

Supplementary Material

General Information about anaerobic digestion and biomethane

The feedstock suitable for anaerobic digestion includes the organic fraction of municipal solid waste, municipal green waste, agricultural waste (crop residues, and livestock manure) and energy crops, dairy, slaughterhouse and fish processing waste, sewage sludge and algae [1,2]. However, priority should be given to municipal biowaste, which is strongly linked to measures to increase separate collection. Anaerobic digestion (AD) includes a series of biological processes during which microorganisms break down organic matter in an oxygen-free environment, resulting in the generation of two main products: biogas (a mixture of methane (CH_4), carbon dioxide (CO_2) and small quantities of other gases) and digestate [3]. Bioenergy is the general term for the energy produced from biomass[4]. Biogas and biomethane are forms of bioenergy. The methane content of biogas typically ranges from 45% to 75% by volume, with most of the remainder being CO_2 [5]. The variation of the methane content also means a variation of the lower heating value (LHV) between 1 MJ/m^3 and 28 MJ/m^3 [6]. Biomethane is hence a purified form of raw biogas with CO_2 and other contaminants (e.g., H_2S , NH_4) being removed through physical or chemical processes [7]. Its physiochemical properties make biomethane assimilable for industrial and commercial use as a natural gas substitute with a LHV of around 36 MJ/m^3 [6]. Biomethane can be fed into the natural gas grid or used directly either as Compressed Natural Gas (bio-CNG) or more energy-dense Liquefied Natural Gas (bio-LNG) in the transport sector [8]. In the MAB case study, a use as alternative fuel for the municipal waste collection fleet is foreseen.

Regulatory and non-regulatory drivers and barriers

The identified regulatory drivers and barriers to improving municipal biowaste separate collection are shown in Table S1 whereas non-regulatory drivers and barriers appear in Table S1. Detected regulatory drivers and barriers to enhancing the production of biogas to be upgraded into biomethane shown in Table S3, whereas non-regulatory drivers and barriers appear in Table S1. The full list of consulted and analysed policy documents is available the BCC report D3.2 [9].

Table S1. Regulatory drivers and barriers to improving the separate collection of municipal biowaste in the Metropolitan Area of Barcelona on which the policy recommendations are based. The reference documents were systematically analysed to map relevant passages including explicit legal drivers and barriers that might foster or hinder the implementation of alternative scenarios to the current biowaste management value chains. *The following abbreviations are defined in detail in Chapter 2 (Materials and Methods): Legal/Administrative (L/A); Technical (Tec); Economic (Ec); Soc (Social); Environment/ Health (E/H).*

Level	Reference document	Driver/Barrier	Category	Description
EU	Directive (EU) 2018/850, amending Directive 1999/31/EC on the landfill of waste [10]	Driver	L/A	Landfilling restrictions and reduction targets contribute to incentivising separate collection. Introduction of a maximum target of 10% of MSW (by weight) to be landfilled by 2035.
EU	Directive (EU) 2018/851, amending Directive 2008/98/EC on waste [11]	Driver	L/A	New preparation for reuse and recycling targets for MSW, including biowaste: 55%, 60% and 65% (by weight) by 2025, 2030 and 2035. Mandatory separate collection of biowaste by 31 December 2023. Stricter definition of the types of biowaste to be considered recycled.
National	Law 7/2022, of April 8, on waste and contaminated soil for a circular economy [12]	Driver	L/A	The new landfill and incineration tax will indirectly promote separate collection. It will also reduce differences in landfill and incineration costs among regions.
		Barrier	L/A	The proposed taxes of EUR 40/t for landfilling and EUR 20/t for incineration of MSW (D10) are too low, as e.g., Catalonia has much higher taxes (EUR 71.6/t for landfilling and EUR 35.8/t for incineration).
		Driver	L/A, Tec	Mandatory separate collection of biowaste from commercial and industrial activities by 30 June 2022. Mandatory separate collection of household biowaste from 31 December 2023. Prioritization of high efficiency collection systems such as door-to-door and smart bins.
		Barrier	L/A	Priority should be given to the implementation of highly efficient collection systems, such as door-to-door and smart containers, but there are no binding targets for their implementation.
		Barrier	L/A, Tec	As long as the bins are not linked to their users (as is the case with door-to-door collection), it is not possible to monitor compliance with the sorting obligation and impose fines in the event of non-compliance.
		Driver	L/A, Tec, Ec	For municipal biowaste to be considered separately collected, impurities should be 20% at maximum from 2022 and 15% from 2027. Fines may be imposed if not accomplished.
		Barrier	Tec	15 % contamination is high as to encourage the implementation of high efficiency collection systems (e.g., door-to-door collection).
		Driver	Tec	Biowaste shall be collected in compostable bags that comply with European standard EN 13432:2000 or other European and national standards on compostability of plastics, which will contribute to reduce impurities and to obtain a higher quality of compost.

Level	Reference document	Driver/Barrier	Category	Description
		Barrier	Tec; Soc	Often lack of suitable infrastructure for sorting/treatment of bioplastics in anaerobic digestion and composting plants. Lack of clarity for citizens regarding suitability of bioplastics for (home) composting.
		Driver	L/A	From the 1st of January 2027, municipal biowaste undergoing aerobic or anaerobic treatment may be counted as recycled only if collected separately.
		Driver	L/A, Ec, Tec	Before 2025 local authorities shall establish a waste charge, which should ensure full cost recovery and allow for the implementation of pay-as-you-throw systems. Therefore, the financing of biowaste collection will be improved.
		Barrier	Ec	Full cost recovery by waste charges might be politically difficult to implement for some municipalities. Unit based pricing charges (e.g., pay-as-you-throw) are not mandatory.
National	Royal Decree 646/2020 of 7 July regulating the disposal of waste by landfill [13]	Driver	L/A, Tec, E/H	The amount of municipal waste landfilled should be reduced as to accomplish binding targets by 2025 (40% of total waste generated as maximum), 2030 (20%) and 2035 (10%), which should contribute to increase the separate collection of biowaste.
Regional	Legislative Decree 1/2009, of July 21, approving the revised text of the Waste Regulatory Law [14]	Driver	L/A	Establishes and consolidates the separate collection service, including the organic fraction, in municipalities with less than five thousand inhabitants*.
		Barrier	Ec	The funding mechanisms for the implementation of the separate collection of biowaste is not specified.
		Driver	L/A, Tec	Municipalities must provide the service of separate collection of biowaste among other streams. The service should be provided using those systems that have been shown to be the most efficient.
Regional	Law 5/2020, of April 29, on fiscal, financial, administrative, and public sector measures and the creation of the tax on facilities that affect the environment [15]	Driver	E/H, Ec	The Law establishes a sustained increase in landfill and incineration tax rates in Catalonia until 2024, consequently intensifying the current incentives for separate collection.
Local	PREMET 25 Metropolitan Programme for the prevention and management of resources and municipal waste [16]	Driver	L/A	Includes a separate collection target: 55% by 2020.
		Barrier	L/A	The 55% for separate collection has not been reached (about 46% in the whole of Catalonia in 2020). A stronger package of measures (e.g., financial incentives, environmental education programmes) is needed to achieve the target.
		Driver	L/A, Tec	Includes a target to improve the quality of the separate collection of organic fractions, achieving a contamination level below 8 % by 2020.

Level	Reference document	Driver/Barrier	Category	Description
Local	PREMET 25 Metropolitan Programme for the prevention and management of resources and municipal waste [16]	Driver	L/A, Tec	Encourages local authorities to promote easier and more efficient separate biowaste collection systems.
		Driver	Ec	Encourages local authorities to design a collection and management system that allows rewards depending on results (e.g., pay-as-you-throw).
		Driver	L/A, Ec	The municipalities of the metropolitan area agree in implementing pay-as-you-throw systems and individualized collection systems for at least biowaste and residual waste.
Separate biowaste collection including municipalities with > 5,000 inhabitants was already introduced in the legislation in 1993 (with the implementation set for 1999) through Ley 6/1993, de 15 de julio, reguladora de los Residuos (repealed regulation).				

Table S2. Non-regulatory drivers and barriers based on the feedback from stakeholders' involvement (multi-actor approach) to improving the separate collection of municipal biowaste in the Metropolitan Area of Barcelona. *The following abbreviations are defined in detail in Chapter 2 (Materials and Methods): Legal/Administrative (L/A); Technical (Tec); Economic (Ec); Soc (Social); Environment/Health (E/H); Stakeholder Involvement (SI).*

Driver/ Barrier	Category	Description
Drivers	L/A	Administrations should incentivise food products with less packaging that could lead to less impurities in collected MSW biowaste.
	Ec	There are public incentives such as funding available for the implementation of door-to-door collection and pay-as-you-throw.
	E/H	The contribution of improved biowaste management to the reduction of GHG emissions through better municipal biowaste collection, implying less incineration and landfilling, establishes a synergy between waste and climate policies.
	L/A	Current legislation requires better quality standards for separate collection in terms of impurities, which in turn support to the implementation of high-efficiency collection systems.
Barriers	Tec	There is a lack of experience with smart bins. Further skills related to data management are required before implementing these systems.
	Ec	Higher costs of new collection systems (door-to-door or smart bins) as compared with traditional kerbside collection.
	Soc	Citizen's acceptance of (new) biowaste collection systems.
	Soc	Lack of citizen's knowledge on correct source separation requires further awareness raising campaigns
	Soc	Based on experience from other systems, the implementation of smart bins can be rejected by citizens (e.g., because of personal data protection or feeling of being controlled).
	E/H	Lack of specific environmental impact analyses about the pros and cons of changing the collection system.
	Soc	Door-to-door collection of biowaste can be socially contested alleging potential hygiene problems related to lower collection frequencies, especially in summer.
	Soc, SI:	The relevance of tourism flows in the MAB may hinder the implementation of biowaste collection through smart bins in high pressure spots (e.g., Barcelona) since it requires user identification. Also, engaging tourist population with door-to-door collection might be a significant challenge. The role and management of visiting population should be carefully considered when deciding the implementation of these collection systems.

Table S3. Regulatory drivers and barriers to improving the production and use of biomethane from municipal biowaste in the Metropolitan Area of Barcelona. The reference documents were systematically analysed to map relevant passages including explicit legal drivers and barriers that might foster or hinder the implementation of alternative scenarios to the current biowaste management value chains. *The following abbreviations are defined in detail in Chapter 2 (Materials and Methods): Legal/Administrative (L/A); Technical (Tec); Economic (Ec); Soc (Social); Environment/ Health (E/H).*

Level	Reference document	Driver/Barrier	Category	Description
EU	Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (REDII) [4]	Driver	L/A	EU-wide target of 32% for renewable energy by 2030, as well as sector-specific objectives, including an annual increase of 1.3% for renewable energy in the heating sector and an end target of 14% renewables in the transport sector by 2030. The latter aims at promoting the further deployment of electric mobility and includes a sub-target of 3.5% for advanced biofuels and biogas.
		Driver	Tec	For the better integration of biomethane into European gas grids and its cross-border trade, introduction of a mass balance system related to verification of bioenergy sustainability and the new Union database.
EU	SWD/2022/230 Commission staff working document implementing the repower EU action plan: investment needs, hydrogen accelerator and achieving the biomethane targets [17]	Driver	Tec, E/H	Promotes the sustainable production and use of biogas and biomethane at EU and national/regional level and the injection of biomethane into the gas grid. The use of biomethane from separately collected organic waste treated by anaerobic digestion is encouraged, while the use of food and feed for biomethane production is discouraged.
		Driver	L/A, E/H	Promotion of the development of national strategies on sustainable biogas and biomethane production and use or the integration of a biogas and biomethane component in the National Energy and Climate Plans (NECPs). The identification of regions where biomethane production from locally obtained secondary raw materials (crop residues, manure, organic waste) can be sustainably increased is promoted.
		Driver	L/A	Target to increase biomethane production in the EU to 35 billion cubic metres (bcm) per year by 2030 and further increase the potential by 2050.
		Barrier	Ec, Tec	Large differences between Member States concerning the construction of anaerobic digestion plants, as well as the production of biogas and biomethane. A lot of financing is needed to balance these differences.
		Driver	SI	Promoting stakeholder engagement and public acceptance through the Biomethane Industrial Partnership [18]. Promotion of participatory multi-stakeholder engagement including the organisation of events, in particular conferences, workshops and trainings to raise awareness and provide technical assistance.
		Barrier	SI	Currently lack of coordination between the sectors producing biogenic residues.

Level	Reference document	Driver/Barrier	Category	Description
		Driver	L/A	Reducing the current delay in the permitting process by increasing the capacity in local municipalities dealing with permitting as well as streamline good practices as establishing one-stop shops for biomethane related permits and defining a maximum processing time.
		Barrier	Ec	Lack of funding for capacity development in municipalities dealing with permitting.
		Driver	Tec	Promotion of the development of innovative technologies for the sustainable production of biomethane based on the gasification of biogenic residues and wastes from all sectors and industries and of the identification of regions where biomethane production can be sustainably increased from locally sourced secondary feedstock (crop residues, manure, organic waste).
		Barrier	Tec, Ec	Lack of infrastructure for the production of biogas from biowaste from the food, forestry and agricultural sectors, its upgrading to biomethane and the adaptation of the existing gas network.
		Driver	Ec	Access to grants and loans from existing EU funds, i.e., rural development funds under the Common Agriculture Policy, structural and cohesion policy funds, National Resilience and Recovery Plans, Horizon Europe, Innovation and Modernisation Funds, LIFE funding, and other national funding. Access to innovation funds for innovative production and use of biomethane and biogas projects.
		Barrier	L/A, SI	Administrative procedures for accessing grants can be an administrative challenge, especially for SMEs and small municipalities. Often lack of awareness of possible grants.
EU	Commission Implementing Decision (EU) 2018/1147 establishing best available techniques (BAT) conclusions for waste treatment under IED Directive (2010/75/EU)[19]	Driver	E/H, Tec	BAT conclusions for the biological (composting and anaerobic digestion) treatment of biowaste with the aim to reduce the environmental impact of (bio)waste treatment.
		Barrier	Tec, SI	Awareness about BATs is often limited among plant managers and this can limit the implementation of the most sustainable techniques.
EU, National	Implementing Decision (EU) 2019/1004 laying down rules for the calculation, verification, and reporting of data on waste in accordance with Directive 2008/98/EC [20] <i>implemented into</i> Law 7/2022, of April 8, on waste and contaminated soil for a circular economy [12]	Driver	L/A, Tec	The introduction of stricter calculation criteria for the recovery rate of biowaste in anaerobic digestion and composting processes, which will only include source-separated biowaste, provides a stronger incentive for the separate collection of biowaste.
		Barrier	Ec	The conversion/upgrading/adaptation of existing MBT (Mechanical Biological Treatment) into anaerobic digestion and composting plants that treat only source-separated biowaste requires investment.

Level	Reference document	Driver/Barrier	Category	Description
National	Law 7/2022, of April 8, on waste and contaminated soil for a circular economy [12]	Driver	L/A, Tec	The competent authorities shall promote the use of biogas from anaerobic digestion for energy purposes, for direct use in the facilities themselves, as a fuel for transport, as a raw material for industrial processes, for injection into the natural gas network in the form of biomethane, provided that it is technically and economically feasible.
		Barrier	Tec, Ec	A certain scale is needed to make biogas upgrading financially viable, including supply, grid, and end-user. Lack of financial incentives for investments in green energy from biomethane (especially for SMEs)
National	National Integrated Energy and Climate Plan (PNIEC) for Spain, for the period 2021-2030 [21]	Driver	L/A	Target of 42% of renewable energy in final energy use by 2030. This includes energy used for electricity, heating and cooling, and transport. Spain aims to generate at least 74% of its electricity from renewable sources by 2030. Target to achieve energy savings of at least 39.5% compared to baseline consumption projections in 2030.
National	Spanish Biogas Roadmap 2022 [22]	Driver	L/A	For biogas, introduction of a national target of 10.41 TWh biogas production per year (1.07 bcm) by 2030. For biomethane, introduction of a national target that at least 1% of all gas consumed through the natural gas grid should be biomethane by 2030.
		Barrier	L/A	Both the national biogas and biomethane targets are too unambitious to sufficiently boost biogas and biomethane production.
National	Royal Decree 376/2022 of 17 May, which regulates the criteria for sustainability and reduction of greenhouse gas emissions from biofuels, bioliquids and biomass fuels, as well as the system of GoO of renewable gases [23]	Driver	L/A, Tec	Important foundation for the introduction of the Guarantee of Origin (GoO) system for renewable energy as a means to certify that a given share of energy was produced from renewable sources.
National	State Waste Management Framework Plan (PEMAR) 2016-2022 [24]	Driver	L/A, Tec	Construction of new biological treatment facilities and/or adaptation of existing facilities – including anaerobic digestion plants – to increase the treatment capacity of separately collected biowaste.
		Barrier	Ec, Tec	No financial incentives or technical standards for new treatment facilities (use of BAT) mentioned.
National	Royal Decree 413/2014, of 6 June, which regulates the activity of electricity production from renewable energy sources, cogeneration, and waste [25]	Driver	L/A, Tec	Legal and economic criteria for electricity generation from renewable energy sources using liquid biofuels from biomass or biogas from anaerobic digestion as the main fuel.

Table S4. Non-regulatory drivers and barriers improving the production and use of biomethane of municipal biowaste in the Metropolitan Area of Barcelona. *The following abbreviations are defined in detail in Chapter 2 (Materials and Methods): Legal/Administrative (L/A); Technical (Tec); Economic (Ec); Soc (Social); Environment/Health (E/H); Stakeholder Involvement (SI).*

Driver/ Barrier	Category	Description
Drivers	Ec, Tec	Financial incentives for the implementation of BAT for municipal biowaste valorisation.
	Ec, Tec	Financial incentives for the production of biomethane to feed into the local gas grid.
	L/A	Taxes on fossil-based materials would increase the market share of bio-based products.
	Tec	Improving the efficiency of existing municipal biowaste treatment facilities.
	Tec	Improving quality and quantity of separately collected MSW biowaste can create new treatment options and higher-quality products (e.g., compost).
	Ec	Planning security through long-term subsidies, especially for SMEs.
	E/H	Reduction of GHG emissions through better municipal biowaste management.
	E/H	Less GHG emissions through replacing fossil natural gas with renewable biomethane.
	SI	Inclusion of cooperation among different stakeholders in the field of CBE (science, business and industry, NGOs general public) in the work of local authorities
	Soc	Successful public awareness campaigns on sustainable biowaste-based products including biogas and biomethane.
Barriers	L/A	Too high bureaucracy for SMEs.
	Tec	Risk of conflict between waste prevention and oversized valorisation treatment plants.
	Tec	Seasonal fluctuations of the amounts of separately collected biowaste.
	Tec	Need to increase the capacity of existing AD plants to have enough biogas to upgrade.
	Tec	Lack of biomethane distribution infrastructure.
	Ec	Lack of planning security for long-term investments, especially for SMEs.
	Ec	Competition between different biowaste value chains (compost vs. bioplastics).
	Ec	Lack of long-term security for revenue from sales (market demand for compost, biomethane).
	Ec	Higher costs of biowaste-based products compared to fossil-based products (e.g., bioplastics vs. conventional plastics).
	SI	Limited exchange of best practices for innovative municipal biowaste chains from other EU cities.
	Soc	Consumers' reluctance to use products derived from biowaste.

References

1. Mao, C.; Feng, Y.; Wang, X.; Ren, G. Review on Research Achievements of Biogas from Anaerobic Digestion. *Renewable and Sustainable Energy Reviews* **2015**, *45*, 540–555, doi:10.1016/j.rser.2015.02.032.
2. Iglesias, R.; Muñoz, R.; Polanco, M.; Díaz, I.; Susmozas, A.; Moreno, A.D.; Guirado, M.; Carreras, N.; Ballesteros, M. Biogas from Anaerobic Digestion as an Energy Vector: Current Upgrading Development. *Energies (Basel)* **2021**, *14*.
3. Korres, N.; O’Kiely, P.; Benzie, J.A.H.; West, J.S. *Bioenergy Production by Anaerobic Digestion. Using Agricultural Biomass and Organic Wastes.*; Routledge: London, 2013;
4. Directive (EU) 2018/2001 *Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 2018 on the Promotion of the Use of Energy from Renewable Sources*; 2018;
5. Atelge, M.R.; Krisa, D.; Kumar, G.; Eskicioglu, C.; Nguyen, D.D.; Chang, S.W.; Atabani, A.E.; Al-Muhtaseb, A.H.; Unalan, S. Biogas Production from Organic Waste: Recent Progress and Perspectives. *Waste Biomass Valorization* **2020**, *11*, 1019–1040, doi:10.1007/s12649-018-00546-0.
6. IEA *Outlook for Biogas and Biomethane. Prospects for Organic Growth. World Energy Outlook Special Report*; 2020;
7. Ardolino, F.; Cardamone, G.F.; Parrillo, F.; Arena, U. Biogas-to-Biomethane Upgrading: A Comparative Review and Assessment in a Life Cycle Perspective. *Renewable and Sustainable Energy Reviews* **2021**, *139*, doi:10.1016/j.rser.2020.110588.
8. Madhusudhanan, A.K.; Na, X.; Boies, A.; Cebon, D. Modelling and Evaluation of a Biomethane Truck for Transport Performance and Cost. *Transp Res D Transp Environ* **2020**, *87*, doi:10.1016/j.trd.2020.102530.
9. Meisterl, K.; Chifari, R. *Regulatory Gap and Opportunity Analysis for a Circular Bioeconomy. Biocircularcities Project. Deliverable D3.2 of WP3*; 2023;
10. Directive (EU) 2018/850 *Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 Amending Directive 1999/31/EC on the Landfill of Waste.*; 2018;
11. Directive (EU) 2018/851 *Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 Amending Directive 2008/98/EC on Waste.*; 2018; pp. 1–32;.
12. Law 7/2022 *National Law 7/2022 on Waste and Contaminated Soils for a Circular Economy. Ley 7/2022, de 8 de Abril, de Residuos y Suelos Contaminados Para Una Economía Circular.*; 2022;

13. *Royal Decree 646/2020 Royal Decree 646/2020 of 7 July Regulating the Disposal of Waste by Landfill. Waste by Landfill.*; 2020;
14. *Legislative Decree 1/2009 Legislative Decree 1/2009, of 21 July 2009, Approving the Consolidated Text of the Law Regulating Waste*;
15. *Law 5/2020 Law 5/2020 of 29 April on Fiscal, Financial, Administrative and Public Sector Measures and on the Creation of a Tax on Measures and on the Creation of a Tax on Installations That Have an Impact on the Environment. Affecting the Environment.*; 2020;
16. *PREMET25 PREMET25 Metropolitan Programme for the Prevention and Management of Resources and Municipal Waste 2019-2025*; 2019;
17. *SWD/2022/230 final SWD/2022/230final: Commission Staff Working Document: Implementing the Repower EU Action Plan: Investment, Hydrogen Accelerator and Achieving the Biomethane Targets, Accompanying COM/2022/230 Final.*; Brussels, 2022;
18. *Biomethane Industrial Partnership The Biomethane Industrial Partnership: Teaming up to Achieve 35 Bcm of Sustainable Biomethane by 2030.*; <https://bip-europe.eu/>;
19. *Commission Implementing Decision (EU) 2018/1147 Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 Establishing Best Available Techniques(BAT) Conclusions for Waste Treatment, under Directive 2010/75/EU of the European Parliament and of the Council(Notified under Document C(2018) 5070)*; Official Journal of the European Union, 2018;
20. *C(2019)/1004 Commission Implementing Decision (EU) 2019/ 1004 - of 7 June 2019 - Laying down Rules for the Calculation, Verification and Reporting of Data on Waste in Accordance with Directive 2008/ 98/ EC of the European Parliament and of the Council and Repealing Commission Implementing Decision C(2012) 2384 - (Notified under Document C(2019) 4114)*; 2012;
21. *PNIEC Spain's National Integrated Energy and Climate Plan. Plan Nacional Integrado de Energía y Clima (PNIEC) 2021-2030*; 2020;
22. *Ministerio para la Transición Ecológica y el Reto Demográfico Spanish Biogas Roadmap. Hoja de Ruta Del Biogás.*; 2022;
23. *Royal Decree 376/2022 Royal Decree 376/2022 of 17 May, Which Regulates the Criteria for Sustainability and Reduction of Greenhouse Gas Emissions from Biofuels, Bioliquids and Biomass Fuels, as Well as the System of Guarantees of Origin of Renewable Gases*; 2022;
24. *PEMAR PEMAR National Waste Management Framework Plan 2016-2022*; 2015;

25. Royal Decree 413/2014 Royal Decree 413/2014, of 6 June, Which Regulates the Electricity Production from Renewable Energy Sources, Cogeneration and Waste. **2014.**