Coding Error or Statistical Embellishment?
The Political Economy of Reporting Climate Aid

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Abstract

During the last few decades, general awareness has increased that along with problems of international development, environmental problems, notably with respect to climate change, represent yet another global challenge. In an attempt to win further public support for aid expenditures, aid administrations may have tried to make use of this trend in public perception by labeling some of their aid activities as conducive to the mitigation of, or the adaptation to, climate change. In this case, whether a donor reports a project with a climate-related "Rio marker" will depend not only on the actual content of the project, but also on the national voters' ecological preferences, meteorological extreme events or the media coverage of international climate policy issues.
In our paper we test these hypotheses using project-level aid data and country-level political data for 21 DAC donors from 1995 to 2007. Keyword search in the project descriptions of the PLAID database and complementary hand-coding allows us to assess all projects for their actual climate change-related content, and to thereby construct our most relevant control variables. We then econometrically analyze the impact of political factors on climate aid reporting, in a multilevel setting, controlling for a number of additional project-level and donor country characteristics. Our results reveal that indeed, coding is influenced systematically by political factors, but also by factors that enhance the understanding of and the transparency about the subject matter.

Keywords

Development assistance, climate policy, public choice, project coding, mitigation, adaptation

"Never trust any statistics that you didn't forge yourself."
(Unknown source, albeit sometimes attributed to Winston Churchill; for details see Frankford 2002)

1. Introduction

Ever since the late 1970s, researchers have examined politico-economic determinants of aid allocation (for early studies, see McKinley 1978, McKinley and Little 1979, or Maizels and Nissanke 1984). More recently, other aspects of aid, such as the relationship between multilateral donors' policies and the interests of member governments, or the use of specific procedures and instruments of aid delivery, have also been assessed from a politico-economic perspective. For an overview of various aspects of the recent literature on the political economy of aid, see Lahiri and Michaelowa (2006). From a similar perspective, other authors examine discrepancies between donor rhetoric and actual policies (see e.g. Weaver 2008 for an excellent study on the World Bank) or incentive structures that result in imprecise or biased reporting of project outcomes (Martens 2002, Michaelowa and Borrmann 2006).

The literature on the political economy of climate policy is less comprehensive by far. In this field, one of the few studies related to developing countries is Flues et al. (2010) examining the Executive Board of the Clean Development Mechanism. In the context of environmental aid flows, Hicks et al. (2008) use project level aid (PLAID) data to assess why donor countries increase aid flows benefiting the environment, while reducing aid that has negative impacts on the environment.

In this study, our objective is to contribute to the political economy of aid reporting, i.e. to the assessment of political factors that may lead to a misalignment between actual aid allocation and aid allocation reported to the DAC. In this context, we specifically consider aid officially dedicated to projects related to climate policy. The recent availability of project level aid data with individual project descriptions provides us with the unique opportunity to actually compare project content with the donors' own coding of climate relevance.

Roberts et al. (2008) use the same database to assess climate change-related aid flows and find that climate change-related aid has increased substantially over the last years. Their analysis is partially based on the so-called "Rio marker" for reporting aid projects related to climate policy introduced by the OECD Development Assistance Committee (DAC) in 1998[1]. Some individual donors have used such markers since 1995. Only looking at the projects coded with the climate change marker, it seems that the share of climate change-related development projects has indeed risen strongly over time (see e.g. OECD-DAC 2009a, p. 1). But are these projects really contributing to the mitigation of, and the adaptation to climate change?

There is, indeed, a considerable mismatch between the projects coded as climate change-relevant by donors, and the projects for which a mitigation and adaptation related keyword search reveals an actual climate change orientation. For a random sample of 115 000 aid projects, Roberts et al. (2008) find evidence for climate relevant content only for about 25% of the projects coded as such with the Rio marker.

Our own analysis also reveals substantial discrepancies. For the years 1995-2008 and 21 bilateral DAC donors the PLAID database lists a total of 626 548 development projects, out of which 10 414 are coded as climate relevant by the donors themselves (see Table 1a). According to our keyword search, not even half of these (i.e. a total of 4 321 projects) clearly contribute to either mitigation or adaptation of climate change. For another 2 867 projects, descriptions are so limited that their contribution is not clear. And for about one third of the projects (3 226 projects in total), the bilateral donors' coding is clearly inappropriate, i.e. projects were coded as climate change-relevant while they are not. At the same time, we

[1] There are also Rio markers for biodiversity and desertification, both of which are not assessed in this paper.

observe a high number of cases (12 238) in which some relation to climate policy can be observed, while bilateral donors did not use the Rio marker.
Can such strong discrepancies be purely coincidental, i.e. a random error by coding administrators when typing the data into the system? In this paper, we test this hypothesis against the alternative that at least some of the miscoding is systematically related to political variables such as the national voters' ecological preferences, meteorological extreme events or the media coverage of international climate policy issues. Drawing from the wider field of public choice literature, we assume that governments want to maximize political support. Depending on the valuation of environmental policies by the general public, this support may be positively influenced by statistics showing a significant climate change-related effort of development cooperation projects. At the same time, especially when transparency and the level of information are not very high, these projects may not necessarily have anything to do with climate change. The corresponding coding mismatch may be reduced, however, if the government does not only value public support, but also intrinsically values environmental objectives.
As, to the best of our knowledge, there is no literature on politically motivated project coding so far, this analysis remains largely explorative. In Section 2, we first present some descriptive statistics about the problem of coding mismatch. In this context, we also highlight some inconsistencies with the definition of the Rio marker itself that may be responsible for part of the problem. Moreover, we discuss our own keyword-based recoding strategy and present some illustrative examples of cases where the mismatch occurred.
In Section 3 we develop the conceptual framework of our politico-economic analysis based on an adjusted political support function model. The econometric estimation strategy and the operationalization of the relevant variables are discussed in Section 4. Section 5 provides the empirical results, and Section 6 presents the conclusions of our analysis.

2. Coding mismatch in climate aid

According to the OECD-DAC's definition of Rio markers, agreed to in 1998,

"*climate-change related aid is defined as activities that contribute to the objective of stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic inference with the climate system by promoting efforts to reduce or limit GHG emissions or to enhance GHG sequestration.*" (OECD-DAC 2002a, p. 4)

This definition can also be found in virtually all other climate-aid related DAC documents as well as on the OECD-DAC homepage (see e.g. OECD-DAC 1998, OECD-DAC 2002b, p. 4, OECD-DAC 2009a, p. 1, OECD-DAC 2009b). Interestingly, it focuses exclusively on climate change mitigation and excludes the aspect of adaptation. This is also stated explicitly in the above mentioned documents, illustrated with examples of typical activities, and explained by the fact that mitigation, rather than adaptation, is the ultimate objective of the UN Framework Convention on Climate Change (see e.g. OECD-DAC 2009a, p. 1). To cover adaptation, a different marker was introduced in January 2010 (OECD-DAC 2010), but has not been used for project coding yet and, therefore, cannot be taken into account in this study.
At first sight, the definition thus appears to be very clear and well explained. However, this is less so at second sight. For example, the DAC eligibility criteria for the Rio marker include reduction of ozone-depleting gases regulated in the Montreal Protocol (see e.g. OECD-DAC 2002b, p. 4), which is not really addressing climate change. In addition, even the distinction between mitigation and adaptation is less clear than it might appear. In fact, directly under the clearly mitigation oriented definition, OECD-DAC (2009b, p. 1) speaks about adaptation

when it comes to the clarification of individual scores for the Rio marker.[2] Such confusion may lead to problems of unintended miscoding through lack of clarity, but may also give rise to politically motivated over-coding through the inclusion of adaptation related projects.
Development specialists are usually no experts in climate policy, and the actual use of the climate related Rio marker reveals that many projects were recorded as climate relevant due to their link to adaptation, rather than mitigation (see Tables 1a-c). This confusion may also arise through the fact that mitigation aims at a global public good that does not provide any specific advantage for the developing country in which the activity takes place, and is therefore not a typical aid activity. This is different for adaptation which gives a clear local benefit to the recipient country.

Table 1: Donor coding versus authors' recoding

Table 1a: Overview

		Authors' recoding			
		No climate relevance	Unclear[2]	Climate relevance[3]	Total
DAC coding[1]	No climate marker	614 310	0	12 238	626 548
	Climate marker	3 226	2 867	4 321	10 414
	Total	617 536	2 867	16 559	636 962

Table 1b: DAC Rio markers versus authors' mitigation coding

		Authors' recoding		
		No mitigation	Mitigation related	Total
DAC coding[1]	No climate marker	623 294	3 254	626 548
	Climate marker	7 616	2 798	10 414
	Total	630 910	6 052	636 962

Table 1c: DAC Rio markers versus authors' adaptation coding

		Authors' recoding		
		No adaptation	Adaptation related	Total
DAC coding[1]	No climate marker	617 545	9 003	626 548
	Climate marker	9 137	1 277	10 414
	Total	626 682	10 280	636 962

[1] "DAC coding" refers to bilateral donors' reporting to the DAC using the climate-related Rio marker.
[2] "Unclear" refers to cases in which project descriptions were insufficient to assess climate-relevance, i.e. when the project description contained no elements to determine either relevance or irrelevance for climate change. "Unclear" coding only appears in the context of positive DAC coding since in cases in which project descriptions are missing or extremely uninformative, potential climate-relevance is only revealed though the DAC coding itself. Such projects would have been assumed to be climate-irrelevant had they not received a Rio marker. Since unclear cases do not even allow us to reassess the climate-coding altogether, the more specific links to mitigation or adaptation cannot be established either. In Tables 1b and 1 c, these cases are subsumed in the categories "no mitigation" and "no adaptation".
[3] If a project is coded "climate-relevant" this usually implies that it will also be found in the categories "mitigation related" and / or "adaptation related". However, there are some cases in which the climate relevance was clear while the concrete project activities were not indicated. Therefore the sum of projects we code "climate relevant" exceeds the sum of projects we were able to count as relevant for mitigation and adaptation.

[2] "Activities receive a significant score (score "1") where climate change *adaptation* was an important, but not principal objective. The score not targeted (score "0") means that the activity has been found not to be targeting significantly climate change *adaptation*." (OECD-DAC 2009b, p. 1, emphasis added by the authors)

Looking more closely at Table 1b, we see that if the Rio marker were taken seriously as a code only for mitigation related projects, evidence of over-coding would be even stronger than discussed in the introduction. In fact, the numbers reveal that only about one forth of all projects with Rio marker are actually relevant for mitigation (2 798 out of 10 414). The remaining three quarters would be over-coded. If we add projects relevant for adaptation (1 277, see Table 1c), the share of over-coded projects is reduced to below 60%. Obviously, this share is still extremely high. Thus, even if we assume that all adaptation related over-coding is solely due to lack of knowledge or insufficiently clear coding directives, we still have a very high share of over-coding to explain by other factors..

Let us now look at those projects which were *not* reported as climate-relevant to the DAC, but still are related to either mitigation or adaptation. Figure 1b reveals that more than half of the actually mitigation relevant projects since 1995 have never been coded as such. For adaptation the share of relevant but unrecorded projects is still much higher, at almost 90% (Figure 1c). This probably reflects that after all, to some extent, project administrators have realized that the focus of the Rio-coding is mitigation rather than adaptation.

Table 2 breaks down the information on over- and under-coding by donor country. Note that, to be on the safe side, we report only those projects as "over-coded" which meet neither mitigation nor adaptation related criteria, i.e. we treat the Rio marker as if it included adaptation as well. To remain consistent with our definition of "correct" coding, we then report all those projects as "under-coded" which are not coded as climate-relevant with a Rio marker although they are relevant for either mitigation or adaptation. The values for "under-coding" therefore have to be interpreted with care: They may reflect correct coding for those countries that (in line with its original objective) did not apply the marker to adaptation.

As countries started using the marker at different points in time, and still appear to apply it only to a fraction of their climate change-related projects, we decided to report the number of donor coded projects along with the total number of projects in the dataset. In Table 2, over- and under-coding refers to this restricted number of projects. In addition to over- and under-coding, we add a column reflecting those cases where the information provided on the project was so limited that the coding-decision could not really be verified (unclear coding).

Table 2 reveals that the quality of climate related reporting varies substantially among donor countries. Over-coding is particularly prevalent in the United States, Netherlands and Norway, followed by Portugal, Germany, Denmark and Austria. In all of these countries, over-coding concerns more than 5% of the projects for which these countries reported some climate coding to the DAC. The United States represents a particular case with perhaps somewhat inflated percentages due to the fact that they have never applied climate coding to any project considered as climate irrelevant (the Rio marker was never set to zero). Thus the overall number of climate coded projects reported to the DAC is very small. Nevertheless, a high number of miscodings is obvious in the project descriptions since in the United States, virtually all wildlife protection projects were coded as climate relevant.

In addition, many donors show a high share of projects with extremely limited information. Japan and New Zealand do generally not provide long descriptions which are often crucial to evaluate the project. Belgium, Denmark, Germany, Norway; Sweden and Switzerland lack long descriptions for the majority of projects. For most of these countries, this leads to a considerable share of unclear codings, i.e. codings which we were unable to verify. Only for New Zealand, Sweden and Switzerland, the problem is mitigated through the fact that the Rio marker they provide for most of the projects is zero anyway, so that no coding conflict does arise.[3]

[3] If there is no climate relevance apparent from the project description and the project is coded as climate irrelevant by the donor himself, we do not see any reason to assume that it might be climate relevant even though. We therefore do not consider these cases as unclear despite the limited project documentation.

Table 2: Climate aid reporting by donor country, for the period 1995-2008

Donor country[1]	Total number of projects in the database	Number of projects with DAC coded climate assessment[2]	of which [in %][3]: over-coded	under-coded	unclear
Australia	20 972	4 597	1.68	2.81	0.02
Austria	12 938	971	5.97	2.78	2.16
Belgium	37 173	5 342	4.08	1.35	0.77
Canada	23 926	9 035	1.11	3.59	0.27
Denmark	5 '707	2 512	5.97	2.67	5.69
Finland	10 051	3 375	1.72	3.05	0.50
France	43 289	2 062	1.60	0.29	1.50
Germany	53 938	5 959	6.57	1.49	6.93
Greece	6 252	4 653	2.71	0.64	0.11
Ireland	21 235	6 901	1.75	6.33	0.65
Italy	23 114	3 583	3.99	1.93	0.89
Japan	41 479	24 701	0.09	0.42	5.12
Netherlands	27 548	2 991	20.60	3.28	5.18
New Zealand	5 405	2 884	3.33	2.70	0.14
Norway	44 059	1 710	12.63	2.69	17.25
Portugal	9 142	134	9.70	3.73	2.24
Spain	74 302	26 962	1.96	2.16	0.20
Sweden	30 100	15 296	0.20	1.56	0.55
Switzerland	30 334	3 872	0.83	1.65	2.66
United Kingdom	24 176	2 432	1.23	4.32	0.45
United States[4]	91 822	362	45.58	0.00	33.43

[1] Some smaller DAC donors are not included in this table and in this study in general because information on relevant variables is missing or without any variance that could be explored (e.g. for Luxembourg, there is no project coded as climate relevant).

[2] This number refers to those projects for which donors reported some climate coding to the DAC. This coding (Rio marker) could be either 0 (climate objective not relevant) or positive (1or 2, depending on how central the climate objective is for the project). For other projects, we cannot be sure whether they were actually assessed for their climate relevance by the individual donor.

[3] Note that overall, the percentages shown here are much larger than those discussed earlier, because they only refer to those projects for which donors reported some climate coding to the DAC.

[4] When applying the Rio marker, the United States never used the 0-code. Thus, projects assessed as climate irrelevant cannot be distinguished from projects not assessed at all. As a consequence, we cannot find any under-coding within the set of projects to which the Rio markers were applied.

Obviously, whatever discrepancies and inconsistencies we find in the data may be, in principle, related as much to mistakes in our own recoding, as to mistakes in the original coding reported by DAC donors. Such errors may arise, in particular, because we had to assess a huge number of projects within very limited time. Since, for the sake of our politico-economic analysis, we require information on all projects, we were not able to use an in-depth study of a sub-sample of projects such as Roberts et al. (2008). We were also unable to follow the method of machine based recoding suggested by Roberts, Weissberger and Peratsakis (2010). They train a computer to do the coding of the full dataset on the basis of the experience gathered in the initially drawn random sample. Unfortunately, their recoded data have not yet been available in time for our analysis.

However, given our familiarity with climate-related aid projects, and the safeguards we set up through a double-check of all mismatches, we believe that our own coding efforts can be considered as sufficiently reliable in the context of this study. Our own coding also tries to avoid the ambiguity of some coding categories (such as “cleaner production” and “air

pollution enforcement") found in Roberts et al. (2008).[4] More specifically, our coding procedure was based on the following three steps:
First, we decided about a comprehensive list of keywords relevant in the context of mitigation and adaptation. For mitigation, these keywords were derived from project types found in the Clean Development Mechanism (CDM) as listed by UNEP Riso Centre (2010). For adaptation, the selection of keywords was driven by our own knowledge of the field (for the list of keywords, see Appendix 1). Overall, this keyword search led to an overall output of over 30 000 projects potentially relevant for mitigation, and over 50 000 projects potentially relevant for adaptation.
Second, we manually assessed the actual relevance of these projects. This procedure led us to delete the vast majority of the above projects because the keywords appeared in a context unrelated to mitigation and / or adaptation activities.
Third, we double checked the mismatches between our coding and initial donor coding to ensure that no project would appear as wrongly Rio-marked by any donor (over-coded) simply for having escaped our initial mechanical search procedure. This led us to reconsider a total of 8 854 projects which did not appear in our list of climate-relevant projects while having obtained a positive Rio marker. Where necessary, our mitigation and adaptation codes were revised accordingly. Cases of unclear project descriptions that did not allow us to take any firm decision, were coded separately, and were not considered as a mismatch in our final measure of donor over-coding. This implies that, if our coding is biased, it is biased in favor of donors, i.e. it might show less over-coding than actually present in the data.
Projects which we finally code as climate-irrelevant although they are coded with a Rio marker are thus only those projects for which this is obvious from the project description. As already noted by Roberts, Weissberger and Peratsakis (2010), some countries have a tendency to report any environmentally relevant project as climate-relevant. This may include lake and river cleaning (Greece), various kinds of wildlife protection activities (Greece, United States), or the financing of environmental NGOs or donor staff travelling to conferences. In yet other cases, there is not the loosest link to even any environmental objective.
Many more specific examples of miscoding are provided along with a much more detailed description of our coding procedure in Appendix 1 of this paper. Appendix 1 also includes a discussion of certain problems faced during the coding process.

3. A conceptual framework for politically motivated coding decisions

Let us now return to the question whether the strong discrepancies between climate coding by bilateral donors and our recoding based on individual project descriptions can be purely coincidental. To some extent, they certainly reflect a lack of expertise with respect to climate policy or unclear information about the new marker. They may also reflect a lack of diligence driven by time and resource constraints, or even a lack of knowledge about the project itself – if some head office administrative staff rather than the project manager assigns theses codes (Roberts, Stadelmann and Huq 2010, p 3). These reasons for coding mismatch would simply lead to a random error of donor coding.
The mismatch is, however, so substantial that we believe this is only part of the story. Climate policy has become such a prominent part of international and national policy debates that it may be relevant for electoral decisions. Aid agencies are well aware of the public relevance of climate policy. Anecdotal evidence suggests that high-level staff in aid agencies considers moving towards climate related topics in order to escape from a general aid fatigue (see also

[4] While it might be safer to include these categories if one wants to make sure to cover all possibly climate related projects, we exclude them because the probability that they are truly related to climate change mitigation (without further mentioning of this relationship) appears to be relatively small.

Michaelowa and Michaelowa 2007). However, at times, rhetorical changes (or changes in coding, rather than in substance) may be sufficient to ensure public support. This is particularly true for policy areas as difficult to verify as climate aid.

More formally, let us assume a government's utility depends on public support, on the one hand, and on some ideological preferences on the other hand. Public support is increased through greater evidence for the government's climate change-related activities, especially if environmental objectives are considered important by the country's population. This evidence can be generated by either actually increasing climate-related activities, or by forging the statistics through over-coding. The former has the disadvantage that subject to a given budget constraint, any additional climate project will lead to the reduction of activities elsewhere. For simplicity, let us assume that the effect on government utility cancels out since the public also values the government's already existing activities. Over-coding, however, can provide the impression of enhanced climate activities without the need to reduce other activities. It will therefore increase government utility – at least as long as transparency is low enough to ensure the obfuscation of this policy, i.e. as long as the risk of discovery is relatively low. As aid statistics for the general public are typically presented in terms of financial flows rather than in terms of the number of projects, over-coding a financially large project will have a stronger impact on public support. As a consequence, we should expect to observe over-coding more frequently for large than for small projects.
From the perspective of optimizing public support, climate over-coding should therefore positively depend on the public's valuation of environmental issues, negatively depend on the level of climate policy-related information or transparency, and be more prominent for large than for small projects.
At the same time, assuming that the government also has ideological preferences may alter its optimization problem. "Ideological" thereby simply refers to an intrinsic valuation of certain objectives, unrelated to voter preferences and exogenously determined, i.e. not explained within our model. The type of ideological preferences we are interested in here would be ecological preferences. If a government has ecological preferences, an increase of actual climate change-related activities will lead to higher utility even if other activities equally valued by the public will have to be reduced. This implies that at a given level of transparency and public support of environmental issues, a government with ecological preferences will generate more truly climate-relevant activities and thereby resort to less over-coding.
If we further consider governments as entities encompassing both politicians and the relevant part of the administration (here: aid ministries or agencies), the political economy of bureaucracy suggests to add slack as a further component of the utility function. Slack could be related to a lack of diligence or uninformed coding decisions. In certain countries, this kind of behavior is strongly despised while it is more accepted in others (where bureaucratic quality is generally low). When it is despised, it carries a high social cost making it eventually unattractive. Maximizing slack could be a reason for even the unintended ill-coding to vary systematically across countries and over time.

Summing up, our conceptual framework allows us to formulate the following hypotheses:

1) Over-coding will be the stronger the more the national population in the donor country values environmental objectives.
2) Over-coding will be stronger for larger projects.
3) Over-coding will be the stronger, the less the population is informed about climate policy issues.
4) The prevalence of over-coding is reduced if the government has ecological preferences.
5) Incorrect coding is more frequent if bureaucratic quality is generally low.

4. Operationalization and econometric estimation strategy

We can test these hypotheses using the project-level aid data provided by PLAID (AidData 2010) in combination with political, economic and environmental data from other sources. As we want to explain the donors' coding decision, the dependent variable is based on the Rio marker reported to the DAC. We generate a dummy variable "Rio dummy" that takes the value 1 if a donor reports that his project is climate change-relevant and 0 otherwise. As discussed above, we cannot clearly distinguish between those projects assessed by the donors as climate change-irrelevant and those projects not assessed at all (in particular for the United States which did not use zero-codes at all). Therefore all of these will be coded as 0 in our Rio dummy.

As an alternative dependent variable, we will directly use our dummy for "over-coding" taking the value of 1 if we find clear evidence that the project has no link to either mitigation or adaptation activities while the Rio dummy is still reported as 1. Unclear cases are coded as 0 rather than 1, i.e. they are considered as correct.

We use different variables to measure the environmental or ecological preferences of the population (as necessary to test Hypothesis 1). First, we explore the World Values Survey (WVS) which provides us with the percentage of the population in each donor country considering global warming or the greenhouse effect as a very serious problem (World Values Survey Association (2009). Unfortunately, the information is only available for a single year (2005). Nevertheless, assuming that – at least relative to other countries – these preferences stay relatively stable over time, we can use these figures as a general estimate of cross-country differences in the population's valuation of global environmental problems, and even more specifically, the problem of climate change. For some countries, for which data on this question were not available, we used information from other question related to the environment from the 2005 and earlier WVS surveys to impute the missing values. Only for one donor (Greece) no imputations are possible because it did not participate in any of these surveys.

Second, we assume that ecological preferences of the population should find their reflection in votes for green parties, so that we can use the share of green seats in national parliaments as a second indicator of the relevance of environmental objectives in the population. These data are available from Armingeon et al. (2008).

Third, we consider the rate of unemployment as an indicator of the relative salience of environmental problems. Our expectation is that in periods of high unemployment, people will be less concerned with environmental issues. As business cycles do not necessarily move in line with electoral cycles, this variable might capture some of the variation in preferences which is not covered by the more direct measure of preferences reflected in electoral outcomes. Data on unemployment are available from the World Bank's (2009a) World Development Indicators (WDI).

Finally, we take into account the age composition of the population in donor countries. As the neglect of climate change today is equivalent to living on the future generation's resources, we conjecture that the younger the population, the stronger the preferences for environmental policies and vice versa. To capture this effect, we include the share of the population aged 65 and over which is available from the OECD (2008) (and reported along with the political variables used here in Armingeon et al. 2008).

Let us now turn to the variables required to test our other hypotheses. Project size, supposedly relevant for any government wishing to impress its population by a high share of climate change-relevant aid (Hypothesis 2), is available directly from the PLAID database. Using

donors' financial commitments we construct an indicator variable which takes up the value of one, if the project belongs to the 25% of the largest projects in the database ("big project").
The information of the population about climate policy issues (as required for Hypothesis 3) is measured by a count of press articles referring to climate change in their abstract (or introductory paragraph). As we cannot assess the press in all national languages, we consider only one relatively widely read international newspaper, namely the New York Times. While this does not allow us to explore cross-country variation in the level of information, it should capture variation over time at the global level. The data on this variable was obtained through keyword search in LexisNexis (2010).
Regarding the preferences of the government (Hypothesis 4) we consider several variables. First, we assume that green or, more generally, left governments tend to have ecological preferences. To reflect the governments' political position, we use an index of cabinet composition developed by Schmidt (1992) and updated by Armingeon et al. (2008). The index takes on values from 1 (hegemony of right-wing and center parties), to 5 (hegemony of social-democratic and other left parties).
Second, we suppose that the relative Kyoto gap, i.e. the difference between the national emission target adopted in the framework of the Kyoto Protocol and current emission levels, divided by the base year emissions level, could provide further information on government preferences. If the government is itself responsible for the emission reduction target, a stringent target (and thus a high initial relative gap) is a direct reflection of the government's position on this topic. For later governments who inherit the target, the remaining gap is proportionate to the necessity of action. If the target is eventually not met, the government will loose credibility at the international level. Thus even if the "green" beliefs are not fully authentic, the fears to loose face at the international level may increase the preferences for concrete environmental policy action. Data on the Kyoto gap are available from IGES (2009).
Third, we conjecture that extreme meteorological events with severe consequences in any particular donor country (such as flooding, storms, heat waves or droughts) will influence the government's perceptions about the general need for climate policies. We extract data on extreme events from publications by the World Meteorological Organization (WMO various years) and construct a corresponding dummy variable.
Bureaucratic quality, as required for Hypothesis 5, can be measured with the indicator on government effectiveness provided by the World Bank's (2009b) World Governance Indicators (WGI). According to its definition, this indicator captures "perceptions on the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies" (Kaufmann, Kraay, and Mastruzzi 2009, p. 6). As this variable was only created on a bi-annual basis until 2003, we use linear interpolations from data of neighboring years to impute missing values.
Finally, we will consider a certain number of controls. Most importantly, when we use the Rio dummy as our dependent variable, we need to control for actual mitigation and adaptation. In our recoding procedure described in Section 2 and Appendix 1 we generate two separate dummy variables indicating a project's relevance for either of these two. It is worthwhile to distinguish between both because of the Rio marker's official focus on mitigation only. Controlling for mitigation and adaptation separately, we will be able to make out to what extent this has been incorrectly interpreted to include adaptation.
In addition, we control for income and growth in donor countries. The underlying idea is that these factors may influence the government budget constraints when considering climate related interventions. While the general level of income (GDP per capita) affects the overall level of resources and therefore shapes government spending in the long-run, temporary relaxation of the budget constraint is determined by economic growth. We thus expect that

with a higher general level of income and in periods of high growth there is less need to use over-coding since finance for truly climate related measures is more easily available.
As yet another macroeconomic variable, we consider the share of agricultural value added in donor GDP. In developed countries, a strong agricultural sector usually goes hand in hand with important lobbying activities. As national policies against climate change often have a negative impact on immediate earning prospects in agriculture, these lobbying activities tend to be directed against such interventions or against the perception of a need for action against climate change in general. Such lobby interventions may therefore interfere with the preferences of the government and / or the preferences of the population as a whole.
Just as the rate of unemployment mentioned in the context of Hypothesis 1 above, these additional macroeconomic variables are available from the WDI database. Missing values for all our macroeconomic variables are imputed using linear imputation based on related macro variables from the same dataset.
Finally, we include one project level control variable indicating whether the recipient country is a member of the group of Small Island Developing States (SIDS). In these countries, most projects are climate relevant in some way or the other due to their high vulnerability to climate change. Therefore, by definition, there may be less scope for over-coding.
Details on all variable definitions and sources are provided in Appendix 2. Unfortunately, many of the explanatory variables, notably the political variables most important for our analysis, are only available until the end of 2007. As mentioned earlier, the starting year of our analysis is 1995 since no country used the Rio marker for any earlier year. This leads to an overall time period covered from 1995-2007.

The estimation approach needs to reflect the structure of the data, notably the fact that any given donor carries out a multitude of projects which cannot be considered as fully independent from each other. This leads us to adopt a two-level hierarchical model in which projects are nested in donors. However, there is also some risk that unobserved donor characteristics might induce bias. We thus test the typical two-level (random effects) model against a model with donor fixed effects using a standard Hausman test. This test consistently rejects the random effects model. Nevertheless, in the next section, we will present both alternatives to show that our main qualitative results are robust to changes in the estimation strategy.[5]

5. Politico-economic determinants of systematic coding mismatch: econometric evidence

Let us now examine the results of our analysis. Table 4 presents six regressions. Regressions 1-4 are based on a linear probability model, whereas Regressions 5 and 6 are logit regressions. Regressions 1-5 use the Rio dummy as the dependent variable and control for mitigation and adaptation, while Regression 6 directly uses our dummy for over-coding. Regressions 1-4 differ by the use of random (RE) or fixed effects (FE) and the inclusion of certain control variables. Note that our variable on the perception of global warming as an important problem does not vary over individual projects and over time, so that it drops out of the regression as soon as we enter donor fixed effects. At the same time, this leads to the inclusion of observations for an additional donor country (Greece) for which information from the World Value Surveys was not available.
None of these changes substantially alters our major results. As our descriptive statistics have already suggested, instead of a one-to-one relationship between actual mitigation and a positive Rio marker, our mitigation dummy increases the probability of a positive Rio marker

[5] We also introduce year dummies in some alternative specifications. Again, this has no effect on the qualitative results of our analysis. The results of these regressions are available from the authors upon request.

by only about 34 to 42%. Projects related to adaptation increase this probability by another 6 to 10% (depending on the different specifications). Much of the overall variance in the dependent variable remains unexplained, and we will now see whether some of it is indeed systematically related to our politico-economic variables.

As to Hypothesis 1 concerning the donor country population's ecological preferences, we find a significant and highly robust effect of the share of green parliamentarians. On average, increasing the share of green party representatives in a national parliament by 1 percentage point leads to a 0.1 percentage point increase of projects coded as climate relevant, irrespective of the projects actual relationship to mitigation or adaptation. Our estimate in the direct regression of over-coding is smaller, but also positive and highly significant. These results are in line with our conjecture that ceteris paribus, a population's ecological preferences, as expressed in the votes at national elections, lead to higher over-coding.

We also find some evidence for a negative effect of unemployment. According to our coefficient estimates in Regressions 1 and 2 a rise in unemployment by 10 percentage points reduces the probability of a project to receive a positive Rio marker by about 0.3 percentage points. This is in line with our interpretation of unemployment reducing the relative salience of environmental concerns in the donor country population.

It should be noted, however, that we found the effects of our different macroeconomic variables (unemployment, but also the other variables included as controls) to be far less robust than the effect of many other variables. This is partially related to their correlation among each other. In Regression 3-6, we thus keep only two of these variables in the set of control variables, and also drop unemployment.

The other two variables included to assess Hypothesis 1 do not yield the expected results. The population's overall opinion on global warming as a very important problem is not significant at the 5% level. We tend to interpret this primarily as a result of measurement error induced by the fact that the information is based only on a single year, and by the fact that missing observations for several countries had to be imputed. As, in addition, the fixed effects specification suggested by the Hausman test leads us to drop this variable in most regressions, we will not consider this result any further.

More interestingly, the share of elderly people in the population does not yield the expected effect, either. The idea that in donor countries with a younger population, more projects tend to be labeled as climate relevant to please this young clientele which we considered more strongly interested in climate policy, is apparently inconsistent with our data. To the contrary, over-coding is found to be consistently stronger when the share of older people is relatively high. Unfortunately, our analysis does not allow us to conclude at which point exactly our conjectures were wrong. It could be that we simply underestimated the role of environmental objectives for the older population. It could also be that the older population tends to rely in a more uncritical way on (partially embellished) statistics.

Hypothesis 2 on the role of big projects is clearly confirmed. Financially more significant projects are consistently related to a higher probability of receiving a positive Rio marker, at a given level of actual relevance for mitigation or adaptation. Our coefficient estimates indicate that, ceteris paribus, if a project belongs to the 25% financially most important projects, its chances to be coded as climate relevant increase by up to 0.6 percentage points. Again, the coefficient is considerably smaller if we directly consider over-coding (Regression 6), but this appears consistent with the consideration that the total effect (Regressions 1-5) reflects both higher over-coding and reduced under-coding, which should both be relevant here.

Table 4: Estimation results[1]

Regression number	(1)	(2)	(3)	(4)	(5)	(6)
Regression type	RE, linear	FE, linear	RE, linear	FE, linear	FE, logit[2]	FE, logit[2]
Dependent variable	Rio dummy	Rio dummy	Rio dummy	Rio dummy	Rio dummy	Over-coding
Environmental preferences, donor country population						
Global warming very important	-0.082		-0.088			
	(0.19)		(0.10)			
Green parliamentarians, in %	0.001	0.001	0.001	0.001	0.001	0.0002
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment, in %	-0.0003	-0.0003				
	(0.05)	(0.02)				
Population 65 and over, in %	0.008	0.008	0.008	0.008	0.003	0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Project size						
Big project	0.006	0.005	0.005	0.005	0.002	0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Information						
New York Times	-5.41e-05	-4.63e-05	-5.01e-05	-4.56e-05	-2.58e-05	-7.89e-06
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
New York Times, lagged	0.0001	0.0001	0.0001	0.0001	5.94e-05	1.66e-05
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Donor government preferences						
Cabinet composition, 1 right-5 left	-0.001	-0.002	-0.001	-0.002	-0.0004	-0.0002
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Kyoto gap relative to base year	-0.001	-0.003	-0.002	-0.001	-0.007	-0.004
	(0.87)	(0.47)	(0.56)	(0.83)	(0.02)	(0.01)
Extreme events	-0.005	-0.005	-0.005	-0.005	-0.002	-0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Extreme events, lagged	-0.006	-0.005	-0.005	-0.005	-0.003	-0.002
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Bureaucratic quality						
Government effectiveness	-0.023	-0.025	-0.023	-0.025	-0.011	-0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Controls: Actual climate relevance						
Mitigation	0.414	0.416	0.414	0.416	0.337	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	
Adaptation	0.087	0.095	0.087	0.095	0.064	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	
Other controls						
GDP growth, in %	-0.0006	-0.0005	-0.0005	-0.0006	-0.0003	-0.0002
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP per capita	4.52e-07	-1.39e-07				
	(0.00)	(0.31)				
Agricultural value added, in %	0.001	-0.002	-0.001	-0.002	-0.001	-0.002
	(0.39)	(0.04)	(0.02)	(0.00)	(0.04)	(0.00)
SIDS	-0.001	-0.0003	-0.001	-0.0003	-0.0002	-0.0004
	(0.07)	(0.61)	(0.07)	(0.61)	(0.46)	(0.09)
R^2	0.11	0.12	0.11	0.12		
Prob > (Wald) Chi^2 or Prob > F	0.00	0.00	0.00	0.00	0.00	0.00
Observations	552017	557278	552017	557278	557278	557278
Number of donors	20	21	20	21	21	21

[1] P-values in parentheses, constants and fixed effects not presented.
[2] Marginal effects, evaluated at the mean of the explanatory variables; for dummy variables, discrete change from 0 to 1.

Hypothesis 3 on the role of information in reducing over-coding is in line with the evidence, too. As expected the coefficients are negative and significant. However, the substantive effect is rather small: One hundred more New York Times articles mentioning climate change in

their abstract or introduction in any given year only reduce the probability for a positive Rio dummy by only 0.3-0.5 percentage points.
Moreover, considering the lag of our information variable, we find that the effect is reversed only one year later. Our interpretation is that information first increases the call for truly climate relevant interventions and the critical scrutiny of government action in this respect. However, after some time, if the information effort is not sustained, people reduce their effort of critical policy assessment so that simple statistical embellishment tends to become the governments' preferred strategy.
Let us now turn to the donor government's own ideological preferences and their role as suggested in Hypothesis 4. Our most direct measure of ideological dominance between right and left parties in cabinet composition (Schmidt-index) shows that indeed, over-coding seems to be less prevalent in left-wing governments. This is in line with our conjecture that, due to their own preferences, these governments may tend to truly act on climate related issues rather than to simply rely on over-coding. The effect indicated by our estimates in the linear probability model (Regressions 1-4) is relatively strong, reaching up to almost -1 percentage point for a full switch from hegemony of right parties to hegemony of left parties. The marginal effect estimated in the logit models is substantially smaller, but perhaps, evaluation at the mean (as presented in Regressions 5 and 6) is in fact not so meaningful for this particular indicator.
Our more indirect indicators (Kyoto gap and the occurrence of extreme events) also yield the expected results. Governments with strong climate policy objectives appear to resort to actual measures rather than to simple over-coding. However, coefficient estimates are extremely small (as they refer to a change of the gap by 100%) and significant only in Regressions 5 and 6. The effect of meteorological extreme events is more pronounced: If the donor country is hit by a meteorological extreme event, over-coding tends to be reduced by 0.1 percentage points, and the general attribution of a positive Rio marker by up to 0.6 percentage points.
We also test whether, in analogy to the effect of media information, this effect phases out over time or even leads to increased over-coding in the following year. Interestingly, this is not the case here. To the contrary, it seems that extreme events have a sustained effect in the following year, which is even of a similar magnitude than in the year it actually occurs.
Our final hypothesis (Hypothesis 5) on the general role of bureaucratic quality also finds supportive evidence. Increasing the government effectiveness index by one unit (roughly corresponding to the difference between Italy or Greece and France or Germany in 2007) leads to a reduction in the probability of a positive Rio dummy by up to 2.5 percentage points.[6]
Let us now briefly examine our control variables. We have already discussed the influence of actual (and recognizable) mitigation and / or adaptation relevance. The remaining control variables include three macroeconomic variables and the SIDS dummy. The latter shows the expected negative coefficient although it is only small and not significant at the 5% level.
As already mentioned above, some of the macroeconomic variables do not show a very robust effect. GDP growth shows the expected negative impact, albeit with a very small coefficient. For both GDP per capita and agricultural value added, we observe changes in sign and significance across regressions. Based on the fixed effects specifications suggested by the Hausman test, we find that the coefficient for GDP per capita is negative as expected, but

[6] As bureaucratic quality should generally enhance correct coding and thus avoid both over- and under-reporting using the Rio dummy as a dependent variable should in fact underestimate the full effect of this variable. In fact, in a separate regression of under-coding (not reported here), we do indeed find a significant negative correlation with government efficiency. The coefficient of the direct regression of over-coding should avoid this downward bias. However, we do not find the expected difference in coefficients when we compare the different regressions. In fact, the coefficient in Regression 6 on over-estimation again turns out to be considerably smaller than those of Regressions 1-5. This could be due to our treatment of unclear cases which are not controlled for in Regressions 1-5, and certainly correlated with bureaucratic quality.

insignificant (Regression 2). The effect of agricultural value added is negative as well, and consistently so, once other macroeconomic variables are dropped from the regression. As suggested in Section 4, this can be interpreted as the effect of agricultural lobby groups on (perceived) national preferences for climate policy.
Finally, it may be interesting to note that, once the politico-economic variables are controlled for, the magnitude of country fixed effects (not shown) is typically rather small, too. In Regression 6 on over-estimation, they range from -0.005 for the United States to 0.01 for New Zealand. This implies that unexplained country effects do not dominate the effects we were able to describe through our politico-economic model.

Overall, we can conclude that our hypotheses appear to be generally consistent with the data. While, due to the lack of a firm theoretical underpinning, our interpretations of the effects observed for individual variables may lend themselves to further discussion and alternative interpretations, the overall picture clearly shows that politico-economic variables systematically influence donors' coding of aid projects. While the effects observed are relatively small in magnitude, for the most part, they are clearly different from zero and highly robust across different specifications – at least in terms of direction and significance.
At the same time, the strong evidence for adaptation related coding may indicate a wide-spread misunderstanding of the current Rio marker.
To sum up: What we observe in the data is clearly inconsistent with a simple random error around an otherwise correct coding of climate change-relevant aid. To some extent, incorrect coding appears to be related to a wrong interpretation of the current Rio marker. But more remarkably, climate coding of aid projects does indeed depend on politico-economic variables such as the national voters' ecological preferences, cabinet composition, climatic extreme events or the media coverage of international climate policy issues.

6. Conclusions

Important discrepancies between climate coding of aid projects reported to the DAC and a keyword based examination of actual climate change-relevance have led us to conjecture that climate coding may be motivated by political factors, at least to some extent. As we cannot draw from prior theoretical analysis on politically motivated coding decisions, we derive our hypotheses based on a conceptual framework drawing on the general literature on public choice, the political economy of aid, and the political economy of environmental policy. The analysis remains largely explorative and many interpretations may lend themselves to further debate.
Nevertheless, our empirical results are generally consistent with our hypotheses. They are tested using project-level aid data and country-level political data for 21 DAC donors from 1995 to 2007. Keyword search in the project descriptions of the PLAID database and complementary hand-coding allows us to assess all projects for their actual climate change-related content, and to thereby construct our most relevant control variable.
The econometric model takes into account the hierarchical structure of our data, whereby projects are nested in donor countries. We find that mitigation, the official focus of the DAC reported climate coding, only adds about one third to the probability to actually receive the so-called climate related "Rio marker" by any DAC donor. Relevance to adaptation, which is excluded by the formal definition of the Rio marker, roughly adds up to another 10%. The latter may, at least in part, be due to a misunderstanding of the Rio marker.
In addition to these two variables characterizing the substance of the project, a number of political variables are systematically related to the coding decision. In line with our politico-economic framework, we find that general ecological preferences of the donor country

population, the financial relevance of the project, information on climate policy issues, the ideological preferences of the donor government, and the donor's general level of bureaucratic quality, influence the coding decision. This implies that for a given relevance of any project to climate change mitigation or adaptation, politico-economic factors significantly influence the statistics reported to the DAC. While the magnitude of the effects observed is relatively small, they are far from negligible. In any case, what we observe in the data is clearly inconsistent with a simple random error around an otherwise correct coding of climate relevant aid.

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Appendix 1: Information on recoding climate relevance

The evaluation of the climate mitigation / adaptation contribution was done per keyword search in the title, the short and long description of all projects in the PLAID database as follows:

Mitigation technologies were evaluated for the project types found in the Clean Development Mechanism (see UNEP Riso Centre 2010), i.e. cogeneration, composting, efficient stoves, efficiency improvements (power plant rehabilitation), gas flaring reduction, industrial gas reduction, landfill gas and methane recovery, renewable energy (including biomass power, geothermal, hydro, solar photovoltaics/thermal, and wind), solid waste management in large cities, transport (including rail, public transport and river/inland shipping activities), waste to energy, and waste water. Moreover, forestry-related projects such as forest protection, afforestation and reforestation were considered. Finally, the development of greenhouse gas inventories and the explicit mention of Activities Implemented Jointly, Joint Implementation and the Clean Development Mechanism were covered by the keyword search.[7]

For each project that showed one of the keywords, it was assessed manually whether the keyword really referred to the project type. For example, many projects showing the term "hydro" referred to hydrological analyses for agriculture / water supply systems, or "rehabilitation" referred to physical rehabilitation of war victims. Such projects were then excluded.

For adaptation, besides the keyword adaptation, strengthening of resilience against and relief of impacts of meteorological extreme events was looked at with the keywords flood, drought, storm (including cyclone, hurricane, typhoon), as well as disaster, urgency, compensation. The set up of early warning and meteorological coordination systems was also included. Moreover, dyke / sea wall projects as well sea-level-related projects were looked at. Resource availability improvement integrated rural development projects were also included if they strengthen overall resilience or lead to a better management of water / agricultural resources, even if they do not have an explicit disaster-related component.[8]

As in the case of mitigation projects, the context was assessed to exclude projects that do not contribute to adaptation. While it is simple to exclude non-meteorological disasters such as earthquakes, tsunamis or civil war, it is much more difficult to assess whether a resource-related project can be seen as a resilience-enhancing activity. Especially regarding water resources, frequently projects relate to digging a few wells. Such projects with a limited scope were excluded.

Given that sometimes only the original language of the donor country was used in the descriptions, we tried to cover all of those descriptions as well. As we did not do a search for all possible terms in all languages, however, some projects that only had non-English terminology are likely to have been overlooked.

In a final step, all 8 854 projects that have a climate change mitigation Rio marker, but did not feature any of our keywords were assessed whether they fit in any of our mitigation / adaptation categories. If they do, our initial coding is revised. Projects for which this final assessment is impossible due to a lack of relevant information in the project description receive a special code. Projects obtain a zero-code for climate irrelevance only if the project descriptions clearly reveal that there is no connection to either mitigation or adaptation.

[7] The following mitigation-related keywords were entered into the PLAID project search engine: Energy, fuel switch, methane, carbon capture, industrial gas, HFC, N_2O, PFC, SF_6, afforestation, reforestation, forestry, transport, renewable, biomass, geothermal, hydro, solar, photovoltaic, wind, power, landfill, composting, waste, stove, charcoal, retrofit, rehabilitation, cogeneration, electricity, boiler, heating, flaring, steam, efficiency, manure, biogas.

[8] The following adaptation-related keywords were entered into the PLAID project search engine: Adaptation, early warning, disaster, compensation, insurance, dyke, seawall, resource, ressource, relief, urgence, urgency, inondation, inundation, flood, rehabilitation, river, drought, storm, cyclone, hurricane, typhoon, dry, sea level..

Textbox 1: Projects without any conceivable climate change connotation

- Public health campaigns in Vietnam to address SARS and avian flu (Australia); one similar project from New Zealand
- Trauma counselling of tsunami victims (Australia), house rebuilding after tsunami in Sri Lanka (Belgium) as well as several other post-tsunami rehabilitation and early warning projects (3 from Canada, 1 from France, 5 from Germany, 1 from New Zealand, 3 from Spain).
- Transparency International anti corruption campaign in the Pacific (Australia)
- Capacity building for East Timor's Parliament (Australia)
- Education sector assistance in Kiribati (Australia)
- Institutional support for non-military national service in Georgia (Austria)
- Support for an Austrian secondary school in Albania (Austria)
- Surgery training programme (Belgium)
- NGO campaign on Congolese debt (Belgium)
- Monetary climate in Democratic Republic of Congo (Belgium)
- Capacity building of officials of the Algerian Ministry of Justice (Belgium)
- Bee-keeping programme of a cooperative (Belgium)
- Financing the sarcophagus of Chernobyl nuclear power plant (Belgium, Greece)
- Fight against proliferation of small arms in Colombia (Belgium)
- Transport of educational material for school (Belgium)
- Disposal of expired pesticides (Belgium, Germany); organic pesticide commercialization (Germany), pesticide awareness (Norway)
- Love movie festival (Belgium)
- Gujarat earthquake rehabilitation (Canada), house reconstruction after earthquake (Belgium),
- geo-risk evaluation (Germany), earthquake safety (Switzerland)
- Education Program Development Fund (Canada)
- Capacity building for state auditors in Vietnam (Denmark)
- Hazardous waste management (Denmark), also Germany (2), New Zealand (1), Norway (3), Spain (1), Switzerland (1)
- Communication equipment for airports (Germany)
- Protection of Maya archaeological sites (Germany)
- Green Parliament contribution to UNICEF telemarathon (Greece)
- 422 professional uniforms for students of Georgian school of tourism (Greece)
- HIV / AIDS (Ireland), one similar project from New Zealand
- Media handbook for Balkans (Ireland)
- Chernobyl humanitarian assistance (Ireland)
- Village leprosarium (Italy)
- Therapy of smile for sick children in Cape Verde (Italy)
- Kilns for burning used currency notes in China (Netherlands)
- NGO communication equipment in Balkans (Netherlands)
- Child protection in Somalia (New Zealand)
- Lombok crafts (New Zealand)
- Tobacco control (New Zealand)
- Management of toxic chemicals (New Zealand, Norway), similarly PCB decontamination of transformers in China (Italy), POPs phaseout (Italy), support for Basel Convention (New Zealand), 6 toxic chemical projects (US)
- Acid rain impact (Norway)
- Development of Gaiety theatre (Norway)
- Rescue archaeology (Norway)
- Prevention of cardiovascular diseases in Mozambique (Portugal)
- Museum restoration in Paraguay (Spain)
- Uniforms for park guardians in Central America (Spain)
- Marketing of organic coffee (Spain)
- Primary and secondary education support (Spain, 8 projects)
- Identification of pathogenic fungus in watermelon in Tunisia (Spain)
- Tomato virus in Morocco (Spain)
- Trade unions for democracy (Spain)
- Guinea pig farm (Spain)
- Long-distance Spanish language training (Spain)
- Support of victims of landmines (Switzerland)
- Aid for victims of munitions explosion in Albania (Switzerland)
- Lead reduction in transport fuels in Pakistan (UK)
- Derelict fishing gear and related debris (US)
- Mercury reduction (US, 2 projects)

While the criteria for the marker include ozone-depleting gases regulated in the Montreal Protocol, the corresponding projects are not really addressing climate change. Projects purely related to Montreal Protocol gases have thus been rated as not contributing to greenhouse gas mitigation. This coding problem related to the criteria of the marker itself, however, concerns only a very small number of projects (19 in total). In all other cases, the donor coding is wrong even using the widest possible interpretation of the marker.

Countries have specific ways of wrongly reporting climate change-related projects. Greece for example reports whatever environment-related activity, be it lake and river cleaning or national park management. Ireland lists hundreds of projects financing NGO staff that has nothing to do with climate change. The Netherlands list support for conferences and steering committees. Wildlife protection activities of all kinds - that do not contribute to forest protection - feature prominently in the US project list (106 projects, particularly intriguing ones are “Savannah elephant vocalization”, “Presence of antibodies to Ebola virus in Gorilla survivors”, “The role of seismic detection in African elephant ecology” and “Passive transponder marking of Rhinoceros”).

Some projects may have slipped through the attention of non-expert aid administrators because they seem to be addressing climate change issues while they are not. For example, Australia reports a project cleaning up coking plant wastewater.

For certain projects, it is unclear how they got the climate marker because even at first glance they have nothing to do with climate change. The most curious examples are shown in Textbox 1. It is likely that these entries were just made by exhausted officials mechanically checking boxes (e.g. looking for the term “climate”) and are not deliberate obfuscation.

Some projects are even counterproductive, as they increase emissions (see Textbox 2):

Textbox 2: Projects increasing emissions

- Road building in Western China (Canada), other road building/improvement projects include Denmark (1), Germany (19), Norway (3), Sweden (1), UK (3)
- Oilfield recovery (Canada)
- Rehabilitation of electrostatic filters of cement plant (Denmark), which reduces local pollution but increases greenhouse gas emissions
- 18 MW diesel power plant in Ouagadougou (Denmark)
- Reduction of traffic congestion (France)
- Support to Department of Motor Transport (Germany)
- Financing of mining equipment (Germany)
- 12 seater minibus for Georgian school of tourism (Greece)
- Electricity supply Kirkuk / Mosul (Norway)
- Diesel generation on isolated islands (UK)

Further categories relate to publicity expenses for development assistance activities in the donor countries, such as awareness building of Canadians / Britons on Canadian/UK development assistance and climate change, or to promotion of companies from the donor country, as done by Denmark. The Netherlands even list the support for the Dutch candidate to chair Working Group 3 of the IPCC!

Appendix 2: Variable description

Variable	Mean	Std.Dev.	Min	Max	Source
Rio dummy (1 for climate relevance reported to the DAC)	0.02	0.13	0	1	AidData (2010)
Mitigation (dummy: 1 if keyword search reveals relevance for mitigation)	0.01	0.10	0	1	AidData (2010) / authors' coding
Adaptation (dummy: 1 if keyword search reveals relevance for adaptation)	0.02	0.13	0	1	AidData (2010) / authors' coding
Over-coding (dummy: 1 if keyword search reveals climate irrelevance, but Rio dummy=1)	0.01	0.07	0	1	AidData (2010) / authors' coding
Under-coding (dummy: 1 if keyword search reveals climate relevance, but Rio dummy=0)	0.02	0.14	0	1	AidData (2010) / authors' coding
Unclear coding (dummy: 1 if Rio dummy=1, keyword search provides no indication for either climate relevance or irrelevance)	0.004	0.07	0	1	AidData (2010) / authors' coding
Big project (dummy: 1 if project among the biggest 25% in terms of commitments)	0.25	0.43	0	1	AidData (2010) / authors' coding
SIDS (dummy: 1 if recipient country belongs to the group of small island development states)	0.06	0.23	0	1	UN (2007)
Global warming very important: Share of donor population considering global warming or the greenhouse effect as very serious (measured only once in 2005)	0.60	0.08	0.47	0.72	World Values Survey Association (2009)
Extreme events (dummy: 1 if an extreme event occurs in a particular year in a donor country)	0.07	0.26	0	1	WMO (various years)
Kyoto gap (absolute Kyoto gap, i.e. current emissions minus Kyoto target emissions level, divided by base year emissions)	0.08	0.12	-0.24	0.38	IGES (2009)
New York Times (annual number of abstracts containing the term "climate change")	71.75	82.29	10	273	LexisNexis (2010)
Green parliamentarians (share of seats in the national parliament, in %)	2.42	3.42	0	13.3	Armingeon et al. (2008)
Cabinet composition (Schmidt-index: from 1: hegemony of right-wing and center parties, to 5: hegemony of social-democratic and other left parties)	2.50	1.62	1	5	Armingeon et al. (2008) following Schmidt (1992)
GDP growth, annual %	2.71	1.34	-2.05	11.68	World Bank (2009a)
Unemployment, in % of total labor force	6.89	2.97	2.5	22.7	World Bank (2009a)
GDP per capita, PPP (constant 2005 international USD)	32571	6149	16544	49359	World Bank (2009a)
Agricultural value added, in % of GDP	2.14	1.08	0.9	9.25	World Bank (2009a)
Population 65 and over, in % of total population	15.64	2.44	10.8	21.5	OECD (2008), as listed in Armingeon et al. (2008)
Government effectiveness (index from -2.5: lowest effectiveness, to +2.5: highest effectiveness)	1.71	0.38	0.32	2.64[1]	Kaufmann, Kraay, and Mastruzzi (2009), World Bank (2009b)

[1] We cannot explain the value for Switzerland 1996 of 2.64 which is out of range - possibly a typo in the original database.