TT2: Economics and Financing of RE-DH
Webinar, 18.06.2020

Economic Feasibility of Biomass District Heating

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CONTENT

Aim of the economic feasibility tool

Introduction to the economic feasibility tool

Calculation of an example

Sensitivity Analyses

ECONOMIC FEASIBILITY TOOL

- Comprehensive economic assessment of DH projects

- Dynamic calculation considering
  - Time of payments/revenues
  - Price adjustments/indexation
  - Heat sale development

- Calculation of heat prices
- Sensitivity analyses – analysis of influence factors / options

- Potential improvements:
  - Heat generation costs according to VDI2067
  - Automated sensitivity analysis

INPUT DATA SUMMARY

Technical data

- Expected annual heat demand → heat sale
- DH System efficiencies (boilers & DH grid) → fuel consumption

Economic data

- Costs for construction, installation, planning → total investments
- Current fuel prices and expected price indices → fuel costs
- Costs for personnel, maintenance, rent (e.g. land), other costs (insurance), …) → total running costs
- Subsidies → investment to be financed
- loan conditions → annuity
- Heat price → revenues

INPUT DATA - SCREENSHOTS

OUTPUT DATA SUMMARY

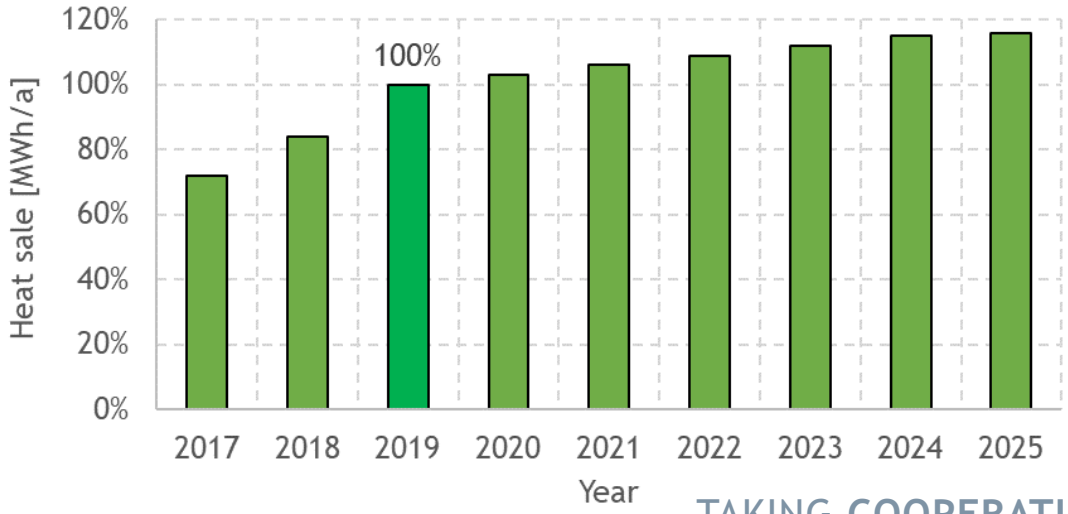
- Annual results of
  - Detailed breakdown of disbursements and inpayments
  - Net Present Value
  - Status of loan balance
  - Cumulative disbursements and inpayments

CALCULATION OF AN EXAMPLE TECHNICAL DATA

Basic plant description (commissioning 2017)

- 2 Biomass boilers with a total nominal capacity of ~1.500 kW
- 35 m^3 storage tank
- 3.000 m^3 storage for (loose) wood chips

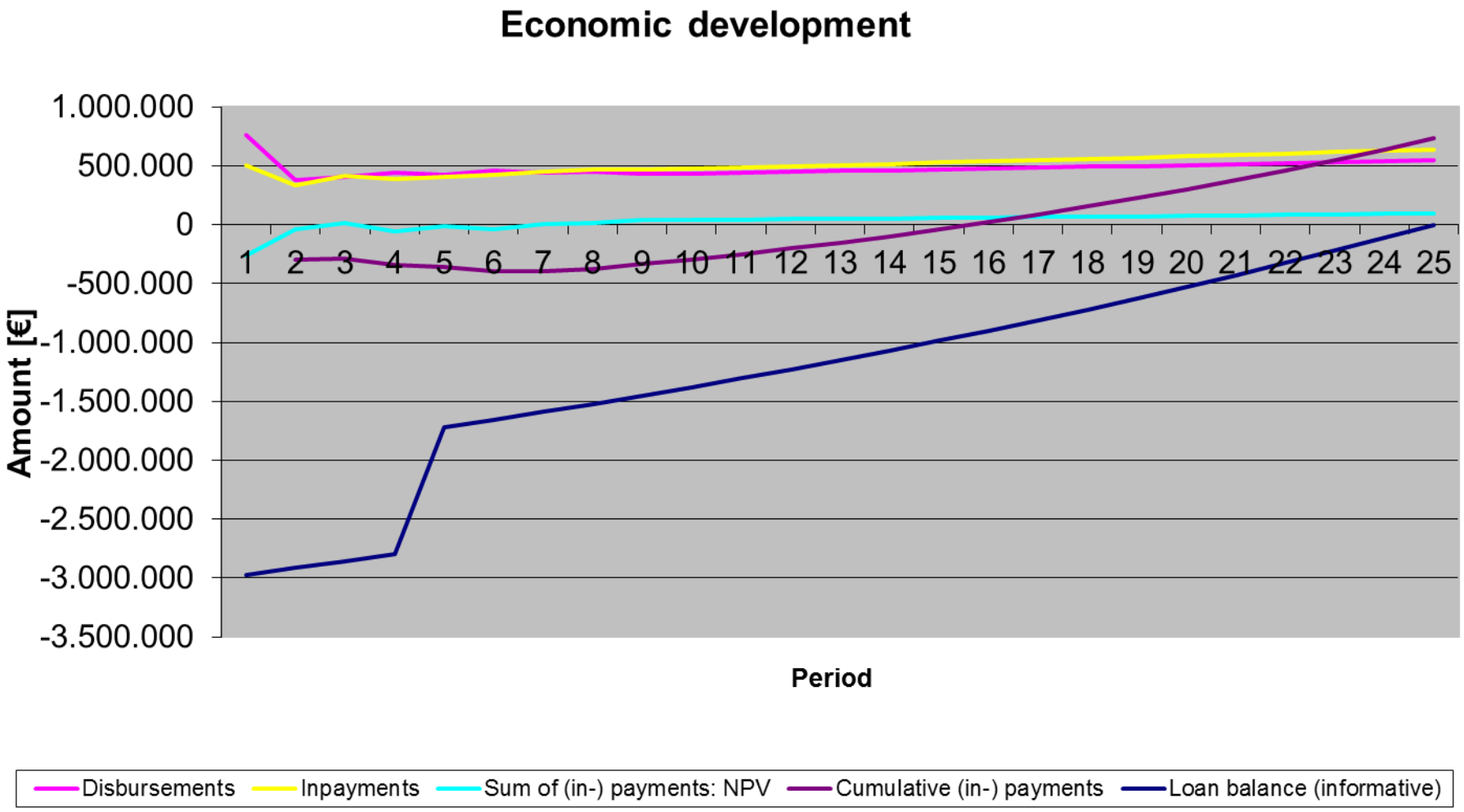
- DHN trench length ~4.500 m
  - Temperature level 85°C / 55°C
  - 56 consumers / Heat sale 4.197 MWh/a (= 100%)



CALCULATION OF AN EXAMPLE

- Real project data (from QM Heizwerke database!)
  - xxx
  - xxx

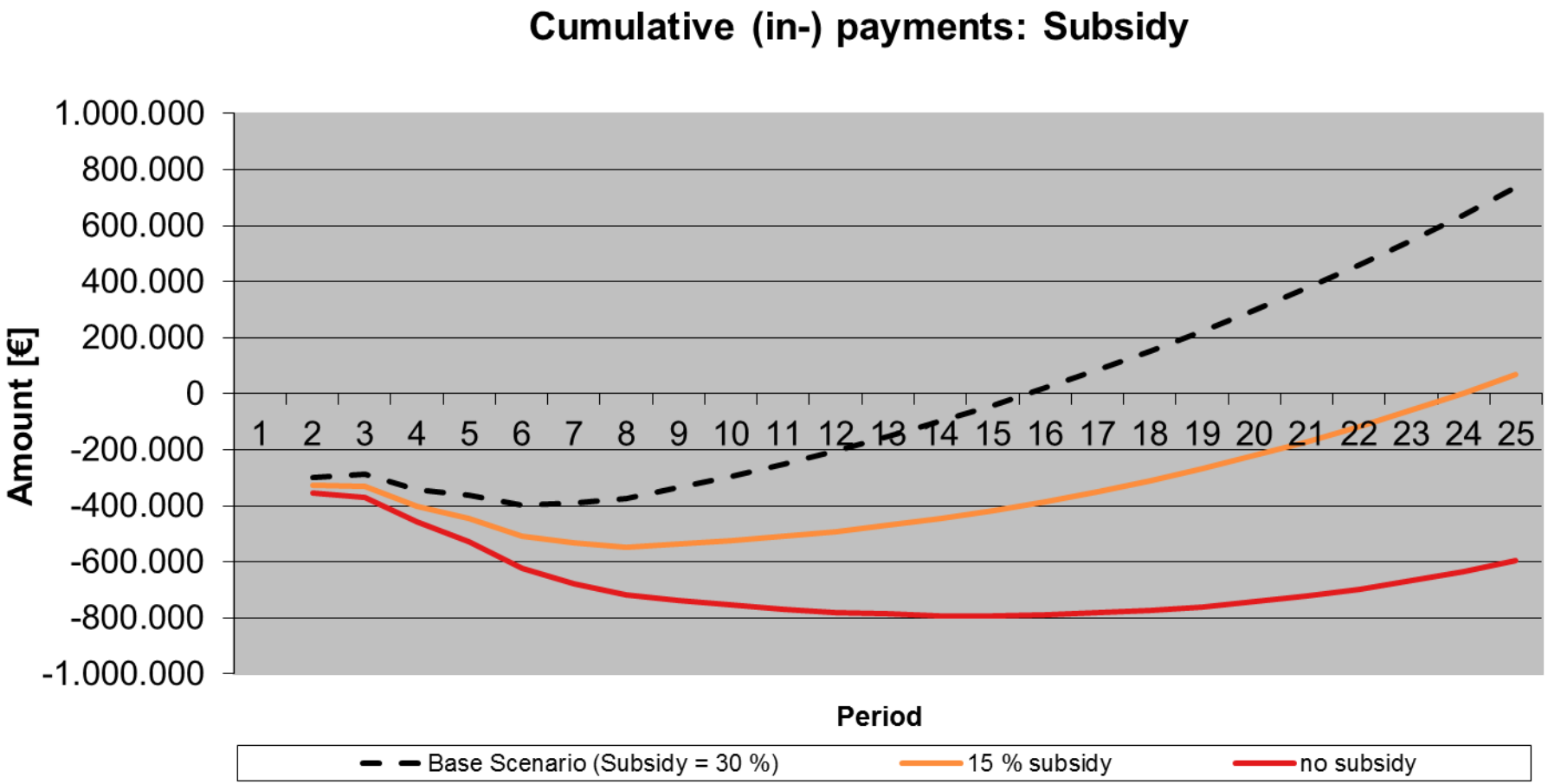
RESULTS BASE SCENARIO



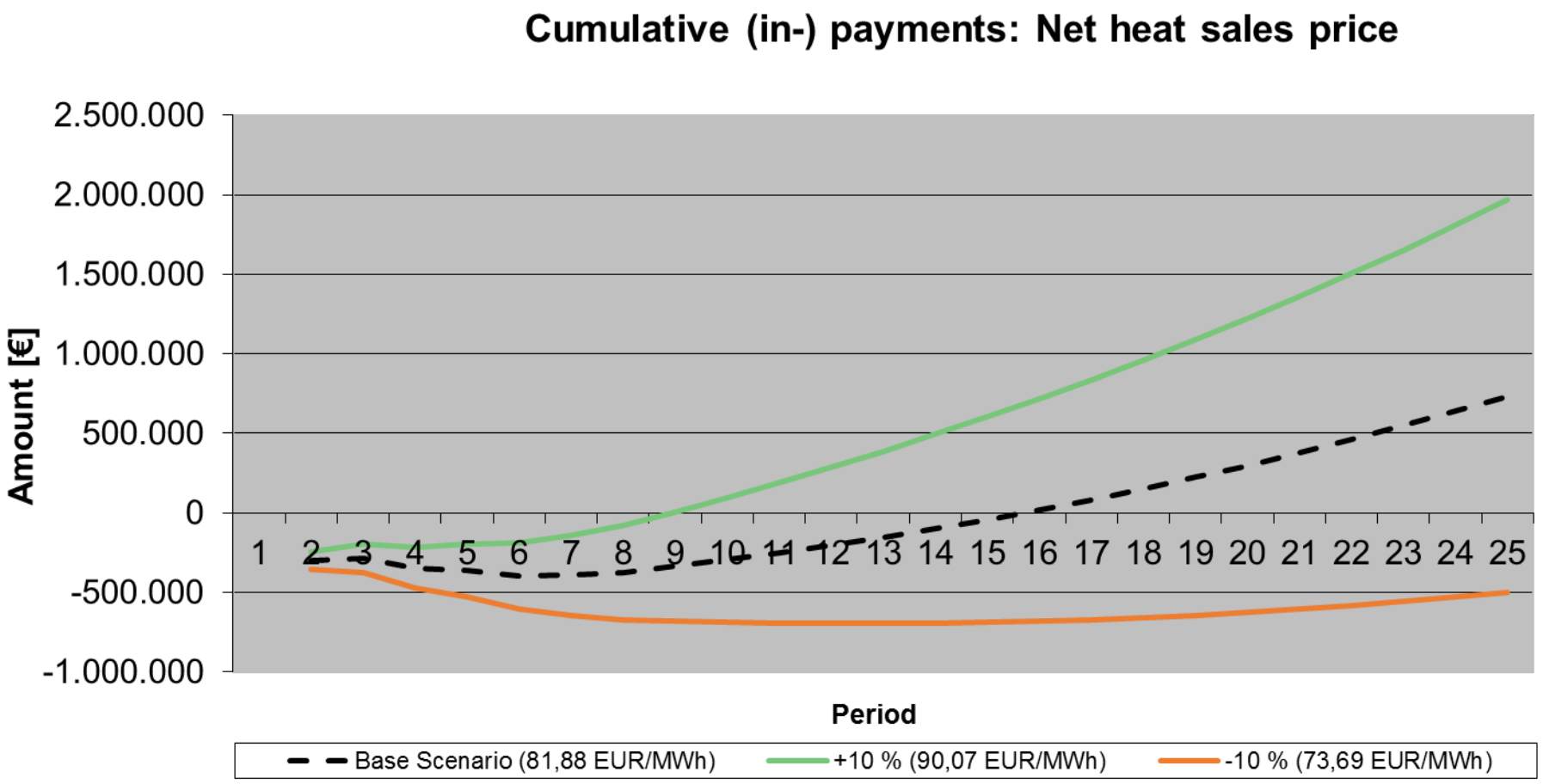
INPUT SENSITIVITY - FOREWORD

- Few words… ?
  - Even if inputs are carefully assess …
  - Results must be always interpreted based on the assumptions / parameters

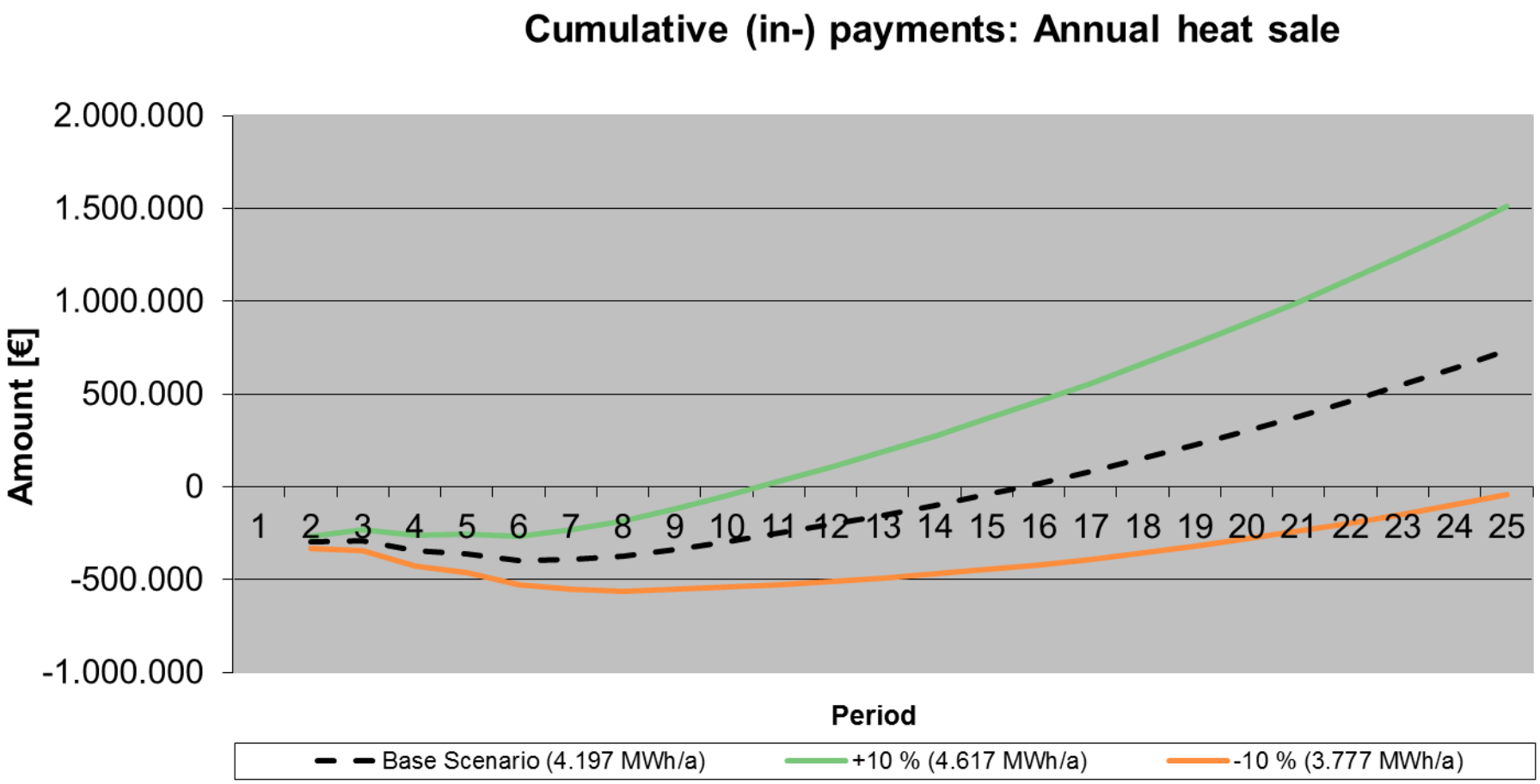
SUBSIDY / INVESTMENT



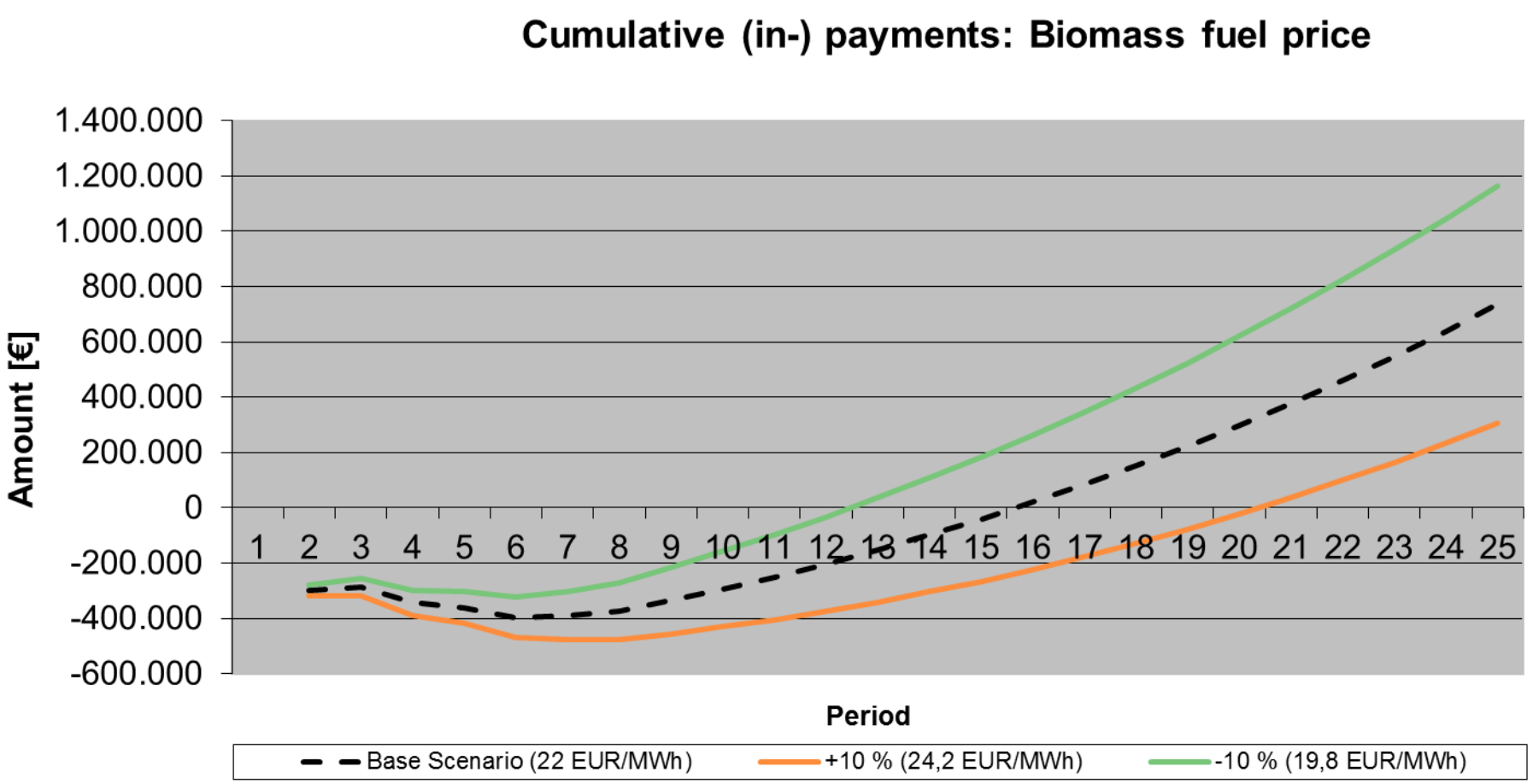
NET HEAT SALES PRICE



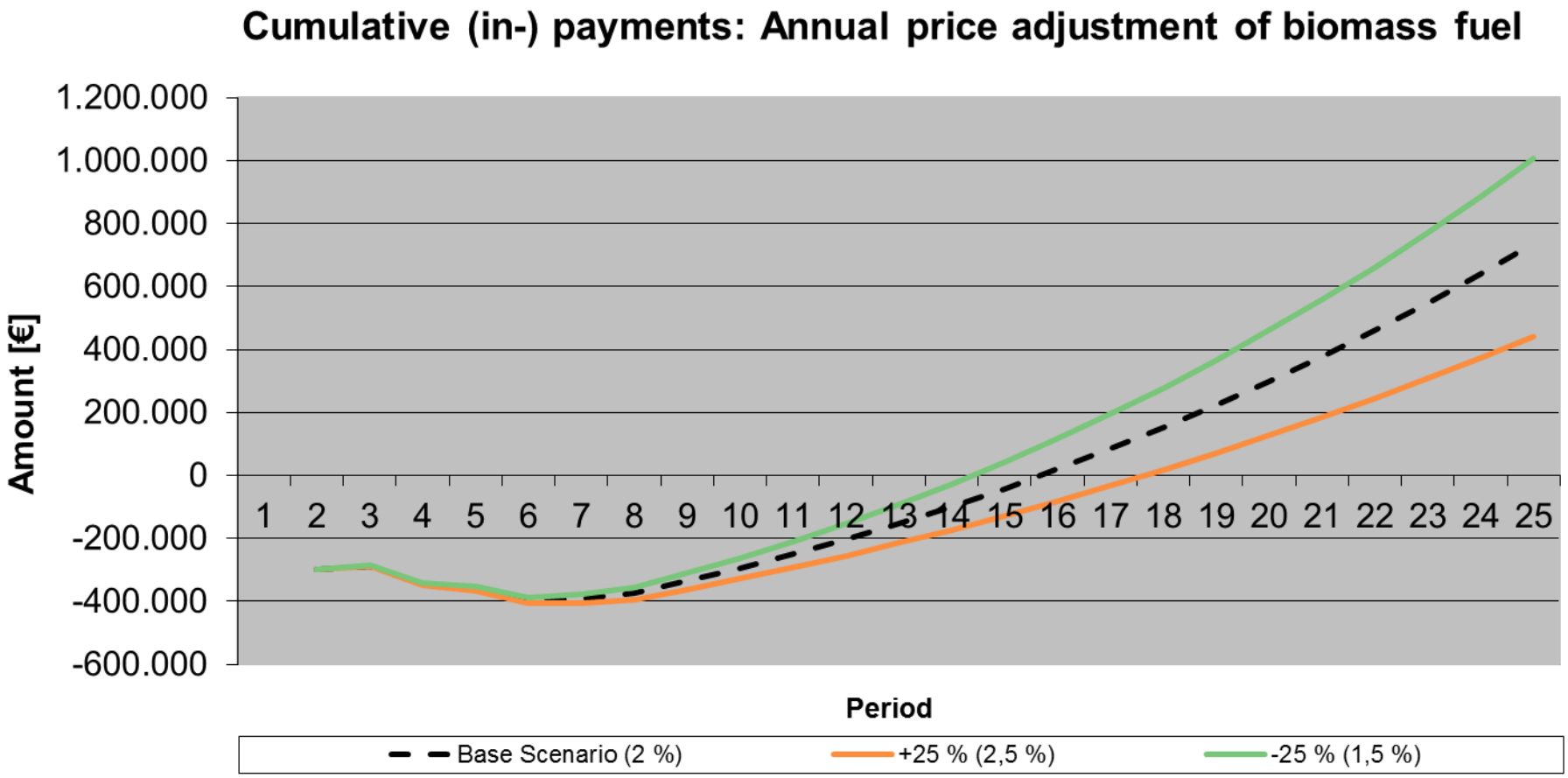
ANNUAL HEAT SALE



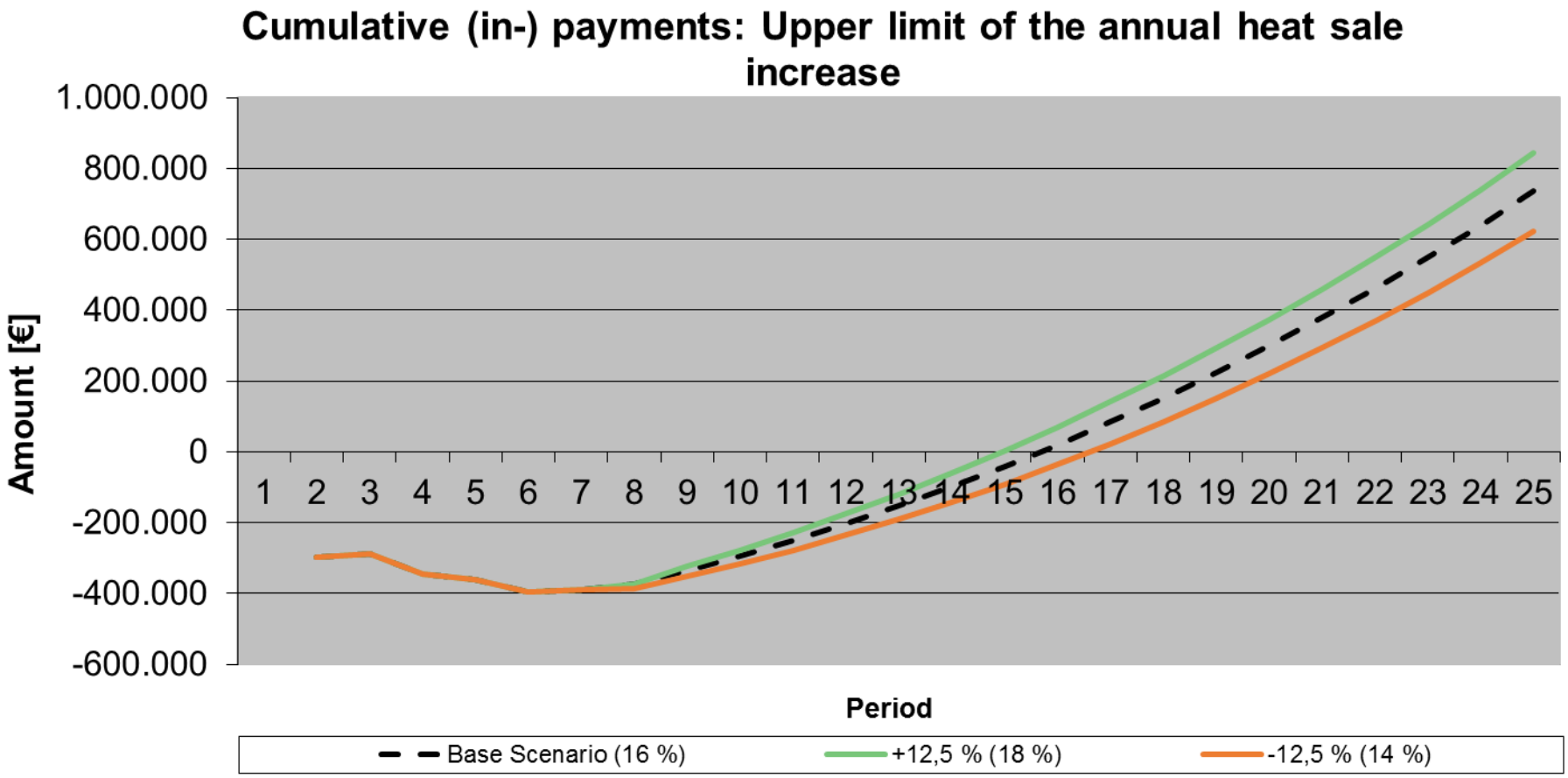
BIOMASS FUEL PRICE



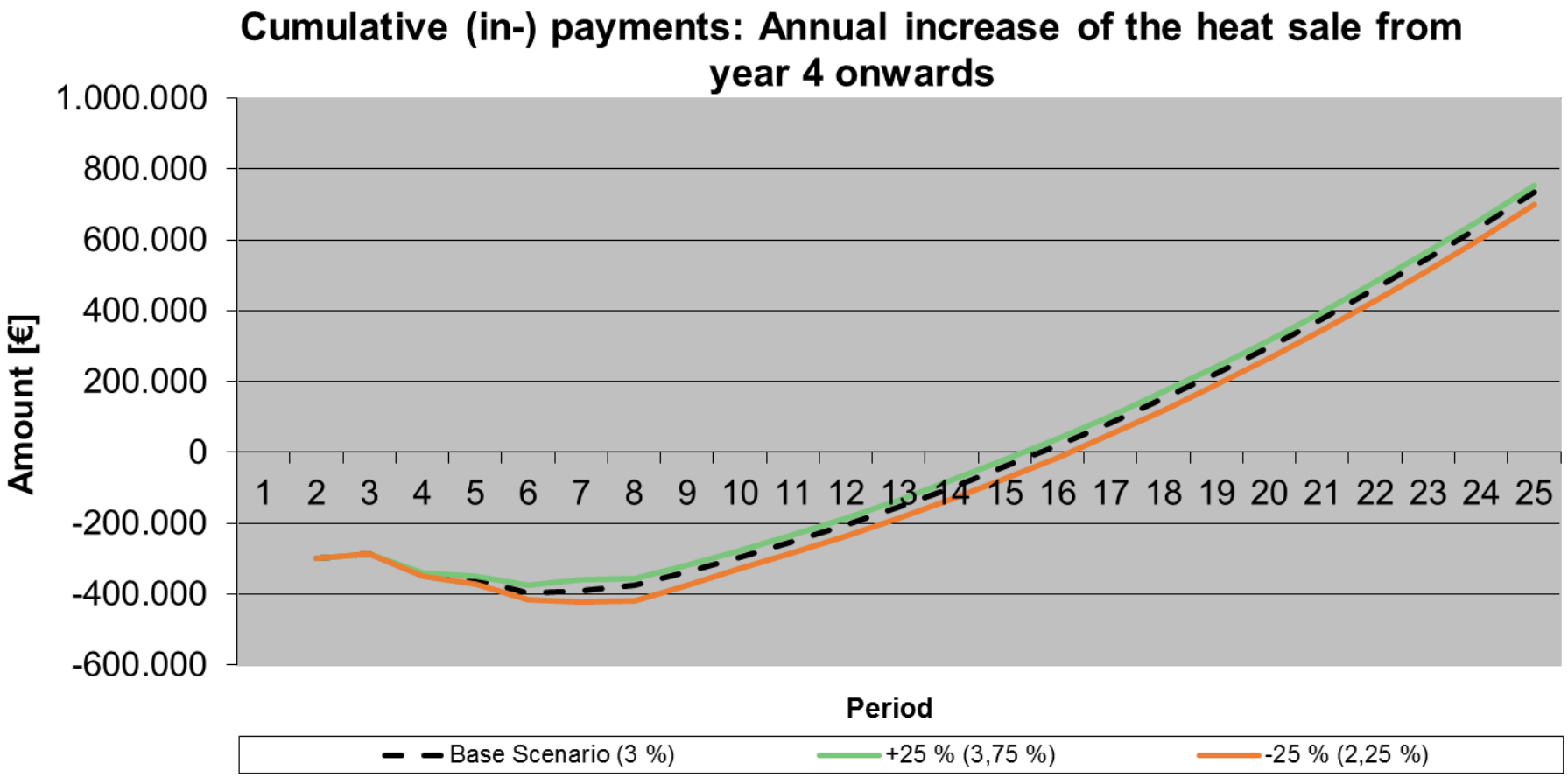
ANNUAL PRICE ADJUSTMENT OF BIOMASS FUEL



UPPER LIMIT OF THE ANNUAL HEAT SALE INCREASE



ANNUAL INCREASE OF THE HEAT SALE FROM YEAR 4 ONWARDS



INPUT SENSITIVITY - CONCLUSIONS

HEAT PRICE CALCULATION

- XXX
  - XX
  - XXX

THANK YOU!

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