Sustainability in Development Cooperation: Preliminary Findings on the Carbon Footprint of Development Aid Organizations

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ABSTRACT
This study assesses for the first time the environmental sustainability of development organizations involved in North–South cooperation by quantifying the carbon footprint as a widely adopted indicator. Our objectives are to (1) analyze the criteria that should be met for correct greenhouse gas accounting of development organizations, (2) gain insight into the emission profile for a limited sample of development organizations from Belgium and Germany, and (3) set forward policy options for more sustainable practices. Carbon footprints are calculated following official guidelines and include available data from different institutions. Mobility of staff is on average responsible for 60% of total annual emissions of the organizations under study, mainly owing to air travel (40%), followed by electricity and heating of offices. These emissions may be partially offset through voluntary carbon market transactions or within development projects themselves. Either approach requires the adoption of high standards of carbon accounting by development organizations. Copyright © 2012 John Wiley & Sons, Ltd and ERP Environment.

Received 20 December 2011; revised 23 July 2012; accepted 14 August 2012

Keywords: Sustainable development; life cycle assessment; climate change; environmental policy; greenhouse gas balance; corporate social responsibility

Introduction

LIVELIHOOD AND ENVIRONMENTAL QUALITY ARE INTERTWINED (MUKHERJEE AND CHAKRABORTY, 2012; NORTON, 1992) AS sustainability is depicted as incorporating environmental, social and economic dimensions. Although the original mandate of development cooperation was confined to economic and social goals, particularly bringing prosperity to poor nations and reducing poverty (Vives, 2004), the increased importance of the sustainability paradigm as part of corporate social responsibility has urged development organizations to be aware of environmental goals as well. The Millennium Development Goals are now internationally recognized as the main targets for development and development cooperation, and ensuring environmental sustainability is one of the

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Millennium Development Goals. One way in which development aid can contribute to these environmental targets of development is to advocate and promote sustainable environmental practices into the realization of development projects and in their own daily operations (Fox and Prescott, 2004).

By acknowledging their own environmental impacts and by planning their activities with a low-impact philosophy, development agencies can better face the scrutiny of stakeholders and thereby improve their public image as well as meet regulatory policies. A major improvement strategy is to reduce carbon dioxide (CO₂) emissions and to offset emissions through carbon trading. Further, the insight in own impacts can lead to immediate advantages through identification of potential cost reduction and enhanced operational efficiency, e.g. suitable energy-saving options (Lash and Wellington, 2007). Moreover, it offers development aid institutions the opportunity to address environmental impact mitigation and regulation with their partners in the South. This will enhance their role of welfare promotion and add a practical dimension to environmental sustainability problems to which developing countries are more vulnerable (Ahmed et al., 2009; Mukherjee and Chakraborty, 2012).

Organizations seek straightforward indicators of environmental performance that easily mesh with their general management practices. While carbon footprinting is probably best known as an eco-label of products and even nations, it is also used by various institutions from different sectors as a resonant and efficient display of their environmental performance (Hoffmann and Busch, 2008; Lash and Wellington, 2007). Despite its widespread use and popularity, there is no consensual definition of the carbon footprint in literature (Pandey et al., 2010). It generally expresses a cumulative amount of greenhouse gases (GHG) emitted by a product, activity, individual or organization, which conforms to the global warming potential (GWP) indicator in life-cycle thinking. In the context of the Kyoto Protocol targets for GHG emission reductions, it became a tool to measure an institution’s fitness within the stress of carbon-constrained settings.

A carbon footprint provides organizations with basic information to develop emission reduction strategies. Institutions can actively reduce their own emissions or pay for emission reduction elsewhere, i.e. through participation in the carbon offset market. An increasing number of public sector institutions and private companies are concerned with their emissions; some employ reduction actions in their own operation, whereas others engage in regulatory or voluntary carbon offsetting.

There is a growing body of scientific literature that reports institution-level efforts for GHG emission reduction and exercises of carbon accounting and carbon management. Various institutions have been scrutinized, including universities (Parsons, 2009), private companies (Lee, 2011; Penela et al., 2009), and even entire public and economic sectors, such as health care (Chung and Meltzer, 2009), tourism (Dwyer et al., 2010) or fisheries (Iribarren et al., 2010). The outcomes of such studies are case-specific and represent a wide range of methodological options. To the best of our knowledge, there are no studies available yet that have evaluated the carbon footprint of organizations in the sector of development cooperation. This is somehow surprising because civil society actors, such as non-governmental organizations (NGOs) and development aid agencies, have been the main advocates of environmental accounting. It seems logical and necessary to also scrutinize the carbon footprint of the operations of these institutions. The aim of this paper is to fill this gap (1) by assessing carbon footprints for a selection of development aid organizations and (2) by making recommendations for further progress in this domain. The paper thereby provides a novel contribution to the growing body of knowledge on carbon emissions of organizations.

Methodology

We used a life-cycle assessment approach to calculate the carbon footprint of Belgian development organizations. We aimed at generating a reference dataset for typical organizations in the Belgian development cooperation sector through a full accounting for each institution’s mobility and in-office activities and compared it with our results for a well-known German development agency. Belgium poses an interesting case because of its relatively high national carbon footprint per capita (Hertwich and Peters, 2009) and because it stands among the Organization for Economic Cooperation and Development countries with the largest budgets for development aid in relation to the gross national income (UNDP, 2011).
Scope

We carried out a carbon footprint assessment according to the ISO 14064 guidelines (ISO, 2006) and the GHG Protocol (GHG Protocol website, 2011), which are currently the most widely accepted guidelines for carbon footprinting. A first step in calculating the carbon footprint of an organization is to set the scope of its activities and define the boundary within which all flows of materials and energy will be taken into account. The ISO 14064 guidelines and GHG Protocol identify three different scopes of embedded carbon: (1) direct emissions from processes and activities within an organization; (2) emissions from the production of all sorts of energy used by the institution, but generated elsewhere; and (3) emissions from waste disposal, mobility of commodities and staff and upstream processes in the supply chain of purchased energy and materials.

Whereas for manufacturing and processing companies scope 1 emissions are likely to be very important, scope 3 emissions are expected to add substantially to the carbon footprint of development aid organizations, because of the frequent air travel of staff and collaborators. Although only scope 1 and 2 reporting is mandatory within the ISO and the GHG Protocol frameworks, many authors argue to include scope 3 emissions to allow a more robust analysis (Matthews et al., 2008; Pandey et al., 2010; Peters, 2010; Weidema et al., 2008). In this analysis we accounted for scope 1, 2 and 3 emissions.

Because large organizations can be expected to emit more than smaller ones, two variables were used to normalize between organizations: the annual revenue [in thousands of euros (k€)] and the number of staff [in full-time equivalents (FTE)] (Table 1).

Inventory

In a first step of data gathering, 116 Belgian NGOs and the Belgian Technical Cooperation (BTC) were probed for the online publication of environmental audits. In addition, questionnaires were sent to 10 of those NGOs as well as to the Vlaamse Interuniversitaire Raad – University Development Cooperation (VLIR-UOS). Besides BTC, few NGOs had divulged online environmental performance information on their websites and only three (ATOL, CDI-Bwamanda and PROTOS) provided sufficient information in quantity and explicitness to calculate a carbon footprint. Only VLIR-UOS responded to the questionnaire.

We calculated the carbon footprint of these development organizations and the German development cooperation agency (GIZ), which set a term of comparison of relative footprints. Of the neighboring European countries with similar national carbon footprints, the German agency provided enough data for our assessment in their reporting.

Data were gathered from published annual (NGOs) and environmental (GIZ) reports (ATOL, 2009; CDI-Bwamanda, 2009; GIZ, 2010; PROTOS, 2010) and through direct consultation (VLIR-UOS). All primary data pertain to the head-offices of those institutions in 2009, so they exclude staff and the infrastructure in the South. Data were grouped into five main categories: (1) office activities (e.g. office equipment, paper consumption, water consumption); (2) energy use in buildings (e.g. electricity and heating); (3) waste disposal and recycling; (4) air travel; and (5) commuting and overland travel. Background data required to include scope 3 emissions were retrieved from the life-cycle assessment databases Ecoinvent (Swiss Centre for Life Cycle Inventories, Switzerland) and ETH-ESU 96 (Swiss Federal Institute of Technology Zurich, Switzerland).

<table>
<thead>
<tr>
<th>Name of institution</th>
<th>Annual revenue (k€)</th>
<th>Staff size (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDI-Bwamanda</td>
<td>2906.1</td>
<td>4.8</td>
</tr>
<tr>
<td>ATOL</td>
<td>658.3</td>
<td>7.1</td>
</tr>
<tr>
<td>PROTOS</td>
<td>7983.5</td>
<td>13.8</td>
</tr>
<tr>
<td>VLIR-UOS</td>
<td>32200.0</td>
<td>20.0</td>
</tr>
<tr>
<td>GIZ</td>
<td>1447000.0</td>
<td>1400.0</td>
</tr>
</tbody>
</table>

Table 1. Annual revenue and staff size of each institution. These variables reflect the size and activity intensity and were used as functional units for the carbon footprint.
Description of Selected Institutions

CDI-Bwamanda reaches over 800,000 people in the Democratic Republic of Congo, mainly in the North-Equator province. Established in 1969, it focuses on capacity building among farmers as well as investments in essential infrastructures.

Since the 1970s PROTOS has been advocating for equitable, sustainable and participatory water management in nine countries in the South.

ATOL has worked for 30 years on issues such as empowerment, gender and social economy in the Democratic Republic of Congo, Mali, Niger and Senegal.

By managing the BTC university cooperation for development funds, VLIR-UOS funds and facilitates academic cooperation and exchange between higher education institutions in Flanders (Belgium) and in developing countries, and ultimately aims at building capacity and knowledge for sustainable development.

GIZ is an enterprise commissioned mainly by the German Federal Ministry for Economic Cooperation and Development. It delivers development services and is present in about 130 countries.

Carbon Footprint Assessment

Because direct measurements are often complex, GHG emissions are generally estimated using indirect methods. Operation and process-related factors are multiplied with an average GHG emission factor (i.e. an amount of GHG emitted per process unit) and then summed to obtain a final carbon footprint results (Pandey et al., 2010). There are several methods to perform this last step, each one with pre-defined emission factors. In this study we opted to use the console SIMAPRO® (PRé, the Netherlands) with the method IPCC 2007 GWP 100a. This method calculates a GWP according to the atmospheric properties of GHG for a time horizon of 100 years as reported by the IPCC (2007). The results are expressed in mass of carbon dioxide-equivalents (kg and t CO2-eq), hence expressing a sum of CO2 and non-CO2 GHG.

Sensitivity Analysis

We tested the sensitivity of the final footprint to variations in mobility. Two aspects were tested: (1) using the train instead of the car; (2) reductions of 10%, 25% and 50% in air transport kilometers, distinguishing between intercontinental and continental flights. The sensitivity analysis was performed only when the inventory of an institution contained sufficient data on modal splits.

Results

Inventory

The size of the sample is smaller than desired owing to low data availability (Table 2). To enhance the reliability of calculations, we included only the institutions that provided sufficient raw data for footprinting because we did not use those results of carbon footprints performed elsewhere.

The level of detail in the data varies widely across the organizations (Table 2), as annual reports reflect what institutions consider to be relevant. Travelling and commuting as well as energy consumed for heating buildings and electricity are well reported (Table 2). A distinction between transport mode and an indication of distances travelled was available for all organizations except ATOL. With the exception of VLIR-UOS, none of the institutions separated short-haul from intercontinental flights or provided information on connecting flights. Paper and water consumption and office appliances are erratically reported. Non-reported data were omitted from the analysis.

Carbon Footprint Assessment

The results of the carbon footprint calculation are reported in Figure 1. We find that the 2009 carbon footprint normalized for revenue for VLIR-UOS was 4.6 kg CO2-eq k€−1 (Figure 1A). This is the smallest footprint among
the Belgian development organizations included in the analysis. Yet, the VLIR-UOS’s footprint is substantially smaller than that of GIZ, which is 9.5 kg CO₂-eq k€⁻¹. CDI-Bwamanda follows with 12.4 kg CO₂-eq k€⁻¹ and PROTOS with 20.6 kg CO₂-eq k€⁻¹. ATOL’s year activity emitted 69.2 kg CO₂-eq k€⁻¹, which is three times more than the second largest emitter (PROTOS) and almost 15 times more than the smallest emitter (VLIR-UOS) (Figure 1A).

We come to different results when comparing the footprint per FTE (Figure 1B). PROTOS and GIZ show the higher per FTE carbon footprint (11.9 and 9.8 t CO₂ eq FTE⁻¹, respectively) and ATOL the lowest (6.4 t CO₂ eq FTE⁻¹). VLIR-UOS and CDI-Bwamanda emitted 8.1 and 7.5 t CO₂ eq FTE⁻¹, respectively. When considering the per FTE

<table>
<thead>
<tr>
<th>Office activities</th>
<th>Water consumption</th>
<th>CDI-Bwamanda</th>
<th>ATOL</th>
<th>PROTOS</th>
<th>VLIR-UOS</th>
<th>GIZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper consumption</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Toner consumption</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Furniture</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Computers and other electronics</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Energy use</td>
<td>Electricity</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Heating</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Gas for cooking</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Air travel</td>
<td>Car</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Commuting and overland on-duty travelling</td>
<td>Bus</td>
<td>✓</td>
<td>n</td>
<td>✓</td>
<td>✓</td>
<td>n</td>
</tr>
<tr>
<td>Train</td>
<td>✓</td>
<td>n</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Metro/tram</td>
<td>✓</td>
<td>n</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Bicycle/walking</td>
<td>✓</td>
<td>n</td>
<td>✓</td>
<td>✓</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Waste</td>
<td>Paper</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>PMD</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Data availability per inventory category and institution
✓ Quantified; n, mentioned but not quantified; X, no information; –, not applicable. This table indicates the completeness of the inventory of each institution discriminating data availability for each inventory entry type.

PMD: Plastic, Metal and Drink cartons.

Figure 1. Carbon footprints in 2009 normalized for revenue (A) and number of staff (B) of five development organizations. The total footprint value is indicated above each column. Stacked bars indicate the contributions of each inventory category. Mobility, particularly air travel, is the main source of greenhouse gas emissions of all institutions, followed by the energy required by their offices.
footprint, the differences between the organizations are much smaller – the highest carbon footprint is only 1.9 times higher than the lowest one – and the relation between carbon footprint and organization size in terms of FTE is less clear.

On average, air travel accounts for c.40% of the total carbon footprint and overland mobility is responsible for 20%. Hence, more than half of total GHG emissions are scope 3 emissions. Commuting and overland travel are the main contributors to PROTOS’ carbon footprint (54% versus 28% of air travel; Figure 1), a trend also reported in their own annual environmental analysis (c.44% versus 38%; PROTOS, 2010). In contrast, the air travel of GIZ workers is responsible for 62% of the carbon footprint (nearly 8500 t CO2-eq emitted in 2009, nearly 6 t CO2-eq per worker).

Energy expenditure in the office under the form of heating and electricity is the second largest driver of the institutions’ footprints. Its contribution varies between c.15% in PROTOS and almost 40% in CDI-Bwamanda and GIZ. The VLIR-UOS results (Figure 1, fourth column) indicate that the use of office equipment and consumables (including water) appears to be a relevant share of total emissions (c.13%). However, there was not sufficient data to identify a trend across offices.

Sensitivity Analysis

The sensitivity of the final footprint to transport was evaluated for VLIR-UOS only (Figure 2) because this institution provided the most complete inventory.

If it were possible to replace the distances covered by car with the train, it would reduce the total footprint by 2%. A cut of 10% in air-travelled distances (long and short haul) would trigger a reduction of 2.6%. Reducing the air mileage by 25% and 50% would lead to cuts of 8.1% to almost 13% in GHG emissions. Despite the steep air mileage cuts, the emission reductions are not large because of the differentiation between long-haul and short-haul flights both in flown distances and in impact computation by SimaPro®.

Discussion

Discussion of the Results

Having a small sample size, we need to mind the interpretation and generalization of results. Although the lack of data for carbon accounting in the development cooperation sector is an important finding in itself (see subsequent sections), it poses questions about the representativeness of our results. Data availability not only influenced the size

![Figure 2. Attainable reductions in the carbon footprint of Vlaamse Interuniversitaire Raad – University Development Cooperation (VLIR-UOS) under changes in transport use: always using the train instead of the car (first column) and reducing air travel miles in 10%, 25% and 50% (second to fourth columns). Largest possible reductions come from avoiding half of the current flights, which would lower the footprint of VLIR-UOS by 13%](image)
of the sample but also interfered with footprint calculations. There are discrepancies in the inventory, specifically in the completeness of the data, the level of detail and data quality. Because of these data limitations, we cannot draw broader conclusions on GHG emission profiles in the development aid sector; nor can we make a detailed comparative assessment of the carbon footprint of different organizations. Such sector-wide assessments require a larger sample from more organizations in different countries. Yet, the sample at hand captures the different ends of the range of institutional dimensions in this sector. In addition, our analysis points to some relevant general trends and does capture some heterogeneity across organizations.

First, the outcome of our analysis confirms the importance of scope 3 emissions in carbon footprints, particularly at an institutional-level assessment (Huang et al., 2009). On average, mobility contributes to nearly 60% of the carbon footprint of the selected development aid institutions (Figure 1). This is 30% more than expected by Huang et al. (2009) for service industries.

Second, scope 3 emissions are much more important in the activities of the development cooperation sector than in other sectors. Publicly available data for Belgian companies of different sectors indicate that scope 3 emissions account for less than 15% on average (CDP website, 2011). These discrepancies are linked to the activities of development organizations, which are low-demanding in terms of commodities and energy but which rely heavily on the mobility of their workers. Knowing the high impact of aviation, it could be expected that this would be the main burden in the footprints of these institutions. However, the results presented in Figure 2 suggest that the basic in-office activities are also relevant to the total carbon footprint of development aid organizations. The importance of these activities does not depend only on dedicated energy use for keeping equipment running and thermal comfort, but also on basic office infrastructure together with treatment of sorted garbage.

Third, there seem to be economies of scale in minimizing carbon footprints in development cooperation. When considering the carbon footprint relative to an institution’s revenue, larger institutions seem to have smaller footprints (Figure 1A). An increased distribution over a financial functional unit may be a result of emissions the intensity of which is not fully correlated with activity output. On the other hand the carbon footprint per revenue of VLIR-UOS is half of that of GIZ, so it is clear that carbon footprint can be uncoupled from size. The differences in carbon footprints are much less pronounced when emissions are considered relative to the staff size (Figure 1B). The uniformity in the carbon intensity per worker might be related to the fact that personnel mobility is an important source of emissions and points to excessive travelling in small organizations.

Policy Implications

Climate change is gaining importance in corporate social responsibility policies (Barth et al., 2007), private companies engage in voluntary measures to offset their environmental impacts ahead of regulations (CDP website, 2011; Southworth, 2009). It could be argued that private companies with more energy intensive and polluting supply chains feel a stronger need to be in the spotlight of eco-sustainability policies, whereas institutions associated with lower impact activities and institutions in the public or non-profit sector have not yet come under such intense scrutiny from markets or the general public.

The civil society has been an important advocator of corporate social responsibility in general and of including environmental concerns into corporate practices. Despite NGOs being key players in this (Vogel, 2010), the challenges in data acquisition and the results of this study make clear that they are not forerunners in putting this rhetoric into practice, as previously suggested by Barr (2004). However, there are signs that development institutions are realizing their exemplary role and incorporating environmental issues transversally to all cooperation projects. Although we do not have a full picture of the NGO sector, government-driven development cooperation in Belgium and neighboring countries is starting to take action in environmental auditing and emission offsetting (AFD, 2010; BTC, 2011; DFID, 2010; GIZ, 2010). This must consist of a systematic and long-term accounting of impacts throughout the life of their projects, which can be facilitated by the coupling of financial and carbon accounting. Financial records can provide a basis to keep track of the emissions of an organization, but will likely require some adjustments to make it a management tool for carbon accounting and develop a new generation of carbon performance indicators (Hoffmann and Busch, 2008).

A step further is to engage in emission reduction through a set of management changes and investments, e.g. in energy efficiency or better commodity use. The scant information conveyed by development aid organizations in
Belgium reveals that there are already operational level measures for emission cutting. Public information describes prescriptive measures to reduce their GHG emissions, emphasizing the importance of mobility of workers, and especially air travel. Several institutions in Belgium affirm flight offsetting and promoting ‘eco-friendly’ commuting, either by making bicycles available to their workers, offering public transport at reduced prices or introducing telework. However, this only affects a small fraction of emissions of those institutions. Besides being difficult to put into practice, especially in the face of desirable activity growth, large cutbacks in air travel have limited emission reduction potential (Figure 2).

Owing to the large impacts of food production (Sager, 1995; Tukker et al., 2009), dietary choices influence the carbon footprint of an individual and its collectivity (e.g. Carlsson-Kanyama and González, 2009). This means that institutional carbon accounting might be flouting an important source of GHG emissions: meals in the work floor. Meals are generally an expense of the employee. However, unlike commuting, meals are systematically excluded from carbon accounting. More and more organizations are aware of that and are intervening in the diet of their staff by changing menus in the canteen. Bottom-up approaches have been related to effective individual initiatives to reduce environmental impact (Sutcliffe et al., 2008) and may, in this case, consist of voluntary agreements for sustainable diets on the work floor.

Organizations from all sectors are resorting to compensation mechanisms to trim down the effects of carbon emissions of air travel rather through voluntary offset programs instead of baseline reductions. Institutions may opt for transferring offsetting costs through certified providers, considering that the calculation of offset needs, like prices, varies greatly (Gossling et al., 2007).

The second option is to include offsetting in the institution’s own development programs (e.g. Trees for Farmers of VLIR-UOS). However, to be comparable with outsourced offsetting, these actions should preferably include carbon monitoring as well. Offsetting entails the risk of creating a perception among stakeholders of emission outsourcing and displacing responsibility (Anderson, 2012) and the validity of certain types of carbon mitigation strategies are debated (e.g. Galik and Jackson, 2009). Including offsetting in development projects may minimize the risk of misperception and increase actual benefits because it overcomes rhetoric and reality gaps in climate change mitigation and sustainable development.

The implementation of carbon abatement measures in concert with development goals has been previously suggested. FAO (2010) urges the need for integrated food and energy production among small farmers in developing countries. This would couple energy and food security with carbon sequestration and improved natural resource management. Casillas and Kamen (2010) show that it is possible to increase and decentralize access to energy combined with carbon abatement in poor rural communities in Nicaragua. There is the additional benefit of possible reduction in compliance costs at a national scale, such as Clean Development Mechanisms which were suggested for the Belgian case (Bréchet and Lussis, 2006).

Methodological Shortcomings and Data Availability

Carbon footprinting has several methodological caveats, which are mainly the result of a lack of standardization and the wideness of guidelines. Currently available carbon footprint frameworks are tolerant to variable depths of scope and inventory as well as to the choice of parameterization in emissions estimation. Moreover, there is high variability in background data. This ultimately effects result stability and may lead to the underestimation of baseline and subsequent footprints (Matthews et al., 2008).

In the particular case of air travel, for example, it is recognized that aviation-related GHG emission accounting and reduction are not straightforward (Gossling et al., 2007; Walker and Cook, 2009). There is a large variation in emissions from airplanes depending on several factors, which are beyond the influence of the passenger. Hence, for the calculations average figures are normally used, which distinguish little between pathways that are more or less polluting. Moreover, there are uncertainties regarding the physical phenomenon of radiative forcing and GWP calculations rely on the best available knowledge. Nonetheless, it is well accepted that GWP is an estimation and that the emissions from fuel consumption in aviation should not be disregarded.

Even though there were some shortcomings in the data, the results suggest opportunities for methodological improvements. The trade-off for decreasing uncertainty and improving footprint quality would be the harder effort from organizations as well as practitioners. A broader and more profound insight on the status quo of eco-sustainability of development organizations would benefit from the availability of systematic data collection efforts. Standardized
carbon footprinting requires extensive datasets on inputs, emissions factors and characterization factors including multi-sector data with different geographic specificities. In addition, it requires specific uniform boundary settings and calculation procedures, rather than guidelines that give room to maneuver different data availabilities. Intermeshing with entities such as the Global Reporting Initiative (GRI website, 2011) and The Carbon Disclosure Project (CDP website, 2011) would provide institutions with frameworks for environmental sustainability reporting. Ultimately, such an effort would congregate and replace several government-developed or commercial carbon footprinting tools and orientations available.

Available carbon footprint protocols require an adaptation to the institutional carbon management. Current protocols are focused on the product, which corresponds to a mainstream interest of labeling of goods and consumer appeal and is facilitated by the product-driven life-cycle assessment thinking in the base of footprinting. From the institutional point of view, it is paramount to couple the assessment of GHG flows with financial concerns beyond its outputs to the market. As such, optimal institutional carbon footprint methods must consider the identification of carbon risks and opportunities beyond their own direct activities.

Another methodological difficulty is the normalization, as previously discussed. In the private sector added value is often used as a yard stick to allow comparison between various sectors (Lenzen et al., 2007). Using revenue or budget turnover in the development sector would generally mean that smaller organizations with lower budgets would have higher footprints, which we did not verify. This suggests that, because the development sector tries to optimize different objectives besides profit, a mix of approaches for emission reduction is generally promoted rather than adhering to economies of scales.

Conclusions

If promoting sustainable development is an institution’s mandate, then it is expected that the institution functions itself in a sustainable manner. Credibility is the key socio-political driver here. This sought-after sustainability should also include carbon emissions and a low carbon intensity of operating, which are becoming unavoidable realities for any environmentally responsible organization. For a long time it could be claimed that dealing with this was too complex or too expensive. This paper illustrates that organizations, small and large, can address it in a straightforward way by improving carbon accounting procedures. These allow the identification of opportunities for win–win situations and trade-offs to cut carbon emissions and costs. These efforts require, on the other hand, that current methodological issues are overcome, particularly insufficient carbon footprint protocols and lack of consensus on fundamental data.

The preliminary results of this study based on a small sample of Belgian and German institutions in the development sector show that the bulk of the carbon footprint of the assessed institutions is indirect (scope 3), and that applying what is known already allows the identification of some win–win cases. Besides internal reduction strategies, carbon offsetting is a widespread routine for climate-proofing of institutions. Development agents may either outsource it through the carbon markets or try to incorporate it into their own activities, bringing relevant benefits in livelihood improvement amid developing countries. The latter approach gives more control on how development can be attained in a sustainable way, but would also require carbon accounting for these mitigation activities. Furthermore, endorsing climate change mitigation and connecting it tightly with development goals will improve the image of development aid agencies and will stimulate peers to follow. Ultimately, sector and trans-sector carbon effectiveness frameworks are established and climate change–poverty fight models are launched.

Acknowledgements

We appreciate the support of KLIMOS, an interdisciplinary and interuniversity research platform on climate change mitigation and adaptation funded by VLIR-UOS and the Belgian Development Cooperation. We are grateful for the data sharing by VLIR-UOS and the apprentice work carried out by Mathias Syx, Gillis Beun, Kobe Dedecker, Jarrik Schaepherders and Liesbeth De Keukelaere. We acknowledge Fundação para a Ciência e a Tecnologia for the grant SFRH/BD/72015/201. Finally, the feedback of two anonymous reviewers was highly appreciated.
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