



• Vol.17

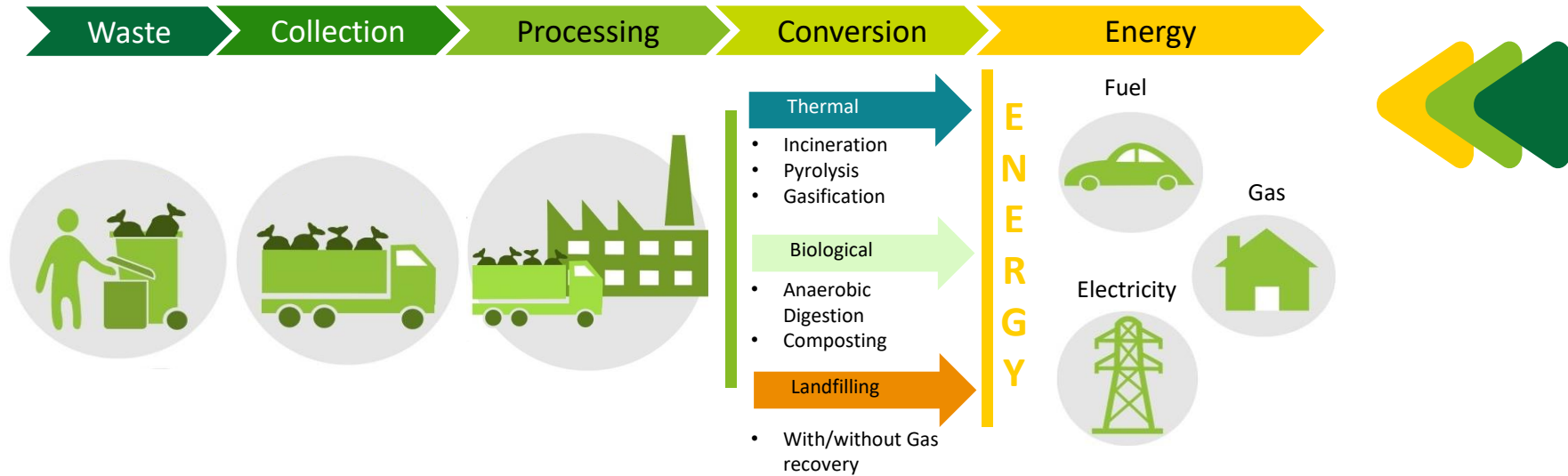
Fueling a Sustainable Future: Waste-to-Energy Investment Landscape



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Waste-to-Energy (WtE) value chain



Biomethane can play a crucial role in accomplishing the European Union's (EU) 2030 Greenhouse Gas (GHG) reduction target and reaching net-zero emissions by 2050. There are sufficient renewable feedstocks available in the EU-27 to achieve the REPowerEU 2030 target (35 bcm). An estimate indicates that up to 41 bcm of biomethane could be produced in 2030 in EU. Greece is anticipated to have an anaerobic digestion potential of 0.51 bcm/year and a thermal gasification potential of 0.03 bcm/year in 2030.

Allocated investments for biomethane production per country for 2030 (€ billion)

REPowerEU

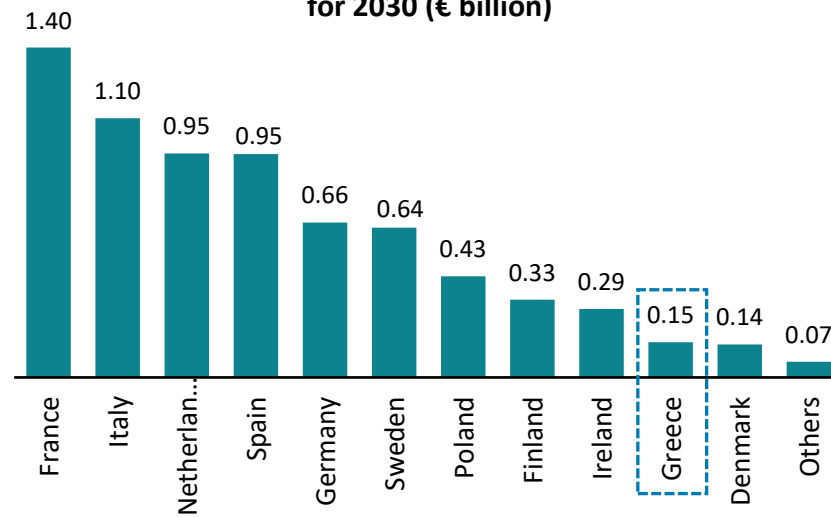


35

bcm of biomethane by 2030 in EU

Total planned investments for biomethane in EU

| | |
|-------------------------|------------|
| 2023-2025 | € 4.1 bn. |
| 2026-2030 | € 12.4 bn. |
| Timeframe not specified | € 1 bn. |

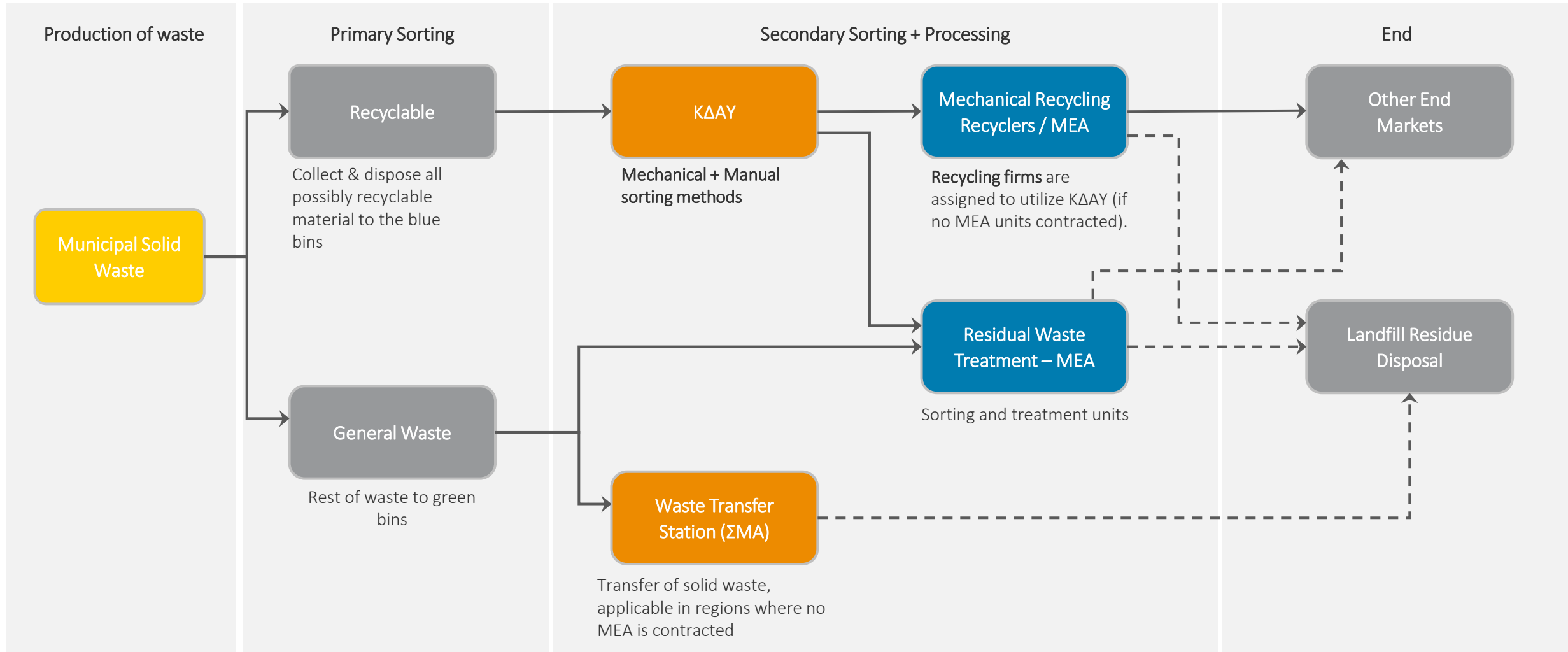


Most of the planned investment is for greenfield plants, while only \$0.4 billion is earmarked for brownfields, which includes the conversion of biogas-CHP plants to biomethane production facilities. Primarily, the proposed investments will be concentrated in France and Italy. Greece currently stands 10th in terms of biomethane production investment, with 150 € million allocated.

Greek value chain of municipal solid waste

Key takeaways

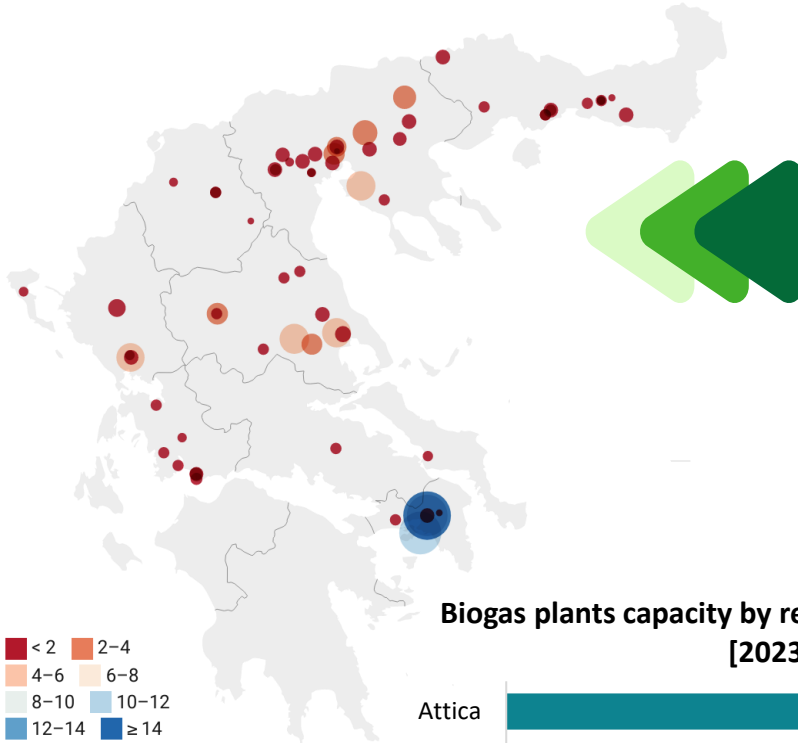
- Complex value chain which is not complete and is currently being established
- Specific areas of investment interest include the waste management units of the value chain



Note*: Complementing blue bins, in some areas there are specific bins only for plastic waste

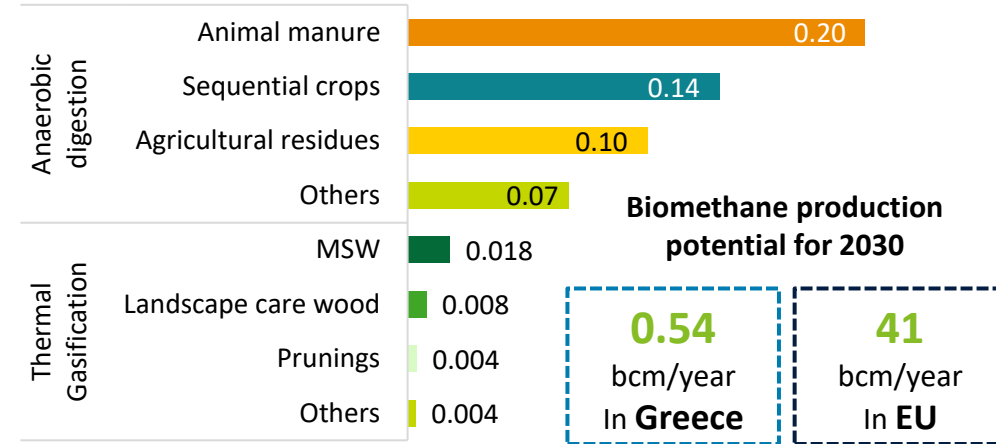
Source: Deloitte Analysis, National Waste Management Plan

Biogas plants in Greece (MW), [2023]

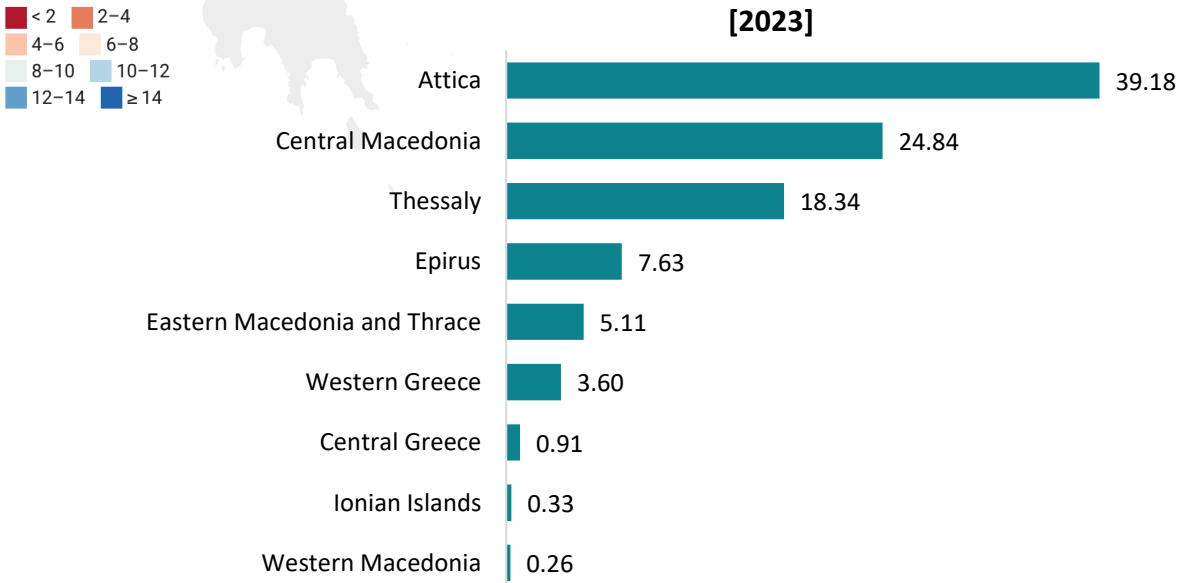


Greece currently operates 66 biogas units with a total nominal power of approximately 100 MW, 13 of which are Water Treatment Units/Landfills and 53 of which are Agricultural and Livestock Units. Greece produced 5.52 million tonnes of municipal solid waste (MSW) in 2018, of which 43% was organic, 24% paper, and 14% plastic waste. In the same year, only 1.5% of MSW was utilized for energy, whereas the target for 2030 is 32%. Aside from MSW, Industrial solid waste is also currently being exploited in Greece.

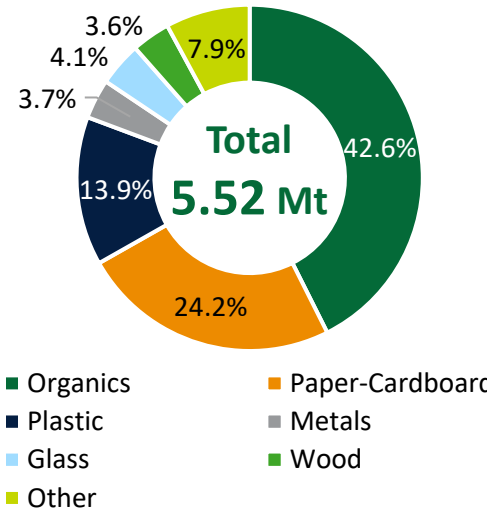
Anaerobic digestion and Thermal gasification for biomethane production potential in 2030 per feedstock in Greece (bcm/year)



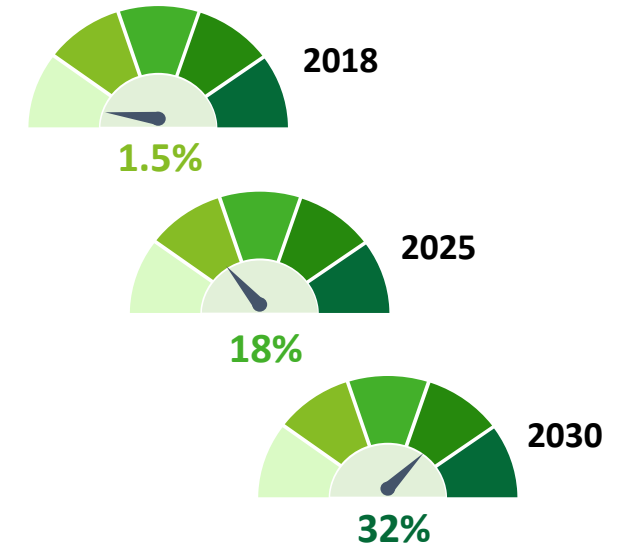
Biogas plants capacity by regions in Greece (MW), [2023]



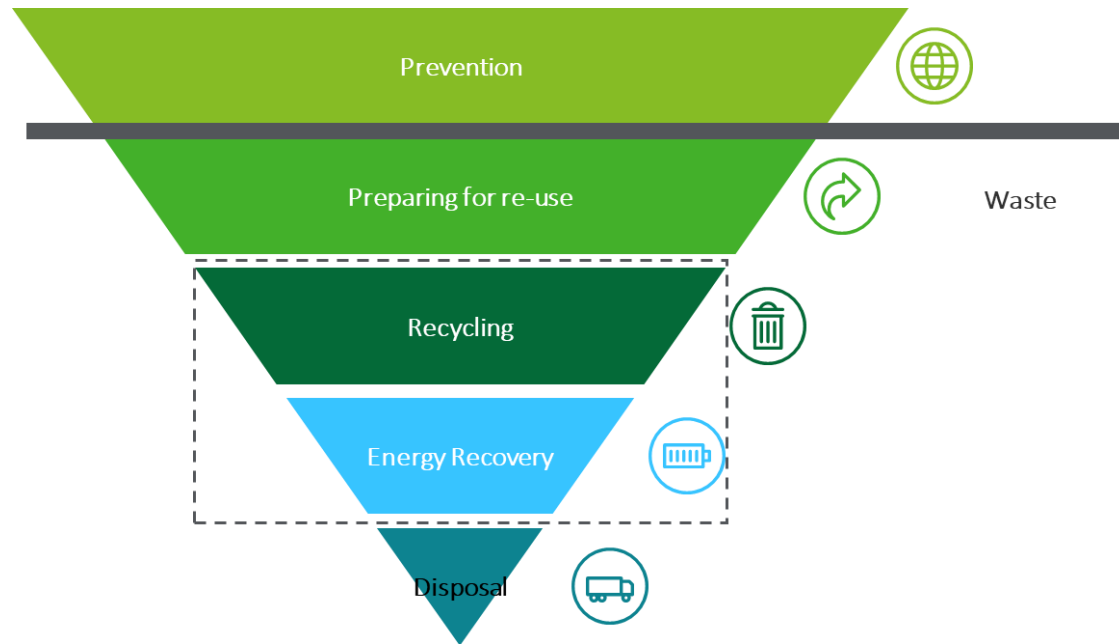
Share of Municipal Solid Waste - MSW (%) in Greece [2018]



Energy Utilization of MSW in Greece [2018-2030]



Waste Framework Directive 2008/98/EC – Five-step “waste hierarchy”



Use of waste for energy purposes is **part of a wider framework** related with the waste lifecycle

Key prerequisites for commercial success for waste-to-energy

1

Viable business models

- I. Business models need to **develop across the various stages** of the value chain, incl. **decisions on centralized vs decentralized processes and geographic locations**
- II. **Logistics** constraints need to be alleviated, to ensure **constant and uniform supply of waste and high operating capacity**

2

Regulatory & Political Support

- I. **Regulatory drivers** are critical to **stimulate demand** (e.g., minimum blending obligations for transport fuels and natural gas distribution)
- II. **Financial reforms** incl. economic incentives for waste-to energy use and disincentives for fossil counterparts to increase cost competitiveness of waste-to-energy

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