

Are international climate aid really climate-related ?

An empirical analysis on the reporting of donor countries

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International Climate Aid

- In Copenhagen climate negotiations in 2009 (COP 15), developed countries pledged to reach a joint mobilization target of US\$100 billion a year by 2020 to meet the climate needs of developing countries. This target was extended until 2025 at the Paris Agreement.
- In 2019, donors mobilized only USD 79.6 billion to developed countries (OECD, 2021).

Climate aid reporting

- OECD DAC members report their official development aid through the Creditor Reporting System. They use the Rio Markers Methodology to evaluate the environmental relevancy of the funded projects they are reporting.
- Most OECD DAC donor countries then use these data to self-report to the UNFCCC Secretariat on their climate aid commitments toward developing countries.
- Actual climate assistance received for climate change mitigation and adaptation is however deemed incomplete by recipient countries, contrary to donors' self-declarations.

Rio Markers Methodology

- Since 1998, donor countries have indicated the relevancy of the development projects they are reporting to the three objectives of the Rio Convention (1992) : climate change, biodiversity and desertification.
- Initially, there was only one climate-related marker, focusing on mitigation actions. In 2010, a second climate change marker was implemented: the adaptation marker.

Projects overcoding

- Donor countries tend to misclassify a significant number of their development projects as climate-related.
- Two types of reporting errors can be identified:
 - ▶ Non climate-related projects being reported as mitigation and/or adaptation projects;
 - ▶ Confusion between adaptation and mitigation projects.
- Examples of misclassified projects (in our 2002-2018 database):
 - ▶ *Support to Elections, Oversight Institutions and Accountable Service Delivery;*
 - ▶ *Technical and professional electronic equipment for the Georgian-Greek school of tourism Ikarus;*
 - ▶ *Capacity building to reduce illegal elephant hunting and bush meat trade in the Selous Ecosystem in Tanzania.*

Rationale for over-reporting

- Potential reasons for projects over-reporting:
 - ▶ Misunderstanding of the project's content;
 - ▶ Coding mistakes;
 - ▶ Strategic over-reporting to satisfy international climate commitments.

Research questions

- What is the extent of the over-reporting of climate projects over 2002-2018 ?
- What are the factors that may affect donor countries' over-reporting of climate projects?
- Do these factors differ for the over-reporting of adaptation and mitigation projects ?

Literature on climate aid reporting

- Some small-scale analyses have been focusing on adaptation projects and on short time samples and case studies : Junghans and Harmeling (2012); Weikmans et al. (2017); CARE (2021).
- Donner et al. (2016) analysed the climate adaptation content of development projects towards Small Islands Developing States in Oceania from 1992 to 2012. They however did not estimate over-reporting.
- Michaelowa and Michaelowa (2011) carried out a wider analysis over 1995-2008 but they did not cover adaptation over-reporting as the Adaptation Marker had not been yet introduced. They estimated that certain political variables, such as the share of votes for green political parties or the composition of government, play a role in determining the number of misreported projects.

Literature on climate aid reporting

- Main findings from the literature:
 - ▶ The scale of climate aid over-reporting is large;
 - ▶ Most donor countries over-report climate aid, even smaller donors;
 - ▶ The over-reporting persists over time.

Our contribution

- In our paper, we analyse a large set of 63, 195 climate aid projects funded by 28 donor countries in 154 recipient countries over the period 2002 to 2018 (OECD CRS Database).
- We develop a new assessment methodology after the ones used in the literature: keywords search, classification of the projects' purposes and hand-coding.
- We estimate the share of overcoding for climate projects overall and for adaptation and mitigation projects separately. We also estimate these overcoding ratios for aid in USD.
- We estimate the determinants of climate projects over-reporting for these different categories.

Projects coding method

- Our method of projects evaluation includes 3 steps:
 - ① We classify the 206 projects' purposes from the database as mitigation-relevant, adaptation-relevant, not climate-related or undetermined. Mitigation and adaptation categories are not exclusive.
 - ② For the projects whose purpose is undetermined, we undertake a systematic textual search of keywords in their description using Python programming. The keyword search is also applied on projects with a climate-related purpose as to refine the classification. We use the five main languages found in the database.
 - ③ We assess, by hand, projects which were classified as not climate-related in the previous steps but did include the word "climate" (1,620 projects).

Projects coding method

- From the results of our analysis, we build three dummy variables corresponding to three overcoding errors:
 - ▶ *Overcoded*: takes the value 1 if the project was reported as mitigation/adaptation-related but is actually not climate-related;
 - ▶ *False mitigation*: takes the value 1 if the project was reported as a mitigation project but is actually either not climate-related or adaptation-related;
 - ▶ *False adaptation*: takes the value 1 if the project was reported as an adaptation project but is actually either not climate-related or mitigation-related.

Results

Overcoding ratios	Nb of projects	projects' value
Ratio of overcoded aid	48.6%	60.7%
Ratio of false mitigation aid	64.3%	61.1%
Ratio of false adaptation aid	67.8%	71.5%

Determinants of donor countries' overcoding

We develop three hypothesis to explain donor countries' overcoding.

- **H1:** *The scale of overcoding will be higher, the more the national population in the donor country values environmental objectives (Michaelowa and Michaelowa, 2011).*
 - ▶ **Intuition:** Climate aid could be an electoral strategy for governments with environmentally concerned population.
 - ▶ **Variable:** share of green votes in parliamentary election (Armingeon et al., Comparative Political Dataset, 2021).

Determinants of donor countries' overcoding

- **H2:** *The scale of overcoding will be higher, the less the donor country's government values environment.*
 - ▶ **Intuition:** Governments with low environmental preferences are more likely to choose to misreport their development aid into climate aid as to uphold their international commitments with no budgetary constraint.
 - ▶ **Variables:** relative evolution of GHG emissions since Kyoto (UNFCCC GHG Data), nb of International Environmental Agreements (IEAs) in force (Mitchell and Ronald B., IEA Database Project, 2021), cumulative nb of climate-related laws and policies (Grantham Research Institute on Climate Change and the Environment & Sabin Center for Climate Change Law, 2021), Protected Areas Representative Index (PARI) (Wendling, Z.A. et al., 2020 EPI, 2020).

Determinants of donor countries' overcoding

- **H3:** *The scale of overcoding will be higher when the government faces higher budgetary constraint.*
 - ▶ **Intuition:** It is less costly to misreport development aid as climate aid rather than to fund new climate projects.
 - ▶ **Variables:** GDP per capita and GDP growth (World Bank Open Data), government debt (% GDP, World Bank Open Data), unemployment rate (Armingeon et al., 2021), Official Development Aid (OECD Development Aid Database).

Determinants of donor countries' overcoding

- Control variables:

- ▶ Total number of climate projects reported annually by the donor country;
- ▶ Total amount of climate aid reported annually by the donor country;
- ▶ Project's value;
- ▶ Bureaucratic Quality Index (International IDEA, The Global State of Democracy Indices Database v.5, 2021);
- ▶ Governance Effectiveness Index (World Bank, Worldwide Governance Indicators database, 2021).

Econometric model

- To test our hypotheses we estimate the following logit model with unconditional fixed effects:

$$Pr[Overcoding_{pijt} = 1] = Pr[Overcoding^*_{pijt} > 0] = F(\beta X_{it} + \theta Z_{pijt} + \lambda_i + \mu_j + \nu_t)$$

$$\text{with } Overcoding^*_{pijt} = \beta X_{it} + \theta Z_{pijt} + \lambda_i + \mu_j + \nu_t + \varepsilon_{pijt}$$

where $Overcoding_{pijt}$ is a dummy variable indicating if the project p financed by country i in country j during year t has been overcoded (1) or not (0).

Econometric model

- Three dependent variables: climate aid overcoding (2002-2018), false mitigation and false adaptation (2010-2018).
- Donor, recipient and year fixed effects: based on a detailed descriptive analysis of our overcoding results (Neumann-Noel and Bayramoglu, 2022), we believe donor countries have specific individual behaviors towards the overcoding of climate aid. This analysis also shows heterogeneity in overcoding among recipients and years.
- Clustered standard errors at the donor, recipient and year level.
- Robustness : Linear Probability Model and alternative fixed effects.

Results for climate aid overcoding

Dep. Var: Overcoding	(1)	(2)	(3)
GDP growth	✓	✓	✓
GDP per capita	✓	✓	✓
Gov. debt	✓	✓	✓
Unemployment	✓	✓	✓
Share of green votes	✓	✓	✓
GHG evolution	✓	✓	✓
CC laws and policies	✓	✓	
IEA	✓	✓	✓
ODA	✓	✓	✓
Nb of projects	✓	✓	✓
Total climate aid	✓	✓	✓
Project's value	✓	✓	✓
Bureaucratic quality	✓	✓	
Green votes x GDP per cap.		✓	✓
PARI			✓
Gov. effectiveness			✓
<i>N</i>	60290	60290	60313
pseudo <i>R</i> ²	0.109	0.110	0.108

Exponentiated coefficients (odd ratios); Standard errors in parentheses

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

Results for climate aid overcoding

Dep. Var: Overcoding	(1)	(2)	(3)
Share of green votes	0.979 (0.028)	34.448*** (20.969)	24.007*** (14.343)
Green votes x GDP per cap.		0.720*** (0.040)	0.742*** (0.041)

● H1:

- ▶ The share of green votes is significant when we add the interaction variable of green votes and the GDP per capita. It has then the expected positive effect on the probability of overcoding.
- ▶ This effect decreases when the GDP per capita increases. When the budgetary constraint is reduced, governments might be less inclined to overcode aid as an electoral strategy.

Results for climate aid overcoding

Dep. Var: Overcoding	(1)	(2)	(3)
GHG evolution (since Kyoto)	1.140*** (0.019)	1.136*** (0.019)	1.121*** (0.019)
CC laws and policies	1.829*** (0.161)	1.971*** (0.174)	
IEA	0.003*** (0.002)	0.001*** (0.001)	0.003*** (0.003)
PARI			2.331** (0.878)

● H2:

- ▶ Donor countries whose GHG emissions have increased since the Kyoto Protocol are more likely to misreport aid as climate-related while the more they participate in IEAs the less likely they are to misreport.
- ▶ However, higher number of cc laws and policies and higher values of the PARI are related to more overcoding. This might be explained by the difficulty to measure actual government's environmental preferences.

Results for climate aid overcoding

Dep. Var: Overcoding	(1)	(2)	(3)
GDP growth	0.958*	0.963	0.966
	(0.023)	(0.023)	(0.022)
GDP per capita	0.819	1.196	1.088
	(0.201)	(0.295)	(0.272)
Gov. debt (% GDP)	0.985	0.973	1.022
	(0.019)	(0.019)	(0.020)
Unemployment	1.937***	1.997***	2.022***
	(0.161)	(0.167)	(0.174)

● H3:

- ▶ The GDP per capita and the government debt are not significant and the GDP growth is only significant in our first specification with a negative effect on the probability of overcoding. We find that higher unemployment consistently increases the probability of overcoding in all specifications. Worsening economic situation may thus induce donor governments to increase projects overcoding.

Results for climate aid overcoding

Dep. Var: Overcoding	(1)	(2)	(3)
ODA	0.768*** (0.059)	0.851** (0.067)	0.880 (0.070)
Total climate aid	0.859*** (0.026)	0.848*** (0.025)	0.823*** (0.024)

● H3:

- ▶ Higher amount of ODA is associated with less overcoding. As the total amount of climate aid also has a negative effect on overcoding, this might reflect a more virtuous general behavior regarding aid.

Results for climate aid overcoding

Dep. Var: Overcoding	(1)	(2)	(3)
Nb of projects	1.407*** (0.051)	1.410*** (0.052)	1.509*** (0.055)
Project's value	0.989* (0.006)	0.989* (0.006)	0.988** (0.006)
Bureaucratic quality	0.000*** (0.000)	0.001*** (0.001)	
Gov. effectiveness			0.593*** (0.094)

● Control:

- ▶ Donor countries with higher score in bureaucratic quality and government effectiveness are less prone to overcode development aid as climate-related.
- ▶ More expensive projects are less likely to be overcoded and a higher number of climate projects leads to more over-reporting, likely due to human coding errors.

Results for mitigation aid and adaptation aid overcoding

	Dep var: False Mitigation			Dep var: False Adaptation		
	(1)	(2)	(3)	(1)	(2)	(3)
GDP growth	0.866*** (0.030)	0.863*** (0.029)	0.891*** (0.030)	0.895*** (0.029)	0.894*** (0.028)	0.942* (0.030)
GDP per capita	0.130*** (0.056)	0.162*** (0.071)	0.176*** (0.079)	0.127*** (0.052)	0.152*** (0.064)	0.145*** (0.065)
Gov. debt (% GDP)	0.934** (0.032)	0.919** (0.031)	0.944* (0.033)	1.085*** (0.032)	1.079** (0.032)	1.136*** (0.034)
Unemployment	0.589*** (0.120)	0.660** (0.137)	0.749 (0.160)	1.024 (0.189)	1.064 (0.196)	0.992 (0.194)
Share of green votes	1.050 (0.046)	49.743*** (59.233)	33.182*** (39.128)	0.948 (0.037)	5.046 (5.178)	2.878 (3.018)
GHG evolution (since Kyoto)	1.014 (0.028)	1.008 (0.028)	1.003 (0.029)	1.145*** (0.028)	1.143*** (0.028)	1.093*** (0.027)
CC laws and policies	4.150*** (0.701)	4.203*** (0.704)		4.210*** (0.690)	4.218*** (0.689)	
IEA	0.000*** (0.000)	0.000*** (0.000)	0.001*** (0.002)	0.031** (0.049)	0.027** (0.042)	1.945 (3.159)
ODA	0.682*** (0.073)	0.761** (0.087)	0.686*** (0.081)	0.940 (0.088)	0.979 (0.095)	1.056 (0.106)
Nb of projects	1.363*** (0.082)	1.414*** (0.087)	1.569*** (0.096)	1.518*** (0.086)	1.535*** (0.088)	1.687*** (0.098)
Total climate aid	0.851*** (0.040)	0.825*** (0.040)	0.796*** (0.039)	0.915* (0.043)	0.902** (0.043)	0.866*** (0.041)
Project's value	0.907*** (0.007)	0.907*** (0.007)	0.907*** (0.007)	0.934*** (0.009)	0.934*** (0.009)	0.937*** (0.009)
Bureaucratic quality	0.000** (0.000)	0.000** (0.000)		0.048 (0.257)	0.045 (0.241)	
Green votes x GDP per cap.		0.702*** (0.076)	0.723*** (0.078)		0.858 (0.081)	0.899 (0.087)
PARI			0.659 (0.328)			3.586*** (1.404)
Gov. Effectiveness			1.374 (0.451)			0.484** (0.137)
N	30408	30408	30408	37475	37475	37475
pseudo R²	0.142	0.142	0.139	0.098	0.098	0.095

Exponentiated coefficients (odd ratios); Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Results for mitigation aid and adaptation aid overcoding

- **H1:** Same results as total climate aid when considering mitigation aid but not with adaptation aid.
- **H2:** Similar mitigated results concerning government's environmental preferences.
- **H3:** Results are different from the baseline model. The GDP growth and the GDP per capita are significant with the expected negative effect. However, the government debt effect has opposite signs for adaptation projects and mitigation ones, and unemployment and ODA are not significant for adaptation overcoding.
- **Control:** Similar results concerning administrative quality and human error.

Conclusion

- Out of 63,195 projects reported as climate-relevant, about 48.6% were not climate-related. Regarding adaptation and mitigation projects, we find respectively 67.8% and 66.4% overcoded projects.
- Overcoding ratios are higher for aid in USD.
- Classification errors persist over time despite learning by doing of projects coding by donors.
- This form of greenwashing could compromise the confidence in future climate negotiations.
- Accurate data on climate aid are also necessary to estimate the effectivity of climate activities and the gap with recipients' needs.

Conclusion

- As in Michaelowa and Michaelowa (2011), we find that economic, environmental and political factors have an influence upon the donor's overcoding of climate aid but our results differ from theirs:
 - ▶ Electoral Strategy: the share of green votes is only significant when we add an interaction effect with the GDP per capita.
 - ▶ The impact of the government's environmental preferences is mitigated and highlights the difficulty in correctly measuring environmental policy stringency. It is supported by our results for IEAs and GHG emissions.
 - ▶ Budgetary constraint hypothesis is supported by unemployment and our interaction variable.
 - ▶ Higher ODA is associated with less overcoding.
 - ▶ Donor countries with better bureaucratic quality and government effectiveness are less prone to overcode.

Thank you for your attention!

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Annex

- From our baseline regression (2), we compute the marginal effects of the share of green votes on the probability of overcoding for several values of the GDP per capita:

Mean(GDP per capita)	Min(GDP per capita)	Max(GDP per capita)
-0.0005	0.0932***	-0.0693***
(0.006)	(0.015)	(0.011)

Standard errors in parentheses

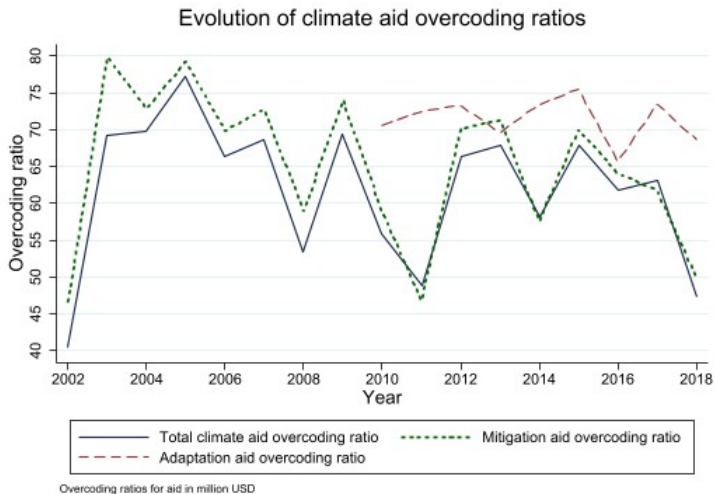
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Annex

Table: Descriptive Statistics

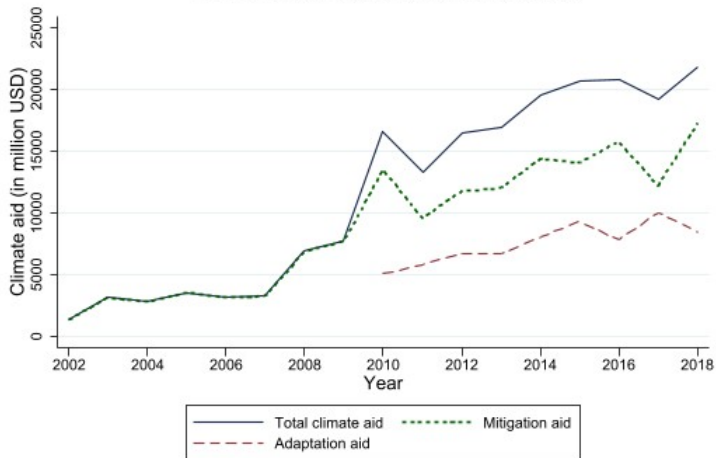
Variable	Mean	SD	Minimum	Maximum	Observations
GDP growth	1.81	2.27	-8.07	25.18	63,195
GDP per capita	50,219.51	19,020.27	10,620.91	134,270.30	63,195
Government debt	1.79	4.65	-14.47	16.18	63,157
Unemployment	7.78	4.90	2.20	27.50	60,370
Share of green votes	4.01	4.34	0.00	21.70	60,370
GHG emissions evolution	-7.42	12.63	-39.90	32.92	60,370
Climate change laws	14.06	7.00	1.00	36	63,172
IEA in force	336.21	77.35	121.00	507.00	63,195
ODA	12,392.01	11,608.65	27.50	40,722.61	63,184
Number of projects	435.16	300.35	1.00	1,478	63,195
Amount of climate aid	1,725.42	2,643.45	4.33e-04	11,001.12	63,195
Project's value	3.302	29.56	4.92e-20	2,006.58	63,195
Bureaucratic quality	.93	.12	0.63	1.00	63,195
Government effectiveness	1.50	.35	0.16	2.35	63,195
PARI	40.40	14.28	13.11	69.58	63,195

Annex



Annex

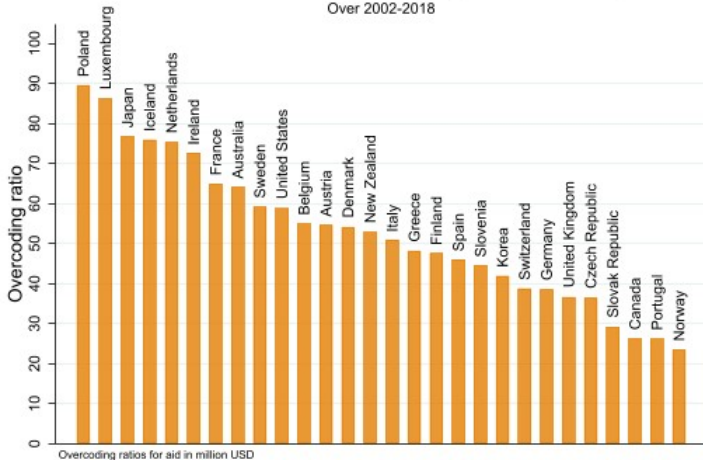
Evolution of climate aid allocation



Annex

Climate aid over-reporting by donor country

Over 2002-2018



Annex

Climate aid and overcoding ratio by recipient country

