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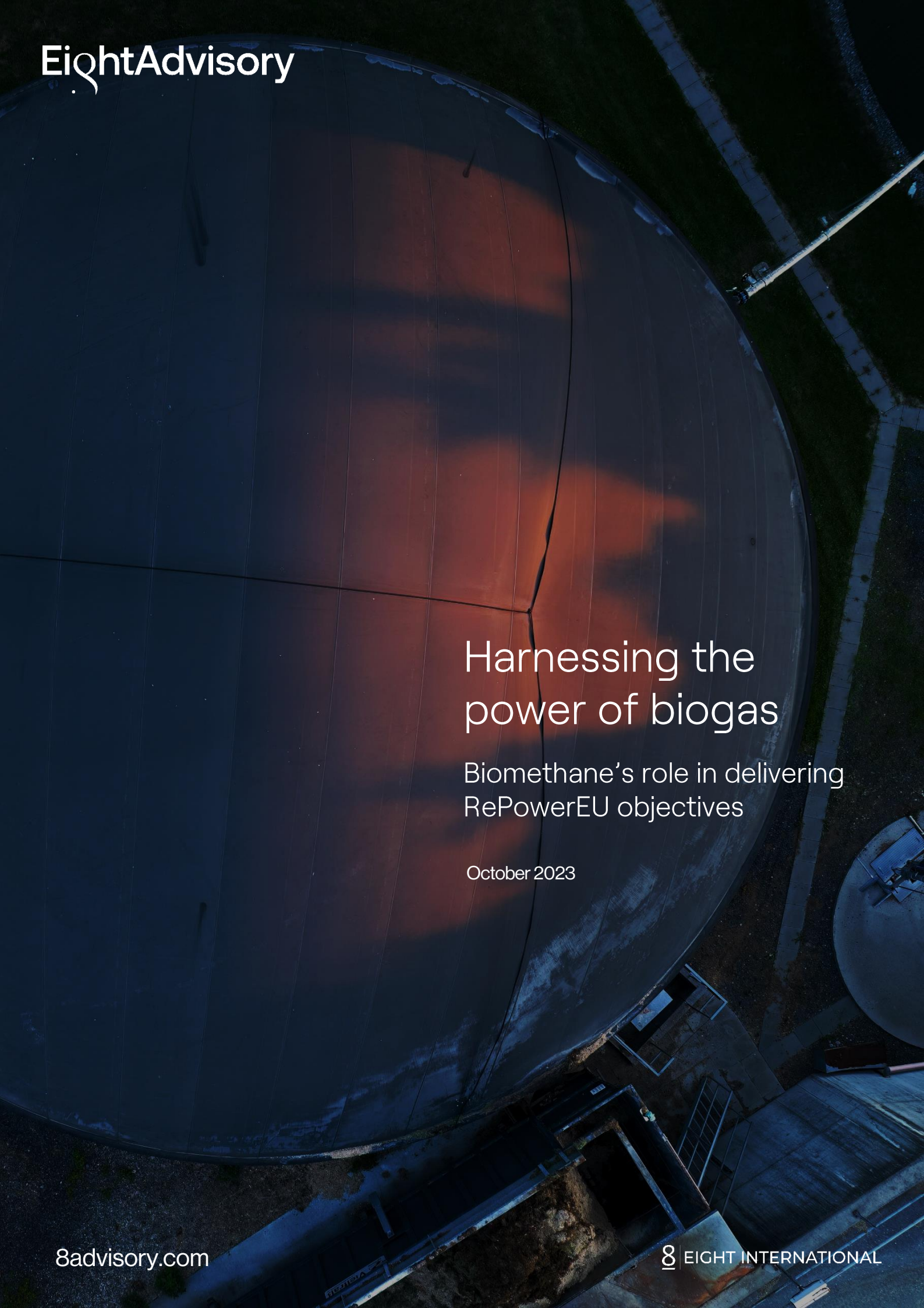

Harnessing the power of biogas

Biomethane's role in delivering RePowerEU objectives

October 2023

Biogas (or biomethane) will play an important role in delivering RePowerEU objectives, notably energy supply diversification and clean energy production

Recent geopolitical events have emphasized the importance for the European Union to increase its resilience across strategic sectors including energy. The reduction of the dependence of the EU on energy imports is key to mitigate risks of energy shortages and price volatility, affecting end-user prices and industry competitiveness. To address these challenges, the EU launched the RePowerEU plan in 2022, aimed at reducing energy consumption, diversifying energy sources, and promoting clean energy by mobilizing EUR 300 billion by 2030.

Biogas production generates renewable energy through the anaerobic digestion of organic materials such as agricultural or industrial wastes, or sewage. By decarbonizing end-uses (e.g. heat, power, fertilizer), it is a significant driver in reducing global greenhouse gases (GHG) between 10% and 13%, according to the European Biogas Association.

The biogas sector has the potential to reduce Global Greenhouse Gases (GHG) emissions by 10 – 13%

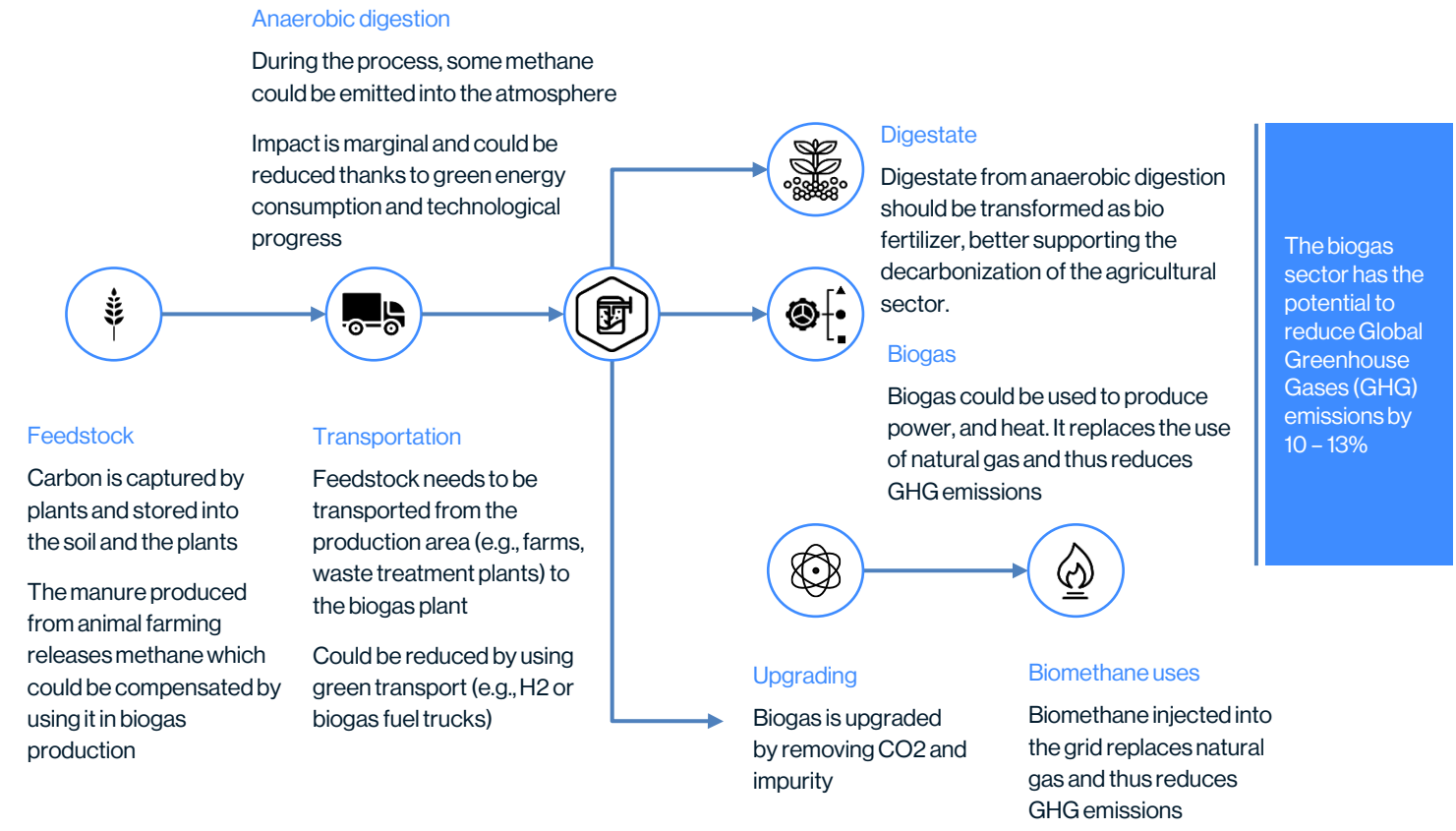

Fig. 1 Biogas production value chain
Sources: EBA, Eight Advisory analysis

Additionally, the development of biogas production offers two very local key benefits. Firstly, it addresses the growing challenge of waste processing and utilization, especially as regulations on recycling, landfilling and incineration become more stringent. Secondly, biogas production generates digestate, which should be transformed as bio fertilizer, better supporting the decarbonization of the agricultural sector.

France and Spain with the highest growth potential in Europe

The production of biogas and biomethane has experienced a significant increase in Europe in the recent past, rising from 163 TWh in 2016 to 196 TWh in 2021. This represents 4.5% of the gas consumption of the European Union in 2021. Biogas production has been primarily used for power and heat generation through cogeneration. However, there has been a shift towards upgrading biogas to biomethane for grid injection (from 10% of total biogas production in 2016 to 19% in 2021). This ramp up is driven by the development of more efficient alternative solutions to produce heat and power such as heat pumps, solar PV, and wind power.

EU biogas and biomethane production growth is expected to accelerate in the future to reach around 8 – 10% per year between 2021 and 2030

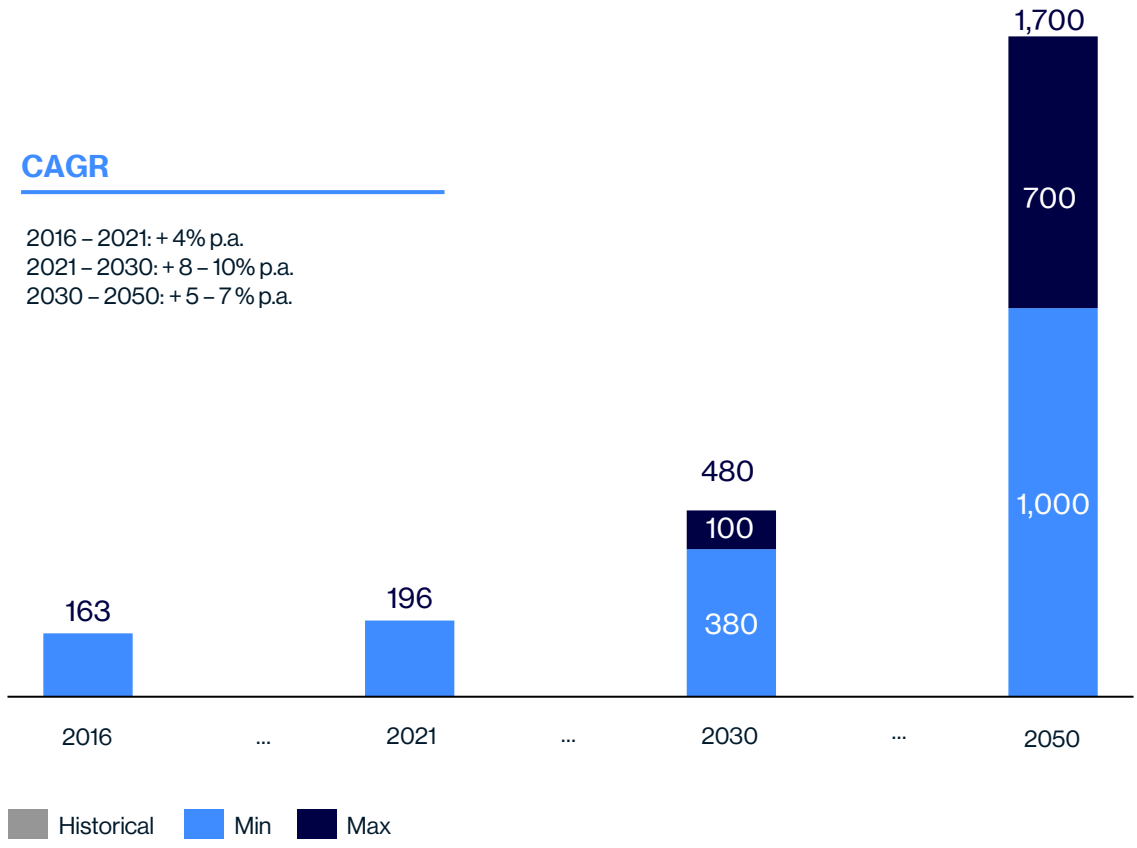

Fig. 2 EU biogas and biomethane production historical and forecast (TWh, EBA)
Sources: EBA, Eight Advisory analysis

Germany leads the path as Europe's largest producer of biogas and biomethane, contributing to around 40% of total EU production in 2021 (85 TWh). The UK (27 TWh), Italy (27 TWh), and France (11 TWh) follow behind with a combined contribution of around 30%. While the biogas market in Germany is more mature, France and Spain have the greatest growth potential by 2050 (224 TWh and 202 TWh, respectively).

Germany is by far the largest biogas producer in 2021 in Europe; France and Spain have the biggest 2050 potential for both biogas and biomethane production

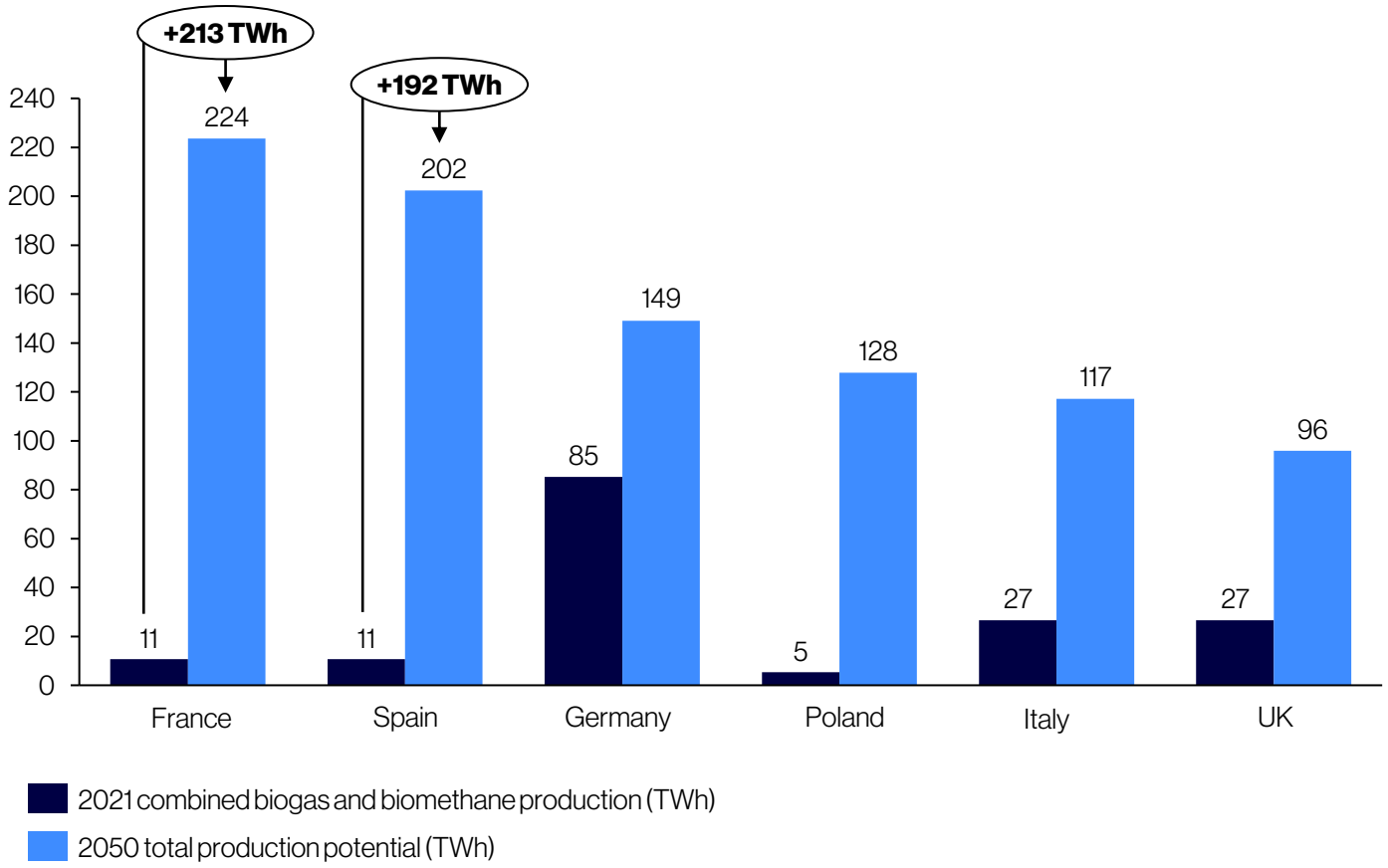

Fig. 3 2021 and future (2050) biogas and biomethane production potential per country (TWh)
Sources: EBA, Eight Advisory analysis

To ensure that ambitious biogas production targets are met, some key challenges still need to be tackled:

- **Long-term strategy:** RePowerEU is a good starting point for the sector. Nevertheless, EU countries still need to provide more visibility in the long-term regarding regulation. Moreover, the regulation should be – as much as possible - harmonized between countries to foster cross-border development,
- **Sector organization:** the biogas industry is still relatively nascent and needs to be better structured to improve project development efficiency. The development of sizable European and National platforms is a must. Additionally, better collaboration between the energy and agricultural sectors is key to securing easy access to feedstocks and to unlock the full potential of the sector,
- **Technology:** methanization is a complex and capital-intensive process. Promoting research and development is also key for ensuring cost-effective projects and improving the availability and efficiency of production facilities.

How to put the odds in favor of developers and investors?

Three enablers have been identified to unlock the full potential of the biogas sector:

- **Project standardisation -** The imperative for biogas production plant developers to exhibit a high degree of organization and a steadfast commitment to standardised project development cannot be overstated. Standardisation, encompassing feedstock types, project scales, and operational protocols, is an absolute need for maximising project success. This approach simplifies the intricacies of project planning and execution, permitting the replication of successful models. It amplifies efficiency in feedstock management, ensuring optimal technology and equipment choices tailored to specific project dimensions.

- **Securing feedstock -** A key challenge in developing a biogas plant is the long-term securing of sustainable feedstock which can be time-variable (e.g., agricultural waste, industrial waste, sewage sludge). Since biogas plants are typically designed for a specific mix of inputs, any potential changes in the feedstock mix can pose operational and performance issues. To ensure a consistent mix, it is essential to establish long-term partnerships with the agricultural sector such as cooperatives or waste collectors. Additionally, the technology and operators should be adaptable to accommodate changes in feedstock.

- **Profitability optimisation -** The optimisation of the overall profitability of the projects through revenue diversification is crucial. Biogas plants can generate revenues from waste processing (through gate fees), biogas production or biomethane injection, and biofertilizer production. The go-to-market strategy for biogas and biomethane facilities should be established on a project basis, as it is dependent on the specific circumstances of the location, such as local regulations (e.g., Feed-In-Tariffs for biomethane injection or power generation) and the potential for Biogas Purchase Agreements (BPAs) with off-takers.

With its multidisciplinary teams specialising in project strategy, operations, finance, and transaction services, Eight Advisory is well-equipped to support investors and project developers in the assessment and definition of a solid business case, as well as evaluating the commercial and technical viability of the project.

The project standardisation, the long-term securing of the feedstock, and the optimization of the overall profitability are the key enablers for biogas plant developers:

Emphasize efficient organization and commitment to standardized project development for biogas plant success

Standardize planning definition, permits application, feedstock sourcing, technology, and suppliers' selection

Ensure feedstock consistency by forging long-term partnerships with agri-cooperatives or waste collectors for biogas plant stability

Adapt technology and operations to accommodate variations in feedstock mix to address operational challenges

Optimize project profitability through diversification of revenues, generating income from waste processing, biogas, biomethane, and biofertilizer

Tailor go-to-market strategy to local regulations and potential Biogas Purchase Agreements, considering project-specific circumstances

Book your
Consultation
with our experts!

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