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Democratic Processing of Waste: European Federalism and Decentralized Waste Management in Navarra and Basque Country

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DEMOCRATIC PROCESSING OF WASTE: EUROPEAN FEDERALISM AND DECENTRALIZED WASTE MANAGEMENT IN NAVARRA AND BASQUE COUNTRY

by

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This manuscript has been read and accepted for the Graduate Faculty in Political Science in satisfaction of the thesis requirement for the degree of Master of Arts.

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ABSTRACT

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By

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Every country, regardless of regime-type, produces garbage. Waste is a significant contributor to the climate crisis, and its management requires the participation of society at large. The competency for waste management falls on the most decentralized forms of governance. The local government, however, faces a tremendous difficulty in that it may not be able to realign economic and political incentives to make the sustainable management of post-consumer material a viable option. Using waste policy as a lens to assess climate crisis readiness and federal governance, this study considers Navarra and Basque Country, two of Spain's most decentralized regions, and creates a snapshot of how they are responding to federal pressures. Spain's asymmetrical federal system exists within the European Union's framework and, following the lead of other Member States, the country's autonomous communities and municipal governments are experimenting with waste management. The study relies on public observation, personal interviews, governmental plans, and local journalism.

ACKNOWLEDGMENTS

Field and human subject research during the COVID-19 pandemic presented many uncertainties and demanded leaps of faith. I would like to extend a tremendous thank you to Dr. Julie George for graciously offering her expertise in the IRB process and later helping guide the project from an oddball stuck between disciplines to something much more focused. It was a pleasure to work together.

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CHAPTER 1: INTRODUCTION

"The first thing I have to say is that in no moment will I question what other entities in Navarra do. Waste collection is adapted to the local reality and for this reason there exist many, many different systems." David Campión Ventura, independent president of the *Mancomunidad de la Comarca de Pamplona* and mayor of Valle de Ollo, said in an interview with the *Diario de Navarra* on January 30, 2022.[1] "In every town or city," he continues, "it depends on urbanism, the number of inhabitants, the type of waste, the processing facilities, the technical and economic capacity, etc. [...] What is shared across entities is that the lack of separation and collection of organic material is the main environmental problem that waste creates."

In 2013, the *Mancomunidad de la Comarca de Pamplona* (MCP) launched a separate collection for biowaste recycling with open street-side containers. In order to prevent contamination, the MCP provided mechanical keys to those residents interested in using the program. In October of 2021, the Navarran capital, representing roughly half the of the autonomous community's 650,000 inhabitants, also locked the refuse container. Both the refuse and biowaste containers are now only accessible with a mobile application or magnetic card. The move to lock these street-side containers is a step towards limiting biowaste contamination and also reducing the usage of waste containers. This new system marks another push towards separate collection.

On the opposite column of the newspaper is Fernando Ferrer, president of the *Mancomunidad de La Ribera* and city councilman of Tudela, the second most populous urban area in the autonomous community. As the member of the right-wing Navarra Suma party

[1] *Diario de Navarra* is one of two major local news publications in Navarra. *Diario de Navarra* is considered center right while Basque nationalist *Noticias de Navarra* is considered leftist. In order to capture both the center right and leftist opinion on the environmental topic of waste, I primarily focus on *Diario de Navarra*.

opines, locked bins are not only uncomfortable but unnecessary, at least for the current moment, in Tudela. The *Mancomunidad de La Ribe*ra introduced a separate collection for biowaste in December 2021 and by January 2022 the amount of separately collected biowaste had doubled.[2]

Weeks later, in February of 2022, Montejurra, the third largest *mancomunidad* in Navarra advised residents of the new organics collection scheme and the implantation of new waste containers with smaller lids in Estella-Lizarra. In an interview for the local magazine, Calle Mayor, the waste technician for the *Mancomunidad de Montejurra*, Raquel Crespo Gil, took a different stance. When asked in an interview if it is necessary to raise awareness about recycling and waste management, she responded: "Yes, but up to a certain point. It is important to inform everyone about the changes being made and always have information available on the topic, but we are beginning to doubt that raising awareness to raise awareness is truly effective."

These public statements make clear that a "one size fits all" approach to waste management is not the reality. There is no single model or approach that is supported unanimously across politicians, technicians, and societies at large. Instead, various models are being trialed and implemented. Over the past ten years, Navarra, like Basque Country, has sought to overcome the politicization of waste management in favor of technical and sustainable long-term solutions. There is not only variation in these two autonomous communities, but also continued technical experimentation and political discord. Neither urban or rural areas have reached a consensus about how to best manage waste in any step of the process: material generation, separation, collection, processing, and disposal. What remains a commonality across municipalities and *mancomunidades* is that localities must find a solution that fits their

[2] Diario de Navarra. 16 January 2022. "La Ribera recoge el doble de orgánica tras solo un mes del nuevo contenedor."

circumstance. Navarra and the Basque Country are not alone in this confounding and environmentally harmful public problem.

Variation, however, can be both harmonious and harmful. The challenge in waste management and policy is to understand the variation of municipal responses and the factors that predispose a government towards a specific management plan and move them along a distinct trajectory. Many societal, technological, political, and technical considerations must be made by the decentralized government, and often these considerations are made in line with more centralized levels of government. Waste policy in the European Union, of which Spain is a member, informs the decentralized responses across Member States, thereby issuing a standardization of the intended outcomes. After reviewing relevant literature on federalism in the context of Europe and Spain, in Chapter 3 I will introduce my research design. Chapter 4 discusses how EU waste policies targeting waste separation and collection are being interpreted by local entities in Navarra and Basque Country. Chapter 5 discusses the implementation of EU treatment and disposal policies within the two autonomous communities (ACs).

This research considers the implementation of federal climate policy on the municipal level and therein emphasizes the variation and contours of federalism. The overarching goal is to observe European and Spanish federalism in action. Through a practical application of federal and decentralized theory on the mitigation of the climate crisis, waste management being the frame and policy scope, it becomes possible to measure both the progress towards EU climate goals as well as the relative strengths and weaknesses of the federal bargain. Unlike the US where municipalities have by and large offloaded local services like waste management to private companies, thereby limiting democratic participation therein, Navarra's regional and municipal governments are the entities affecting change. Variation in decentralized models of

federalism, notably, creates different outcomes and consequences, desired or not. In the case of waste policy, Navarra and the Basque Country are exercising their decentralized authority ahead of Spain.

CHAPTER 2: LITERATURE REVIEW

While technical expertise, managerial capacity, and public participation shape the success and failures of waste management schema, the service depends greatly on governing institutions to lay the brickwork. A practical application of federalism is therefore in order since multi-level policies structure and prioritize management strategies and direct the municipality in the provision of this service. Federalism and decentralization are necessary concepts for understanding waste policy in that the directives and mandates implemented on the municipal level come directly from the European Union. Moreover, Spain's level of federal asymmetry and decentralization shape the waste management outcomes and consequences across ACs.

Federal structures are often associated with democracy, though increasingly this has also been called into question due to the amount of interpretations that may lead regions and municipalities to distinctive outcomes and therefore different trajectories. This balancing act has the chance of strengthening the federal system, though, in some cases, results in further fragmentation. Local entities, such as municipalities and *mancomunidades*, interpret and implement waste management strategies in conjunction with the policy provided by the EU federal framework.[3] The provision of waste services goes against common economic incentives; the cheapest way to manage waste, as both developed and developing countries can attest to, is to not manage it at all, and, instead, simply dump it somewhere out of sight. To that effect, waste policy necessitates a negotiation and a realignment of economic incentives. Through the EU Next Generation program, regions have received funding for COVID-19 recuperation and climate resilience so long as they fulfill certain preliminary milestones. To realign economic

[3] *Mancomunidades* are assemblies made up of representatives from municipalities. These assemblies provide consolidated services such as local transportation, waste management, and water.

incentives in waste management, municipalities must strike a bargain with upper levels of the federal structure in order to comply with EU mandates and meet the EU funding milestones.

The structure of federalism, under optimal conditions, is a mutually beneficial relationship between centralized and decentralized governments. American political scientist William Riker theorized federalism as a rational bargain between central leadership and peripheral governments who "come together for the purpose of creating a larger territory so as better to facilitate the levying of taxes and the raising of armies" (Riker, 1964). McKay (2004) synthesizes that a successful Rikerian bargain depends on "first, a desire on the part of those offering the bargain peacefully to expand territory by combining constituent governments into a new political entity in order to meet an external military threat or threat to internal order; second, for those accepting the bargain, some sacrifice of political control is exchanged for the promise of security provided by the new federal government." This sacrifice of political control for the promise of security supports local entities as they realign incentives and provide sustainable waste management. Before the creation of the EU, Riker, however, was doubtful about what the EU's path towards federalism might look like:

> For . . . [a European Union] to appear there must be some significant threat. And in the absence of a threat large enough to render the federal bargain mutually profitable to the participating governments, there is nothing that will bring... [such a union] about, no matter how much people wish for . . . [it] to happen (Riker, 1975: 130 – 31).

Increasingly one may consider the impending climate crisis as a significant threat to diplomacy, sovereignty, and political ability. As other theorists have noted, however, Riker's strict emphasis on military and diplomatic ties may merit elaboration and may not directly apply to this case. Whether we make this leap towards the significant threat of the climate crisis or not, the

formulation of the rational bargain proves a useful tool in understanding the communication between levels of government on the topic of municipal solid waste management.[4]

In Navarra and Basque Country, federalism looks much different than it does in Spain's other ACs due to the historical and cultural distinctiveness of these regions. At its core, federalism is a territorial model, not a model that accounts for the diversity of citizenship. Asymmetrical federalism is therefore more capable of achieving recognition of cultural pluralism as it allows for a degree of heterogeneity in the relation between central and peripheral governments. "A constitutional model that is suitable for plurinational societies should be flexible and "open," and offer the different national realities stability and good future prospects" (Requejo, 2005). The shared Basque culture that unites Navarra and Basque Country makes it necessary to modify the federal model in order to regulate Spain's plurinational character.

The Spanish federal system is composed of 17 ACs and 4 co-official languages. Linguistic and historical differences within Spain's ACs were suppressed by Franco's authoritarian regime and the continued legacy of suppression have resulted in independence movements across the country. Franco's dream of a nation unified by Christianity and the Spanish language resulted in independence struggles (Domke, 2011). *Euskadi Ta Askatasuna* (ETA), for example, was a Basque terrorist organization responsible for the killings of 829 people and the injury of thousands more during its active period from 1959-2010.[5] The ongoing separatist struggles, primarily in Basque Country and Catalonia, make clear the plurinational difficulties that Spain's federal system faces.

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[4] In line with Directive 2008/98/EC of the European Parliament and of the Council, I define municipal waste as either "mixed waste and separately collected waste from households, including paper and cardboard, glass, metals, plastics, bio-waste, wood, textiles, packaging, waste electrical and electronic equipment, waste batteries and accumulators, and bulky waste, including mattresses and furniture," or "mixed waste and separately collected waste from other sources, where such waste is similar in nature and composition to waste from households."

[5] "ETA has killed 829 people as of 19 January 2011" *Ministerio del Interior*. Gobierno de España.

In order to balance ethnic, religious, linguistic differences as well as the "tyranny of the majority," political scientist Alfred Stepan (1999) elaborates on the Rikerian bargain and details variation and asymmetry in federalism. Federalism, as Stepan explains, is a mechanism in which the state "brings together," "holds together," or "puts together" regions. In the case of Spain's linguistic and cultural divides, federalism "holds together" the multinational polities together. Describing democratic federations in this category, Stepan writes: "The only way to hold their countries together in a democracy would be to devolve power constitutionally and turn their threatened polities into federations." Spain, as of 1978 when the Spanish constitution was approved, is an example of asymmetrical federalism. Since the asymmetry is determined in part by the presence of regional treasuries, the only two instances being in Navarra and Basque Country, these regions exercise self-determination and governance strategies in ways the other ACs do not.

Navarra and Basque Country lie at an extreme of decentralization, both with the highest levels of decentralization due to their federal asymmetry and the fiscal autonomy which allows them to fully administer taxes. In regards to expenditure responsibilities, the Spanish Constitution outlined two procedural mechanisms for ACs. Navarra and Basque Country, along with Catalonia, Canary Islands, Valencia, Galicia, and Andalusia, followed the mechanism that is often referred to as the "fast-track process" and received increased decentralized capacities, thereby heightening their ability to exercise their autonomy. These regions "assumed executive and legislative powers in health care, education, and environmental policy." The rest of the ACs followed the second track, "slow-track process," that "limited autonomy and provided a slower devolution of spending responsibilities" (León, 2010: 6). Considering these two "tracks," the distribution of power across levels of government are therefore less intertwined and more clear.

Spanish political scientist Sandra León, however, questions whether decentralization blurs or enhances the capacity, responsibility, and authority of political institutions in the multi-level Spanish system. She considers the clarity of responsibilities in multilevel systems and the effects on democratic accountability, arguing that the relationship "between multilevel governance and responsibility attribution is contingent upon the type of decentralization in place, defined by the balance of powers between central and subnational units" [pg. 2]. Given the balancing of powers, it is paramount to examine federal waste policy within the asymmetrical federal framework of Spain and the unique capacities of these "fast-track" ACs. The responsibilities of governments, however, may be cause for concern in that distinctive powers granted to certain regions may confound societal understanding and affect the democratic process. "If citizens cannot clearly distinguish spheres of authority across levels of government, they may become more vulnerable to politicians' strategies of blaming other levels of government to excuse or justify bad policy outcomes" [pg. 3] . With this possible lack of clarity in the multilevel system, León worries that the public will punish the central government for the failures of the regional authorities, and thus undermine true democratic accountability.

Considering this, the federated governments of Basque Country and Navarra are more independent relative to other ACs. These regions are able to leverage their authority in multiple policy areas as well as in the management of their regional treasuries, thereby presenting the opportunity for accelerated environmental taxation schemes. In so far as the public is able to differentiate between powers of government, this may increase democratic accountability and public participation. In this way, local journalism is an apt indicator as it gauges the public conversation and stimulates discourse around the competencies of the levels of government. The

ability for newspapers to reproduce the federal structure and communicate the activities of local government to the public proves to be a clarifying venture for the democratic process.

Beramendi (2007) advocates that research considers the exogenous moments that defy the underlying tastes of the relevant political coalition, the "identification and analysis of external shocks" [pg. 24]. The EU rules represent a shock that is exogenous to the Basque Country and Navarra. Therein lies the rupture between policy and interpretation: as the ACs take divergent strategies to waste management, they are making distance with each other, with Spain, and, at times, with the European Union thereby exacerbating a moment of exogeneity. By detailing this moment of exogeneity, it is possible to generate hypotheses about the contours of federal climate policy in Spain and the EU.

Local political power is essential for waste policy; a municipality's ability to effectively manage its waste depends on their ability to create solutions unique to their circumstance and available resources. A central system may not be able to create a coherent taxonomy that would generalize any number of variables including topographic constraints, economic capacity, proximity to ports, infrastructure availability, political will, cultural appropriateness, etc. of their territories (Rodic & Wilson, 2017). Simultaneously, municipal waste management depends on central strategizing to orchestrate new incentives, innovative or not, and sustainable outcomes. Considering the variation within municipal waste management, it is in the best interest of the central government that the locality find durable waste solutions on its own and it is in the best interest of the locality that the central government distribute the incentives to make the cost of sustainable waste management attainable. Waste management is one activity of many in which the Spanish local government makes the final decision based on the expectations outlined by higher federal levels which, in this case, is the European Union. The variations and asymmetries

between Navarra and the Basque Country are compounded when considering more economically dependent autonomous communities like Andalucia.

CHAPTER 3: RESEARCH DESIGN

This study uses Municipal Solid Waste Management (MSWM) as a lens to evaluate federalism, EU climate policy, and Spanish national politics. Successful MSWM has high levels of public participation and is systematized by public policy, local government, and climate mitigation technologies. Worldwide, waste generation and disposal represents a significant contributor to the climate crisis, and of the seventeen UN Sustainable Development Goals of the 2030, at least twelve have direct ties to solid waste management. According to the World Bank's Global Snapshot of Waste Management to 2050, approximately a third of material typically sent to landfills, incinerators, or illegal dump sites is organic. Under optimal circumstances, it will be recycled and broken down into a nutrient rich soil amendment commonly known as compost. The US Environmental Protection Agency recognizes compost as an agricultural commodity useful, and at times necessary, for the amelioration of soil health. When sent to a landfill, organic material rots and emits high concentrations of methane, a toxic greenhouse gas.[6]

The World Bank has identified challenges that low- and middle-income countries typically face in regards to solid waste management. In low- and middle-income countries, over 90% of waste is mismanaged and 1/3 of the material is openly dumped or burned. According to the World Bank, on average, MSWM costs these low-income areas 20% of municipal budgets. In many lower-income countries, governance plays a more important role than technical aspects. Across developed and developing regions alike, challenges to improvement include financial capability, topographic complexities, resistance from local population, ambiguity around

[6] I use 'organic material' and 'biowaste' interchangeably to refer. Directive 2008/98/EC of the European Parliament and of the Council define biowaste as "biodegradable garden and park waste, food kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food processing plants."

organizational structure and responsibility, and limited institutional capacity for planning, monitoring, and enforcement.

I examine the outcomes and consequences of EU waste management policy on the autonomous communities of Navarra and the Basque Country as a way to understand how EU federalism has enabled opportunities for local control. Evidence has been collected via formal interviews and government documents as well as systematic examination of the *Diario de Navarra*. From January 2021-December 2021, I interviewed 23 politicians, technicians, and civil servants in Navarra and the Basque Country, the majority of which being the presidents of *mancomunidades* and *diputaciones*.[7] Presidents of the *mancomunidades* are appointed by the assembly of local politicians. The presidents and their waste technicians report to both their home municipality and the *mancomunidad* assembly.

Empirical research often accounts for the "first line of evidence" in under-studied fields (Gerring, 2009). This research is a small-N case study of European waste policy. Navarra and Basque Country are the samples. The research is generating a hypothesis more than it is testing one. A case study is a necessary starting point on the topic due to the limited research on the implementation and outcomes of environmental policy and, more specifically, waste policy. The vast amount of municipalities worldwide under-managing waste or dumping it illegally makes clear the need for research on the matter. To this end, it is possible to observe the strengths and weaknesses relative to the context. Considering the similarities between Navarra and Basque Country, we would not expect much variation. The CA's, after all, share Basque heritage and are the only ones to have their own treasuries. Yet the implementation of EU policy shows the two regions on diverging paths of waste management.

[7] *Diputaciones* are the provincial governments in the Basque Country. Since Navarra does not have provinces, the term only applies to Basque Country.

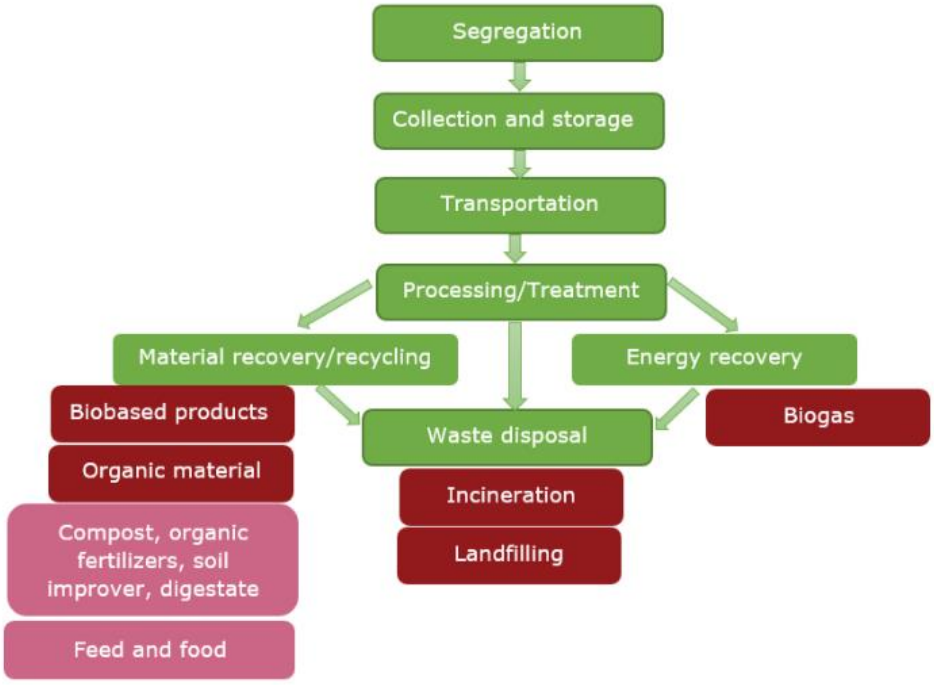
CHAPTER 4: SEPARATION AND COLLECTION OF BIOWASTE

Introduction

This chapter introduces the centralized EU waste policies on separate collection and places them first in the context of Navarra, then in Basque Country and its provinces of Gipuzkoa and Biscay. Interviews, local journalism, and governmental waste plans and policies contextualize the implementation of EU waste policy over the period January 2021- December 2021. While separate collection for paper/cardboard, plastics, metals, and glass have been widely implemented across Spain, biowaste collection has not. The study of biowaste collection initiatives in Navarra and Basque Country emphasizes the direction of EU waste policy, Spanish federal asymmetry, and the variation across and within these two ACs.

Biowaste, compared to other waste streams, disproportionately harms the environment when improperly disposed of and that reaps the most opportunity when properly managed. When waste continues its journey from the consumer back to the producer as a resource, it stimulates the circular economy transition and reduces the generation of new raw materials. As illustrated in Figure 1, separation and collection are the first steps in the biowaste management process, separation occurring at the hands of the public and collection by the institution tasked with picking up the material and transferring it to processing/treatment facilities. With this in mind, onboarding the public in the management of biowaste is crucial. Navarra and Basque Country's decentralized governments have gone beyond the scope of Spanish authority as they exercise their competency in environmental matters. The emphasis on separate collection across levels of government shows a commitment to reevaluating waste and the varied approaches taken to achieve this.

Figure 1: Steps in Biowaste Management*



*EU Valuewaste Project

Central Authority: The European Union

Since the 1990s, the European Union has promoted ambitious climate policy. The European Green Deal, approved in 2020, is a strategy to make Europe the first climate neutral continent by 2050. NextGenerationEU Recovery Plan, a strategy to facilitate Europe's recovery from the COVID-19 pandemic, accounts for one third of the 1.8 trillion euro investment. In the scope of Europe, Spain's implementation of comprehensive biowaste management comes on the heels of municipalities across Europe experimenting with waste. In this way, biowaste recycling schema in Spain are a reaction to the synthesized systems across Europe, which brings the experimentation and innovation to a new level. An understanding of the European context will therefore deepen the case differences and the problems of federalism in the EU.

Figure 2: Circular Economy Diagram*

*European Parliament on Circular Economy

In 2018 the EU passed a set of comprehensive waste laws targeting municipal solid waste generation and disposal. The laws are a part of four EU directives: the Waste Framework Directive (WFD), the Landfill Directive (LD), the Packaging and Packaging Waste Directive (PPWD), and the Single-Use Plastic Directive (SUP). According to the European Environmental Bureau, by July 2020 all Member States were expected to transpose these EU laws into national legislation. According to the WFD, Member States should reach 50% recycling rate by 2020, 55% by 2025, 60% by 2030, and 65% has been recently approved for 2035. Article 3 (11) of the WFD defines separate collection as the collection where a waste stream is kept separately by type and nature so as to facilitate a specific treatment. By July 2020, Member States must stop burning or landfilling separately collected waste and by 2024, it is obligatory to provide separate collection of biowaste.[8] As of 2027, countries can only report biowaste as recycling if it is separately collected. In order to be eligible for European funds from the NextGeneration EU,

[8] As per the WFD definition, I define bio-waste as biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises and comparable waste from food processing plants.

member states and their municipalities must adhere to the milestones presented by these respective laws. While the distribution of NextGeneration EU funds has been questioned due to their opaque requisites, it is understood that member states that do not meet the necessary aid regulations face the risk of reimbursement required by the European Commission.[9] The resilience strategy is an example of 'download Europeanization' wherein subnational policy-makers are charged with implementing EU policies (Marshall, 2005). A part of the European Green Deal, the Circular Economy Action Plan, aims to reduce the manufacture and consumption of raw materials and instead circulate used materials back into the economy. Figure 2 shows the placement of raw materials in the circular economy which, under optimal conditions, are not expelled in the form of waste. Biowaste recycling is integral to the circular economy; biowaste is approximately a third of what is typically thrown away and by far the heaviest material due to its high water content making its transport costly and environmentally damaging.

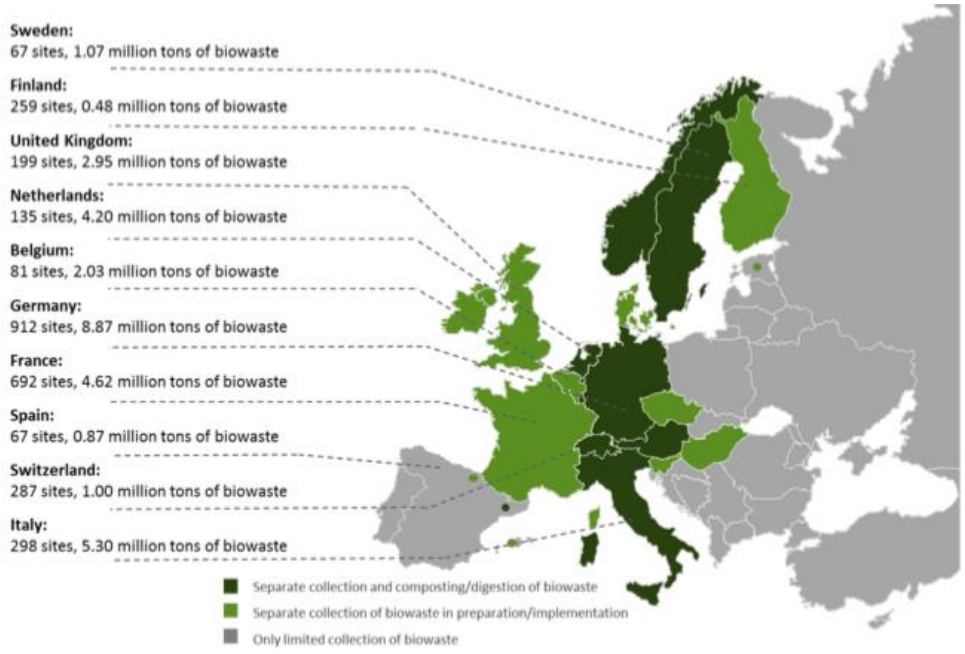
In 2020, the EU Commission proposed the Methane Strategy in order to target the waste sector with specific measures to reduce emissions. Measures include diverting biowaste from landfills to composting and anaerobic digestion, as well as stabilizing the biodegradable material before disposal. After carbon dioxide, methane is the largest contributor to climate change. The European Commission states that in the EU, 53% of anthropogenic methane emissions comes from agriculture, 26% from waste, and 19% from energy. In regulating the generation of methane across its Member States, the EU reduces and standardizes the management of biowaste.

In order to divert biowaste from landfills, separate collection is key. The EU's mandate for separate collection for recyclable material is a measure to maintain the quality of the material.

[9] El País. "El reparto de las ayudas de los fondos Next Generation EU, a examen" (2022).

The European Commission states that separate collection systems for glass, paper, metal, plastic, and bio-waste is an integral step to augment re-use and recycling rates for municipal waste in Member States. Separate collection for bio-waste was introduced in the 2014 amendment of the Waste Directive in order to reduce contamination of recyclable materials. The amendment of Article 22 of the amendment reads, “In order to minimize contamination of waste materials, Member States shall ensure separate collection of bio-waste by 2025.” With calls to separately collect bio-waste by December 2023 as outlined in Article 22 of the Waste Directive 2008/98/EC, municipalities with pre-existing paper/cardboard, glass, textiles, plastics/metals, and refuse waste streams, EU Member States must separately collect biowaste.

Figure 3: Status of Biowaste Collection in Europe, 2018*



* EU Valuewaste

Having witnessed the trajectories of waste solutions in other countries, Spain is slowly implementing the lessons learned across Europe as it institutes comprehensive biowaste collection schemes and disposal plans. As shown in Figure 3, of western European countries,

only Spain and Portugal lack comprehensive biowaste collection. In formulating their decentralized responses, politicians and technicians in interviews noted the study of waste systems in Germany and Italy. The *Mancomunidad de Pamplona*, for example, studied the cases of Brescia and Imola, Italy; Amberes, Belgium; Ljubljana, Slovenia; and the *Mancomunidad de Sasieta*, Guipukzoa.[10] According to the EU's view, biological treatment must be paired with enhanced separate collection to ensure compost and digestate of good quality. For example, Navarra's Plan de Residuos 2017-2027 states, "Biomethanation is not the solution, but a short-term fix in which selectively collected biowaste loses the organic properties as well as their control and the final destination is in the hands of the private sector. It is not profitable energetically speaking."

While the EU has set forth strategies and laws to increase separation and thereby curb methane emissions and the use of landfills, the implementation of these instruments has not been uniformly synchronized across Member States. Spain lags behind Europe though its regions of Navarra and Basque Country are trailblazing ahead of the national government as they answer the EU's calls. Within and across these two ACs, however, there is also variation in separate collection schema.

Navarra's Waste Plan and Waste Law on Bio-waste Collection

For almost all public programs, success lies in public participation. Separate collection of recyclables is no different. To galvanize the public, the expectations must be clear and coherent, leaving little doubt about what is being asked. The Navarran government and its localities have

[10] Diario de Navarra. 14 September 2021. "Los contendores de orgánica y resto solo se abrirán con tarjeta o móvil."

established their authority on the topic through the passing of waste plans and laws as well as the leverage of environmental taxation as a means to further increase separate collection.

After the initial roll-out of locked refuse and organics recycling bins in the fall of 2021, the *Mancomunidad de la Comarca de Pamplona* (MCP) will begin rolling out the second phase in April 2022, marking the complete roll-out of the program. The initiative was the result of stagnating biowaste collection levels. Before the locked containers pilot program, only 17% of organic material was being recycled, far from the goals presented by the EU and Navarra's Waste Plan which calls for 50% by 2022 and 70% by 2027.[11] The locked bins have brought controversy with them. Local political parties EH Bildu, PSN, and Geroa Bai have supported the program,[12] though Navarra Suma has stated their opposition to the MCP's new collection program. They oppose the electronic readers, stating data privacy as the primary concern. Navarra Suma, a right-wing regional political party, called the new card readers "a control and a meddling in the privacy of the families of Pamplona,"[13] asking that the cards are not associated with addresses or personal data. The MCP, in response, assured that the cards correspond to a place of residence, but not to an individual or household: "This is nothing compared to how we are monitored by our water consumption, not to mention electricity, telephone services, and internet."[14] Currently, only 15% of biowaste is recycled in the MCP and with this new program, the *mancomunidad* expects to exceed a 50% increase, reaching 70% by 2027.[15]

The MCP equates the update in waste service to water and electricity consumption: bills reflect the amount of the service used, thereby alluding to the waste policy known as "Pay-as-

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[11] Diario de Navarra. 14 September 2021. "Los contenedores de orgánica y reso solo se abrirán con tarjeta o móvil."
[12] Diario de Navarra. 31 September 2021. "PSN logra el apoyo al contenedor con tarjeta."
[13] Diario de Navarra. 21 September 2021. "Navarra Suma pide que la tarjeta del contenedor no esté asociada al domicilio."
[14] Diario de Navarra. 16 October 2021. "Los contenedores electrónicos avivan la disputa en Mancomunidad."
[15] Diario de Navarra. 19 October 2021. "Mendillorri, laboratorio de residuos."

You-Throw" in which residents are incentivized to recycle by paying for their use of refuse containers. David Campión, President of the MCP, states, "Waste is the last service that is anonymous. You pay for the light, electricity, heat, gas, phone, water, but waste, no. It isn't just. There is a certain taboo, a certain trend towards hiding waste. But we have to take into account that our activities produce waste and that we must pay for waste as a function of how much we use the service." He goes on to say, "Pay as you throw is possible only if anonymity is completely lost in the production of waste. Right now we are in the process of installing containers with card readers that will not obstruct the anonymity completely, but it will insert a certain level of control. From here, instituting pay-as-you-throw depends on individualizing the production of waste. Either with bags with barcodes, or the container weighs the material of every input, it will be a long process because there is not a precedent for this in Spain. At this point the best we can do is approximate the quantity of waste based on the type of contract." In advance of the MCP's second phase, on February 22, 2022, a *Diario de Noticias* opinion editorial defends the new bins: "We are obligated by Europe to recycle."

Of the seventeen Autonomous Communities of Spain, only Cantabria and La Rioja have a smaller population than Navarra, 661,197 in (2020). About 378,200, or roughly 55% of the population resides in the MCP. The second largest population, 90,167 inhabitants, resides in the *Mancomunidad de La Ribera* which is home to Tudela, the second largest city in Navarra. Navarra, unlike Basque Country, does not have provinces. Despite its small size, roughly the size of Connecticut, the geography of Navarra is varied. While the north is mountainous and dominated by the Pyrennees, the south is flat and arid. Figure 4 maps the mancomunidades. Figure 5 shows the generation by ton of waste in each mancomunidad, which shows us that

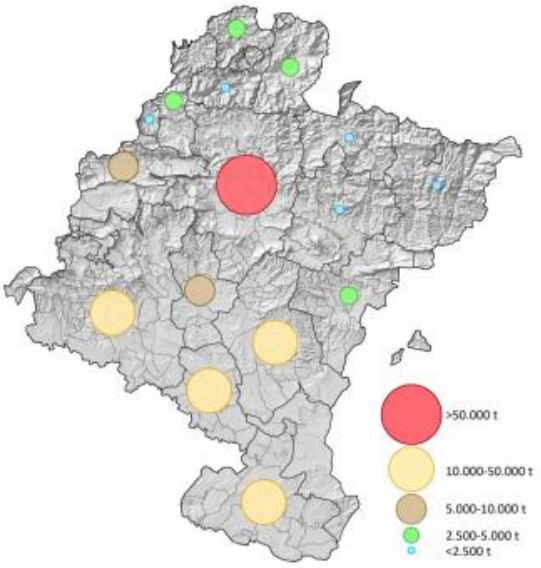
waste generation is centered in the *Mancomunidad de la Comarca de Pamplona*, as well as the *Mancomunidad de La Ribera* in the south and the *Mancomunidad de Montejurra* to the west.

In Navarra, the obligation to the European Union's Waste Framework Directive has been written into law. Navarra is one of seven Autonomous Communities that have waste laws or regulations and it is one of three that have ratified the Waste Framework Directive. In June 2018,

Figure 4: Map of Navarra's Mancomunidades*

*Plan Integrado de la Gestión de Residuos de Navarra 2017-2027

Figure 5: Waste Tonnage generated per Mancomunidad*



*Plan Integrado de la Gestión de Residuos de Navarra 2017-2027

Navarra went further and passed the Regional Law on Waste and its Taxation. As of January 2022, the Regional Waste Law mandates the separate collection of bio-waste, a year ahead of the Waste Directive. Each *mancomunidad* is charged with interpretation and implementation of an organic waste collection scheme that meets the law and its requirements. While some *mancomunidades* such as Sakana have modified their various collection schemes multiple times, other *mancomunidades* like Ribera just introduced their first additional separate collection as of 2022. With both a regional waste plan and a waste law, Navarra demonstrates high levels of political will and administrative capacity.

Navarra's ability to pass the innovative regional Waste Law has been recognized by more centralized levels of Spanish government. According to Isabel Elizalde Arretxea, Minister of Rural Development, Local Administration, and the Environment for the Government of Navarra from 2015-2019, the Waste Law received praise by Teresa Ribera, Minister of the Department of Ecological Transition of Spain, before a committee meeting organized with all the Autonomous Community represented. Isabel Elizalde Arretxea emphasizes the necessity of a law. "Very little

is achieved with a plan. A plan stays in the office of a few. In the end if you have a law, a law is obligatory. A law obligates the administration, the consumer, and the facility managers." The political capacity to draft a waste plan and pass a waste law, however, should not be underestimated. Navarra's ability to do so may be a reflection of many factors including its population size, political will, agrarian traditions, or economy. In this move, Navarra is asserting political control and clarifying the local competency of waste. This has the benefit of enhancing the responsibility and democratic accountability of the service (León, 2010).

Within Navarra, there is acknowledgement of this demonstration of local capacity. Miguel Angel Arrastio Soria, manager of the *Mancomunidad de Peralta*, states, "What the state does is take the European directive, transfer it to Spain, adjust the deadlines, and then say to the autonomous communities, 'Here, this is what we have to do. Now develop it to fit your situation.' But it is not like this. In reality Europe told us what had to be done and in place of Spain, Navarra went ahead of Spain. The regional government of Navarra decided to develop its own waste law before the central government. For that reason, we decided for ourselves how we will reach the European goals without waiting for Spain to tell us how it should be done." On this topic, the decentralized political will is clear; Navarra, with its history of asymmetrical federalism, steps ahead of the Spanish government as they respond to European waste policy.

In as far as separate collection galvanizes the public to separate, the pressure on societal inclusion and participation has been questioned by some. Fernando Ferrer, the President of the *Mancomunidad de La Ribera,* points to innovation in biological treatment plants as a means to achieve high recycling rates instead of separate collection achieved through public participation. Waste Technician Raquel Crespo from the *Mancomunidad de Montejurra* also challenges the public awareness recycling campaigns when she says that outreach campaigns may not reap the

desired outcome.[16] Local newspapers took the opposite stance; in a *Diario de Navarra* interview, Juana Fernández, professor of environmental science at the University of Navarra, stated "If citizens do not have environmental conscientiousness, [recycling] will be seen as an obstacle." Just below is an interview with Sergio García, sociologist and professor at the Public University of Navarra, who states, "Changing the model of waste collection requires the concerted effort of all."[17] Not all *mancomunidades* of Navarra may be on board with the motion towards heightened environmental taxation and "Pay-as-you-throw" models, but local leadership in the most populous *mancomunidad* certainly is.

In regards to separate collection, Navarra's waste plan and waste law provide a taxation scheme that will move waste away from anonymity. Oscar Rubio, director of Navarra's Waste Consortium, an inter-governmental body established by the Waste Law, states, "The most important part is taking away anonymity. For this reason it matters less which system you use so long as anonymity is taken away."[18] Anonymity, in this context, is considered a factor that increases civilian abuse of public services, somewhat akin to the infamous tragedy of the commons. Public participation, in many ways, is motivated by public scorn— how one uses a waste container on a deserted and dark street differs from one on a fully lit screen corner with the neighbors watching. As Davíd Oroz, President of the *Mancomunidad de Sakana*, states, "Some do not fully recognize that they generate waste and that they have to be part of the solution, a solution that takes place in part in their home." The reduction and elimination of anonymity is a motion towards the Pay-as-You-Throw waste taxation scheme which economically incentivizes

[16] See Introduction
[17] Diario de Navarra. 9 November 2021. "El futuro de los residuos."
[18] In the summer of 2021, Navarra's Waste Consortium organized an outreach campaign, "Organi-Copa" in which 9 mancomunidades and 92 municipalities competed to capture the most and best quality biowaste. At the end of the competition, there was an awards ceremony and coverage in multiple local newspapers. Public outreach efforts have been numerous in Navarra.

recycling instead of waste generation. Oroz continues, “With Navarra’s Waste Plan and Waste Law, it is clear that we are moving towards a Pay-as-You-Throw system. It will no longer be the case that some participate in the programs and others do not. Those who are using the waste bins improperly or do not recycle will have to pay whereas those who are using the waste systems appropriately will not. That will be the cost of not participating in the program.” The administrative costs of environmental taxation of this kind look much different in Navarra, a region that has managed its own treasury since the 1500s. For less decentralized ACs that are not accustomed or equipped to overseeing taxation, this motion may create added managerial costs and obstacles.

The onus on separate collection by the consumer comes from the European Union’s disincentivization of technological sorting processes as well as local initiatives that increase awareness. To meet recycling requirements, separation must occur at the origin of collection. The efforts are paying off. In 2020, according to the Domestic and Commercial Waste Inventory, Navarra generated 282,009 tons of municipal waste which equates to about 427 kilos/inhabitant/year of which 39% was separately collected and 61% was mixed waste. Although Navarra’s goal was to reach 397 kg/inhabitant/year, the level reached was lower than the provinces of Basque Country and one of the lowest in Europe. Following the container change, the biowaste collection has increased from 14% in October 2021 to 44% in March 2022. Over the same period, plastic recycling has increased from 33% to 46% and paper recycling from 68% to 77%.[19]

Navarra’s waste plan and waste law demonstrate the decentralized government’s authority on waste management. Their ability to leverage their aptitudes in order to press towards

[19] Diario de Navarra. 3 April 2022. “Resultados positivos de la implantación del nuevo sistema.”

environmental taxation shows their robust political and administrative capacity. There is no question of who holds the competency of waste management. Paired with the consistent coverage of the issue in local journalism, the expectations for the public are clear: they must separate their biowaste and recyclables or face the consequences.

Basque Country's Separate Collection of Bio-waste

With over three times the population of Navarra, Basque Country faces a distinct set of difficulties in achieving high levels of separate collection vis-a-vis public participation. Like Navarra, the region has issued waste plans though it has not taken a comprehensive step towards environmental taxation or passing a waste law. Before considering the government bodies in the provinces of Gipuzkoa and Biscay that hold waste management competencies, this section briefly speaks to the efforts the CA of Basque Country is taking towards separate collection.

The Plan for the Prevention and Management of Waste 2030 (PPGR 2030) of Basque Country establishes the waste management trajectory of its three provinces. The three principal objectives are reaching the European directive regarding waste generation, improve the indicators of waste in Basque Country and resolve disposal issues, and create a stable and secure market for secondary materials. As outlined in the Basque Country's Official Bulletin (2021), relevant lines of action are the implementation of new separate collection sites especially for bio-waste (4,758,092 euros), the construction of specific facilities for the treatment of separately collected bio-waste (2,182,475 euros), the construction of new facilities for the reutilization and recycling of other separately collected waste material (5,749,313 euros), and the increased investments for waste classification and treatment plants (724,224 euros) totaling to 13,414,104 euros.

The document goes on to outline the technical implementation of separate collections. According to the Basque Plan, separate collection of bio-waste increased from 6.4% in 2010, 24% in 2018, and 43% in 2020. The 2020 target was 60%. As the document notes, the municipalities with the highest levels of bio-waste separate collection are located in Gipuzkoa at a rate of 100kg/inhabitant per year. In Biscay, many municipalities do not surpass 10kg/inhabitant per year. Therein we may notice the distinct outcomes from one province to the other. Significant emphasis is therefore placed on the separation and collection of bio-waste for Biscay and Alava, as well as the infrastructure needed to convert the bio-waste into compost or a resource. According to the PPGR 2030, in 2018 of the 241,751 tons of municipal bio-waste generated in Euskadi, 67,688 tons were converted to compost, 80,951 tons recovered to energy, and 93,112 tons were landfilled. In comparison to Navarra, the larger population of Basque Country results in more material generation and therefore more urgency in the management therein.

Basque Country has three provinces: Alava, Gipuzkoa, and Biscay. As of 2018, the population of Basque Country was approximately 2.2 million, the seventh largest AC by population, across the territory that is 7,234 km squared, an area just larger than the state of Delaware. Together with Navarra, Basque Country is one of the wealthiest ACs of Spain according to its median income and gross regional domestic product per capita (Datosmacro). In the context of this research, I limit the study of Basque Country to the provinces of Gipuzkoa and Biscay due to their robust population sizes and the availability of relevant information.

In response to the EU Next Generation program, Basque Country has created Euskadi Next, a program that will coordinate the disbursement of European funds with the three regional

councils and the city halls of the three Basque capitals.[20] Central to these funds is ecological transition, components of which include transitions towards circular economy models and the sustainability of waste management. According to the resilience plan, the objective of the funds is to accelerate investments necessary for the improvement of waste management as well as the guaranteed compliance with waste prevention and recycling goals. The material disposed of in landfills is valued at almost 45 million euros per year.

Notably, the provinces of the Basque Country are moving at different speeds and in different directions. Iñaki Suseata, the waste coordinator for Ihobe, the Public Society of Environmental Management for the Basque Government, emphasizes the difficulties that Basque Country faces: "The results [of bio-waste collection] across provinces are diverse. The administrations have to avoid the simple act of putting the containers in the street for public use. We have to achieve the public's real participation because the European Directive is to collect bio-waste in a separate collection, not to install containers." This may not come as a surprise since the competency of waste management falls on the decentralized government. In reference to the MCP's collection model of locked refuse and biowaste street-side containers in Navarra, Iñaki Suseata states: "The electronic card bin-opening system for garbage and bio-waste works very well. In Gipuzkoa, the card readers have been a logical change. It works well to gather information and to increase public participation. It is understood that it is a way to limit the use of the garbage container and make a push towards bio-waste. It can also be a way to introduce Pay-as-you-Throw."

Separate collection in Basque Country is defined by its population size and the resulting waste material generated. At the AC level, the government is outlining waste goals in their waste

[20] In Basque, "Euskadi" means Basque Country.

plans. Given the diversity of responses within the Basque Country, the two subsequent sections consider separate collection in Gipuzkoa and Biscay, respectively. These two provinces are the most populated and economically robust provinces of the AC and will therefore showcase the similarities and differences of separate collection.

Province of Gipuzkoa

In Gipuzkoa, separate collection has been defined by its politicization and the debate between political parties about the most effective management strategy. In the absence of a collective agreement on behalf of regional politicians, localities were swayed by popular, though perhaps not entirely accurate, information that posited the collection model door-to-door as the sole way to circumnavigate incinerators and WTE facilities. While the politicization of waste has spurred the public conversation, misinformation caused confusion.

In 2019, the Provincial Council of Gipuzkoa passed the *Plan Integral de Gestión de Residuos Urbanos de Gipuzkoa 2019-2030* (PIGRUG 2019) in which they concretized a series of objectives and programs for the reduction of waste vis-a-vis an updated system of prevention, management, and disposal. These objectives set forth a transition from linear to circular economy of resource management in that they prioritize the reduction and prevention of waste in addition to reuse, repair, and recycle. Zero Waste Europe heralds Gipuzkoa as "a European model of transition from incineration to zero waste" due it nearly doubling recycling rates in five years and making "investing in an incineration plant obsolete." By 2015, Gipuzkoa had surpassed the European separate collection target of 50% for 2020. For 2020, PIGRUG 2019 establishes a 60% separate collection rate of bio-waste. Gipuzkoa's goals for 2030 include the

reduction of generated municipal waste to 419 kg/inhabitant and the collection or treatment of 80% bio-waste in origin by 2025 and 90% by 2030.

PIGRUG 2019 outlines 10 separate collection schemes for municipal solid waste. Iñaki Erauskin Urretabizkaia, waste technician of the *Mancomunidad de Sasieta* of Gipuzkoa, states, "The *mancomunidad* will always respect the decision of city halls. We will not put in a system that the city halls don't want, that the politicians or their populations don't want." Since the *mancomunidad* is a higher level of governance than the municipality and city hall, to this effect, the ultimate authority of separate collection strategy is the most decentralized government. On the topic of waste plans, Iñaki Erauskin Urretabizkaia continues, "The Plan for Prevention of Waste was not a defining element that informed the decisions we made in the *Mancomunidad de Sasieta*. The plan existed, and when it was approved, we were already acting at its desired level or we had already exceeded those levels. We are already fulfilling the European Waste Directive and Gipuzkoa's Waste Plan." Unlike Navarra's waste plan, for Sasieta, PIGRUG 2019 did not exert a centripetal force and inform local activities. With this in mind, we may expect more variation across *mancomunidades* of Gipuzkoa in that the influence of the provincial plan may not guide all *mancomunidades* to an equal effect.

The separate collection of Gipuzkoa has been defined by its implementation of door-to-door collection[21] schema which has been recognized, at times wrongly, as the only mechanism to challenge the need for WTE facilities and incinerators. In 2009, the town of Usurbil, Gipuzkoa, was chosen as the host of a waste incinerator and, shortly thereafter, to prove a viable alternative, the town was one of the first in Spain to implement door-to-door separate collection with emphasis on the separate collection of biowaste (Zero Waste Europe). In the 2012 regional

[21] Door-to-door is a waste collection model where waste is collected at each place of residence. In the street-side container model, residents dispose of waste in public collection containers.

elections, the leftist and Basque nationalist party, Euskal Herria Bildu (EH Bildu) gained six seats and the popular vote in the Basque province of Gipuzkoa, holding equal seats to the Basque Nationalist Party (PNV) who had been in power since 2001. PNV continued to hold power in the other two Basque provinces of Alava and Biscay. With the advantage in Gipuzkoa, EH Bildu prioritized a decentralized method of waste management in an effort to reduce inputs to landfills as per European Union legislation and further recycling as a viable alternative to incineration. EH Bildu pushed the implementation of the door-to-door model material recovery and organics recycling in municipalities across Gipuzkoa.

According to Joseba Sanchez Arizmendiarrieta, waste technician for municipalities in Navarra and Gipuzkoa, what EH Bildu sought to do in those four years was reduce the fraction of garbage to such an insignificant quantity as a way to challenge the precedence of WTE facilities. The door-to-door collection model is regarded as one of the most effective models of separation, collection, and recycling. In those four years, however, the changes were too rapid and caused public confusion. By 2016, PNV regained the advantage of 9 seats to 8. In this election, however, Podemos, a Spanish leftist party, came into prominence with 3 seats and made a coalition with EH Bildu, thereby slowing changes. Six months before the regional elections of 2020, the topic of waste management returned to headlines. On February 6, 2020 there was a landslide at a landfill in the Basque Province of Biscay and two workers were killed.[22] In December 2020, while PNV was in power, a WTE facility opened its doors in Gipuzkoa. In small towns and rural areas such as those in Sakana, Navarra, and Gipuzkoa, door-to-door collection continues. As a result of door-to-door waste collection in Gipuzkoa, the topic has become polarized politically.

[22] La Razón. 6 February 2022. “Derrumbe de Zaldibar: dos años sin respuesta.”

The political controversy did not advance or improve the situation in the short term, but in the long term it aided in increasing awareness. Iñaki Erauskin Urretabizkaia, waste technician of the *Mancomunidad de Sasieta* of Gipuzkoa, states, “The controversy over door-to-door in Gipuzkoa had a favorable sociological effect in the sense that the population never considered waste a significant issue. Then suddenly, in the news and in the towns the topic became politicized and there was public discourse about ‘pro-incinerator’ or ‘anti-incinerator’ and ‘pro-door-to-door’ and 'anti-door-to-door.’ People began to identify with a certain system.” The political discord over waste management solutions became civil discord. Without a cogent political response to the issue, the controversy spread, thereby exacerbating the opaque situation. “The biggest error was trying to solve a waste treatment issue with a collection system. A waste collection system cannot resolve a waste treatment problem.” In effect, a separate collection scheme may not correlate to a certain disposal model. Separate collection and incineration are not mutually exclusive and in creating this false linkage, the emphasis was placed more on the collection model instead of public participation, technical expertise, or governance.

Like Navarra, there is experimentation occurring with environmental taxation and economic instruments. The *Mancomunidad de Sasieta* is experimenting with mechanisms to augment consumer waste separation. “With our system, we are able to track and control the frequency of bin use with electro-magnetic cards. For those who regularly use the bio-waste container, we give them a discount on the municipal waste fee. Currently it is a 25% discount on the municipal waste fee for regular bio-waste container usage. At first we defined ‘regular use’ as once a week, but later we modified it to 15 openings each year. Our bio-waste capture has increased, but not by much. For those who are not separating their waste already, they are not waiting for this kind of economic incentive. In the end, the discount equates to about 30 euros a

year. But it has been useful as a step, along with our other efforts which include providing free compostable bags, outreach campaigns, and working with schools, towards increasing public awareness and the public conversation." Though this may not be an ample cause for a significant uptick in public participation, it demonstrates the *mancomunidad*'s willingness to press forward.

Pressing forward, however, depends on public participation. "At a certain point we hit the ceiling of voluntary participation. At that point, it's necessary to experiment with instruments that increase participation. In locking the waste containers, politicians took a big risk. The people did not think that this would actually happen, 'How are they going to lock the waste bin? And moreover that we can only use it on a few days of the week?' To do this, politicians had to have the response prepared: that we have already done outreach, the bio-waste container has been in the street for years, we've given discounts, we are spending a lot of municipal money in the management of waste, and now, because our recycling rates have plateaued, we must take more measures. If a citizen feels that this measure is inappropriate, at least the decision was unanimously made by politicians. This is a critical point. In this way, the system does not become a political game between parties and is not overturned by changes in government."

In Gipuzkoa, the separate collection model of door-to-door has been wrongly associated as the sole way of challenging energy recovery and incineration. In the aftermath of the controversy and political discord, localities are shifting their collection model to fit their circumstance and experimenting with economic incentives in order to increase participation. While the politicization of the issue resulted in public awareness, the discord between political parties fractured clarity.

Province of Biscay

Biowaste collection containers are widely available across Bilbao, a metropolitan area that hosts 346,000 out of Biscay's population of 1.13 million. Like Gipuzkoa, Biscay also sets waste milestones and objectives on its own behalf, though a lack of transparency pervades the province. The controversy over door-to-door and incienation in Gipuzkoa has been heard in Biscay, though the public awareness that we observed in Gipuzkoa has not developed. The political institutions have lagged behind in providing data and waste plans. This lack of urgency can also be seen in society.

The Comprehensive Plan for the Prevention and Management of Waste of Local Competence of Biscay 2030 (PIPGRB 2030) marks as its objective the reduction of waste generation by 15% and the diversion of 4.9 of every 5 kilos of waste, 4 kilos of which will be reintroduced into production and 0.9 kils will be used to generate renewable energy. According to Biscay's Regional Government, with this plan, Biscay will recover almost 80% of waste material by 2030 and bio-waste separate collection will be provided by municipalities. As of April 2022, the complete plan for 2030 has not been released to the public.

Biscay is also experimenting with ways of tying waste management to identity. The President of the *Mancomunidad de Durango*, Mireia Elkoroiribe, states: "We are going back to see if we can include an identification system so that with this instrument the municipalities and city halls can reward those people who are regularly participating in the bio-waste collection program. Raising awareness is the best measure but this is another way to motivate participation." Biscay has this in common with Navarra and Gipuzkoa. At a certain point, collection levels for voluntary programs plateau. This necessitates new tools and laws to make the program mandatory. "There have not been societal pressures to implement a bio-waste collection. There have been people against incinerators, door-to-door, etc., but there hasn't been

a demand from the population for bio-waste recycling." The reasons for this may be multiple. As I will discuss in Chapter 5, many interview subjects point to the long history of incineration in Biscay as an explanatory factor for the lack of urgency in improving waste management.

While Biscay marks objectives for separate collection, the implementation of circular economy practice lags behind those of Navarra and Gipuzkoa. The recycling statistics for a city like Bilbao are not available and, in comparison to Navarra and Gipuzkoa, the public documents on the topic are significantly less detailed. This may point to a limited political and administrative will in the regional government, thereby thwarting transparency and public accountability. When considering the provinces of Basque Country as well as Basque Country as a AC, the large population is a crucial factor. Population puts pressure on waste management solutions, making solutions more urgent and at times more short term, as waste levels pile up. Although robust populations may entrench progress towards marked circular economy objectives, it should be the expectation that the size and reach of governing institutions correlate to population size.

Between Biscay, Gipuzkoa, and Navarra, the region making the slowest progress towards instituting effective MSWM is Biscay. With increased political and fiscal freedom, Navarra and Basque Country are able to accelerate the political decision-making process at times at the risk of Spain. They rely less on transfers from the federal government. Basque political scientist Pablo Beramendi refers to as "fiscal accountability," or the extent to which regional governments internalize the consequences of their activities. "Local authorities take advantage of federal risk-sharing schemes to enact policies that increase local risks" (Beramendi, 2007: 16). The advancement towards environmental taxation in Navarra and Gipuzkoa reflect this increased potential risk. Federalism shapes incentives and affects the interaction between regional and

central incumbents, “By decentralizing social programs without transferring the necessary resources, central governments manage to offload to regional incumbents the political costs of retrenching publicly provided social welfare” (Beramendi, 2007: 16). Not only are Navarra and Basque Country drafting their own waste plans in response to EU legislation ahead of Spain, they are, as Chapter 5 will emphasize, at times making decisions with high levels of risk.

In joining the European Union, Spain yielded their right to fully govern themselves. In a comparable way, in Navarra and Basque Country’s current asymmetrical agreement with Spain, they likewise yield authority to the central government, thereby limiting the exercise of unrestrained democracy (Dahl, 1983). In foregoing the exclusive control of authority, they are able to leverage their local competencies and avoid bottle-necked policies in the central government. Chapter 5 will follow waste from its separation and collection to its treatment and disposal.

CHAPTER 5: TREATMENT AND DISPOSAL

Introduction

With the EU galvanizing the transition from linear to circular economy, the past debate between burning (incineration) or burying (landfill) waste is being replaced with the question of how municipalities can divert all waste into separate collection streams so that there is no need for burning or burying. The distance between current systems and zero production of waste remains notable.

Integral to this discussion is the EU’s Waste Hierarchy, Figure 6. Above all else, the EU promotes waste prevention which is an effort to reconsider everything before it enters the waste cycle. Below prevention is reuse and recycling. Most important to this chapter are the lowest two

quadrants: recovery and disposal. Across its Member States, the EU prioritizes energy recovery, the process by which the incineration of waste produces energy, via Waste-to-Energy facilities (WTE) over landfills. What we'll see in this chapter is how Navarra and Basque Country are internalizing the EU Waste Hierarchy and the tensions therein. Like in Chapter 4, interviews, local journalism, and waste plans contextualize the implementation of EU waste policy over the period of January 2021- December 2021. Discussion will begin with Navarra's processing and disposal. Basque Country and its provinces of Gipuzkoa and Biscay will then be discussed. While Navarra openly challenges the EU Waste Hierarchy, the Basque Country is abiding by the statute.

Central Authority: The European Union

With the Waste Hierarchy, the EU has made clear the preference of energy recovery over landfills. They have instituted various directives aimed at regulating and disincentivizing landfills. Metrics for energy recovery, however, go largely unaddressed. This has negative ramifications for the circular economy transition across its Member States.

Figure 6: EU Waste Hierarchy

As an elaboration of the Commission communication of May 2003 towards a Thematic Strategy on the prevention and recycling of waste, the European Waste Directive of November

2008 established the legal framework for disposal of waste in its Member States. The directive sets milestones and minimum requirements. It also defines the following terms: recovery, disposal, and waste. Recovery is any operation the principal results of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfill a particular function, or waste being prepared to fulfill that function, in the plant or in the wider economy. Disposal is any operation which is not recovery even where the operation has a secondary consequence of the reclamation of substances or energy. Waste is any substance or object which the holder discards or intends or is required to discard. Clear definitions of these terms "strengthen[s] the measures that must be taken in regard to waste prevention, to introduce an approach that takes into account the whole life-cycle of products and materials and not only the waste phase, and to focus on reducing the environmental impacts of waste generation and waste management, thereby strengthening the economic value of waste." Disposing waste in landfills is the last resort.

The location of disposal on the Waste Hierarchy is a reflection of the harmful effects of landfills on the environment. The EU Methane Strategy specifies that biodegradable material and biowaste are responsible for the generation of landfill gas. The EU Landfill Directive (1999) set targets and minimum requirements for disposal, mandating that all Member States implement national strategies to prevent the landfilling of biowaste. All waste must receive treatment[23] prior to landfilling. The Landfill Directive requires landfill operators to manage landfill gas and increasingly the EU has placed stipulations on what classifies as recycling and recovery. For example, Directive 2008 Number 4:

> The amount of municipal biodegradable waste that enters aerobic or anaerobic treatment may be counted as recycled where that treatment generates

[23] 'Treatment' according to WFD means recovery or disposal operations, including preparation prior to recovery or disposal.

> compost, digestate, or other output with a similar quantity of recycled content in relation to input, which is to be used as a recycled product, material or substance. Where the output is used on land, Member States may count it as recycled only if this use results in benefits to agriculture or ecological improvement. As from 1 January 2027, Member States may count municipal bio-waste entering aerobic or anaerobic treatment as recycled only if, in accordance with Article 22, it has been separately collected or separated at source.

In conjunction with the Methane Strategy 2018, the Amending Landfill Directive (2018) set the target of a maximum 10% landfilling of waste by 2035 in order to further reduce methane emissions. The amendment also introduces restrictions on landfilling of waste suitable for recycling or recovery effective in 2030. Through this, it becomes clear the EU's stance on landfills. Little insight can be inferred about energy recovery expectations since, beyond the Directive 2000/76/EC on the Incineration of Waste, there is not currently an EU strategy on energy recovery.

In terms of waste unsuitable for recycling streams, the EU Waste Hierarchy identifies two disposal models: energy recovery or landfill disposal. While policies are in place to set stipulations on disposal, i.e. landfilling, energy recovery objectives have gone largely unaddressed. This is detrimental to the circular economy plans. In the absence of energy recovery expectations, Member States and their municipalities are less incentivized to divert waste into recycling streams in order to generate raw materials.

Disposal in Navarra

As the Spanish expression *quemar las naves* goes, upon arrival to the Americas in the colonial conquest, some captains burned their ships after disembarking in order to incentivize the crew to look only forward. Whatever unpleasant circumstances they might encounter, there would be no easy option to go back. Instead of abiding by the EU Waste Hierarchy, in both its

waste plan, waste law, and the implementation thereof, has brazenly chosen to seek their own recourse. In the absence of incinerators and WTE and the current resistance of their usage, Navarra is focusing efforts on diverting all waste into the upper three quadrants of the waste hierarchy. In the short term, they are faced with continued usage of landfills which may obstruct their path to meeting EU waste targets.

A dubious cloud of controversy about waste incineration and energy recovery has hung over Navarra. The construction and implementation of incineration as a means to achieve energy recovery has resulted in significant backlash. In 2003, the EU passed the Participatory and Procedural Rights in Environmental Matters; waste management plans and prevention programs are subject to this law. According to this law, the public must be consulted on the environmental construction plans. Article 31 on Public Participation of the European Waste Directive states: "Member States shall ensure that relevant stakeholders and authorities and the general public have the opportunity to participate in the elaboration of the waste management plans and waste prevention programmes, and have access to them once elaborated, in accordance with Directive 2003/35/EC or, if relevant, Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (1). They shall place the plans and programmes on a publicly available website." When plans for a WTE facility in the *Mancomunidad de Sakana* were announced in 2012,[24] the plans were halted after public unrest and, in the years that followed, Navarra's Waste Plan 2017-2027 maintained this stance on WTE facilities. Notably, in the 1980's, both Navarra and Basque Country rejected plans for nuclear energy.

[24] Diario de Navarra. 9 June 2012. "Protesta contra la valorización energética en Cementos Portland."

Navarra's Waste Plan (PRN) advances towards environmental taxation on disposal, thereby discouraging landfilling and subsequent incineration through a promulgation of regional law. The push has been towards reducing waste and diverting it into recycling streams as the first step before the possible approval of incinerators or WTE facilities. Navarra's Regional Waste Law applies economic and policy instruments for the eventual elimination of landfills and incinerators. Since there are no incinerators in the region and plans for incinerators, up to this point, have been rejected, the plans give new impetus towards the reduction of landfills and the continued disincentivization of both forms of disposal. To achieve such measures, the same tax is applied to both landfills and incinerators. In doing so, Navarra is placing incineration and landfills on the same level, penalizing them to the same degree vis-a-vis the taxation scheme. The funds collected are allocated to the Waste Fund. The Waste Fund, according to Article 42 of the PRN, finances measures aimed at mitigating the adverse impacts of waste on human health and the environment. Therein lies the possibility that, if Navarra is successful in circumnavigating WTE disposal, there may be Type II upwards denationalization (Maggetti and Trein) that informs Spain in their creation of strategic waste policy solutions that do not include WTE disposal (Maggetti and Trein, 360). This transgression of the EU Waste Hierarchy could reap benefits for regions and provinces across Spain and Europe in that they would have a model for avoiding the costly, environmentally harmful, and undesirable Waste-to-Energy facility.

With the disincentivization, rejection, and closure of disposal sites, Navarra, however, faces a predicament. MCP President David Campión states, "The Waste Plan indicates the closure of Gongora [landfill] and that a new, smaller landfill must be found in the greater Pamplona area." He goes on to say, "The national law will penalize altogether more the use of landfills. At this point, Basque Country and Navarra alike, there is a tax to dump but in Spain

there is not. This may lead to landfill tourism. If a company has the option between dumping in Pamplona where it costs X euros for each ton or in La Rioja where it costs half of that, they will go to La Rioja. There must be a law that homogenizes the country." The advancements of Navarra on this topic will empirically shape Spain's response on the matter as the national government devises a plan to obstruct or control this "landfill tourism." In this way, Navarra's vanguardian move against the EU may be a service to the federal structure.

Miguel Angel Arrastio Soria, manager of the *Mancomunidad de Peralta*, emphasizes the risk inherent in limited disposal sites. "Navarra is collecting more than 150,000 tons of waste. More, in fact. Within 4 or 5 years I hope we manage to reduce the quantity of waste. But one cannot be sure. What we should not do is play with only one card. It is as if we are playing roulette and we only bet on one number. If we aren't able to reduce the quantity of waste, what do we do?" He went on to critique the waste plan and waste law for placing too much importance on separate collection and not enough pressure on treatment facilities. Within the structure of federalism, however, the risks of this move are softened. In the Rikerian bargain, the national government provides a safety net. Navarra is able to experiment and take risks knowing that their shortcomings will be blunted by Spain.

In multiple interviews, politicians and technicians recognize the EU waste hierarchy and recognized how Navarra continues to wager a bet against the prioritization of energy recovery over landfills. The president of the MCP, for example, states: "There has always been strong opposition to incineration.[25] No one wants them close. It is also true that the European Directives consider landfills worse than incinerators in the hierarchy. And also that there is zero dumping, which means incineration will be necessary because some sort of garbage will always be

[25] Although incineration and energy recovery are technically distinct processes, due to the incineration of waste, many interview subjects chose to refer to the two technical processes as one.

generated. Perhaps in the future we will have to think of this kind of solution. In the short term, waste from here can be brought to incinerators in Gipuzkoa but there are transportation and ethical issues in moving waste 200 kilometers for disposal."

Navarra's efforts should not be understood as a flagrant disregard of the EU and the Waste Hierarchy. Instead of reallocating all their waste from disposal to energy recovery, they have taken an accelerated measure towards the circular economy and the first three categories of the waste hierarchy: waste prevention, re-use, and recycling. Simultaneously, however, the fault lines of this risky jump might leave them outside of EU milestones. MCP President David Campión, "There is a risk that by 2035 we must send only 10% of waste to landfills. If the laws aren't amended to allow certain waste treatments and recycling processes, we may not meet the requirements and we might end up with a lot of waste that we won't know what to do with. The risk is that we won't complete the European Directive." As can be inferred from these interviews, Navarra has prioritized a social solution as opposed to a technological one. The population has a stake in the success of the solutions envisioned through the Regional Waste Plan and Waste Law, and the municipalities, instead of a lump sum for a WTE facility as well as management costs, will focus resources on the onboarding and maintaining public participation in the programs.

WTE facilities, like incinerators and landfills, are imposing, environmentally harmful, costly, and undesirable. Navarra, in its brazen step forward, is pooling its resources in the upper three quadrants of the EU Waste Hierarchy to evade energy recovery plans. If the desired outcome does not pan out accordingly, the government runs the risk of having to turn back and retrace their steps.

Disposal in Basque Country

The debate about Basque Country's waste disposal practices vary from one province to another. Between provinces, there is variation in disposal practices which are all the more emphasized when compared to Navarra. On the side of Biscay, Basque Country is reckoning with the historical precedence of incinerators and energy recovery while on the side of Gipuzkoa, the AC is balancing reluctance and skepticism surrounding these processes. The precedent set by incinerators has been recognized by many. Inazio Irigoien Iriarte, professor of agronomy, biotechnology, and health at the Public University of Navarra, states: "Once there are incinerators available, recycling programs slow or collapse. Technological fixes are quick to overtake societal inclusion in waste management and circular economy initiatives." The incineration of potential recyclables continues the reliance on raw materials, thereby thwarting circular economy transitions.

Biscay, the most economically robust province in Basque Country with the largest population, introduced the first incinerator in the 1980s, thereby setting the precedent for Biscay's recycling and disposal trajectory. Beyond the pollution and infrastructural costs of an incinerator, the presence of incinerators and WTE facilities challenges recycling incentives and has deepened the variation across the provinces. In an interview with Iñaki Erauskin, service manager of the *Mancomunidad de Sasieta,* and Leire Artola, President of the *Mancomunidad de Sasieta* and Mayor of Beasain:

> Iñaki Erauskin: "The territories of Basque Country are very different. Or rather, Navarra is doing very well. The *cuadrillas* of Alava are also doing quite well. Biscay doesn't have as much tradition in this as the rest of us. I would say that Biscay would be the worst— it's at a quite low level of recycling."

Leire Artola: “This might have something to do with the fact that in Biscay there have been incinerators for the past 20-25 years.”

Iñaki Erauskin: “It’s possible that by having an incinerator available, it’s a bit like, “Why would I go through the trouble of separating this when it all can be burned?” And so, without landfills and incinerators, what would we do with waste? We’ve lived this reality by sending waste to Cantabria, and by exporting it because we didn’t have a treatment facility available.”

Currently there are three landfills for municipal waste in Basque Country: Gardelegi (Vitoria-Gasteiz), Jata (Lemoiz), and Artigas (Bilbao). While Next Euskadi 2021-2026 does not specify energy recovery and incineration objectives, Basque Country’s Waste Plan (PPGR 2030) details the status of disposal rates. According to the PPGR 2030, from 2010 to 2018, energy recovery of municipal waste in the Basque Country increased from 19.6% to 23.2% whereas compost increased from 1.6% to 6.8%. The upper range of these metrics is provided in Table 1. A degree of difference in percentages is notable.

Table 1: Waste Per Capita, in Basque Country: Biscay and Gipuzkoa, 2015-2018*

Autonomous Community of Basque Country	2015	2016	2017	2018
Urban waste per capita and year: Landfill Deposit	34.52%	35.62%	34.53%	33.89%
Urban waste per capita and year: Energy Recovery	25.88%	23.03%	22.39%	21.10%
Urban Waste per capita and year: Recycle	35.01%	36.27%	37.46%	38.71%
Urban Waste per capita and year: Compost	4.58%	5.08%	5.52%	6.30%
Province of Biscay	2015	2016	2017	2018
Urban waste per capita and year: Landfill Deposit	20.36%	24.05%	21.11%	21.91%
Urban waste per capita and year: Energy Recovery	43.21%	37.21%	36.05%	34.33%
Urban Waste per capita and year: Recycle	35.45%	37.62%	41.54%	42.01%
Urban Waste per capita and year: Compost	0.98%	1.12%	1.31%	1.75%
Province of Gipuzkoa	2015	2016	2017	2018
Urban waste per capita and year: Landfill Deposit	48.13%	48.05%	49.56%	45.46%
Urban waste per capita and year: Energy Recovery	6.64%	6.67%	5.16%	5.38%
Urban Waste per capita and year: Recycle	35.06%	34.12%	32.23%	35.10%
Urban Waste per capita and year: Compost	10.17%	11.17%	13.05%	14.06%

*Ekopol

In 2018, Basque Country generated a total of 1,066,107 tons of waste of which 800,674 tons (75.1%) were domestic waste and 265,434 tons (24.9%) were commercial waste. Of the 241,751 tons of municipal biowaste generated that year, 67,688 tons were composted, 80,951 tons were recovered energetically, and 93,112 tons were landfilled. The PPGR 2030 states as its guiding principles the Royal Decree 1481/2001 of December 27 Article 1 section 6 states that only wastes that have been subjected to initial treatment and recovery may be deposited in landfills. Royal Decree 646/2020 of July 7 specifies that by January 1, 2035 the amount by

weight of municipal waste landfilled will be reduced to 10% or less of the total waste generated of this type with intermediate objectives to 2030 of 20% or less and 2025 of 40% or less.

The Official Bulletin of Basque Country dated 21 October 2021 places significant emphasis both on the increase of separately collected biowaste as well as the construction of biowaste treatment facilities. With that in mind, the Official Bulletin, which is the predecessor of the Basque waste plan, goes on to outline the technical and financial parameters of biological treatment sites. "The construction of new mechanic-biologic treatment facilities will not be financed."[26] Like Navarra, Basque Country is moving away from biological treatment facilities as a method of increasing recycling capture.

In accord with EU waste policy, Basque Country seeks to reduce landfill inputs through a combination of energy recovery, recycling, reuse, and prevention. It faces the obstacle of overcoming the centripetal trend of incinerating waste at pre-existing facilities instead of making new efforts to divert it into recycling streams. Nonetheless, its proactive stance is notable, especially when considering the waste plans from Gipuzkoa and Biscay.

Province of Gipuzkoa

Gipuzkoa's trajectory is defined by the aforementioned door-to-door controversy. While in recent years they have implemented energy recovery, their prioritization of circular economy goals is made clear by their restricted use of energy recovery despite the EU's lack thereof.

Among the objectives outlined in Gipuzkoa's Waste Plan 2019-2030 (PIGRUG 2019) is the goal to collect or treat at the source of 90% of biowaste in 2030 and 80% in 2025. By 2025, the plan also outlines the goal of converting 75% of waste into secondary resources while

[26] Boletín Oficial del País Vasco, 21 October 2021. Pg 17

limiting energy recovery to 15% as well as reducing disposal to less than 30% of waste generated. As previously mentioned, the EU does not mandate a reduction or limitation on energy recovery. Gipuzkoa's goal is to reduce the generation of waste to a value of 419 kg/inhabitant by 2030 from 481 kg/inhabitant in 2018, which would put Basque Country among the lowest generators of waste kg/inhabitant in Europe. As illustrated by Gipuzkoa's door-to-door experience, the region has resisted incinerators and WTE facilities until the recent hour. Gipuzkoa's Waste Plan does not impose an environmental tax on landfills or incinerators. Miguel Angel Arrastio Soria states, "Despites the PNV government, a Basque Nationalist government, EH Bildu with leverage power, they have come forward with an incinerator. It is clear that the Basque nationalists in both Navarra and Basque Country don't want incinerators. Under no condition. But then again, no one wants a landfill either."

Considering Gipuzkoa's history of reaching its objectives and going beyond the objectives set by the European Union, Spain, and the Basque Country, the PIGRUG 2019 points to a commitment towards the circular economy and reuse of post-consumer material instead of energy recovery. This, therefore, challenges the presumption that the presence of incinerators and energy recovery categorically thwarts the upper quadrants of the waste hierarchy, reduce, reuse, and recycle. Yet the history with door-to-door and incinerator controversy must be weighed accordingly. When asked if the lasting impact of the politicization of waste meant the possibility of smaller incinerators, Iñaki responded, "Of course. The incinerator in Gipuzkoa is capable of managing 100,000 to 180,000 tons and up to now it receives less than that. When you make the infrastructural plans, you have to include a 30-35 year projection. These facilities are designed to last a long time. The plants are always designed to treat more than what is generated today." According to Table 1, over from 2017 to 2018, there was a marked decrease of 4% of

material sent to landfills. At roughly 5%, the rate of energy recovery over this period is well below the 2030 goal of less than 15%. Though compost levels mark a steady increase, the total production of secondary resources from waste material in 2018 is 49%. To meet their 2025 goal, recycling and compost capture must increase by at least 26%.

The *Mancomunidad de Sasieta* has been able to achieve the majority of their goals. “Ten years ago 60% of waste went to landfills and 30% was separately collected. Now it's the reverse: 60% separately collected and 30% goes to the incinerator for energy recovery. All this within 10 years. In ten years the situation has been turned around.” The province’s ability to reach their goals speaks to their political, societal, and managerial will. “Based on the European directives, there is a waste hierarchy that says that the landfill is the last and worst solution and that before landfilling, municipalities must take other measures. The EU promotes energy recovery of waste. Not incineration alone, but incineration with energy recovery.”

In line with its promotion of separate collection and recycling, Gipuzkoa’s disposal practices show a low use of energy recovery and an increase in biowaste collection over the 2015-2018 period as they divert waste from landfills. In the absence of EU targets for energy recovery, the Basque province has set their own in their most recent waste plan. In doing so, they demonstrate their political authority and commitment to the circular economy.

Province of Biscay

With Biscay’s most recent waste plan, there is a push to reduce what is being sent to incinerators and instead divert it to circular economy strategies. Like Gipuzkoa, Biscay has set benchmarks for the amount of waste material they will convert to secondary raw materials in

regional waste plans. To meet these metrics, the role of energy recovery is necessary since in 2018, according to Table 1, 34% of waste was processed at a WTE facility.

The Biscay Waste Plan 2005-2016 was extended towards 2020. Currently the updated waste plan has not been released to the public in full. According to the Biscay's Plan for the Prevention and Management of Waste 2030 highlights, the province has set a limit that 17.78% of total waste generated may be recovered energetically and 2.49% of total waste generated may be landfilled. According to Amaia Antxustegi, member of parliament for sustainability and the natural environment, with this plan, Biscay will be able to revalue 79.83% of their waste (reuse and/or recycle 74.19% and compost 5.64%) and to recover 4.9 for every 5 kilograms of waste generated of which 4 kilograms will be reintroduced into the supply chain and 0.9 kilograms will be used to generate energy.[27] In January 2022, the WTE facility located in Bilbao, Zabalgarbi, announced its commitment to Biscay's motion towards managing waste in line with the circular economy efforts. Like Gipuzkoa, Biscay's waste plan does not specify incentives for certain disposal practices via environmental taxation schemes.

As shown in Table 2, to reach roughly 80% of recycling and compost capture, Biscay must increase capture by 30% over the 10 year period. Although collection bins for biowaste are prevalent across Biscay, the rate of biowaste collection and recycling has been low, currently at only 2% which is half of the goal set in 2016.[28] Biscay's management of waste has developed alongside Garbiker, a public company of Biscay that is part of the Department of Sustainability and Natural Environment. The company began its operations in 1986. Garbiker carries out a wide range of waste management and educational activities in the Biscay province. In addition to

[27] Bizkaia Diputación Foral. "Bizkaia se marca como objetivo reducir la generación de residuos un 15% y recuperar 4,9 de cada 5 kilos de los generados para 2030." (2022). Biscay Regional Government.
[28] El Correo (2021). "Bizkaia duplicará su capacidad de reciclaje de orgánicos con tres nuevas plantas en Berriatua, Igorre y Getxo." by Eva Molano.

the compost plant in Artigas which has a capacity to treat 10,400 tons of biowaste per year, Biscay has announced the opening of three additional composting plants in Getxo, Berriatua, and Igorre which will be capable of converting 9,000 more tons of biowaste into compost. Xabier Benito, a representative from the Biscayan parliament, applauded the increased commitment and criticized the lack of economic incentives for participation in the program. The EH Bildu representative Raúl Méndez stated, "Although this measure is arriving late, it is a necessary advancement towards the objectives set forth by Europe," and emphasized the importance of outreach campaigns to encourage participation.[29]

Table 2: Municipal Waste Treatment in Biscay 2019-2020*

Municipal Waste Treatment in Biscay (t)	2019	%	2020	%
Separate Collection Recycling	295,949	48.31%	275,463	47.35%
Compost	12,993	2.12%	13,737	2.36%
Energy Recovery	217,218	35.46%	212,510	36.53%
Elimination - Landfill	86,739	14.16%	80,069	13.76%
Total:	612,554	100.06%	581,779	100%

*Biscay Regional Government

According to Iñaki Susaeta of Ihobe, "In my opinion, the fact that there is energy recovery does not disincentivize separate collection. Gipuzkoa is an example. Gipuzkoa is the province with the most separate collection in Spain. We are not currently capable of generating zero waste. If we were able to separate and recycle everything, we would still have a small quantity of materials that would not be recyclable."

From the data available in Table 1, Biscay's rate of energy recovery slowly decreased and their landfill disposal plateaued at around 21%. The rates of biowaste collection, however,

[29] El Correo. 26 February 2021. "Bizkaia duplicará su capacidad de reciclaje de orgánicos con tres nuevas plantas en Berriatua, Igorre y Getxo." by Eva Molano.

do not exceed 2%. The data provided on Table 2 shows that both energy recovery and compost collection has increased. Recycling rates and landfill disposal have decreased ever so slightly. In order to meet the milestones presented in the regional waste plans by 2030, energy recovery must decrease by 18.75%, which equates to 1.875% decrease per year. As for landfilling, by 2030 the province must decrease by 11.27%. Considering the degree of change from 2015-2020, these rates will take significant effort. Most notably, however, is the degree of waste prevention. From 2019 to 2020, total municipal waste generated decreased by 30,775 tons. While Biscay reinstates its commitment to recycling and the upper quadrants of the EU Waste Hierarchy, the telling factor will be the disposal, recycling, energy recovery, and total waste generated rates over the coming years.

CHAPTER 6: CONCLUSION: VARIATION IN FEDERAL SYSTEMS

In Europe the issue of waste management is being addressed on multiple levels of governance. The EU, as the central federal authority, is setting objectives and goals for its Member States. These objectives travel down the federal ladder to the municipality and *mancomunidad*, the level of governance that has the competency of waste management.

The differences in separation and collection between Navarra and Basque Country show a varied, as well as proactive, approach to EU waste policy. Since the ratification of the Spanish Constitution and opting for "fast track process," or a path of increased responsibility and therefore more decentralized, Navarra and Basque Country have aptly assumed a position of heightened sovereignty. This is a service to their plurinational character as well as to the centralized governments: "Policy-makers shift competencies to the supranational level to tackle policy challenges that nation states cannot deal with by themselves" (Maggetti, 2018). Navarra and Basque Country, along with other plurinational regions and their more decentralized governments, have been uniquely capable of responding to the EU's waste regulations at a faster pace than the central government. This serves as a benefit to Spain as the national government can simultaneously devise national policy responses in concert with this empirical knowledge provided by those accelerated autonomous communities. Simultaneously, however, it may also deepen the asymmetry of the federal model, thereby moving to "dilute the importance of the state as an organization" (Requejo, 2005).

Across the regions of Navarra, Gipuzkoa, and Biscay, there is immense variation in their separate collection and disposal practices. Biscay was the first to institute waste incineration and today their recycling programs are floundering. Gipuzkoa, witnessing the difficulties of the Biscay, challenged the precedence of incinerators and currently their recycling programs are

recognized as some of the most successful in Europe. Navarra, the only region of the three without waste incinerators, is pressing forth in a distinct reality: recycling to the point where any waste produced would be too insignificant to warrant the construction of a WTE facility. It is difficult to imagine these outcomes without local journalism. The readership for local newspapers are high especially across Navarra, and often the *Diario de Navarra* and *Noticias de Navarra* published multiple articles about waste management each month, sometime each week.

The nature of the variation and the ethnographic research methodology has resulted in asymmetrical information across the regions. Limitations of study include fewer interviews/insight from Basque Country and from the national government of Spain. Consideration of the Spanish Government's waste law passed in April 2022, for example, has gone unconsidered. By December 2023, all municipalities in Spain are mandated to provide separate biowaste collection. Regional developments towards this goal comprises an area for continued study.

At the core of this project is a study of the political will and effort to revalue waste. While the implementation of EU Waste Policy in these regions have gone beyond the scope of the national government, Basque Country's dependence on WTE and their faulty recycling rates as well as Navarra's risky bet against WTE facilities show the risk outsourced to Spain. Navarra's has written and passed a law that rejects EU priority preferences and protects the AC from predatory technologies and costly and contested infrastructure. Whether that could be feasible or possible without the federal safety net provided by Spain is impossible to know. Bolstered by robust local journalism and comprehensive support on more centralized levels of government, the municipalities of these regions are curbing unsustainable practices.

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