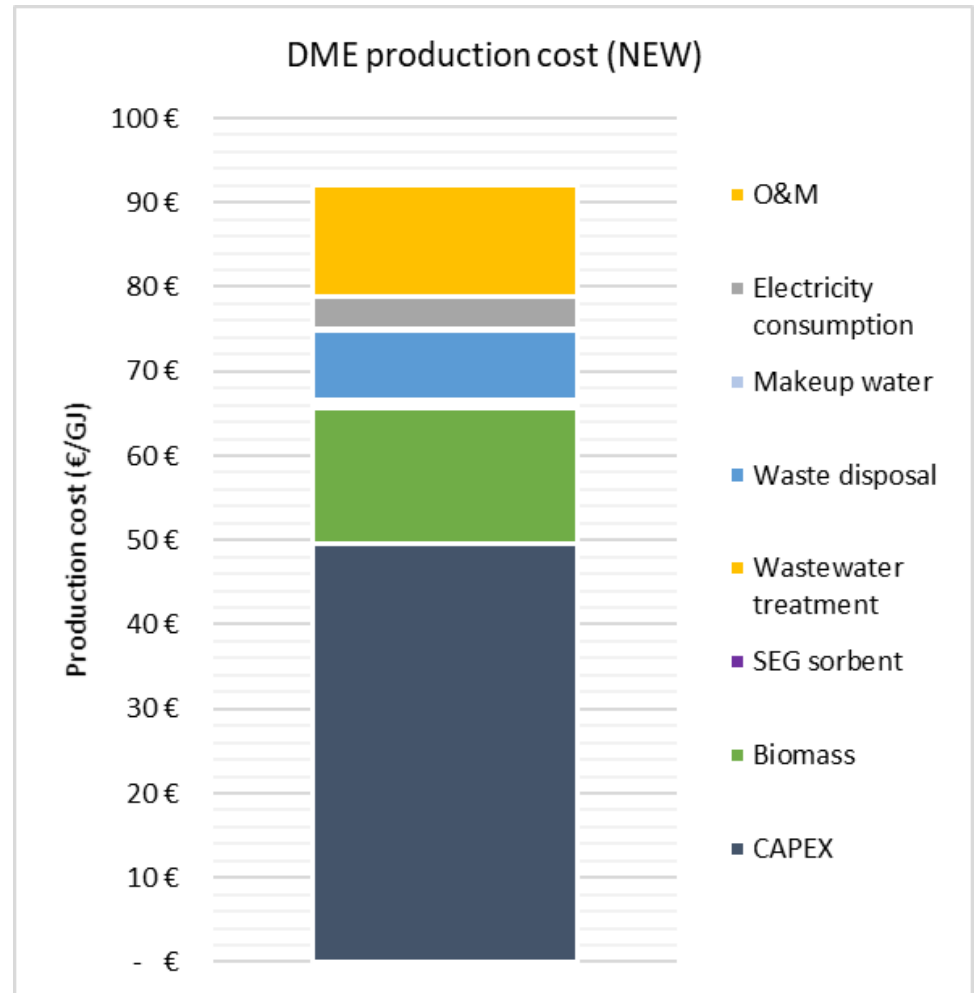
Tipping fee = 40 €/ton



Business case - DME Price

Conclusions:

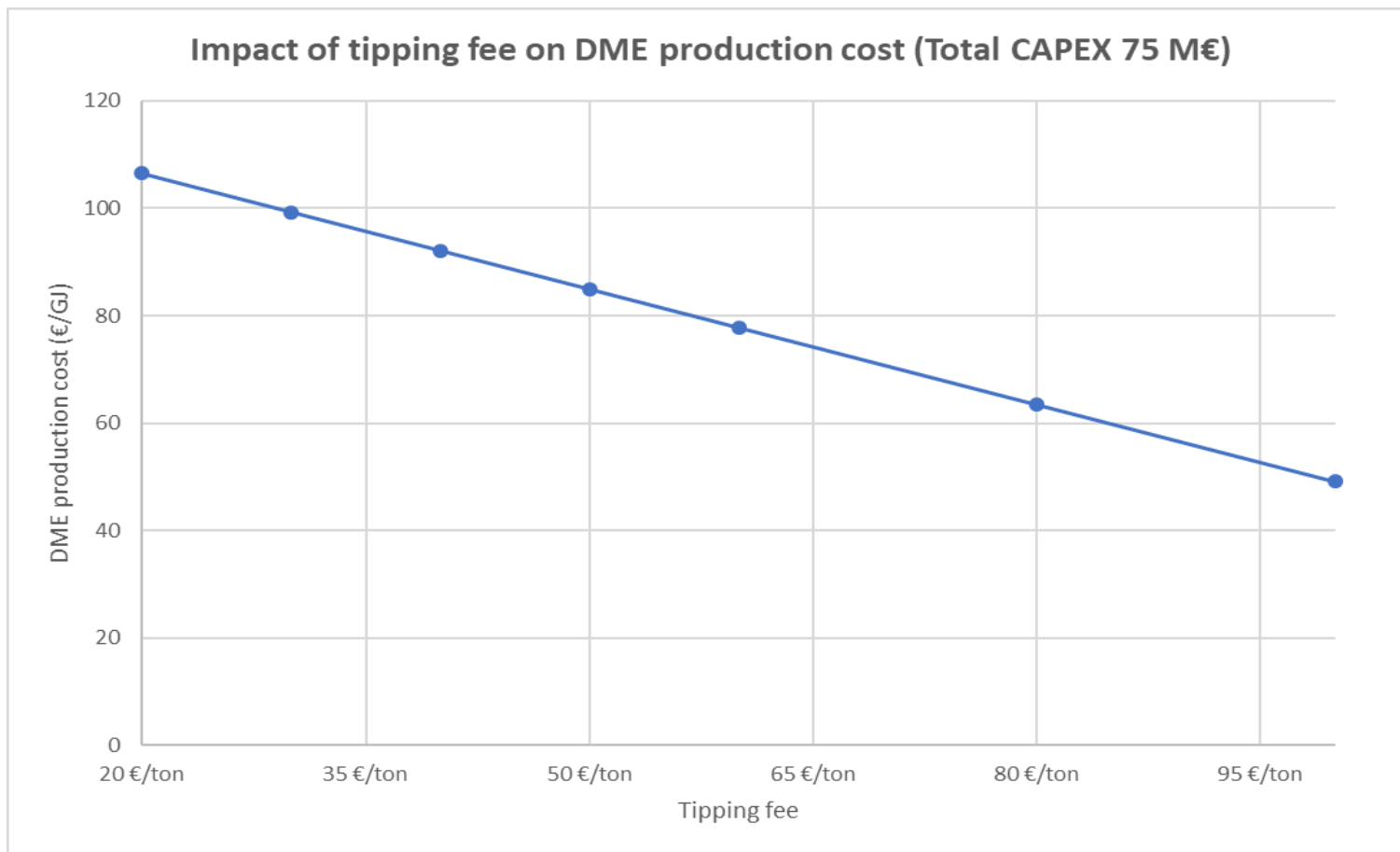
- DME production cost = 92 € / GJ
- DME production cost breakdown:
 - CAPEX (54 %)
 - OPEX (29%)
 - Biomass (17%)



Tipping fee = 40 € /ton (Spain)



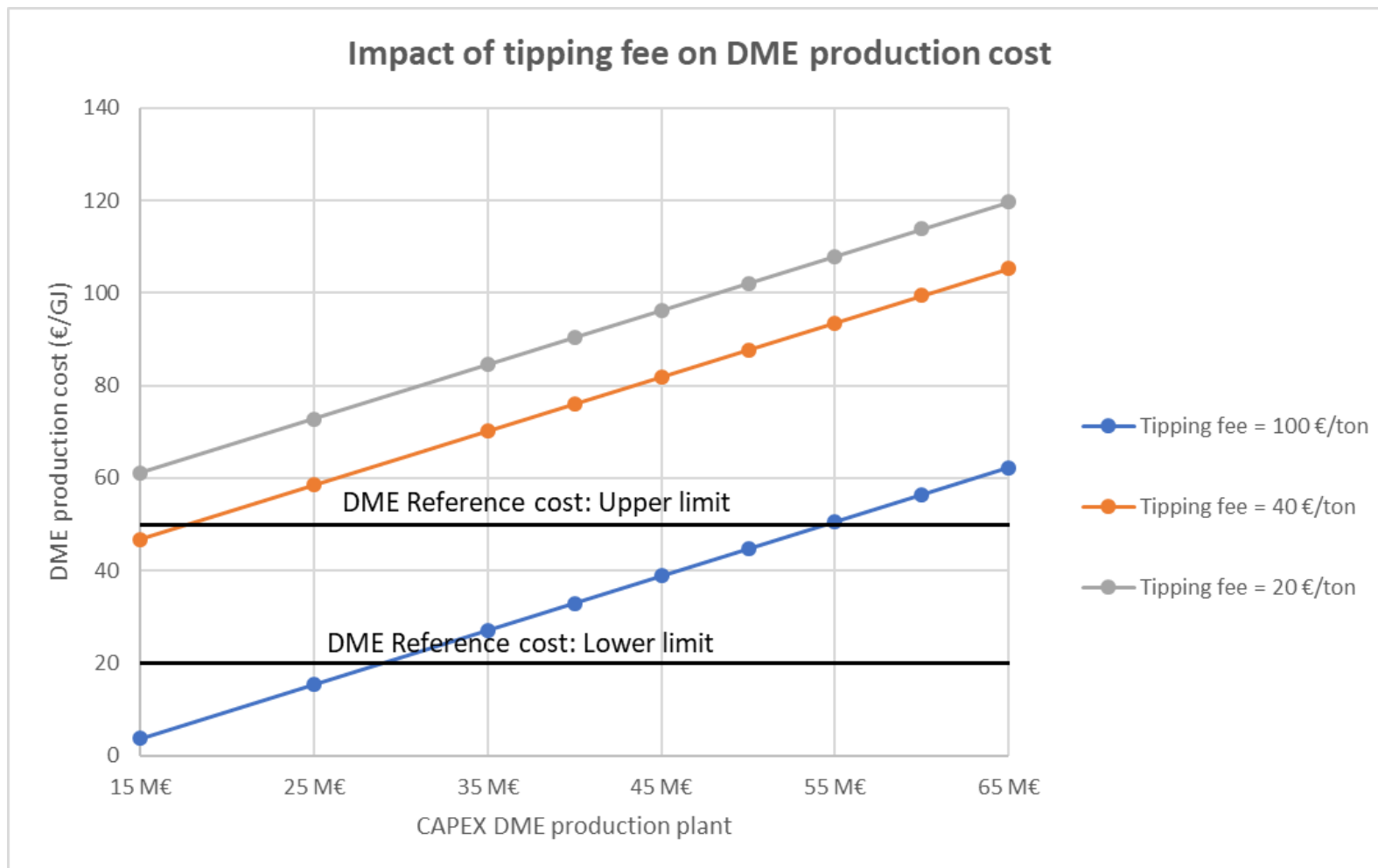
Business case – Tipping fee vs. DME production cost



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





This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727600

