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iee
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Institute for European Studies

Advanced Master in EU Environmental Governance

A united European Union on the global environmental stage?

Statistical analysis of the European Parliament's consent to multilateral environmental agreements

Final dissertation presented by **Adrien ALOST** (0955-25-00)
Under the supervision of Professor **Benjamin DENIS**

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List of abbreviations

AfD	Alternative for Germany (*Alternative für Deutschland*, German party)
ALDE	Group of the Alliance of Liberals and Democrats for Europe in the European Parliament (*Renew* since 2019)
BBNJ Agreement	Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DF	Danish People's Party (*Dansk Folkeparti*, Danish party)
ECR	European Conservatives and Reformists Group in the European Parliament
EFD	Europe of Freedom and Democracy Group in the European Parliament
EFDD	Europe of Freedom and Direct Democracy Group in the European Parliament
ENF	Europe of Nations and Freedom Group in the European Parliament (*ID* since 2019)
EPP	Group of the European People's Party in the European Parliament
EU	European Union
FN	National Front (*Front National*, French party; *RN* since 2018)
Greens/EFA	Group of the Greens/European Free Alliance in the European Parliament
GUE/NGL	Confederal Group of the European United Left/Nordic Green Left in the European Parliament (*The Left* since 2021)
ID	Identity and Democracy Group in the European Parliament
KKE	Communist Party of Greece (*Κομμουνιστικό Κόμμα Ελλάδας*, Greek party)
KNP	Congress of the New Right (*Kongres Nowej Prawicy*, Polish party)
LN	Northern League (*Lega Nord*, Italian party)
MEA	Multilateral environmental agreement
MEP	Member of the European Parliament
M5S	Five Star Movement (*Movimento 5 Stelle*, Italian party)
NI	Non-attached members of the European Parliament
PiS	Law and Justice (*Prawo i Sprawiedliwość*, Polish party)
PVV	Party for Freedom (*Partij voor de Vrijheid*, Dutch party)
Renew	Renew Europe Group in the European Parliament
RN	National Rally (*Rassemblement National*, French party)
S&D	Group of the Progressive Alliance of Socialists and Democrats in the European Parliament
SD	Sweden Democrats (*Sverigedemokraterna*, Swedish party)
SP	United Poland (*Solidarna Polska*, Polish party)
SPSS	Statistical Package for the Social Sciences
SSO	Party of Free Citizens (*Strana svobodných občanů*, Czech party)
TEU	Treaty on the European Union
TFEU	Treaty on the Functioning of the European Union
The Left	The Left in the European Parliament – GUE/NGL
TT	Order and Justice (*Partija Tvarka ir teisingumas*, Lithuanian party)
UK	United Kingdom
UKIP	United Kingdom Independence Party (British party)
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change
VB	Flemish Interest (*Vlaams Belang*, Belgian party)

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1. From Lisbon to global commitments: parliamentary consent in EU environmental treaty ratification

1. Union policy on the environment shall contribute to pursuit of the following objectives:
- *preserving, protecting and improving the quality of the environment,*
- *protecting human health,*
- *prudent and rational utilisation of natural resources,*
- *promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.*

(…)

4. Within their respective spheres of competence, the Union and the Member States shall cooperate with third countries and with the competent international organisations. (…)"

(TFEU, Article 191)

On 13 December 2007, the Member States of the EU signed the Treaty of Lisbon, marking a major step in European integration by reforming the two founding treaties. The 1957 Treaty of Rome and the 1992 Maastricht Treaty were deeply revised and became respectively the Treaty on the Functioning of the European Union (TFEU) and the Treaty on the European Union (TEU). This reform shaped the current institutional architecture of the Union and further anchored environment as a core policy competence of the EU.

While the original Maastricht Treaty already introduced environmental objectives[1], the Treaty of Rome contained no explicit reference to the environment. Initially emerging as "incidental measures" linked to market integration (Hildebrand, 2005), the EU environmental policy progressively became institutionalised through successive treaty reforms. Lisbon introduced Articles 191 to 194 of the TFEU, defining the scope and objectives of this policy sphere. Internally, environmental legislation follows the ordinary legislative procedure requiring adoption of the Commission's legislative proposal by both the Council of the EU and the European Parliament. Externally, the EU is entitled to act through international agreements, as illustrated by the excerpt above. Under Article 218 of the TFEU, ratification of international environmental agreements requires a proposal from the Commission, decision by the Council and consent of the European Parliament (Mańko, 2024). The EU is now party to numerous MEAs, covering issues such as climate change, biodiversity and pollution[2].

This thesis examines the role of the European Parliament in the ratification of selected MEAs since the entry into force of the Lisbon Treaty in 2009. To ensure the multilateral

[1] Maastrich Treaty (1992, original version)

[2] Multilateral Environmental Agreements (MEAs) - Environment (European Commission); European Union - Party Status (InforMEA)

character of MEAs, only agreements concluded under the UN framework were considered. The final selection comprises five treaties: the Nagoya Protocol, CITES, the Paris Agreement, the Minamata Convention and the BBNJ Agreement.

The Nagoya Protocol[3], signed in 2010, completes the CBD and aims to ensure access to genetic resources and benefit-sharing[4]. Following a Commission proposal in 2012, the Parliament gave its consent in 2014 with an overwhelming majority and the Council ratified the Protocol shortly after[5], despite some Member States having not ratified the Protocol themselves[6].

CITES[7] is an international agreement signed in 1973, which regulates trade in endangered species[8]. The Commission launched the ratification in 2013, and the proposal received broad consent of the newly elected Parliament some months later, with ratification following in 2015[9].

The Paris Agreement, adopted in 2015, commits parties to limiting global warming[10]. The Parliament approved ratification in 2016 with strong support[11], enabling the EU to become an early party to the treaty.

The Minamata Convention[12] was adopted in 2013 to address mercury pollution[13]. This treaty was strongly approved by the Parliament in 2017 and entered into force shortly after EU ratification[14].

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[3] Officially the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization*.
[4] History - The Nagoya Protocol on Access and Benefit-Sharing (Convention on Biological Diversity)
[5] 2012/0279 (NLE) Convention on Biological Diversity: Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (Legislative Observatory); Minutes of proceedings 11/03/2014 (European Parliament)
[6] Parties to the Nagoya Protocol (Convention on Biological Diversity). As of 30 May 2026, Cyprus, Italy, Lithuania, Poland and Slovenia have signed but not ratified the Nagoya Protocol; Latvia has neither signed nor ratified the treaty.
[7] Officially the *Convention on International Trade in Endangered Species of Wild Fauna and Flora*.
[8] What is CITES? (CITES)
[9] 2013/0418 (NLE) CITES: accession of the EU (Legislative Observatory); Minutes of proceedings 16/12/2014 (European Parliament)
[10] The Paris Agreement (UN Climate Change)
[11] Minutes of proceedings 04/10/2016 (European Parliament); 2016/0184 (NLE) UNFCCC Paris Agreement (Legislative Observatory)
[12] Officially the *Minamata Convention on Mercury*.
[13] About us (Minamata Convention on Mercury)
[14] Minutes of proceedings 27/04/2017 (European Parliament); 2016/0021 (NLE) Minamata Convention on Mercury (Legislative Observatory)

Finally, the BBNJ Agreement[15], adopted in 2023, extends the UNCLOS to protect marine biodiversity beyond national jurisdiction[16]. The Parliament consented in 2024 with broad support, leading to ratification and entry into force in 2026[17].

These five treaties span across three parliamentary legislative terms: the 7th from 2009 to 2014, the 8th from 2014 to 2019 and the 9th from 2019 to 2024. They allow for an assessment of whether parliamentary consent to MEAs is consistent over time or influenced by changes in its composition. While initial observations suggest strong and constant support (Table A), voting is not unanimous and participation rates vary. What explains the voting behaviour of the Parliament for each treaty? Do similar patterns emerge across the MEAs considered? Is it possible to explain and predict how the Parliament gives its consent to ratify environmental treaties? Ultimately, this is a question of democratic legitimacy: based on the treaties considered, as the only directly elected European institution appears to be widely in favour of ratifying MEAs, consent may act as a democratic added-value and/or as a mere institutional formality.

TABLE A. DISTRIBUTION OF VOTING BEHAVIOURS FOR THE FIVE CONSIDERED TREATIES

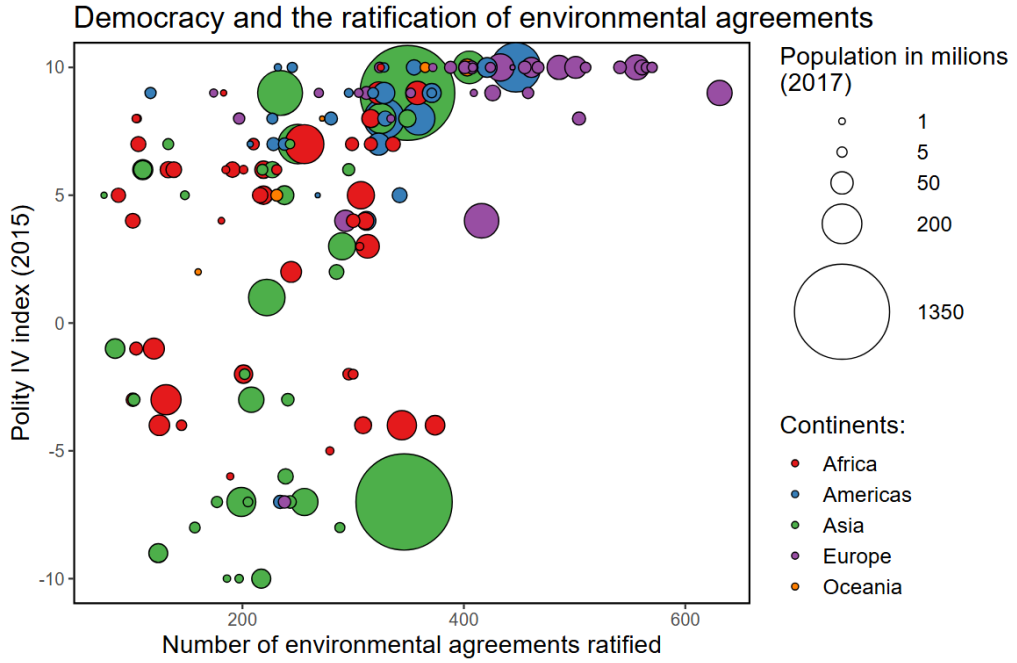
	Nagoya		CITES		Paris		Minamata		BBNJ	
	Number	Share	Number	Share	Number	Share	Number	Share	Number	Share
In favour	649	96.7%	641	91.3%	609	89.7%	593	93.5%	557	88.4%
Against	12	1.8%	60	8.6%	38	5.6%	20	3.2%	34	5.4%
Abstention	10	1.5%	1	0.1%	32	4.7%	21	3.3%	39	6.2%
Voting	671	87.7%	702	93.5%	679	90.4%	634	84.5%	630	89.4%
Absent	94	12.3%	49	6.5%	72	9.6%	116	15.5%	75	10.6%
Total	765	100%	751	100%	751	100%	750	100%	705	100%

The following section reviews the literature on the EU's participation in multilateral environmental governance and the Parliament's contribution to the EU's external action. It then examines the relation between voting and four variables: gender, age, Member State and political group. The methodology is subsequently detailed, followed by an analysis of the data and concluding remarks on the Parliament's role in the ratification of MEAs by the EU.

[15] Officially the *Agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction*.
[16] Agreement on Marine Biological Diversity of Areas beyond National Jurisdiction (United Nations). Bulgaria, Czechia, Estonia, Germany, Italy, Lithuania, the Netherlands, Poland, Slovakia and Sweden have signed but not ratified the BBNJ Agreement.
[17] Minutes - Results of roll-call votes - Wednesday, 24 April 2024 (European Parliament); 2023/0353 (NLE) Agreement under the United Nations Convention on the Law of the Sea: conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (Legislative Observatory)

2. Democratic and institutional drivers of environmental treaty ratification in the EU

With regard to democracy, Morin *et al.* affirm that "*democracies are, on average, more committed to protecting the environment than autocracies*" (2020: 101). Their findings, summarised in the following figure[18], reveal a positive relation between democracy level and the number of ratified international environmental agreements, while also stressing that "*democracy is a necessary but insufficient condition to predict*" ratification. Although democratic regimes are generally more inclined to participate in international environmental governance frameworks, outcomes vary depending on institutional and political configurations, notably the electoral system, power distribution between institutions, economic model and relations with public opinion, civil society and interest groups (*ibid.*).



Sources: World bank (GDP), Polity 2015 Systemicpeace.org, International Environmental Agreement Database Project, https://iea.uoregon.edu/.
Note: The Polity score captures the regime authority spectrum on a 21-point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy).

This observation is nuanced by Eckersley's critique of liberal democracy, highlighting structural constraints such as short-term electoral cycles, mismatch between national decision-making and the transnational nature of environmental issues, and "*inequalities of political participation and bargaining power*" (2020: 114-116). Similarly, Carbonell & Allison (2015) argue that democratic governance does not automatically translate into commitment and compliance. Democracies are more likely to comply with MEAs when they possess the

[18] Interactive Figure 3.3 Democracy and the ratification of environmental agreements as of January 1st, 2019 (Oxford Learning Link)

institutional capacity to fulfil their commitments and when participation aligns with a cost-benefit logic. They also conclude that membership of international environmental organisations positively influences compliance. In this respect, the EU, as an international organisation with recognised global environmental leadership (Vogler & Stephan, 2007), may encourage its Member States to support ambitious environmental action.

This point is reinforced by Bellelli *et al.*'s analysis (2023), which shows that environmental cooperation is more likely at the regional level and that geographical reciprocity between states incentivises broader ratification, as illustrated by EU Member States. These conclusions are particularly relevant to the EU, which, as a regional organisation, can foster both internal and external environmental action. While democracy remains an important driver, the authors stress that other factors also shape ratification patterns, such as economic conditions, governance quality or treaty characteristics.

Given the importance of democracy, it is necessary to also consider the institutional and individual dynamics specific to the European Parliament that may shape its consent decisions. As the only directly elected institution of the EU, the Parliament has consistently consented to the treaties examined. Over time, it has developed a reputation as an "*environmental champion*" and "*strategic environmental advocate*", notably by translating its environmental ambitions into concrete legislative outcomes (Petri *et al.*, 2023). This role emerged gradually through what Meyer (2024) describes as "*communicative entrepreneurship*", whereby MEPs deployed parliamentary activities to establish the environment as a legitimate European policy field, long before the Parliament held formal co-legislative powers.

In the external dimension of environmental governance, the consent procedure grants the Parliament a *de facto* veto, encouraging the Commission and Council to incorporate Parliament preferences into negotiating positions (Petri *et al.*, 2023). However, the Parliament's environmental stance varies depending on the procedure involved: it adopts more ambitious positions in non-binding resolutions on global climate diplomacy, while taking a more pragmatic approach in binding internal legislation (Wendler, 2019). Despite internal political fragmentation, most MEPs continue to support ambitious environmental action, consolidating the Parliament's role as a key actor in EU environmental governance (Petri *et al.*, 2023; Pollex, 2025).

These findings collectively lead to the central question guiding this research: What individual and political factors influence MEPs' voting behaviour on consent to MEAs?

3. Assessing the individual and political drivers of parliamentary consent to MEAs

3.1. Selected independent variables and related hypotheses

In order to identify the factors explaining the Parliament's consistent approval of MEAs, this study analyses four variables: gender, age, Member State and political group of MEPs. These factors are widely recognised as influencing environmental governance and are consistently observable across all MEPs through publicly available institutional data. This reliance on accessible data is particularly relevant, as access to and sharing of information are two vital pillars of effective environmental governance (Brunnée & Hey, 2013).

Regarding gender, evidence consistently demonstrates that women's meaningful participation is associated with better environmental outcomes. Countries with higher female representation in parliament are more likely to ratify multilateral environmental agreements, and women play a key role in climate resilience efforts and community mobilisation (UNDP, 2016). Yet structural barriers continue to hinder their participation in decision-making at all levels (Skanavis & Sakellari, 2008), with negative consequences for governance efficiency and sustainability (Agarwal, 2000). At the individual level, gender norms also shape environmental behaviour, as identity-based expectations influence engagement with pro-environmental actions, with women generally more likely to act in favour of the environment (Brough *et al.*, 2016; Grosz, 2023). These dynamics suggest that gender may affect both policy preferences and voting behaviour among political elites, particularly in more conservative contexts where traditional gender norms are more strongly embedded. This gendered dimension could have substantial implications for the Parliament and how it gives its consent to MEAs.

⇨ Hypothesis 1: Women are more likely than male MEPs to support the ratification of MEAs, with this difference being more pronounced within conservative political groups.

The age dimension reveals a complex relationship between environmental attitudes and policy outcomes. At the individual level, older people tend to engage more in pro-environmental behaviours than younger generations, even as younger generations report stronger pro-environmental attitudes, suggesting a notable attitude-behaviour gap whereby younger people's stated concern does not consistently translate into action (Wang *et al.*, 2021). At the institutional level, aging populations are associated with lower environmental policy ambition, partly due to shorter time horizons and the larger electoral weight of older

cohorts (Albalate *et al.*, 2023). Survey evidence further indicates that older individuals are generally less likely to perceive climate change as an immediate or personal threat (Albalate *et al.*, 2023). Additional reviews highlight that age-diverse groups are associated with stronger engagement, as the integration of younger perspectives tends to reduce conservatism and increase awareness of sustainability issues (Gardiner, 2024; Lorenzini *et al.*, 2021). These findings suggest that age influences environmental preferences and policy choices in ways that may shape the voting behaviour of MEPs.

⇨ Hypothesis 2: Younger MEPs are more likely than older MEPs to support the ratification of MEAs.

The national and political group dimensions of environmental governance in the European Parliament are closely intertwined, though research consistently shows that political behaviour is primarily structured around left-right ideological divisions rather than territorial or national ones, even in external relations domains (Hix *et al.*, 2007; Raunio & Wagner, 2020). Political groups tend to exhibit higher cohesion than national delegations, reflecting the importance of transnational party alignment in shaping parliamentary outcomes (Hix *et al.*, 2007). The relationship between MEPs and their national parties reflects this same dynamic: when conflicts arise between the position of a national minister and that of the transnational group, MEPs generally follow their group rather than their minister (Mühlböck, 2012).

Nevertheless, national cleavages still influence environmental positions. Within groups, geographical fault lines generate intra-group fragmentation on climate votes: MEPs from Central and Eastern Europe tend to be less supportive of ambitious environmental policies than their Western counterparts (Petri *et al.*, 2023). At the same time, the diversity of national and political affiliations across MEPs shapes the Parliament's climate championship in important ways, with left-wing and centre-left groups consistently adopting more ambitious positions, while conservative and Eurosceptic groups adopt more critical or even openly hostile stances, reflecting broader ideological patterns in climate politics (Petri *et al.*, 2023; Pollex, 2025; Schulze, 2021). Lower cohesion has been documented through cohesion indices showing that far-right and Eurosceptic groups score significantly below other groups (Hix *et al.*, 2007). These political divisions also affect coalition-building, with pro-environmental majorities typically formed by alliances between centrist and left-leaning groups, while Eurosceptic and far-right parties remain more fragmented and less cohesive and, thus, unable to form a significant blocking coalition (Desjardins, 2018; Petri *et al.*, 2023). However, these

coalitions primarily form at the committee-level where disagreements are resolved, while the plenary session reflects negotiated compromise rather than polarised confrontation (Wendler, 2019). As a result, ideological alignment appears to be the primary driver of voting behaviour, although national factors still play a secondary role.

- ⇨ Hypothesis 3: MEPs from Eurosceptic and far-right political groups are less likely than other groups to support the ratification of MEAs.
- ⇨ Hypothesis 4: Eurosceptic and far-right political groups display lower internal voting cohesion on consent to MEA ratification, due to internal ideological fragmentation and residual national divergences that weaken collective coordination.

3.2. Research design and statistical approach

In order to verify these four hypotheses, the research relies on a dataset compiling information on MEPs who participated in the consent votes of the selected treaties. As no existing database combines the four variables, a dataset was constructed using the Parliament's MEP directory for the 7th, 8th and 9th parliamentary terms[19], the Legislative Observatory website for vote results[20], and additional online sources to complete missing information. The final dataset includes, for each MEP and vote, their name, surname, gender, birthdate (recoded into age at the time of the vote), Member State, political group, national party, mandate dates, voting behaviour, and a link to their parliamentary profile. Each entry corresponds to one MEP in a given parliamentary term, meaning that individuals may appear multiple times. For MEPs of the 8th term, the same line is used for CITES, the Paris Agreement and the Minamata Convention, unless they changed political group. Additionally, some variables were formatted for statistical analysis in SPSS, notably by grouping age into nine age categories (from below 30 to over 65, with a 5-year interval for each in-between group) and coding voting behaviour numerically ("In favour" = 1; "Against" = 2; "Abstention" = 3; "Absent" = 4).

[19] Members of the European Parliament (MEPs) - Parliamentary term: 7 (Open Data Portal); Directory - 7th parliamentary term (European Parliament); Members of the European Parliament (MEPs) - Parliamentary term: 8 (Open Data Portal); Directory - 8th parliamentary term (European Parliament); Members of the European Parliament (MEPs) - Parliamentary term: 9 (Open Data Portal); Directory - 9th parliamentary term (European Parliament)

[20] 2012/0279 (NLE) Convention on Biological Diversity: Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (Legislative Observatory); 2013/0418 (NLE) CITES: accession of the EU (Legislative Observatory); 2016/0184 (NLE) UNFCCC Paris Agreement (Legislative Observatory); 2016/0021 (NLE) Minamata Convention on Mercury (Legislative Observatory); 2023/0353 (NLE) Agreement under the United Nations Convention on the Law of the Sea: conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (Legislative Observatory)

To test relationships between voting behaviour and nominal variables (gender, Member State, political group), Chi-square tests of independence were conducted. Statistical significance is determined at $p < 0.05$, with less than 20% of cells having an expected count less than 5, and the strength of association is assessed using the Cramer's V (weak if < 0.30; moderate if [0.30, 0.60]; strong if > 0.60) (Clark & Foster, n.d.). Standardised residuals are used to identify specific group deviations from expected distribution, with a threshold set at ±1.96. For analyses involving larger tables, additional measures such as the Contingency Coefficient and graphical distributions complement the interpretation (Gingrich, 1992). For political groups, internal cohesion is further examined using the Agreement Index developed by Hix *et al.* (2007), alongside lambda as an indicator of predictive association (Gingrich, 1992).

The influence of age is analysed separately due to its numerical nature. Descriptive statistics are first used to examine age distribution for each treaty and across voting behaviours. The Kruskal-Wallis test is then applied to assess whether differences in age are statistically significant across groups, with $p < 0.05$ (Volk-Jesussek, 2025). Where significant results are found, post-hoc comparisons identify which voting categories differ from one another. To verify the robustness of the results, the test was used for age both as a continuous and as an ordinal variable (age group).

To assess the combined effect of variables, the multinomial logistic regression is employed. This method allows for the estimation of how gender, age, Member State and political group jointly influence voting behaviour (Laerd Statistics, n.d.). Model significance is assessed through the Model Fitting Information's p-value (< 0.05), while non-significant Goodness-of-Fit p-values ($p > 0.05$) ensure the adequacy of the model (SPSS Analysis, n.d.). The explanatory power of the model is evaluated using pseudo-R^2 measures, particularly Nagelkerke. The Likelihood Ratio Tests results indicate which independent variables are statistically significant ($p < 0.05$) and how AIC and BIC vary as each variable is added to the model. Parameter estimates provide the direction and magnitude of significant relationships between independent variables and voting outcomes, as reflected in the p-value, B coefficient and Exp(B) indicator[21]. Finally, the classification table reveals how accurately the model classifies its data into the right categories.

[21] The reference category for the voting behaviour is "In favour"; reference categories for independent variables follow SPSS defaults.

To better isolate the contribution of each variable, a series of nested models is tested, progressively adding variables to the regression. This approach allows for the identification of changes in model significance and explanatory power. Additionally, as "Absence" may reflect heterogeneous motivations unrelated to political preferences, a separate regression excluding absent MEPs is conducted and compared with the full model.

Finally, AI tools, namely Claude.ai[22] and ChatGPT[23], were used to support the correct execution of statistical tests in SPSS. Their use remained complementary and the interpretations of the SPSS output were based on my own analysis, informed by the relevant methodological literature. The full syntax and output files are provided in the annex.

[22] Claude.ai (Anthropic)
[23] ChatGPT (OpenAI)

4. Statistical analysis of the Parliament's consent

4.1. A gendered Parliament?

At first glance at the frequency tables on gender[24], the ratio between men and women slightly decreases through the years, from 64% of men and 36% of women for the Nagoya Protocol in 2014 to 60% of men and 40% of women for the BBNJ Agreement in 2024, showing that the European Parliament has not reached gender parity in its composition and that its seats are primarily occupied by men. Another observation is that women seem to engage more than men in consenting to MEAs ratification, voting more often in favour and less often not in favour than men. The Minamata Convention stands as a notable exception to this trend: women vote less in favour and more against than men in this consent procedure, while being more absent than men for this vote. However, the gaps between shares in all voting behaviours are smaller than for the four other treaties, potentially indicating that this difference might not be statistically significant. This is why these data have been further tested, running a Chi-square test for each treaty to determine if a link exists between gender and voting behaviour.

When analysing this link, as the data show in the crosstabulations between gender and voting and their corresponding test outputs, one main issue occurred for the Nagoya Protocol and CITES. In both cases, 25% of the cells contained an expected count less than 5. To maintain a statistical adequacy, the maximum percentage of such cells cannot exceed 20%. This is why, seeing the low number of MEPs voting against or abstaining for those two treaties, these voting behaviours have been merged into a "not in favour" category to allow for a smoother and more correct testing: it is this adjusted test that has been considered for the following analysis. For all treaties, except the Paris Agreement, p-values exceeded the 0,05 threshold, preventing the rejection of the null hypothesis that there is no statistically significant difference between the populations tested. This indicates that, for the treaties considered, gender did not influence the vote results. With the exception of the Paris Agreement, there is thus no need to look at the Cramer's V that would have revealed the intensity of that link nor at the adjusted residuals that would have indicated any cells deviating from expectation under independence.

[24] Tables 1.1.1. to 1.5. in the annex.

TABLE B. SELECTED RESULTS OF CHI-SQUARE TESTS AND SYMMETRIC MEASURES FOR GENDER AND VOTING BEHAVIOURS

	Nagoya	CITES	Paris	Minamata	BBNJ
P-value for Pearson Chi²	0.416*	0.183*	0.025	0.712	0.244
Cramer's V	0.048	0.067	0.111	0.043	0.077

*Value for the adjusted test with a "Not in favour" category merging "Against" and "Abstention"

Despite what the descriptive tables seem to highlight, gender does not appear to statistically determine the voting behaviour of MEPs during ratification consent procedures for international environmental treaties. The Paris Agreement is a notable exception: its p-value higher than 0.05 indicates a statistically significant difference between men and women, although the effect remains low (Cramer's V = 0.111). This is consistent with the shares of "In favour" and "Against" voting behaviours showing a greater gap than for any other treaty considered. This is also confirmed by looking at the adjusted residuals exceeding the ±1.96 threshold: for the Paris Agreement, women tended to vote more in favour (+2.4) and less against (-2.8) than what would have been expected from them, with men observing the opposite trend. Moreover, the descriptive results of the Minamata Convention are not supported, as the Chi-square test for this treaty gave the highest p-value (0.712) of all treaties, confirming the absence of any statistically significant influence of gender on Minamata's consent. These results contradict the literature showing that women would engage more than men in pro-environmental behaviours. The link between gender and voting behaviour therefore needs further testing to see if a gender dimension can be integrated notably within the Member States and political groups analyses, as will be done in the multivariate section.

4.2. Generational patterns in Parliament's consent

The descriptive statistics for age observed for the five treaties show a similar pattern of central trends. Age means revolve around 53 years old, while medians have an average value of 54 years old. Following the modes observed, the most recurring age of MEPs was located between 51 and 61 years old, with the full age range covering MEPs from 26 (for Nagoya, CITES and BBNJ) to 92 years old (for CITES). An interesting observation is the evolution throughout the 8th parliamentary term: the mean, median, range and quartiles of the three treaties consented to during that term reflect MEPs getting progressively older. This natural trend is also mirrored in the results for the Nagoya Protocol and the BBNJ Agreement, as both treaties were given consent at the end of their respective parliamentary terms, with higher age means and quartiles' values. Looking at the age distribution of MEPs into the nine age groups, it is systematically the three youngest categories (below or 40 years old) that have the fewest

MEPs, representing from 11.1%[25] to 17.3%[26] of the Parliament's composition. The aging trend of the 8th term is again conspicuous in this case, with the three youngest age categories representing progressively 17.3%, 14.2% and 12.9% of the total composition. Conversely, the age categories that have the most MEPs are primarily the 56-60 years old category (between 15% and 18.2% of total composition) and the 51-55 years old category (between 14.9% and 17.7%), while, overall, MEPs over 45 always represent a large majority of the Parliament (between 69.8% and 81.2%). What is striking here is that most older categories individually represent a similar share to the three youngest categories, highlighting an unbalanced composition in favour of older MEPs.

TABLE C. SELECTED RESULTS OF DESCRIPTIVE STATISTICS FOR AGE AND VOTING BEHAVIOURS

	Nagoya	CITES	Paris	Minamata	BBNJ
Mean	55.04	51.54	53.28	53.99	53.60
Median	56.00	52.00	54.00	54.00	54.00
Mode	51	51	59	54	61
Range	60 (26-86)	66 (26-92)	60 (28-88)	60 (29-89)	57 (26-83)
Q1 (25%)	48.00	43.00	45.00	46.00	45.00
Q3 (75%)	63.00	59.00	61.00	62.00	62.00

It is therefore interesting to run the Kruskal Wallis Test to analyse the influence of age on consent votes. This test follows the same logic as the Chi-square test used for the other independent variables' bivariate analysis, but addresses numerical and ordinal variables more effectively. In this case, the Kruskal Wallis Test has been used to analyse both the link between age (numerical variable) and voting behaviour, and between age groups (ordinal variable) and voting behaviour. The first observation is that, for the ten realised tests, only the two for the BBNJ Agreement had a p-value less than 0.05 (0.012 for age and 0.036 for age groups). This prevents the rejection of the null hypothesis of no statistically significant difference between the groups tested for all treaties except the BBNJ Agreement, for which the null hypothesis is rejected. When looking at the mean ranks for that treaty, higher values go to older age categories and to "against" and "abstention" voting categories. After this preliminary step, pairwise comparisons have been analysed to detect where the link occurs. In both the numerical age and ordinal age groups situations, the comparisons resulted in a statistically significant difference between votes in favour and abstentions ($p = 0.006$). For the age analysis, the statistic had a value of -93.426 (with Standard Test Statistic = -2.771), while for the age groups analysis, the value was -92.540 (with Standard Test Statistic = -2.770). These two values are essentially saying that MEPs who abstained for the BBNJ Agreement

[25] For the Nagoya Protocol.
[26] For CITES.

ranked systematically higher than those who voted in favour. The near-identical values for age and age groups also confirm that treating age as numerical or ordinal makes virtually no difference to the conclusion.

Overall, age does not appear to be a systematic driver of voting behaviour, even though, in the case of the BBNJ Agreement, the significant difference is limited to abstention. This variable thus needs further investigation during the multivariate analysis to confirm of definitively reject the hypothesis of an influence of age on Parliament's consents.

4.3. National colours in a European vote

To analyse the relationship between the Member States MEPs have been elected in and their voting behaviour, the Chi-square test is the best test to verify the existence of a link between these two nominal variables. However, as can be seen in the tables displaying the distribution of MEPs across Member States[27] and the crosstabulations between the two variables[28], the 20%-threshold for cells having an expected count less than 5 is often largely exceeded (from 69.6% to 74.1% of cells). Merging voting behaviours, such as what was done for the gender analysis with a "Not in favour" category, or countries into a broader category (for instance, putting the Baltic States or the Benelux together) would have made no empirical or theoretical sense and led to an imprecise result that would not reflect the relation tested in this instance. The reason for such a high number of insignificant cells is the size of Member States' delegations within the Parliament, with some countries sending only 6 MEPs[29] while others elect over 70 representatives[30]. A crosstabulation with four voting behaviours for 28 countries, some of which already start with a total count of MEPs close to five, automatically gives a large number of cells with an expected count below 5, distorting the statistical results and interpretation that can be drawn. Despite this statistical inconsistency, I have decided to keep working with the data output provided by SPSS. Member States with larger delegations inherently impact the vote results, as is reflected in the adjusted residuals of the crosstabulations, while those with smaller delegations have a less significant influence, although the tables reveal that they can have a significant role. In addition to the Cramer's V showing the intensity of the link between the two variables, the Contingency Coefficient has also been calculated, as a useful complement to provide a more stable measure of association strength when table dimensions are large.

[27] Tables 3.1.1.; 3.2.1; 3.3.1; 3.4.1.; 3.5.1.
[28] Tables 3.1.2; 3.2.2; 3.3.2; 3.4.2; 3.5.2.
[29] Cyprus, Estonia (7 MEPs since the 9th term), Malta and Luxembourg.
[30] Germany (96-99 MEPs), France (74-79 MEPs), Italy (73-76 MEPs) and UK (73 MEPs).

TABLE D. SELECTED RESULTS OF CHI-SQUARE TESTS AND SYMMETRIC MEASURES FOR MEMBER STATES AND VOTING BEHAVIOURS

	Nagoya	CITES	Paris	Minamata	BBNJ
P-value for Pearson Chi²	< 0.001*	< 0.001*	< 0.001*	< 0.001*	< 0.001*
Cramer's V	0.247	0.308	0.351	0.342	0.434
Contingency Coefficient	0.393	0.471	0.519	0.510	0.601

*Over 20% of cells have expected count less than 5.

Despite the high proportion of cells with low expected counts, the p-value for all five treaties is lower than 0.001, formally satisfying the 0.05 significance threshold. The considered treaties have a Cramer's V indicating a moderate association between Member States and voting behaviour, with the exception of the Nagoya Protocol with a value below 0.30 and therefore showing a moderate relation. Cramer's V results are also confirmed by their Contingency Coefficients, highlighting that the Nagoya Protocol has the weakest link, while the BBNJ Agreement has the strongest link. This trend potentially reflects the national ratification of the considered treaties: while the three treaties ratified during the 8th parliamentary term have a 100% rate of national ratification, the Nagoya Protocol has 78.6% and the BBNJ Agreement 62.9% of national participation rate, as of May 2026. However, this hypothesis has limited explanatory power as, for both treaties, MEPs from Member States that have not ratified them are not particularly voting in the same direction as their national governments. It is worth exploring if these MEPs consent to a European ratification to bypass national decision and ensure that their Member State is, to some extent, legally bound by the considered treaties. Moreover, some Member States have ratified the treaties after the EU's decision to participate, reinforcing the idea that European ratification can drive the position of its Member States.

Adjusted residuals further deepen the analysis by identifying voting behaviours across Member States having a significantly higher or lower incidence than expected (significant at ±1.96). For all treaties, France appears to be the main country where MEPs statistically vote more not in favour (significant adjusted residuals for against or abstention always with positive values, except for Paris with no French MEP voting against and for BBNJ with no French MEP abstaining) while voting statistically less than other Member States in favour (significant adjusted residuals in favour always with negative values). The UK follows a similar trend, even stronger, for the four treaties its MEPs could give consent to: British MEPs statistically voted more not in favour (significant adjusted residuals for against or abstention always with positive values) while voting less than any Member State in favour (significant adjusted residuals in favour always with negative values) and being particularly absent for the

Paris Agreement and the Minamata Convention's consent votes. Germany also frequently stands out across treaties, showing a statistically higher voting behaviour in favour for the first three treaties, while overall showing lower tendency to vote against, abstain or be absent to consent votes. It is crucial to note that these three countries are the ones with the largest delegations of MEPs, which could explain their predisposition to stand out in the crosstabulations. Conversely, Member States with smaller delegations rarely appear in the adjusted residuals due to their size, with the exception of Cyprus for the BBNJ Agreement for which all six representatives were absent. For delegations with an average delegation, it is worth noting the occurrence of Dutch MEPs disproportionately voting against the Nagoya Protocol and the Minamata Convention and statistically less likely to vote in favour of these two treaties. Poland also stands out for the BBNJ Agreement, with residual values being exceptionally high, indicating a strong trend to not vote in favour of the treaty and to abstain.

A final look at the figures showing the Member States driving each of the four voting behaviours[31] confirms the importance of the UK in votes against treaties, of France in abstaining or voting against them, and of Germany always scoring high in supporting them. For the Nagoya Protocol, the Netherlands is the second delegation driving votes against, while Greece appears to significantly weigh in abstaining and Italian MEPs are the most absent. Although Croatian, Danish, Estonian and Luxembourgish MEPs have unanimously voted in favour, their smaller size does not weigh significantly in the "In favour" balance. For CITES, votes in favour are diffuse across delegations, with MEPs from Austria, Croatia, Cyprus, Finland, Latvia, Luxembourg and Slovakia all voting in that direction. Votes against are primarily driven by France and the UK, while Italy remains the main driver of absence and abstention is driven by Belgium, since the only MEP abstaining for this treaty comes from that country. For the Paris Agreement, votes in favour are particularly driven by larger delegations (Germany, France, Italy and Spain), with unanimity from Cyprus, Estonia, Malta and Slovenia. The UK and Italy lead votes against, France drives abstention by far, and the British MEPs are the main absent representatives. For the Minamata Convention, notable phenomena are France's significant part in votes against, the UK's overwhelming weight in driving abstention, and absence mainly from British, German and Italian representatives. Finally, the BBNJ Agreement is characterised by France and Germany driving votes against, Poland and Sweden as the main abstaining delegations, and significant absence from Italian and Polish MEPs.

[31] Figures 3.1.3; 3.2.3; 3.3.3; 3.4.3; 3.5.3.

Before drawing a definitive conclusion regarding Member States, it is crucial to analyse the role of political groups on voting behaviour and to observe how these two independent variables interact in explaining the vote outcomes. Indeed, Member States delegations rarely vote in a monolithic way; they are composed of different national parties, distributed across the Parliament's political groups, all having various interests and values to promote and defend, and therefore nuancing the eventual voting behaviour for the five considered treaties. It seems clear that Member States alone cannot explain the votes of their MEPs.

4.4. Parliamentary groups' fault lines in a broad consent

Over the three parliamentary terms covered, EPP and S&D remain the dominant political groups, representing together between 45% and 61% of the assembly. ALDE – Renew[32], the Greens/EFA, ECR and GUE/NGL – The Left[33] are the other traditional groups present to vote for the five treaties. Far-right Eurosceptic formations (EFD, EFDD, ENF – ID[34]) have changed throughout the terms, accounting together for 4% to up to 11% of the Parliament's composition. Finally, non-attached MEPs (NI), being more of an administrative group than an ideologically coherent group, represented a smaller share of the composition. A notable case is that of the ENF Group creation: in 2015, several non-attached MEPs from various national far-right parties decided to come together to form a new political group (Laviale, 2019), driving away a significant number of MEPs out of the NI group.

TABLE E. DISTRIBUTION OF POLITICAL GROUPS

	Nagoya		CITES		Paris		Minamata		BBNJ	
	Number	Share	Number	Share	Number	Share	Number	Share	Number	Share
EPP	273	35.7%	219	29.2%	215	28.6%	216	28.8%	177	25.1%
S&D	194	25.4%	191	25.4%	189	25.2%	189	25.2%	140	19.9%
ALDE – Renew	85	11.1%	68	9.1%	70	9.3%	68	9.1%	102	14.5%
Greens/EFA	58	7.6%	50	6.7%	50	6.7%	51	6.8%	72	10.2%
ECR	57	7.5%	71	9.5%	74	9.9%	74	9.9%	68	9.6%
GUE/NGL – The Left	35	4.6%	52	6.9%	52	6.9%	52	6.9%	37	5.2%
EFD	31	4.1%	/	/	/	/	/	/	/	/
EFDD	/	/	48	6.4%	46	6.1%	42	5.6%	/	/
ENF – ID	/	/	/	/	39	5.2%	39	5.2%	59	8.4%
NI	32	4.2%	52	6.9%	16	2.1%	19	2.5%	50	7.1%
Total	765	100%	751	100%	751	100%	750	100%	705	100%

To analyse the relation between political group and voting behaviour, the Chi-square test was run to identify potential statistical differences between the considered groups. Due to some groups being smaller or having what will be revealed as a strong internal cohesion, the issue of cells with an expected count less than 5 exceeding 20% is recurring in this case. To

[32] ALDE decided to transform into *Renew* in 2019.
[33] GUE/NGL decided to change name to *The Left* in 2021.
[34] ENF decided to transform into *ID* in 2019.

address this, and consistent with the idea of an internal cohesion, voting behaviour has been recoded into two categories ("In favour" and "Not in favour" comprising "Against", "Abstention" and "Absent") to carry out an adjusted test. This recoded variable was only used for this test; the rest of the analysis distinguishes the four voting behaviours.

TABLE F. SELECTED RESULTS OF CHI-SQUARE TESTS, SYMMETRIC MEASURES AND DIRECTIONAL MEASURES FOR POLITICAL GROUPS AND VOTING BEHAVIOURS

	Nagoya	CITES	Paris	Minamata	BBNJ
ORIGINAL TEST					
P-value for Pearson Chi²	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cramer's V	0.306	0.448	0.495	0.480	0.512
Contingency Coefficient	0.496	0.613	0.651	0.639	0.663
Lambda	0.018	0.098	0.091	0.071	0.111
ADJUSTED TEST*					
P-value for Pearson Chi²	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cramer's V	0.250	0.595	0.617	0.398	0.548
Contingency Coefficient	0.242	0.511	0.525	0.370	0.480
Lambda	/	0.086	0.099	0.048	0.093

*Values for the adjusted test with a "Not in favour" category merging "Against", "Abstention" and "Absence"

In both the original and the adjusted tests, the results are statistically significant, with Cramer's V values showing a clear link between political groups and voting behaviour. Only the value for the Nagoya Protocol's adjusted test does not pass the 0.30 threshold and reveals a moderate association. The strong link is confirmed by the Contingency Coefficients, indicating again that political groups might be the main explanatory factor of consent to MEAs. Lambda values, indicating the predictive potential of political groups on vote outcomes, contradict however that idea by revealing weak predictive improvements (lambda < 0.10), but this measure is depressed by the fact that "In favour" vote is overwhelmingly dominant across groups. When looking at the adjusted standardised residuals in the original crosstabulations[35], most groups exceed the ±1.96 threshold but far-right formations and the NI group systematically score higher and show a propensity not to vote in favour of consent. This is also visible when observing the crosstabulations for the adjusted tests[36]: EFD, EFDD, ENF, ID and NI are always scoring significant residuals with higher values. Figures showing the weight of political groups in each voting behaviour[37] highlight that, over the five treaties, far-right groups drive votes against and abstentions by far, while the NI group plays a significant part in these two behaviours for the Nagoya Protocol and CITES. The case of CITES seems

[35] Tables 4.1.2; 4.2.2; 4.3.2; 4.4.2; 4.5.2.
[36] Tables 4.1.3; 4.2.3; 4.3.3; 4.4.3; 4.5.3.
[37] Tables 4.1.4; 4.2.4; 4.3.4; 4.4.4; 4.5.4.

obvious due to the presence of MEPs that would become the ENF group some months later, but for the Nagoya Protocol, the reason for such results must be sought somewhere else.

A statistical element that can explain this trend is the Agreement Index. This index measures the internal cohesion within a political group, indicating how unanimously its members vote on a given treaty. The data, computed in the following table, again reveal the specificity of far-right and NI groups. While it appears normal for the NI group to have a low Agreement Index due to its own nature, it is striking to see that far-right groups' scores are significantly smaller than for other groups. The index for ECR for the Paris and BBNJ agreements is another notable observation. Since these political groups show significant internal heterogeneity, it is interesting to look more closely at them and at what creates this situation. I analysed only the groups having a score below the average Agreement Index value for a treaty, by running a Chi-square test for each political group between Member States and voting behaviour, since the national dimension already appears to matter, and by comparing frequency tables of gender, age and Member States between the actual group composition and the dominant voting behaviour of that group. The Chi-square test with Member States was not conducted for the NI group because MEPs coming from the same country are not necessarily coherent in their position to be part of that group. This identification attempt is also a first step into the multivariate analysis of the next section.

TABLE G. AGREEMENT INDEX OF POLITICAL GROUPS

	Nagoya	CITES	Paris	Minamata	BBNJ
EPP	0.99	1.00	0.99	1.00	0.99
S&D	1.00	1.00	1.00	1.00	1.00
ALDE – Renew	1.00	1.00	1.00	1.00	1.00
Greens/EFA	0.96	1.00	1.00	1.00	1.00
ECR	1.00	1.00	0.78	1.00	0.15
GUE/NGL – The Left	0.88	1.00	0.84	1.00	1.00
EFD	0.48	/	/	/	/
EFDD	/	0.21	0.05	0.05	/
ENF – ID	/	/	1.00	0.17	0.28
NI	0.20	0.41	0.29	0.43	0.72
Treaty average	0.81	0.83	0.77	0.74	0.77

For the Nagoya Protocol, EFD[38] showed no statistically significant difference at the Chi-square test ($p = 0.573$, with all cells having an expected count less than 5), despite a moderately high Cramer's V (0.576). The only significant residual is the UK, and more specifically the Eurosceptic UKIP, who voted unanimously against. This is mainly due to the

[38] Tables 4.1.5.1. to 4.1.5.3.

numerical importance of that party within the group: with 8 MEPs, it represents over 25% of the group. Despite internal inconsistency, EFD voted at 55% in favour of consenting to the ratification. Members that voted that way were predominantly Italian (mainly from LN) and Polish (from SP), with a gender distribution mirroring the male-dominance of EFD, and statistically younger than the overall group. The group division seems therefore due to a split between the British Eurosceptic party and its continental partners.

For CITES, EFDD[39] has a strong link with Member States ($p < 0.001$; Cramer's $V = 0.811$), influenced by Italian M5S voting unanimously in favour, UKIP members all voting against and Lithuanian TT party being absent. The group voted at 35% in favour and 54% against the treaty. That dominant voting behaviour is driven by UKIP, the two Swedish SD members and the Czech SSO representative, and by slightly older MEPs, while gender distribution is similar to that of the whole group.

For the Paris Agreement, EFDD[40] had the lowest Agreement Index collected across all groups and treaties. Despite a p-value of 0.004 and Cramer's V of 0.554, 87.5% of cells have an expected count less than 5, reducing the statistical relevancy of the observations. Again, M5S voted in favour and UKIP overwhelmingly opposed the ratification. The dominant voting behaviour is "Against" with 44%, driven again by UKIP and older, predominantly male MEPs compared to the overall group distribution.

For the Minamata Convention, both EFDD and ENF showed low internal homogeneity. EFDD's Chi-square test[41] was formally significant with a strong Cramer's V (0.787), but too many cells have an expected count less than 5. More Member States produced adjusted residuals, explained by the fact that some of them comprise only one MEP[42], with M5S unanimously in favour and UKIP overwhelmingly abstaining. The dominant voting behaviour was to support consent (43%), as did primarily Italian, Swedish and French MEPs, mostly women and younger representatives. ENF follows the same pattern ($p < 0.001$; Cramer's $V = 0.802$; 91.7% of cells with expected count less than 5)[43]. With a quarter of the group being absent, 41% voted against, making it the dominant behaviour, driven by the French FN, Dutch PVV and Polish KNP. Women are here statistically more likely to vote against, with older MEPs driving that behaviour.

[39] Tables 4.2.5.1. to 4.2.5.3.
[40] Tables 4.3.5.1. to 4.3.5.3.
[41] Tables 4.4.6.1. to 4.4.6.3.
[42] Czechia, Lithuania and Poland.
[43] Tables 4.4.5.1. to 4.4.5.3.

Finally, ECR and ID are the most right-wing groups of the Parliament for the BBNJ Agreement's consent vote. They both have a low Agreement Index. ECR's dominant behaviour is to abstain (47%), although this position significantly differs between Member States ($p < 0.001$; Cramer's $V = 0.707$; 97.1% of cells with expected count less than 5)[44]. Abstention is primarily due to Polish (notably PiS) and Spanish MEPs, with the women's share being higher than for the overall group and age being similar. ID voted predominantly against (47%), with results differing strongly between Member States ($p < 0.001$; Cramer's $V = 0.789$; 87.5% of cells with expected count less than 5)[45]. Out of the eight national delegations in that group, only the French RN, German AfD, Belgian VB and Danish DF voted that way, with gender and age showing a similar distribution to that of the overall group.

An odd observation is that, for far-right groups, the four variables all seem to influence voting behaviour. Women are often more in favour, although that distribution progressively tends to balance and these groups remain male-dominated; the age mean and median of supporting MEPs are lower than those of the whole group; and national considerations obviously play a determining role in explaining vote outcomes.

For the NI group[46], the dominant voting behaviour was to vote in favour (between 53% and 62%), except for CITES where a strong majority voted against (65%). For that specific case, MEPs from French FN, Italian LN, Dutch PVV and Greek KKE opposed the treaty. This distribution reflects the disparate nature of NI, with parties spanning from the far-right to far-left. It is also worth recalling that FN, LN and PVV would later quit that group to create the ENF group (Emmott *et al.*, 2015), thus driving away significant votes against treaties from NI. For the four other consent votes, support comes from a wide range of Member States, with women more likely to vote that way despite the overall composition being male dominated. Regarding age, MEPs in favour were slightly younger than the overall composition for the Nagoya Protocol and BBNJ Agreement, and slightly older for the Paris Agreement and Minamata Convention, especially due to the comparatively older composition of NI for these two treaties. While Member States and, to a lesser extent, gender influence the vote of non-attached MEPs, age does not appear to be a significant driver.

These within-group analyses already considered the four variables together. While we observed that each variable influences voting behaviour to different degrees, it is worth

[44] Tables 4.5.5.1. to 4.5.5.3.
[45] Tables 4.5.6.1. to 4.5.6.3.
[46] Tables 4.1.6.1; 4.1.6.2; 4.2.6.1; 4.2.6.2; 4.3.6.1; 4.3.6.2; 4.4.7.1; 4.4.7.2; 4.5.7.1; 4.5.7.2

applying the same multivariate logic to each treaty as a whole, in order to detect the trends identified in the bivariate tests with greater precision.

4.5. Multivariate evidence on the drivers of consent

Including all four variables is justified, as they interact in various ways highlighted in previous analyses. Multinomial logistic regression allows for the assessment of these interactions and the relative weight of each variable in explaining MEPs' voting behaviour.

Prior to the regression, correlations between Member States and political groups and between gender and political groups were tested to identify potential multicollinearity issues that could alter the predictive power of the regression. Regarding the correlation between Member States and political groups, the p-value is always below 0.001, revealing a statistically significant difference, though this should be interpreted with caution given the high share of cells with an expected count less than 5. Despite this constraint, the test remains relevant because the strong dominance of the "In favour" behaviour automatically generates discrepancies between voting behaviours and drives counts away from these categories. Cramer's V values satisfy the below 0.40 threshold to proceed normally with all variables in the same model. Regarding the correlation between gender and political groups, p-values are significant for all models, except for those of the BBNJ Agreement, and Cramer's V values are lower than for Member States. For the BBNJ Agreement, those results reflect the absence of a statistically significant gender effect observed in the bivariate analysis for that treaty. These results suggest that multicollinearity is not severe enough to compromise the regression models.

TABLE H. SELECTED MEASURES FOR MULTICOLLINEARITY TESTS OF POLITICAL GROUPS

	Nagoya		CITES		Paris		Minamata		BBNJ	
	With	Without	With	Without	With	Without	With	Without	With	Without
POLITICAL GROUP * MEMBER STATE										
P-value for Pearson Chi²	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001	< 0,001
Cramer's V	0.316	0.323	0.349	0.358	0.339	0.394	0.330	0.341	0.348	0.337
% of cells with exp. count < 5	80.4%	84.4%	78.6%	83.5%	81.7%	85.7%	81.7%	86.9%	80.6%	83.7%
GENDER * POLITICAL GROUP										
P-value for Pearson Chi²	< 0,001	0.003	< 0,001	< 0,001	0.005	0/019	0.005	0.006	0.136	0.084
Cramer's V	0.194	0.179	0.179	0.189	0.172	0.164	0.172	0.183	0.125	0.141
% of cells with exp. count < 5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

For the Nagoya Protocol, both models are statistically significant ($p < 0.001$) and display satisfactory fit, suggesting that results are not attributable to chance. AIC and BIC values consistently increase as additional variables are introduced, with political group alone providing the most adequate model fit, confirmed by likelihood ratio tests. The full model with absence explains 39.2% of variance in voting behaviour (Nagelkerke $R^2 = 0.392$) and

correctly classifies 86.5% of MEPs. Despite these results, no parameter estimates reach significance, and no meaningful odds ratios can be interpreted. By contrast, the without-absence model explains 83.1% of variance (Nagelkerke $R^2 = 0.831$) and correctly classifies 98.5% of MEPs, though this high value reflects the reduced outcome diversity once absences are excluded. However, this model's parameter estimates indicate that membership in GUE/NGL significantly decreases the odds of abstaining relative to supporting consent.

For CITES, results confirm the importance of both political group and Member State in contributing significantly to predicting vote outcomes. However, AIC decreases when political groups are added to the Member States model, while BIC continues to increase, suggesting that political group improves fit but at a complexity cost. Despite a strong overall model performance, with high Nagelkerke values and classification accuracy at 92.9% with absence and 99.6% without absence, only limited parameter estimates are interpretable. In both models, the odds ratios of EFDD significantly decrease when voting against rather than supporting ratification.

The Paris Agreement presents contrasting results between the two models. The results of the with-absence model are difficult to interpret due to the overwhelming dominance of "In favour" votes, which limits variability and undermines model fit, despite some nested models yielding significant improvements (gender with $p = 0.016$; gender + age group + country with $p < 0.001$). The without-absence model tells a substantially different story. It significantly outperforms the intercept-only specification ($p < 0.001$), with exceptional pseudo-R^2 values (Nagelkerke = 0.944; McFadden = 0.916), 98.4% correct classification (89.7% baseline), and fully satisfactory Goodness-of-Fit. AIC and BIC decrease when political group is introduced, confirming that it improves fit sufficiently to offset added complexity. Likelihood ratio tests identify gender ($p = 0.014$), Member State ($p < 0.001$), and political group ($p < 0.001$) as significant independent predictors. Notable parameter estimates include women being significantly less likely to abstain than vote in favour, MEPs aged 41-45 showing elevated abstention odds, MEPs from Denmark, Portugal and Romania similarly more likely to abstain, and EPP membership significantly decreasing abstention odds, consistent with the group's 0.99 Agreement Index for this treaty. Overall, the without-absence model identifies political group and national origin as the strongest predictors, with gender and age group playing more limited roles.

Both models for the Minamata Convention show strong and consistent results, with significant model fit and satisfactory Goodness-of-Fit statistics. In both models, AIC and BIC

increase as predictors are progressively added in the first three nested models but decrease once political group is introduced, demonstrating that this variable substantially improves model fit despite increased complexity. A similar pattern is observed for Nagelkerke R^2, with Member States contributing meaningfully to the third model (0.337 and 0.526 respectively) before a sharp increase following the inclusion of political group. Likelihood ratio tests further confirm that Member State and political group are robust predictors across both models ($p < 0.001$). However, important differences emerge between the two specifications. The with-absence model explains 52.5% of variance and correctly classifies 84.7% of MEPs (baseline 79.1%), while the without-absence model achieves near-perfect explanatory power (Nagelkerke $R^2 = 0.989$) and classification accuracy (99.7% against 93.5% baseline), largely due to reduced outcome diversity once absences are excluded. The likelihood ratio tests also diverge: all four variables are significant in the with-absence model (age group $p = 0.004$; others $p < 0.001$), whereas only Member State and political group remain significant in the without-absence model. The parameter estimates highlight the added value of including absences. In the with-absence model, MEPs aged 41-45 are significantly less likely to be absent, and MEPs from Austria, Italy, Poland, and Portugal also show significantly lower odds of absence, indicating higher participation rates. Membership in EPP and Greens/EFA similarly reduce the likelihood of absence. By contrast, the without-absence model yields no significant parameter estimates, reflecting the concentration of votes in favour.

For the BBNJ Agreement, both models are statistically significant and confirm once again the dominant role of political group, alongside a secondary influence of Member State, in structuring parliamentary consent. Model fit improves markedly with their inclusion, while classification accuracy exceeds baseline levels by a notable margin (+10.6 with absence; +11.3 without absence). At the same time, AIC and BIC values generally increase as variables are added, indicating that the added complexity of each variable is not sufficiently offset by improvements in fit. Despite these similarities, the with-absence model explains 77.5% of variance, whereas the without-absence model achieves near-perfect explanatory power (Nagelkerke $R^2 = 0.994$), largely due to reduced outcome variability once absences are excluded. Only the with-absence model yields statistically significant parameter estimates. In this specification, membership in the ID group significantly increases the odds of voting against rather than in favour of consent, while membership in EPP, S&D, Renew, and Greens/EFA significantly decreases the likelihood of being absent relative to voting in favour. Finally, gender and age display limited explanatory power, with the former only reaching

statistical significance in the without-absence model, though no significant parameter estimates emerge.

Across all treaties, political group systematically appears as the most powerful predictor of voting behaviour, while Member State exerts a secondary but still significant influence. Gender and age show limited and inconsistent explanatory power, rarely remaining significant once political group is controlled for. Model performance is generally stronger in the without-absence specifications, largely due to reduced outcome variability and the dominance of "In favour" votes. By contrast, with-absence models, although less predictive overall, provide more nuanced insights into both voting behaviour and participation dynamics.

Overall, the multivariate analysis largely confirms the findings of the bivariate analyses rather than substantially extending them. It reinforces the central role of political groups in structuring voting behaviour, highlights the secondary influence of national context, and suggests that individual-level characteristics play a more limited role in explaining parliamentary consent to MEAs.

4.6. The European Parliament: political arena of environmental policy

The first hypothesis states that women are expected to be more supportive of MEA ratification than men, especially within conservative political groups. Descriptive findings indicate a persistent male majority in the Parliament, although women appear slightly more likely to support and less likely to oppose ratification. However, Chi-square tests reveal no statistically significant relation between gender and voting behaviour. The Paris Agreement constitutes the only significant case, where women show higher support and men the opposite trend, though this effect remains weak and isolated. Multivariate analyses confirm the limited and inconsistent role of gender, with no evidence of intensification within conservative groups. The hypothesis receives only limited support, contradicting the existing literature and suggesting that gender may play a secondary and indirect role rather than a primary determinant.

The second hypothesis expects younger MEPs to be more supportive of MEA ratification than older ones. A notable observation is the strong dominance of older MEPs and underrepresentation of younger categories across the composition of the Parliament, although no clear systematic pattern emerges from descriptive data alone. Kruskal-Wallis tests have been inconclusive, showing no significant age effect for most treaties. The BBNJ Agreement shows limited variation, where older MEPs tend to abstain or vote against ratification and

younger MEPs tend to support it. Regressions confirm that age rarely remains significant, especially once political group is controlled for. This hypothesis is largely not supported, as age does not systematically influence voting behaviour.

The third hypothesis examines the role of political groups, predicting that MEPs from Eurosceptic and far-right groups (EFD, EFDD, ENF, ID, ECR) are less likely to support MEA ratification. Throughout the three terms, Eurosceptic and far-right groups represent a small but significant share of the Parliament's composition. Chi-square tests reveal a clear and systematic relation between political group and voting behaviour, with association measures indicating a moderate to strong link. Mainstream groups consistently show higher support for ratification, while far-right groups are disproportionately associated with the three other voting behaviours. The NI group also contributes significantly to non-supportive votes, due to its ideological heterogeneity. These patterns are consistent across all treaties and confirmed by the Agreement Index indicating very high internal cohesion of mainstream groups and lower cohesion among far-right and NI groups. Despite this lower cohesion, these groups still display a higher tendency to not support MEAs, although their opposition is not always cohesive and is often internally divided due primarily to national differences and ideological positions regarding Euroscepticism. The multivariate analysis confirms that political group is the most significant predictor of voting behaviour. While this effect is often mediated by national and ideological differences within far-right and Eurosceptic groups, the findings support the hypothesis and confirm that political groups constitute the primary lens for understanding parliamentary voting.

Finally, the last hypothesis considers the role of Member States as a secondary source of variation, particularly through their contribution to internal fragmentation within political groups, which is more pronounced in far-right and Eurosceptic groups. Chi-square tests indicate a significant but moderate association between Member State and voting behaviour, although methodological constraints limit the robustness of the results and make interpretation indicative rather than definitive. Larger national delegations consistently shape observable patterns of national influence on voting behaviour, with some countries displaying more opposition or abstention than others. However, Member States rarely vote as unified blocs, given that delegations are internally divided across political groups. As a result, national patterns operate primarily within political groups rather than across the Parliament as a whole. These national divisions are associated with lower cohesion measures within far-right Eurosceptic groups and a strong correlation between Member States and these groups.

National context explains much of the variation within groups, as certain parties drive opposition or abstention, while varying Euroscepticism levels prevent these groups from forming cohesive blocking coalitions. By contrast, mainstream groups have very high Agreement Index and minimal visible national fragmentation across all five treaties. The multivariate analysis confirms that, while Member State is a significant predictor, its effect remains secondary to political group. The hypothesis is thus supported, though national effects mainly reinforce intra-group variation rather than acting as independent drivers. Together with ideological fragmentation, national heterogeneity becomes decisive in explaining low cohesion in far-right groups.

The findings indicate a hierarchical explanatory structure in which political group membership constitutes the primary determinant of voting behaviour, Member State effects play a secondary role through intra-group variation, and individual characteristics, namely gender and age, display only weak and inconsistent effects.

5. A limited internal actor with strong external ambitions?

Across the five examined treaties, the European Parliament consistently shows high support for MEA ratification. The voting behaviour of MEPs is not random but structured primarily by their political group. Their Member State acts as a secondary driver, while individual factors have a minimal impact on vote outcomes. Although the Parliament appears broadly unified in supporting MEAs, this position is limited and not unanimous. The unity of the Parliament is challenged primarily by far-right and Eurosceptic groups and national variations within these groups, but these divisions are not strong enough to block ratification and unity remains dominant, although not absolute. While Petri *et al.* (2023) suggest that the Parliament is "a strong internal actor with external ambitions", this research finds that the institution acts rather as a limited internal actor with strong external ambitions. Its limited nature comes from the fact that it only has a consent power in the ratification process, with no possibility of amending the Council's position or participating in treaty negotiations beforehand. Moreover, consent records for the five considered MEAs indicate a broad and predictable approval, with political divergences confined primarily to far-right and Eurosceptic groups. Nevertheless, this wide and consistent support for environmental agreements reflects the Parliament's ambition to actively participate in the EU external dimension of its environmental policy and to reinforce the Union's global environmental leadership.

However, does the Parliament's consent have a real democratic added-value or is it merely a formal procedure? On the one hand, consent of the only directly elected EU institution adds a democratic validation to a procedure largely in the hands of the Commission and Member States. The broad cross-party and cross-national support suggests a wide European societal engagement with environmental action, that may differ from the position of the Council and the Commission. But, on the other hand, this consent remains a formal procedure in which the Parliament has little real influence over the content or outcome of agreements, while high approval rates reflect limited contestation within the parliamentary arena. Ultimately, consent appears as both legitimising and constrained, symbolically reinforcing the legitimacy of EU ratification of MEAs more than it shapes outcomes.

In light of these findings, voting behaviour regarding MEA ratification may not be comprehensively understood yet. Uneven national delegation sizes and overrepresentation of "In favour" votes revealed methodological limitations, while a quantitative approach cannot capture motivations behind votes. Moreover, some variables were not included in this

research, even though existing literature points out the relevance of other factors such as national party ideology, committee membership, sub-regional patterns as identified by Petri *et al.* (2023) or treaty characteristics. Bellelli *et al.* (2023) observed that this last element was among the most predictive indicators of voting behaviour, as different patterns could emerge by comparing the ambition level or the binding commitments of MEAs. This can also extend beyond environmental agreements: in cases where the Parliament must consent, is this approval as consistent as for MEAs, or does it depend on the policy domain of the international treaty? Additionally, Wendler (2019) identified that most of the political trade-offs occur at the committee-level of the Parliament. An analysis of that level could reveal how real decisions are made before the plenary vote. More broadly, qualitative research could strongly complement this work, namely through interviews and/or discourse analyses, to understand and identify how MEPs justify their votes.

The European Parliament is politically structured internally and broadly supportive externally regarding global environmental action. However, it plays less a decisive role than a legitimising one in EU environmental governance. The limited influence granted by the consent procedure may itself shape voting behaviour, as the high likelihood of ratification reduces incentives to oppose agreement. This raises an open question: if the Parliament held stronger formal powers in the ratification process, would its support remain as consistent and as ambitious? The answer remains uncertain but it points to the importance of institutional design in shaping both parliamentary behaviour and the EU's external environmental action.

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A united European Union on the global environmental stage?

Statistical analysis of the European Parliament's consent to multilateral environmental agreements

ANNEX

Final dissertation presented by **Adrien ALOST** (0955-25-00)
Under the supervision of Professor **Benjamin DENIS**

Academic Year 2025-2026

2026).
https://en.wikipedia.org/wiki/List_of_members_of_the_European_Parliament_(2019%E2%80%932024) (last consultation on 31 May 2026).

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