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The Waste War: on the electoral costs of local sustainability policies

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Abstract

Sometimes, environmentally successful policies fail, not because of personal attitudes or technical feasibility, but because of the electoral dispute. Using fixed effects, Difference-in-Difference estimators and opinion polls, this paper scrutinizes the electoral cost of introducing a door-to-door (D-t-D) waste collection system in the Basque province of Gipuzkoa (Spain). D-t-D aimed to raise sorting rates in order to make the construction of an incinerator redundant. Separate collection improved significantly, but estimates show that the main opposition party increased its vote share by 12 percentage points in the following municipal elections as a result of the policy. Seeking the reasons for the opposition's success, opinion polls reveal that D-t-D was surrounded by controversy and lack of information that even led citizens to perceive it as environmentally less efficient. In this context, citizens were unwilling to accept the change in habits that the new waste collection system entailed if they saw their efforts diluted in the electoral dispute. The article concludes that not only the environmental performance, but also the perceived effectiveness of the policy, a climate of social trust and the provision of participation mechanisms are determinants for the electoral success of green policies.

Word count: 7924

Keywords: environmental policymaking, electoralism, local political economy, municipal waste management, door-to-door waste collection

Introduction

Urban sustainability is rarely an object of political dispute: scientists warn that the climate emergency requires a broad set of policy instruments across government tiers (Ripple, et al., 2019); planners and practitioners rely on evocative terms such as eco-, smart-, sustainable- or green cities; environmental activism has become institutionalized and in some cases co-opted by institutions and corporate interests (Berny & Rootes, 2018); and political parties of different stripes converge on general and overly consensus-driven urban policies (Bossuyt & Savini, 2018). Indeed, as a burgeoning literature on postpolitics suggests (Rosol et. al, 2017; Swyngedouw, 2009), urban sustainability is a perfect expression of a ‘postpolitical order’, in which consensus *forestalls the articulation of divergent, conflicting and alternative trajectories of future (urban) environmental possibilities and assemblages* (Swyngedouw, 2009, p. 610).

In spite of the consensual nature of contemporary sustainability governance, sometimes environmental policymaking enters the electoral arena. Parties oscillate between depoliticization and politicization because, on the one hand, they try to enclose the debate for the sake of general agendas and consensus, while, on the other, they try to differentiate themselves from opponents to persuade voters (Bossuyt & Savini, 2018). Environmental policies have been characterized as “luxury goods” that constituents care about only during good economic times (Abou-Chadi & Kayser, 2017), but, as this paper shows, they can become a core element of the electoral contest if parties politicize environmental issues to challenge their opponents and attract votes.

In order to explore how the partisan dispute unfolds, this article analyses the effect of the so-called *Waste War*, i.e. the implementation of a door-to-door (D-t-D hereinafter) waste collection system in the Basque province of Gipuzkoa (Spain). After success in the 2011 local elections, the left-wing nationalist coalition introduced D-t-D in the municipalities where it governed by absolute majority. The system proved effective as separate collection rates increased substantially, but came at an electoral cost to local governments. Some citizens perceived it as a coercive policy that changed the status-quo. The main opposition party echoed this discontent and proposed an alternative, obtaining very good results in the following elections.

This is a good case to study because it shows the electoral consequences of introducing an effective environmental policy that involves a high degree of compulsoriness. Previous literature has identified attitudinal, contextual and policy design factors as drivers for the acceptability of environmental measures (Drews and van den Bergh, 2016), on the assumption that, the higher the acceptability, the lower the associated electoral cost. However, sometimes environmentally successful policies fail, not because of personal beliefs, socioeconomic conditions or technical feasibility, but because of the political dispute.

The empirical analysis involved two methodological approaches. First, we ran fixed effects (FE) and Difference-in-Difference (DiD) estimators to assess the impact of D-t-D on the two main contenders. Our results show that the main opposition party was able to capitalise on the controversy and increased its vote share by 12 percentage points in D-t-D municipalities compared to non-D-t-D municipalities. Second, we analysed three opinion polls that provided insights into citizens' perceptions to disclose the mechanisms behind the electoral outcomes. Surveys revealed that the implementation of D-t-D took place in a context characterized by a lack of information and social division that even led citizens to perceive it as less effective in boosting separate collection, despite figures showing that rates increased. This fact points to the importance of communication campaigns that address the individual cost and the perceived collective benefits.

This paper contributes to the literature on the political economy of environmental protection in two major ways. First, the research advances our understanding of the electoral constraints that local governments face when implementing environmental policies. Previous research has focused on general goals such as climate change mitigation (Martelli et al., 2018), taxes (Ashworth et al., 2006), charges on public goods (Hansen et al., 2021) or the opposition to the construction of waste infrastructure (Rootes, 2009), but urban waste management has been under the radar, despite being one of the main responsibilities of local authorities. Second, the article sheds light on how the electorate responds to the introduction of policies that involve a change in habits. The literature has looked at the determinants of public support for environmental policies in the assumption that attitudes are translated into policies through the decision-making process (Drews and van den Bergh, 2016). However, the reverse is not clear, i.e. voters' attitudes following the introduction of an environmental policy. In this vein, our analysis

of opinion polls allows us to understand retrospectively what particular elements voters sanction.

The paper is organized as follows. In the next section, we review the determinants of environmental policy acceptability. After that, we put our case study into context in terms of the local political landscape and the implementation of D-t-D. We then present the data and the methodology for the empirical analysis, followed by an explanation of the results and the opinion polls. The article concludes by summarizing the main findings and the implications for local pro-environment policymaking.

The determinants of environmental policy acceptability

What are the electoral implications of introducing environmental policies? Unlike fiscal studies, in which the cost of taxation has long been discussed scholarship on the electoral burden of green policies has been less prolific¹. However, a burgeoning literature focuses on the determinants of public support for environmental policies, on the assumption that their acceptance will not have an electoral cost and may even favour the vote for green options. In what follows, we explore some of these determinants.

Attitudes

Voters' environmental attitudes can have a decisive impact on election outcomes. Attitudes are primarily framed within individuals' worldviews, values and political ideologies. A large number of studies have associated support for green policies with egalitarian and self-transcendent values (i.e. the concern for the welfare of others), whereas individualism and self-enhancement (i.e. the pursuit of self-interest) drive opposition (Drews and van den Bergh, 2016). Left-wing political orientation has been linked to more favourable attitudes towards environmentalism (Ejelöv and Nilsson, 2020). Gender also seems to be associated with pro-environment positioning, as women

¹ But see Clulow (2019), Jänicke, (1997) and Schulze (2021) for the features of national political systems and the adoption of environmental policy.

report stronger ecological attitudes and behaviour than men and are willing to support a wider range of policies (Rhodes et al., 2017). Other socio-demographic factors for environmental acceptability include income, education and age, although their influence is rather small compared to values and ideology (Ejelöv and Nilsson, 2020).

However, attitudes themselves do not necessarily or automatically translate into vote choices. First, because there might be a dissonance between attitudes and practices on both sides of the equation, i.e., citizens showing green attitudes but not the corresponding environmental behaviour, and individuals with ecological practices in spite of exhibiting grey attitudes (Martinsson and Lundqvist, 2010); and second, because environmental attitudes are not unidimensional and may result in different options. Indeed, individuals react differently to various measures, making policy design and the perceived fairness of policy outcomes key elements for electoral acceptability (Schuitema & Bergstad, 2018).

Policy design

Two characteristics have significant influence on the acceptability of environmental policies (de Groot & Schuitema, 2012): the level of coerciveness and the behavioural target of a policy. The level of coerciveness identifies the degree to which a measure enforces a change in behaviour. Overall, people prefer non-coercive measures that reward over coercive ones aimed at punishing (Drews and van den Bergh, 2016). On the other hand, the behavioural target of a policy refers to the effort it takes to change a conduct. Usually, people accept more easily policies targeting low-cost behaviour because individual interests are not so greatly affected (de Groot & Schuitema, 2012).

Specific policy design features affect support. The literature has identified several infrastructure-related factors that are crucial so that households participate in separation, including, ease of access, distance of collection points, frequency of collection, clean appearance and smart visual design of collection points (Knickmeyer, 2020). The convenience of the policies vis-à-vis other alternatives is also important (Miafodzyeva and Brandt, 2013), as is the perceived effectiveness, costs and fairness of the measures adopted (Drews and van den Bergh, 2016). People wonder whether a certain intervention is the optimal solution to achieve the desired outcome, or whether other alternatives are

better suited to reach the goals. They also seem to evaluate the costs (both budgetary and personal) and the distribution of the burden. In this regard, Dechezleprêtre et al. (2022) show that support for policies hinges on key perceptions centred around the effectiveness of the policies, their distributional effects, and their impact on the respondents' self-interest. As a result, providing information that specifically addresses these key concerns can substantially increase the support for environmental policies, whereas simply informing people about negative impacts is not effective.

Nevertheless, the acceptability of environmental policies is not only a technical issue, but a social process that faces collective action problems. Portney (2005) identifies three *deadly sins* that impede progress towards sustainability: the tragedy of the commons, the Not-In-My-Back-Yard (NIMBY) syndrome and the transboundary shifting of environmental impacts. These are well exemplified in urban waste management. Recycling is a public good prone to the tragedy of the commons because it is costly to individuals in terms of time and effort, while the associated environmental benefits (avoiding landfilling or incineration) are non-rival and non-excludable (Huhtala, 2010). Likewise, the NIMBY opposition to waste infrastructure is often driven by selfish and exclusionary motivations. Finally, the negative environmental impacts (pollution) are diffuse and transcend local boundaries, whereas the costs of changing sorting habits is borne by individuals.

Social norms and trust

Although attitudes and policy design features are important drivers, social norms also exert a powerful influence on pro-environmental behaviour and voting. People tend to conform to what is collectively accepted because compliance entails rewards, whereas violating them will lead to some kind of disapproval and moral sanctions (Keizer and Schultz, 2018). The strength of the social norm is of particular importance so that the stronger the informal rules that govern collective behaviour, the higher the acceptability level, and vice versa (Schuitema & Bergstad, 2018). As such, if a given behaviour is socially accepted, then the electoral cost of the associated environmental policy will probably be lower.

The literature on social practice theory provides insight for understanding how sustainability transitions are the outcomes of dynamic interactions and co-evolving practices, rather than mere products of attitudes, values, or policy interventions (Shove & Walker, 2010). Personal actions are embedded within a social context, and individuals come across a wide variety of practices that mould their behaviour. This, of course, does not erase individual agency, but instead recognizes that it is through engagements with practices that individuals come to understand the world around them (Warde, 2005). An important implication of social practice theory for policymaking is that furthering pro-environmental actions does not depend so much upon education programmes to persuade individuals to behave differently, but rather on transforming practices to make them more sustainable (Hargreaves, 2011).

One last societal issue that deserves attention for environmental policy acceptability is the role that may be played by the sociopolitical atmosphere, notably trust in institutions and political actors. Trust facilitates coordinated action and policy acceptance. In environmental policies, trust in the administration has been identified as an important predictor for the support of instruments (Harring, 2018), because, if citizens trust governments, they will be more inclined to make sacrifices for environmental purposes (Jin & Shriar, 2013).

Public participation

Over the last few decades, public participation has become institutionalized as a good planning practice that enhances compliance and implementation. Participatory governance increases democratic legitimacy, bridges the gaps between citizens and government, and boosts participants' problem-solving capacity and policy support' (Scholanke & Gutberlet, 2021). As Portney (2005) summarizes, civic engagement plays two distinct roles in environmental policymaking: first, participatory processes are necessary to produce durable and operational definitions of sustainability, i.e. local residents are instrumental in defining the specific programmes and policies for their needs; second, greater civic engagement is itself an integral part of what it means for a city to be more sustainable.

At the most basic level, participation involves dissemination of information to raise awareness around the environmental problem and the solution outlined. In municipal waste management, lack of public knowledge has been pinpointed as one of the most important information barriers for effective recycling (Ma & Hipel, 2016). In some cases, the dissemination of information is complemented by consultation to collect insights on public opinion and inform decision-making (Rut et al., 2019).

Communication campaigns and consultation can raise environmental awareness, but a stronger citizen involvement is needed to succeed in social change efforts. In Arnstein's (1969) classic formulation of participation as a staircase process, these are forms of tokenism because their purpose is, at best, to capture citizens' views but they are not intended to change the status quo. In a similar vein, Brulle (2010) warns about one-way communication campaigns and points out that they need to be integrated into broader efforts to foster political mobilization in support of social change. Therefore, at a higher level of participation stands community empowerment, whereby power is devolved to citizens and they become active agents of environmental policymaking. Empowerment can be pursued through different means: making meaningful and binding consultations, engaging citizens in the policy design, and bringing together community members in ways that build relationships and social capital (Aitken et al., 2016).

Participation is probably the most important factor because it affects all other drivers of green policy acceptance: it can inform about the effectiveness and costs of a given policy and raise awareness of the associated collective action problems; it can be used to endorse citizens' preferences; it can shape social norms if it is intended to build social capital; it can reinforce trust; and it strengthens the sense of belonging to the community, so critical when the adoption of a given environmental policy entails a significant personal cost.

Institutional context

The local political landscape

Gipuzkoa, one of the three provinces of the Basque Country, is made up of 88 municipalities. Its population is 725,000 inhabitants, distributed in a relatively homogeneous way throughout the province. San Sebastian is the capital.

Municipal elections are held every four years. Councillors are elected in an imperfect proportional representation system following the d'Hondt rule, and later, councillors elect mayors. There are five main political forces, which are divided not only along the left/right axis, but also along Basque nationalist/non-nationalist lines (Figures 2 and 3): EH Bildu (left-wing, pro-independence), the Basque Nationalist Party (PNV, centre right, moderate nationalist), the Socialist Party (SP, social democrat, non-nationalist), the Popular Party (PP, Spanish conservative) and the non-nationalist left (an electoral field occupied by Podemos).

Historically, the nationalist left has had the greatest municipal power, but its performance has been conditioned by its relationship with the terrorist group ETA. In the 2003 local and provincial elections, the Supreme Court banned this group from running due to its links with ETA and the party asked its supporters to cast null votes. Later, the left-wing nationalist bloc was divided between the candidacies that the Supreme Court allowed to run in some municipalities and a faction that demonstrated unreserved opposition to ETA's violent activity. In 2011, the pro-independence left achieved the best results in its history, obtaining 58 out of 88 mayors, plus another 22 from independent candidates in small municipalities. They also did very well in the provincial council elections, entering government for the first time. The end of terrorist activity had a significant influence on the electoral success. After more than forty years, ETA announced the end of armed actions and the pro-independence bloc was able to participate without any restrictions. This mobilised a part of the electorate that was reluctant to support them and allowed several parties from this ideological spectrum to come together in an electoral coalition, called EH Bildu ("Basque Country Unite").

The second most important force is the Basque Nationalist Party. Although the PNV dominates Basque politics, it is surpassed by EH Bildu in municipal elections. After defeat in 2011, in which the PNV lost the government of the provincial council for the first time, it bounced back in 2015. At present, they come close to the nationalist left in terms of votes, but the latter retains most municipalities. The remaining political forces have had limited local power in the last twenty years.

Figure 1. Voting trends in municipal elections

Source: Authors' elaboration based on Basque Government data.

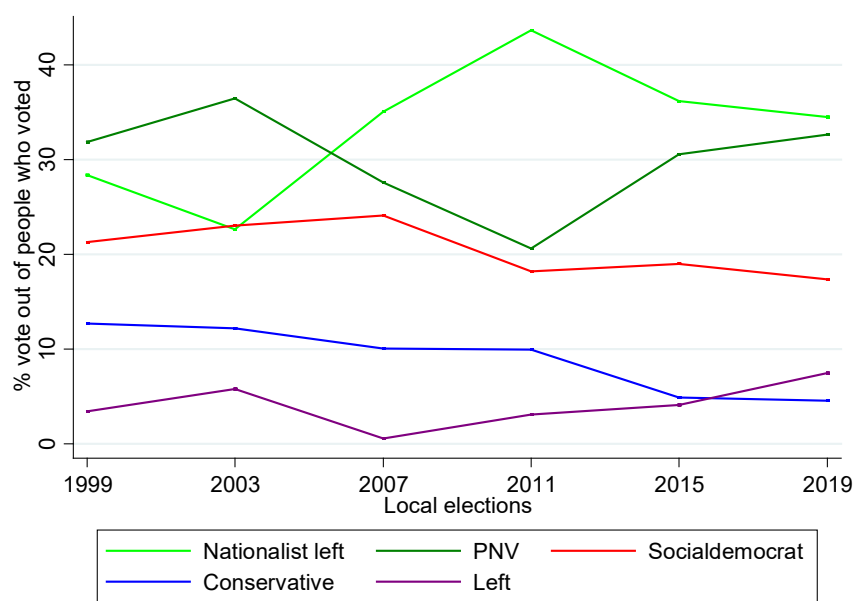


Figure 2. Number of mayors

Source: Authors' elaboration based on Basque Government data.



The “Waste War”

Following its electoral success in 2011, the nationalist left decided to introduce a selective door-to-door waste collection system that it had previously implemented in four municipalities. It soon became a salient issue and a central element of the political dispute, as public rejection grew and the opposition exploited it as an electoral lever. The media echoed this controversy with headlines such as “The Waste War” (Egaña, 2012), “Rebellion in Gipuzkoa against ‘door-to-door’” (Ormazabal, 2012), and “Waste management, Bildu’s ‘nightmare’” (EFE, 2013).

EH Bildu decided to implement the system in the municipalities where it governed with an absolute majority (see Annex 1, left). The left-wing party defended this policy on the grounds that it was essential to improve waste management. The European Commission had set minimum reuse and recycling targets of 50%, 55%, 60% and 65% for 2020, 2025, 2030 and 2035, respectively, and had called for minimizing landfilling (European Commission, 2008). At that time, separate collection rates were low, and landfills, the main treatment option, were close to saturation. The previous provincial government, responsible for the general guidelines and supra-municipal waste infrastructures, envisaged a system that prioritized energy recovery of the mixed residual waste as an alternative to landfilling. Yet, this strategy required, at least, one new incineration plant, and eventually, up to three new plants were planned. EH Bildu and civil society organizations strongly opposed the construction of the new incinerator due to environmental, health and economic concerns. Their counterproposal was D-t-D in order to increase recycling rates and make the infrastructure unnecessary. Essentially, two models were in dispute: one that prioritized energy recovery by incinerating residuals, and another that prioritized material recovery by substantially increasing separate collection rates through D-t-D² (Bueno et al., 2015).

² The models differ in the way they treat the residual fraction. In the one that prioritizes energy recovery, the residual flow is incinerated and the ashes go to landfill. In the system that prioritizes material recovery, the residual flow is transported to a mechanical biological pre-treatment (MBP) facility. They also differ in the importance placed on separate collection. Since incineration plants perform better when flows are bigger, authorities do not have much incentive to broaden selective collection that would reduce the residual flow and jeopardize their viability. On the other hand, systems that prioritize material recycling try to extend separate collection because only separated waste can be satisfactorily recycled (Bueno et al., 2015, pp. 452).

The implementation of the D-t-D brought about a major change in citizens' habits. Under the previous system, the different categories (unrecyclable multi-product, paper/cardboard, glass and light packaging) were deposited in containers on any day of the week. Under D-t-D, citizens had to leave each fraction outside their house hanging on a post according to a pre-established timetable, which was then collected door-to-door. The schedule was rather restrictive: organic waste, light packaging and paper were collected three times, twice and once a week, respectively, whereas the multi-product category was picked up every two weeks to minimize non-recyclable waste and an extra fee had to be paid for collection on days other than those set.

From the outset, ad-hoc citizens' movements and opposition parties strongly objected to the D-t-D. In contrast to the ruling coalition, they framed their criticism through a non-environmental lens. In a context of fiscal consolidation after the Great Recession, they argued that the D-t-D system was very expensive. They also stressed concerns regarding hygiene, privacy and compulsoriness. Citizens had to leave each category of waste outside their home, allowing those who put out their rubbish outside the pre-established schedule or who did not sort correctly to be identified and fined. Last, opposition parties argued that the system had been imposed without any social participation, and promised to run popular referendums if they were elected at the next elections.

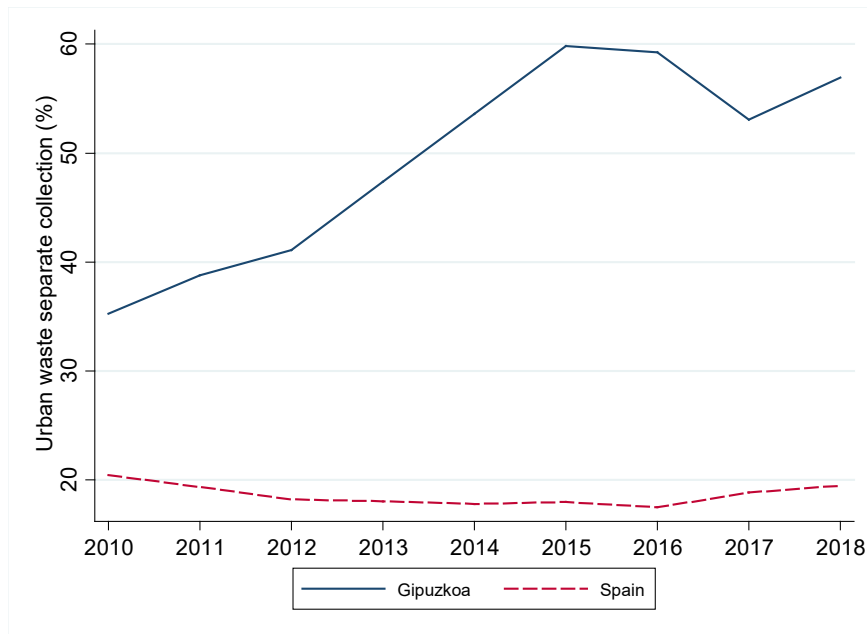
D-t-D proved to be an effective system and separate collection rates increased substantially (Figure 3). With high separate collection rates, the system that prioritizes material recovery provides better environmental results than sending residuals to incineration (Bueno et al., 2015). In economic terms, a comparison between different waste management systems showed no significant differences in the per capita cost (Jofra & Freire, 2014). Actually, D-t-D systems are considered more cost-effective as higher collection costs are compensated by lowered disposal costs, particularly when landfilling and incineration are taxed (Wanderley, McQuibban, & Mörsen, 2022)

However, D-t-D did not last long. Following the 2015 elections, in which the PNV regained the provincial government and several municipal councils, the former opposition parties reversed the policy and most localities returned to the old collection system based on drop-off points. By 2019, only fourteen municipalities had retained D-t-D, and the full scheme only remained in force in ten³ (see Annex 1, right). Separate collection figures,

³ Four municipalities combined both, D-t-D and ordinary container-based collection.

though, did not return to pre-2012 levels, probably because of the social learning process it entailed. After some years of separating thoroughly, citizens seem to have adopted the habit and become more aware of the importance of recycling.

Figure 3. Percentage of urban waste collected separately



Source: data from Gipuzkoa's provincial council and INE.

Data and methodology

In order to assess the electoral cost of introducing such environmental policy, the empirical assessment included econometric tests and survey analysis to shed light on estimation results.

Econometric strategy

The estimation strategy considered a panel dataset that contains electoral, socioeconomic and demographic information for 84 municipalities between 2011 and 2019 in three local

elections (2011, 2015, 2019). Gipuzkoa comprises 88 municipalities, but the four municipalities that had introduced the D-t-D system before were removed. The dependent variable is the vote percentage for the two main contenders in municipal elections (EH Bildu and PNV) as a share of the vote cast. Independent variables include: a dummy variable for the implementation D-t-D (*dtd*); dummy variables for 2015 and 2019 (*2015.year* and *2019.year*, respectively); and a set of controls related to the demographic, socioeconomic and educational characteristics of the locality (see Annex 2 for Descriptive Statistics). The electoral data came from the Basque Government's public database; information on the geographical distribution of the D-t-D from the provincial government; and demographic, socioeconomic and educational data from the Basque Statistical Office.

The econometric analysis includes two approaches. We first applied a fixed-effects (FE), heteroskedasticity and autocorrelation robust estimation with municipal and time effect since the Hausmann test advised against random-effects (Eq. 1):

$$Vote/cast_{it} = \alpha + \beta_1 dtd_{it} + \sigma_i + \tau_t + u_{it} \quad (1)$$

where *dtd* is a dummy variable that captures the introduction of the waste collection system, σ_i is a municipal fixed effects and τ_t is a year fixed effects for the 2015 and 2019 elections respectively. Robust standard errors were clustered at the municipal level to control for serial and spatial correlation.

Although FE is a consistent approach, we also applied a Difference-in-Difference (DiD) estimator to weight the effect of the policy. Unlike FE, DiD allows assessing whether there is causality, which makes it one of the most frequently used methods in impact evaluation studies for testing a given government intervention when certain groups are. In our analysis, the vote share of the two main contenders is the outcome and the introduction of D-t-D waste management is the treatment. We consider a two-group, two-period standard design, in which observations $i = (1, 2, \dots, 84)$ are grouped via $D - t - D \in \{0,1\}$ such that $D-t-D_i = 1$ indicates treatment. The treatment group consists of the 33 municipalities where EH Bildu implemented D-t-D following the 2011 elections (11 after 2015), whereas the control group is the remaining 51 municipalities (77 after 2015). The DiD equation is:

$$Vote/cast_{it} = \alpha + \beta_1 D-t-D_{it} + \beta_2 T_{it} + \beta_3 D-t-D_{it} T_{it} + \beta_4 Z_{it} + \varepsilon_{it} \quad (2)$$

in which Z_{it} is a vector of time-varying controls for demographic, socioeconomic and educational characteristics, and ε_{it} is a mean-zero error term that is uncorrelated with D_{it} and T_{it} .

We consider the effect of D-t-D on the 2015 and 2019 elections separately. In 2015, the treatment effect captures the impact of D-t-D implementation on the vote share of the two leading parties. Later, the system was withdrawn in many municipalities, so the treatment in 2019 reflects the electoral gains from its removal.

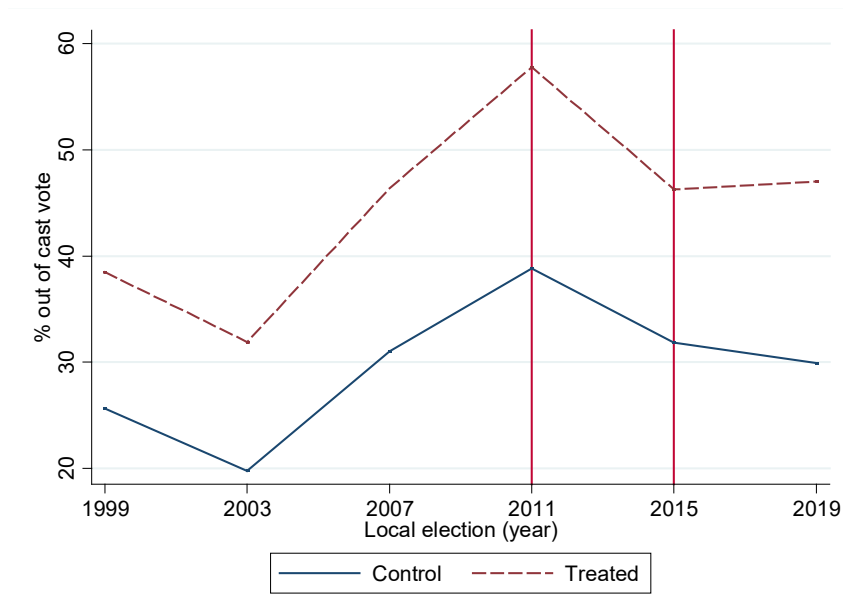
An important assumption for DiD is that treatment assignment is exogenous to the outcome. We believe there is no major reason to worry about endogeneity. The left-wing nationalist coalition introduced the waste management system where it governed with an absolute majority, that is, where it obtained a majority of councillors following the d'Hondt formula for transforming votes into seats. Consequently, what determines whether a party falls into the treatment or control group is exogenous to the vote share⁴. Another assumption is parallel trends, i.e. that both groups followed the same trend before treatment, and therefore, the outcome would have been the same in the absence of treatment. As Figure 4 shows, both groups evolve along the same path, with a slightly higher increase in support for the control group in the 2011 elections.

In the baseline estimates, we take as a control group all municipalities where D-t-D was not implemented. Nevertheless, we also performed a test considering the municipalities where the nationalist left got a simple majority as the control group, since they should be even more similar to those treated, therefore reducing potential noise in the DiD estimation by ensuring the only relevant difference between municipalities in the treated and control groups lies in the application of the D-t-D. We present the results for this robustness exercise in Annex 3.

⁴ Indeed, some municipalities with a higher percentage of votes for EH Bildu did not result in absolute majorities for the left-wing coalition and vice versa, in some municipalities with a lower percentage, the nationalist left obtained an absolute majority.

Figure 4. Weighted average vote (%) to left-wing nationalism by group of municipalities (treated vs. control)

Source: Authors' elaboration based on Basque Government data.



Survey analysis

To make sense of the econometric results, in a second step we analysed data from three surveys: *Study of citizen priorities in the management of policies in Gipuzkoa* (Gizaker, 2015, October), *Socio-political situation Gipuzkoa* (Gizaker, 2016, November) and *Study on waste collection and treatment* (Gizaker, 2016, June). The first two included four questions on waste collection and treatment, along with demographic characteristics and information on the party voted for in the last municipal and provincial elections. The latter specifically gathers public opinion on waste management grouped into four areas (habits and social knowledge; citizen perceptions about the social situation; preferences on waste collection and processing; and assessment of decision-makers), but it does not include information on the party voted for.

Results

Estimation results

Table 1 displays the results for the incidence of D-t-D on the vote share of EH Bildu. The basic FE estimator holds a negative coefficient for *dtd* (Model 1), suggesting that this policy did punish the ruling party. However, when introducing the time effect of the 2015 and 2019 elections (Model 2), the variable becomes non-significant, whereas *2015.year* and *2019.year* are statistically significant and show a negative coefficient. The latter indicates that, when controlling for the 2015 and 2019 elections, the potential negative effect of D-t-D vanishes, i.e., the potential electoral impact is absorbed by time variables. Indeed, the negative coefficient of *dtd* in Model 1 seems to be reporting a correction for the novelty effect that the left-wing nationalist party experienced in 2011, rather than a penalty for the waste management system. The 2011 contest brought a sharp increase in the vote for the left-wing block; hence, the vote loss in 2015 may be due to the disappearance of this novelty effect and a return to the mean, rather than to the implementation of the environmental policy. Columns 3 and 4 present the DiD estimators. Results show that the treatment effect is not statistically significant, indicating further that the implementation of the waste disposal system did not have an electoral cost for the ruling party in 2015 and 2019 elections.

Table 1. Estimates for the ruling coalition

<i>EH Bildu</i> vote/ cast vote	(1) FE	(2) timeFE	(3) DiD15	(4) DiD19
<i>Dtd</i>	- 0.0737*** (0.0211)	-0.0308 (0.0242)		
Treatment effect			-0.0602 (0.0561)	-0.0650 (0.0465)
2015.year		-0.0679*** (0.0180)		
2019.year		-0.0649*** (0.0152)		
Constant	0.659*** (0.00795)	0.694*** (0.0107)	-0.772 (0.558)	-0.579 (0.791)
Controls	NO	NO	YES	YES
Observations	264	264	168	88
R-squared	0.065	0.169	0.443	0.390
Number of id	88	88	84	88

Note: Robust standard errors, clustered at the municipality level, are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

As for the opposition, the introduction of the new waste collection system did have a substantial electoral effect. FE estimations for the PNV report a statistically significant positive coefficient for *dtd* across all specifications (Table 2, columns 1, 2). The PNV vote was between 7 and 10 percentage points higher in those municipalities that introduced D-t-D, depending on the iteration considered. The dummies *2015.year* and *2019.year* show a positive sign, which implies that the vote for the main opposition party increased by an average of 4.7 and 7.4 percentage points, compared to 2011. In contrast to the ruling coalition, the *dtd* variable is significant when controlling for the election years fixed effect, indicating that the waste collection system brought an additional 7.5 percentage points for the opposition where implemented.

In the same vein, DiD models show the treatment effect is statistically significant. In 2015 the PNV received a 12.2 percent higher vote in the municipalities that implemented the waste collection system compared to those that did not (Column 3). The effect extended into the 2019 ballot. After the 2015 elections, the PNV won several municipalities where the D-t-D had been operating, and in other municipalities the nationalist left lost its absolute majority and the system was withdrawn. Column 4 shows the results for the 2019

race and the treatment captures the effect of its removal: in those municipalities where the system was phased out, the electorate rewarded this decision with an additional 12-percentage points.

Table 2. Estimates for the main opposition party

<i>PNV</i> vote/ cast vote	(1) FE	(2) timeFE	(3) DiD15	(4) DiD19
dtd	0.0992*** (0.0164)	0.0752*** (0.0178)		
Treatment effect			0.122*** (0.0455)	0.119*** (0.0422)
2015.year		0.0479*** (0.0132)		
2019.year		0.0745*** (0.0112)		
Constant	0.173*** (0.00616)	0.137*** (0.00782)	0.890** (0.395)	1.231** (0.592)
Controls	NO	NO	YES	YES
Observations	264	264	168	88
R-squared	0.173	0.343	0.389	0.352
Number of id	88	88	84	88

Note: Robust standard errors, clustered at the municipality level, are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

To test the consistency of baseline estimates, in Annex 3 we present the outcomes for the exercise reducing the control group to the municipalities where the nationalist left won by simple majority. For the ruling coalition, the coefficients are practically identical, except for the treatment in 2019, which becomes significant (Column 4). The latter would suggest that the electorate punished the nationalist left by 12 percentage points in those municipalities that removed the D-t-D.

The robustness exercise also yields consistent results for the opposition party. In the FE models, the coefficients are almost equal and in the DiD estimators the effect increases slightly up to 13 and 14 percentage points in 2015 and 2019, respectively. This is what we call the electoral consequence of the “Waste War”. It demonstrates that the main opposition contender succeeded in its strategy, first campaigning against the policy, and once in government, withdrawing it.

Survey results

To make progress on the mechanism underlying the correlations revealed in the econometric exercise, we turn to the surveys. Overall, opinion polls confirmed a general rejection of the waste collection system, a disenchantment that the opposition was able to exploit. Five months after the municipal ballot, 67% of citizens were against D-t-D, but there were significant differences across partisan lines, indicative of electoral polarisation: 62% of EH Bildu supporters were in favour, while 85% of PNV voters opposed it, a rejection that mirrored that of all the other opposition groups (Gizaker, 2015, October). When asked about their preferred waste collection procedure, 70% of respondents showed a preference for returning to kerbside drop-off points with an additional fifth container for organic waste (Gizaker, 2015, October), which constituted the alternative proposed by the opposition parties.

There are three fundamental factors behind the rejection of D-t-D and the opposition's successful campaign. First, the good performance of D-t-d was overshadowed by controversy. Indeed, when asked about different choices, 61% of respondents judged D-t-D as less effective than the container-based system (Gizaker, 2016 June). They also perceived it to be more expensive, although half of the respondents admitted they did not know how to assess the systems in economic terms. In fact, it is surprising that after four years of heated debate in the media, the population was unaware of important waste management and treatment issues. As noted in the conclusions of the *Study on waste collection and treatment*:

(...) despite the political debate that has taken place in the territory regarding waste collection and treatment, the population has a great lack of knowledge on this matter. For example, 70% of the population openly states that they do not know where the waste generated in their homes goes (...)
With regards to political accountability (...) we find that 60% of the entire population acknowledges that they do not know which institution manages the rubbish. (...) Another detail that reveals the high level of ignorance is that almost 90% of

the population claims not to know whether or not there is a waste treatment facility in the province.

(Gizaker, 2016 June)

The ruling coalition failed to communicate the benefits of D-t-D to boost recycling and linked the debate to the discussion around the construction of the incinerator. As a result, part of the population was confused about the effectiveness of the different alternatives and citizens felt that they had to bear a high individual cost, while the social benefits were unclear. The latter was a major constraint because explaining how policies work and addressing their effectiveness, the distributional effects and individuals' self-interest is critical to fostering policy support (Dechezleprêtre et al., 2022).

A second determinant for the resurgence of the opposition was the atmosphere of social polarisation that arose. Around two-thirds (64%) said that they thought there was a problem in the province, but not in their municipality (Gizaker, 2016 June). However, there were important differences in the perception of social polarisation. The D-t-D municipalities largely stated that in their town there was a problem with waste collection, while in the rest of the municipalities, it was not perceived as a local issue, but as a provincial problem. This could be due to the fact that they saw the waste war in neighbouring municipalities and in the media, but not in their own streets.

While general trust and confidence in policymakers are essential ingredients for the implementation of any environmental policy, this is even more so when it comes to an intervention that requires a change in behaviour. We agree with Jesson et al. (cited in Knickmeyer, 2020 pp.8) when they say that for recycling *the persuasive influence of local authority messages and communications is enhanced by the existence of a strong and trusted relationship between people and their neighbourhood, and with their local council*. Neither of these two conditions was met in Gipuzkoa. The social divide led citizens to take up strongly-held positions on the issue and not to trust municipal authorities.

The last factor refers to the proposal of an alternative that was perceived as more efficient and democratic. When in opposition, the PNV campaigned for returning to a multi-container system with the addition of a fifth bin for organic waste and a referendum on the waste collection system, which never came to fruition. The consultation became a

core element of the discussion. Over half of the respondents (55%) said they would like to see an official binding consultation to choose the waste collection system (Gizaker, 2016 June). When asked about the preferred scheme, three quarters reported they would choose the 5-container system and, surprisingly, the majority were in favour of making recycling mandatory, even going as far as fining those who do not recycle.

As it is usually the case when waste management is framed as a technical issue (Bulkeley et al., 2006), local governments did not implement civic engagement mechanisms, and the opposition's proposal of a referendum allowed them to appear as a more democratic alternative. However, we should not be naive about the role that public participation might have played. Citizen involvement requires a favourable socio-political context (Sintomer et al., 2012), one very different from the polarisation in which the implementation of the D-t-D took place. A prior step, therefore, should have been to build the basic conditions for citizen participation, including a frank discussion of the different alternatives.

Conclusions

Governments are often wary of the electoral implications of environmental policies when citizens perceive high financial and behavioural costs. This article has addressed the political cost of introducing a new waste collection system that was perceived to be highly compulsory. Our FE and DiD estimations show that the selective collection procedure did have an electoral cost for municipal governments, insofar as the opposition was able to profit and increased its vote share by 12 percentage points. Opinion polls reveal some of the keys to the incumbent party's failure and the opposition's success. The majority of the community was against D-t-D and in favour of a consultation on the waste management system as they saw D-t-D as an imposition with a high personal cost (i.e. habits, hygiene and privacy concerns). The coalition government failed to communicate the advantages of the waste management system, while the opposition succeeded by proposing an alternative and a referendum.

Previous literature has stressed the importance of attitudes, the perceived effectiveness of policies, social trust and the provision of mechanisms for participation as prerequisites for the implementation of environmental policies. Our work underpins the critical role of

these principles. The failure of the waste collection system was not due to voters' attitudes, but to the high individual cost and the perceived low collective benefit, which local governments failed to address. More importantly, the policy was implemented in a context of social division that grew over time. This resulted in entrenched positions, a very unfavourable breeding ground for asking citizens to make a commitment that involves a change in their daily behaviour.

Contemporary governance principles stress the importance of public participation to disseminate the benefits of a policy, engage the community and build social capital. We agree with that view. The ruling coalition did not put in place proper communication and awareness-raising campaigns, not to mention sound civic engagement mechanisms. This was not only due to a lack of political will, but to an unfavourable climate of social polarisation. The local government was trapped in a vicious circle because participation could have helped to overcome resistance and engage citizens, but the conditions for it were absent.

We believe our work can help with understanding the potential electoral costs of local green policies. One limitation of the study, though, is the peculiarities of the setting, which mean that the results of the econometric exercise are not necessarily generalizable. In particular, the finding that the ruling party was not penalised seems context-specific. The Basque nationalist left-wing voter is extremely loyal, which probably explains why the vote for the coalition government did not suffer in a statistically significant way. Further research is needed to better understand voters' reactions to sustainability policymaking in different institutional contexts and to policies with different levels of coerciveness and behavioural targets. Another venue for future enquiry is exploring the institutional mechanisms that would facilitate the implementation of environmentally effective measures, but which do not have the necessary public support.

All things considered, this paper has shown that local environmental policymaking can be a conflictual arena in which political parties hold confronting visions and present opposing alternatives. While the partisan dispute is a constitutive element of democracy, it can put at risk the ecological transition if information, participation and perception-shaping instruments are not carefully designed and implemented.

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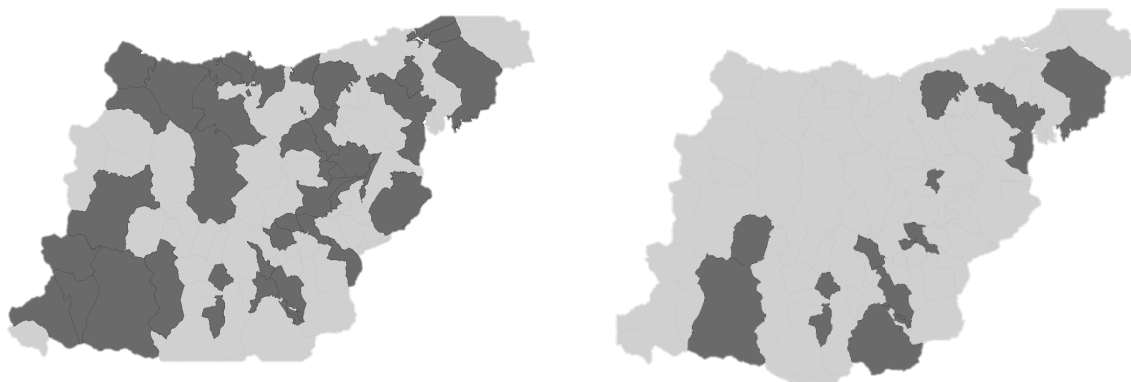
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Annex 1. Municipalities with D-t-D system before 2015 (left) and 2019 (right) elections



Source: The authors, based on data from the Directorate for Environmental Policy, Provincial Council of Gipuzkoa.

Annex 2. Descriptive statistics

Descriptive statistics for the full sample (2011)

Variable	Observations	Mean (unweighted)	Standard error	Min	Max
Nationalist left % vote (out of casted)	84	.6927574	.2157971	.2151069	.9880668
PNV % vote (out of casted)	84	.1400936	.1439335	0	.5275959
Town size (pop)	84	6281.69	17254.49	93	147544
%pop male	84	.5174668	.0271473	.4678068	.6510067
Mean income	84	20222.6	1984.757	15004	27309
%pop illiterate	84	.0234939	.0573268	0	.4098361
%pop without basic education	84	.455823	.0841806	.1173631	.6127367
%pop vocational	84	.0613024	.0166616	0	.1065574
%pop secondary	84	.1519239	.0321479	.0163934	.2251874
%pop middle education	84	.0390112	.0120634	0	.0807453
%high education	84	.0614544	.0200897	.0163265	.1358478
%pop young	84	.2000405	.0260167	.156	.2927
%pop elderly	84	.1795036	.0320077	.0917	.297

Descriptive statistics for the treatment group (2011)

Variable	Observations	Mean (unweighted)	Standard error	Min	Max
Nationalist left % vote (out of casted)	33	.6598095	.1662401	.4604666	.9868668
PNV % vote (out of casted)	33	.193759	.1232361	0	.4033457

Town size (pop)	33	5068.879	4964.83	142	17903
%pop male	33	.5079847	.0134254	.4785006	.5376271
Mean income	33	20083.76	1468.308	16128	22588
%pop illiterate	33	.0124511	.0193549	.0014953	.0989421
%pop without basic education	33	.4478268	.0541018	.2999378	.5442903
%pop vocational	33	.0664155	.0103205	.0482574	.0841171
%pop secondary	33	.1627395	.0189282	.1225048	.2046125
%pop middle education	33	.0405847	.0087934	.0254477	.0583073
%high education	33	.0608913	.0160647	.0424122	.1092245
%pop young	33	.2000364	.0200896	.1612	.2593
%pop elderly	33	.1760727	.0290465	.0917	.2223

Descriptive statistics for the control group (2011)

Variable	Observations	Mean (unweighted)	Standard error	Min	Max
Nationalist left % vote (out of casted)	51	.7140766	.2417366	.2151069	.9880668
PNV % vote (out of casted)	51	.1053689	.1467635	0	.5275959
Town size (pop)	51	7066.451	21836.58	93	147544
%pop male	51	.5236023	.031785	.4678068	.6510067
Mean income	51	20312.43	2266.809	15004	27309
%pop illiterate	51	.0306392	.0712955	0	.4098361
%pop without basic education	51	.460997	.0990989	.1173631	.6127367
%pop vocational	51	.0579939	.0190852	0	.1065574

%pop secondary	51	.1449256	.0368664	.0163934	.2251874
%pop middle education	51	.0379931	.0137621	0	.0807453
%high education	51	.0618188	.0224601	.0163265	.1358478
%pop young	51	.2000431	.029416	.156	.2927
%pop elderly	51	.1817235	.0338806	.1111	.297

Annex 3. Robustness checks

Table 1. Estimates for the ruling coalition with a reduced control group.

<i>EH Bildu</i> vote/ cast vote	(1) FE	(2) timeFE	(3) DiD15	(4) DiD19
dtd	-0.0737*** (0.0218)	-0.0300 (0.0256)		
Treatment effect			-0.0685 (0.0551)	-0.120** (0.0482)
2015.year		-0.0692*** (0.0198)		
2019.year		-0.0660*** (0.0165)		
Constant	0.690*** (0.00867)	0.725*** (0.0115)	-0.121 (0.580)	-0.132 (0.871)
Controls	NO	NO	YES	YES
Observations	243	243	154	81
R-squared	0.066	0.165	0.449	0.412
Number of id	81	81	77	81

Table 2. Estimates for the main opposition party with a reduced control group.

<i>PNV</i> vote/ cast vote	(1) FE	(2) timeFE	(3) DiD15	(4) DiD19
dtd	0.0992*** (0.0168)	0.0777*** (0.0187)		
Treatment effect			0.137*** (0.0431)	0.148*** (0.0431)
2015.year		0.0451*** (0.0144)		
2019.year		0.0751*** (0.0120)		
Constant	0.157*** (0.00667)	0.122*** (0.00838)	0.523 (0.411)	1.185* (0.699)
Controls	NO	NO	YES	YES
Observations	243	243	154	81
R-squared	0.179	0.341	0.493	0.428
Number of id	81	81	77	81

Note: The reduced control group consists of municipalities where the nationalist left won by simple majority. Robust standard errors, clustered at the municipality level, are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.