



জলবায়ু পরিবর্তন অভিযোজন প্রকল্প
বিকল্পজীবিকায়ন: বন্যা ও খরসহিষ্ণু সবজী চাষ (কচু)
FLOOD & DROUGHT TOLERANT VEGETABLE (ARUM)
উপকারভোগী: আফজাল হোসেন, গ্রাম: রামকৃষ্ণপুর
বাস্তবায়নে: গণকল্যাণ ট্রাস্ট ও বিসিএমস, ঢাকা।

**Institutionalising climate adaptation finance
under the UNFCCC and beyond:
Could an adaptation 'market' emerge?**

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Cover Photo: Flood and drought resistant crops, Bangladesh
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STOCKHOLM ENVIRONMENT INSTITUTE
WORKING PAPER NO. 2011-03

Institutionalising climate adaptation finance under the UNFCCC and beyond: Could an adaptation 'market' emerge?

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ABSTRACT

A new institutional architecture is emerging for climate change adaptation finance, with the UNFCCC Adaptation Fund now operational and dialogue underway on post-2012 arrangements. Some donor countries have also begun to channel official development assistance (ODA) through designated adaptation funds. This paper examines how adaptation finance is being institutionalised, and explores whether an adaptation market could emerge, akin to the development of carbon markets, with adaptation projects traded as commodities. The key question is whether such a multifaceted, locally contextualised phenomenon as adaptation can be converted into a uniform and standardised product, with measurable outcomes and benefits that 'buyers' can take credit for. The paper explores two ways to commodify adaptation: focusing on adaptation benefits – the most obvious parallel to carbon markets – or trading in credits for spending adaptation funds. The former is unfeasible for multiple reasons, the paper concludes, including the lack of viable metrics and lack of demand at the international level. Examining the latter, it does find signs of 'supply' and 'demand', but nothing close to a true 'marketplace' or commodification process. Analysis of adaptation in a market context, however, does point to crucial unresolved issues, such as the need for better metrics and accountability systems, as well as questions about whether incentives for effectively delivering adaptation benefits from projects – as opposed to just demonstrating that money was spent – are sufficiently strong. There is also a need for more research on potential new motivations for providing adaptation finance, such as indirect economic, political, strategic or security benefits. Finally, it is important to study the distribution of adaptation finance across countries, sectors and communities to see whether there are sources of bias in institutions and in the emerging professional industry.

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1. INTRODUCTION

A new international institutional architecture on finance for climate change adaptation in developing countries is unfolding, with the United Nations Framework Convention on Climate Change (UNFCCC) Adaptation Fund now disbursing funds and the Transitional Committee having proposed a design for the Green Climate Fund. Three other funds – the Least Developed Countries Fund and Special Climate Change Fund under the UNFCCC and Strategic Priority on Adaptation under the Global Environment Facility (GEF) – have been supporting adaptation since their inception in the 2001 Marrakech Accords, but at a considerably smaller scale than what could result from the Copenhagen Accord commitment: to mobilise USD 100 billion per year by 2020 with a “balanced allocation between adaptation and mitigation”.¹ The Adaptation Fund is also not managed by the GEF, but rather by a Board that is elected at the Conference of the Parties serving as the Meeting of the Parties (CMP) to the Kyoto Protocol, and is directly accountable to the Parties. It is the first institution adopting principles of “new” climate finance as implied by the Copenhagen Accord (see Mitchell and Maxwell 2010),² and thus an important exemplar.

In addition, some donor countries have been channelling finance for adaptation through designated funds within conventional official development assistance (ODA) for some time (Roberts et al. 2008; Atteridge et al. 2009; Persson et al. 2009).³ Among the multilateral ODA flows, the World Bank’s Pilot Program on Climate Resilience is the largest and currently has pledges amounting to nearly USD 1 billion, to be shared between the nine pilot recipient countries and two regions. The debate on the legitimacy and lawfulness of channelling climate finance through ODA has still not settled and will likely be a major issue for the coming years. Developing countries are concerned that such finance will not be “new and additional” as stipulated by Article 4.3 of the Convention and that baselines would be set unfavourably (see Stadelmann et al. 2010).

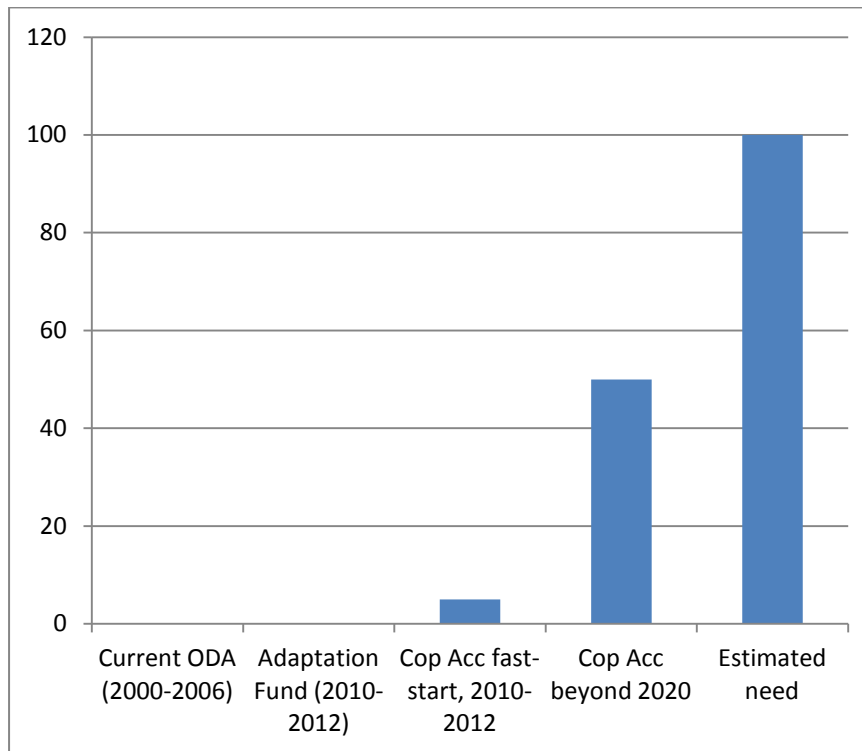
Many thorny issues with regards to financial support for adaptation have not been resolved, and developed countries have yet to complete their pledges and start disbursing funds under the Copenhagen Accord commitment to provide USD 30 billion in “Fast-Start Finance” in 2010-2012. Still, it is likely that the supply of adaptation finance – mainly as grants or highly concessional loans (see UN 2010) – will increase exponentially over the coming decade. Figure 1 illustrates the massive up-scaling which *could* take place if commitments are fulfilled and which *needs to* take place according to various adaptation needs and cost assessments (see UNFCCC 2007; Parry et al. 2009; The World Bank 2010).

¹ Decision 2/CP.15.

² Mitchell and Maxwell (2010, p. 2) propose that “[c]limate finance... signals a new global relationship, shaped by ‘polluter-pays’ rather than charity. It means: governance structures to allocate money weighted toward developing countries; resistance to the use of traditional aid rules and conditions; new lines of accountability to the United Nations Framework Convention on Climate Change (UNFCCC), rather than to traditional ‘aid givers’; and demands from developing countries for direct access to finance, without the need to work through intermediaries”.

³ See www.climatefundsupdate.org, www.faststartfinance.org, and www.wri.org/publication/summary-of-developed-country-fast-start-finance-pledges for continuously updated data.

Figure 1. Annualised current and committed financial flows, billion USD



Note: Annualised adaptation-related ODA based on 2000-2006 data is estimated at USD 90 million (Roberts et al. 2008). The Adaptation Fund is projected to have around USD 100 million per year to spend on projects (Adaptation Fund Board 2011). ‘Cop Acc’ refers to Copenhagen Accord commitments, with the assumption that 50% of commitments are allocated to adaptation. The global cost of adaptation varies in different assessment, with the most recent estimating the upper end of the range at USD 100 billion per year by 2050 (The World Bank 2010). The latter sum is comparable with current annual global ODA flows.

So far, most climate finance has been reserved for mitigation (around 80%),⁴ and climate finance in general is vulnerable to economic recession and changing political priorities. However, the mere potential for fast and massive growth in capital has raised a number of critical policy and research questions for the adaptation community, such as: Through what mechanisms should the billions of dollars be raised (Müller 2008; UN 2010; The World Bank 2011)? How should financing obligations be allocated among donor countries (Dellink et al. 2009; Grasso 2010)? On what basis should adaptation finance be allocated among recipient countries (Klein 2009; Hinkel 2011) and among social groups at the sub-national level (Persson and Remling 2011)? Is there sufficient absorption capacity in recipient countries (Barr et al. 2010)? How should transparency and accountability be ensured in the process of managing adaptation finance (Ballesteros et al. 2010; Transparency International 2011)?

What has been missing in these discussions so far is a political economy perspective (Tanner and Allouche 2011). Importantly, along with procedures and governance, it should also consider outcomes of adaptation finance, including at the sub-national level. It is important to study who will ultimately enjoy adaptation benefits, who will bear the cost, who might have economic interests in particular adaptation finance governance schemes – and whether an adaptation finance marketplace is likely to develop. Given the growing emphasis on the private sector for climate financing, it is increasingly pertinent to ask whether adaptation benefits can, like “emission reduction credits” on the mitigation side, be commodified, marketised and even traded within current and future global climate governance.

⁴ See <http://www.climatefundsupdate.org/graphs-statistics/areas-of-focus>.

Commodities are traded at market prices, and thus require standardised, comparable measurements as a premise for market development. This paper explores whether this is a feasible or helpful perspective for understanding climate adaptation, in the current adaptation finance context, by drawing comparisons with mitigation. It discusses adaptation finance at large, but with specific examples from the practices of the Adaptation Fund.

The paper begins with a review of the evolving institutional architecture on adaptation finance, highlighting recent trends. It then discusses the private vs. public dimensions of adaptation benefits, a largely neglected issue in the up-scaling of adaptation finance, even though it is crucial for defining beneficiaries and has both distributive and efficiency effects (Persson and Remling 2011). The following section explores the notion of commodification, reviewing its key elements and stages and comparing them across mitigation (in particular, carbon offsetting under the Clean Development Mechanism and voluntary carbon offsets) and adaptation. Finally, some conclusions are offered on the relevance of the commodification concept to adaptation, and future research questions related to political economy are discussed.

2. INSTITUTIONALISATION OF ADAPTATION FINANCE

How the issue of adaptation within the UNFCCC regime has evolved since the early 1990s has not been extensively analysed in academic literature, compared with mitigation (Kuik et al. 2008); it has been called the “overlooked cousin” (Schipper 2006). Specific issues that have been explored from a governance and institutional perspective include the conceptual shift from impacts to vulnerability (Burton et al. 2002), principles of fairness and equity in relation to adaptation cooperation under the UNFCCC (Paavola and Adger 2006), obligations and allocation of funding (Dellink et al. 2009; IPCC 2007; Klein and Möhner 2011), and how principles of adaptive governance have or have not been incorporated in the current UNFCCC regime on adaptation (Huitema et al. 2008). Biermann and Boas (2010, p.223) coin the term “global adaptation governance” and identify an urgent need for a broader academic programme studying challenges which are “unprecedented in scale and partly in type”. Many of the possible governance approaches and mechanisms they identify lie in institutional domains beyond the UNFCCC, including the international food, health, and security regimes. Systematic application of international regime theory would shed light on such broader analyses of global adaptation governance, in terms of both constitutive components of the regime (principles, norms, rules, etc.) (Krasner 1983), and the process and conditions for regime formation (Young 1989).

However, an initial overview of adaptation-related provisions and activities under the UNFCCC suggests that past modes of governance have indeed been “soft” and of a network rather than hierarchical or bargaining type (Thompson et al. 1991; Pierre and Peters 2000). Key activities and decisions include:

- a process for preparing National Adaptation Programmes of Action (NAPAs) started in 2001, with financial support for least-developed countries (LDCs), which assess vulnerability and identify priority adaptation actions that Annex I countries are invited to support;
- the 2001 Nairobi Work Programme undertaken under SBSTA for Parties to improve their understanding of vulnerability, impacts and adaptation options and to help them make informed decisions;
- the 2004 Buenos Aires programme of work on adaptation and response measures, which calls for joint learning and knowledge generation on a range of issues;
- a database on local coping strategies compiled by the UNFCCC Secretariat;

- the 2010 Cancún Adaptation Framework, which, *inter alia*, introduces a new national adaptation planning process for developing countries, provides for more shared knowledge and learning on adaptation, establishes an Adaptation Committee to provide technical support and information, and opens up for exploring insurance options.

Evidently, the aim of these provisions and activities is mainly coordination and joint learning on a voluntary basis rather than imposing any substantive or coercive commitments on Parties, with the exception of the responsibility of Annex I countries to provide financial support through designated funds, as discussed more below.

Why has global adaptation governance received less attention, both from policy-makers and scholars? Schipper (2006) argues that the dominant focus on mitigation is indeed consistent with the original intentions of the Convention. It would therefore be natural for adaptation policy and governance to find institutional homes beyond the international climate regime, including at the local level. Indeed, adaptation is often framed mainly as a local concern and is seen as mismatching the rationale of most international environmental cooperation; to provide global public goods and solve collective action dilemmas (Barrett 2008). Based on a discursive approach, Ayers et al. (2010) argue that the reality of adaptation, which requires integration of local and place-based knowledge, does not fit with climate governance structures that “have traditionally focused strongly on technological and economic issues, relying on top-down aggregate modeling” (p.271). As a consequence, the adaptation discourse that does exist within the UNFCCC is also scientific, environmental (pollutionist) and technology-based, rather than grounded in more general vulnerability and development challenges.

Although adaptation as a cause for international cooperation has been perceived to experience a couple of recent breakthroughs – notably the 2007 Bali Action Plan which put adaptation on an equal footing with mitigation for the negotiations on long-term cooperative action and the 2010 Cancún Adaptation Framework which emerged as a result of those negotiations – it is arguably only the provisions regarding financial support for developing countries that involve “harder” and substantive forms of governance, seen in the larger context of climate governance and what is at stake. Up until the 2009 Copenhagen Accord, Annex I countries were invited to make financial contributions on a voluntary basis only, and no quantified targets were set.⁵ The target to mobilise USD 100 billion per year by 2020 thus represented a significant break, which followed both more studies valuing and monetising adaptation needs (see above) and intense pressure from developing countries as a condition for entering the overall deal. There are still lots of unresolved issues and ambiguities in how new climate finance flows will be accounted for (including what “mobilization” means and how baselines will be calculated) and what a “balanced allocation” between mitigation and adaptation will look like. Still, the pressure is now on Annex I countries to start reporting their climate finance flows in a transparent way.

While the quantified target for climate finance is rather new, adaptation finance has been made available through various institutions for some time, as mentioned above. Table 1 summarises the institutional architecture with respect to the key funds within and beyond the UNFCCC regime. Figure 2 illustrates schematically the possible sources and channels for

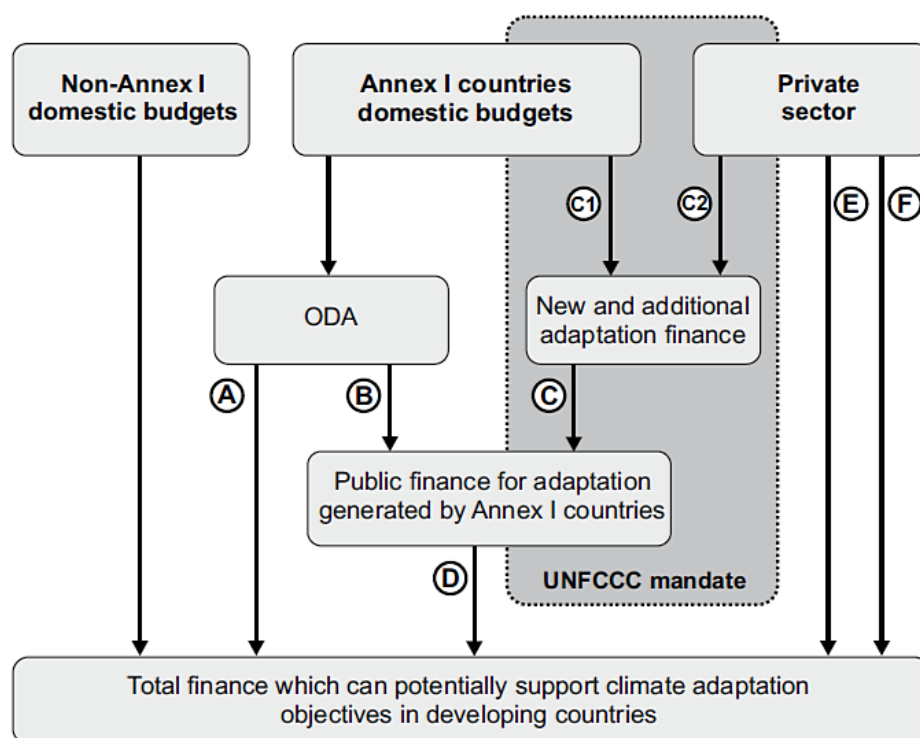
⁵ Fifteen EU member states and five other OECD countries announced in the 2001 Bonn Declaration that they would provide USD 410 million per year by 2005, with a review of this amount in 2008, but an analysis of the EU member states in honouring their part of this commitment (EUR 369 million) found that they fell well short (Pallemmaerts and Armstrong 2009).

adaptation finance (excluding charity and civil society flows), where the funds described in Table 1 would generate flows of type A and D. This architecture could be seen as fragmented, considering the diversity of actors, objectives, norms, and constituencies (cf. Biermann et al. 2010). Concerns about fragmentation, inconsistencies and duplication and the risk of heavy work burdens for resource-poor project proponents in developing countries have indeed been voiced by the NGO community. On the other hand, there may also be scope for healthy competition and learning between funds, as well as “fund shopping” opportunities for project proponents. In any case, there is arguably a significant degree of interdependence in this fragmented architecture. Furthermore, adaptation is still relatively new as a funding objective, which has led to many initiatives for joint learning.

Table 1. Adaptation funds

Funds (date operational)	Scope and governance	No. of projects supported so far	Committed funds, cumulative (time period) (USD)
Within the UNFCCC regime			
Least Developed Countries Fund (2002)	Supports LDCs to i) develop NAPAs and ii) implement projects identified in the NAPA. Only LDCs are eligible. Operated by GEF.	46 NAPAs completed 16 projects implementing NAPA projects	224 million (2002-2010)
Special Climate Change Fund (2002)	Supports adaptation as one of four focal areas (windows). All developing countries are eligible. Operated by GEF.	22	130 million (adaptation window) (2002-2010)
Adaptation Fund (2008)	Supports concrete adaptation projects and programmes. Developing countries that are Parties to the Kyoto Protocol and ‘particularly vulnerable’ are eligible. Operated by the Adaptation Fund Board.	11	305-408 million (projected 2010-2012)
Green Climate Fund (under development)	Not yet operationalised. To be operated by a Green Climate Fund Board.	n/a	n/a
Beyond the UNFCCC regime			
GEF Strategic Priority on Adaptation (2004)	Supports vulnerability reduction and adaptive capacity in human and ecosystems, provided that global benefits are generated.	26	50 million (2004-2010)
World Bank Pilot Program on Climate Resilience (2008)	Supports mainstreaming of climate resilience in national development planning.	9 country and 2 regional programmes	970 million (2008-2010)
Other multi/bilateral ODA funds, including i) designated adaptation funds developed by Japan, the UK, Germany and i) financial commitments to be implemented in general ODA	Diversity of approaches, from project-based to mainstreaming.		

Sources: Global Environment Facility (2010), www.climatefundsupdate.org.

Figure 2. Channels for adaptation finance to developing countries

Source: Persson et al. (2009 p.165, fig. 9.1); for full explanation of flows A-F, refer to the source.

A detailed review of the funds in Table 1 is beyond the scope of this paper, but their co-existence raise many governance research questions not just related to *architecture* (e.g., what is the effectiveness of the overall institutional structure?) and *allocation* (e.g., what is the relative significance and outcomes of allocation principles currently used?), but also to *agency* (e.g., to what extent are non-state actors involved in adaptation finance governance and what is their relative agency?)⁶ and *accountability* (e.g., how will donors be held accountable for providing adequate finance and how will recipients be held accountable for using finance appropriately?)⁷ (Biermann et al. 2009).

Some key trends are relevant to the commodification question explored in this paper. First, there has been a long-standing tension within the UNFCCC process about whether adaptation should be framed in a “pollutionist” way and narrowly in response to climate change, or as building resilience to climate variability more broadly (Ayers et al. 2010). Many developing countries have traditionally supported the former, since it implies the validity of the “polluter-pays” principle, and thus places a financial obligation on developed countries and effectively frames adaptation finance as restitution. However, it also involves a burden to prove “additionality”, i.e., what part of an adaptation investment is addressing the impact “wedge”

⁶ Civil society and NGOs have for a long time been involved in implementing adaptation and shaping higher-order rules and guidelines. The potential role of the private sector is less clear, but they may play future roles in providing or leveraging finance, receiving international finance and in implementing projects (Persson et al., 2009).

⁷ Accountability on the behalf of recipients is addressed in guidelines for monitoring and evaluation and fiduciary standards by the various funds. A range of initiatives for enhancing transparency and accountability on the behalf of the provision of finance have recently emerged, such as monitoring of climate funds and the “Fast-Start Finance” pledges (see <http://www.climatefundsupdate.org>, <http://www.faststartfinance.org>, or <http://www.wri.org/stories/2011/05/have-countries-delivered-fast-start-climate-finance>) and an intended watchdog function (<http://www.adaptationwatch.org>). Accountability to the ultimate beneficiaries of adaptation finance, i.e., citizens and social groups in developing countries, has so far not been addressed.

between climate variability and climate change, and it is commonly associated with promotion of technology-based adaptation (e.g., constructing seawalls). The GEF Strategic Priority on Adaptation funding required such additionality to be calculated, in order to justify the global benefits rationale, but attracted much critique for this (Möhner and Klein 2007). The other view, recognising climate adaptation as part of a much broader development challenge where vulnerability to multiple stressors should be reduced, is espoused by many practitioners on the ground, but has traditionally led to the conclusion that conventional ODA is an appropriate funding source. With a global funding target now in place since the Copenhagen Accord – as a premise for more trust – perhaps the second framing will be viewed with less suspicion, and effective combinations can be found. For example, the Adaptation Fund includes as legitimate objectives of projects not just to technologically adapt to the climate change “wedge” but also to diversify local economies, build climate resilience, and reduce vulnerability to both climate change and variability (Persson and Remling 2011).

Second, there appears to be an increasing emphasis, shared by donors and recipients, to finance concrete activities and physical investments, as opposed to further analytical and assessment work on vulnerability and climate impact. This is an explicit objective of the Adaptation Fund, for example. On the other hand, the Cancún Adaptation Framework introduced a new national adaptation planning process, the content and purpose of which is yet unclear. Third, while many funds today allegedly strive for “country-led” projects, only the Adaptation Fund has implemented a direct access modality, by which national implementing entities can be accredited to apply for and administer funds, as opposed to relying on a multilateral implementing entity. This modality has also been included in the Transitional Committee’s proposal for the design of the Green Climate Fund, to be presented at COP17 in Durban. Fourth, while many Parties and other actors have proposed the superiority of “programmatic” and mainstreaming approaches over individual projects, it is clear from the overview in Table 1 that both funding approaches are still used.

Finally, a critical issue yet to be resolved – at least for the Adaptation Fund, but also with relevance for the Green Climate Fund and with implications for the funds beyond the UNFCCC – is how to allocate scarce funds among eligible countries. The Convention and the Kyoto Protocol, which is the legal basis of the Adaptation Fund, state that those developing country Parties that are “particularly vulnerable” are eligible. Yet no definition or index for such particular vulnerability has been adopted (Klein 2009; Klein and Möhner 2011).⁸ The scientific community is in disagreement on the feasibility of indices, and among Parties there is suspicion regarding promotion of self-interest when proposing methodologies (Barr et al. 2010; Füssel 2010; Hinkel 2011; Ratajczak-Juszko and Feaver 2011). Lacking metrics (including qualitative ones) for vulnerability both in terms of breadth (i.e., number of people and/or spatial extent) and depth (i.e., the severity of vulnerability), there is a risk of highly skewed per capita funding both between and within countries. In the case of the Adaptation Fund, the 36 proposals submitted in the first 18 months differ by up to six orders of magnitude in terms of per capita funding for each country, and by up to four orders of magnitude in terms of direct project beneficiaries (Persson and Remling 2011).

⁸ With no means for narrowing down eligibility in relation to “particular vulnerability”, 149 countries are currently eligible.

3. DEFINING THE 'COMMODITY': PUBLIC VS. PRIVATE BENEFITS OF ADAPTATION AT DIFFERENT SCALES

Against this background, there is a need to clarify what would constitute the “commodity”, before embarking on the analysis of a commodification trend below. In the mitigation and carbon markets literature, the commodity in question is clear and agreed upon: emission reduction credits, measured in a common unit, tons of carbon dioxide equivalent (tCO₂e). In the case of adaptation, it is less obvious what the commodity would be. The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as a *process*, specifically, an “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (IPCC 2007). Sticking to the analogue of carbon markets, however, it is the *output* – the credit or benefit – that we get out of the process that would be of interest to study as a potential commodity to be traded on politically created international markets. Markets and commodities for most climate adaptation *processes* (e.g., weather-related insurance, training on new agricultural methods, construction or retrofitting of infrastructure, diversifying livelihoods) or *inputs* to processes (e.g., air conditioners, more drought-resistant seeds, sandbags for flood protection) already exist to a large extent and are thus not politically created in the same ways as for emission reduction credits.⁹ Here, we define the commodity as adaptation benefits, and more specifically net positive benefits. Examples of how such benefits could be phrased include number of lives saved from climate-related food insecurity, the market value of crops saved, or ecosystem services retained or improved.

Considering that adaptation has both private and public good properties, there is a gap in knowledge about how the current adaptation finance architecture may institutionalise the boundary between public and private responsibility as well as public and private benefits, i.e. what kind of projects it will fund and how funding criteria will construct or reproduce the boundary. This distinction has a bearing on the discussion of commodification of adaptation, in that adaptation can produce both private and public benefits. In contrast, emission reduction credits produce only public benefits, in the form of a more stable climate (although they can be privately owned and profited upon). Demand for credits is politically created, based on the rationale of cost-effective compliance with national emission targets.

Before reviewing economic theory on adaptation and its public/private benefits further, it should be emphasised that in a strict view of adaptation finance as pure restitution, it is irrelevant how funds are used on the ground, including whether they produce mainly private or public benefits. Instead, the main concern is international equity in the face of climate change impacts. In line with national sovereignty, recipient Parties would determine the use of funds at their discretion. Only if this perspective is *not* strictly applied do questions about beneficiaries, effectiveness and efficiency – including whether public benefits are generated – become pertinent.

Who is to benefit from international public funds flowing to eligible countries: private agents or the public? The IPCC has defined private adaptation as “adaptation that is initiated and implemented by individuals, households or private companies” and adds that it “is usually in the actors’ rational self interest” (IPCC 2001, glossary). Public adaptation is defined as “adaptation that is initiated and implemented by governments at all levels” and it “is usually directed at collective needs”. These definitions are closely related to the distinction between autonomous and planned adaptation, also used by the IPCC. However, for the purpose of this

⁹ As explained by Dovers (2009; 2010), adaptation to a variable climate is nothing new and adaptation options are to a large extent known, it is the framing and scale of adaptation to climate change that is new.

paper, it is more relevant to study who will enjoy the resulting *benefits* of adaptation, rather than its agents, as highlighted in the IPCC definition (see also Tompkins and Eakin 2011).

In economic theory, public benefits are identified in cases where an adaptation action has positive externalities (e.g., constructing a seawall that would also protect neighbouring properties). Since individuals have an incentive to undersupply such adaptation, there is a need for collective action, for example orchestrated through government intervention and financial support. According to Leary (1999, p.309), if an adaptation is not associated with externalities, it is not self-evident that public adaptation policies would in general improve upon the autonomous adjustments that private agents would make (see also Fankhauser et al. 1999). Therefore, he argues, “a first step when evaluating public adaptation policies should be to determine whether or not there is a clear rationale to favour a particular public adaptation policy or project over relying on private action”. The overarching goal with this kind of economic analysis and distinction between private/public adaptation is to ensure allocative efficiency (Mendelsohn 2000).

Externalities are one type market failure; public goods are another. Adaptation projects could either provide new public goods or protect existing ones. Public goods have two properties: they are non-rivalrous (consumption does not reduce their availability for consumption by others) and non-excludable (no one can be kept from consuming the good). Mendelsohn (2000, p.584) identifies examples of private vs. public adaptations for various sectors, e.g., plant different crops vs. breed climate-resistant plants (agriculture), depreciate vulnerable buildings vs. erect seawalls (sea-level rise), invest in water efficiency vs. increase water storage (water). Barrett (2008, p.254) states that benefits of adaptation are (always) excludable (e.g., the boundaries of a seawall), making such adaptations club goods rather than public goods. However, this does not hold for an adaptation action such as control of temperature-sensitive disease carriers.

Another misconception is that adaptation *only* yields local benefits. Cimato and Mullan (2010, p.59) identify both global adaptation-related public/club goods (e.g., biodiversity preservation, climate models, R&D in drought-resistant crops) and national ones (e.g., national infrastructure, ecosystems protection, public health and safety, emergency preparedness and security planning). Kartha (2008) also identifies indirect global benefits of local adaptation, such as viability of trading partners vulnerable to climate change, reduced dislocation and migration, and reduced pressure for violent conflicts. Furthermore, supporting local adaptation in developing countries could also have indirect strategic benefits at the global level, in that those countries might be more willing to take on mitigation commitments (Buob 2009; Rübhelke 2011). However, it can be expected that adaptation projects yield *mainly* local benefits.

Economic theory and private vs. public properties of adaptation are by no means the sole justification for government intervention and/or international financial support for adaptation. Distributional and equity concerns are equally legitimate rationales, given the uneven distribution of climate impacts and different adaptive capacity within sectors, regions and social groups (Cimato and Mullan 2010; Rübhelke 2011). However, for the purpose of defining adaptation as a commodity, it is useful to distinguish between the types of benefits discussed above, summarised in Table 2 with examples. This classification highlights three dimensions of benefits: whom they accrue to (private/public), their geographical scale (local to global), and whether they are direct or indirect.

Table 2. Key types of adaptation benefits, with examples

Local private benefits	Local public benefits	Global public benefits	Indirect global public benefits
Value of saved crops for individual farmer Improved water storage for household	Flood-proofed infrastructure Afforestation preventing mudslides	Control of climate-sensitive infectious diseases Protection of climate-sensitive biodiversity	Avoided international migration Lower price volatility on climate-sensitive agricultural products

4. SIGNS OF COMMODIFICATION?

Having identified the “commodity” at stake – benefits arising from adaptation – the remainder of this paper will now focus on the process of commodification and explore its relevance to climate adaptation and current developments in international adaptation finance. Concepts and findings from carbon market studies are used for comparative purposes, but this paper does not engage with the intellectual history of the commodification concept or a deeper analysis of capitalist or neoliberal paradigms (see Castree 2003; Bailey and Wilson 2009).

4.1 Defining commodification

Commodification has recently been a popular concept in relation to carbon markets, although there is a longer tradition of studying the commodification of nature (Castree 2003; Liverman 2004; Bumpus and Liverman 2008). It has been studied from critical theory and Marxist perspectives, with a focus on the material implications, accumulation of wealth and dispossession effects resulting from commodifying carbon in a capitalist world economy (Bumpus and Liverman 2008). There have also been critiques of the underlying science on the global carbon cycle as a premise for calculating emissions (Frame 2011), and post-structural analyses of the accounting, “calculative practices” and “making governable” of carbon emissions and uptake in spatially, socio-economically and technologically diverse contexts (Lohmann 2005; Callon 2009; Lohmann 2009; MacKenzie 2009; Stripple and Lövbrand 2010).

Commodification can be defined in quite cursory terms, such as proposed by Frame (2011, p.138): “[it] allows us to fix quantities and allow prices to equilibrate”, with the controversy lying in how to quantify. Castree (2003, pp.279–283), on the other hand, teases out six principal defining elements of commodification based on classic and contemporary Marxist writings:

- privatisation – “the assignation of legal title to a named individual, group or institution” that confer more or less exclusive rights to dispose of that which is named by the title;
- alienability – “the capacity of a given commodity, and specific classes of commodities, to be physically and morally separated from their sellers”;
- individuation – “the representational and physical act of separating a specific thing or entity from its supporting context”;
- abstraction – “a process whereby the qualitative specificity of any individualised thing ... is assimilated to the qualitative homogeneity of a broader type of process”;
- valuation – monetization, i.e., a process where the commodity is priced and, hence, “rendered commensurable with things not only in the same taxonomic class of goods but in different ones too”;
- displacement – as a consequence of the spatio-temporal separation of producers and consumers, “[it] is about something appearing, phenomenally, as something other than itself”, where the latter refers to socio-natural relations.

Castree argues that when considered in isolation, these elements are not unique to capitalism, but it is their combination that gives them a “capitalist colouration”.

The ownership, or privatisation, aspect in relation to emission reduction credits is particularly addressed by Bumpus and Liverman (2008), who see it as one of three requirements for the commodification of carbon (the other two being quantification and trading). They identify the following original and sequential claimants for ownership of credits: owners of the land or facility where the project occurs; project developers and their local organisational partners; financial institutions and brokers who may hold the credits; and individual consumers, corporations, or countries who purchase credits. Mackenzie (2009) and Stripple and Lövbrand (2010) focus particularly on the commensuration (cf. individuation and abstraction above) aspect (see also Lohmann 2005; Lohmann 2009). Mackenzie explains that “[a] new commodity – an emission allowance or emission credit – needs brought into being: defined legally and technically, allocated to market participants, made transferable and tradable, and so on”, and he analyses “the heterogeneity of the means by which the ‘sameness’ – the fungibility of allowances and credits – necessary for a carbon market is brought into being” (pp.443–444). The means for commensuration of emission reduction credits from very different emitting activities are illustrated with two disparate examples, a combined heat and power plant in Edinburgh and a refrigerant plant manufacturing HCFC-22 in Quzhou city in China. A similar approach is used by Stripple and Lövbrand (2010), who compare purchased carbon offsets originating from an Indian biomass power plant registered under the CDM (“certified emission reductions”) and various of forms of voluntary carbon offsets, based on, *inter alia*, efficient cooking stoves, wind power, afforestation, and an individual walking rather than travelling by car. They add to the commensuration imperative the need to understand “practices of differentiation” of the commodity, which do not only pertain to differentiating its quality in a competitive market but also to recognising the different socio-economic and environmental conditions in which the commodity is produced. The latter relate to the debate on politically differentiating between “subsistence” and “luxury” emissions (Agarwal and Narain 1991). Contemporary carbon market governance is, according to Stripple and Lövbrand, to be understood as a contest between these processes of commensuration vs. differentiation.

An integral part of the process of creating markets for valuing and monetising commensurated emission reduction credits, in particular those regulated under the CDM, is to prove additionality: that emissions have actually been reduced from a given baseline level. A demonstrated ‘saving’ is necessary for an emission reduction to attain economic value. Practices for calculating additionality have been one of the most controversial points, methodologically and politically, in the commodification of carbon (Lohmann 2005; Bumpus and Liverman 2008; Stripple and Lövbrand 2010).

The process of commodification of carbon has created a new professional industry that feeds off carbon markets, as well as new institutions to regulate them. Stripple and Lövbrand (2010, p.169) argue that “carbon markets are therefore not just cognitive constructs, but have a social life and institutional trajectory in their own right”. Institutions needed for running the system includes negotiating arenas, legal processes, communication mechanisms, measuring instruments, and police (Lohmann 2005). In particular with regards to government-sanctioned emission reduction credits, such as certified emission credits under the CDM, a long chain of approving, authorising, validating, verifying and certifying institutions is needed (see Stripple and Lövbrand 2010).

To what extent is the commodification of carbon mirrored in the development of adaptation governance, including the provision of adaptation finance? The following sections explore differences and similarities.

4.2 Privatisation and ownership

Although an emission reduction credit is privately owned, emission reductions lead to global public benefits and the preservation of a global public good.¹⁰ The provision of global public goods and the burden-sharing required to do that is the basic rationale of creating international carbon markets. Demand for emission reduction credits is created through national (and firm-level in the EU Emissions Trading Scheme) “quantified emission limitation and reduction commitments” (hereinafter, quotas) agreed upon in Annex B of the Kyoto Protocol, complemented by demand based on other grounds (e.g., individual ethics, corporate sustainability).

Clearly, adaptation activities far from always provide global public goods; see Table 2. When they do, public benefits are likely to often be outweighed by private or local public benefits. Using Castree’s (2003) terminology above, adaptation benefits could be – and are by nature – *privatised* but not *alienated*, since private benefits are by definition physically inseparable from the adaptation agent, and adaptation generating public benefits does not exclude private benefits for the agent. Hence, there is no similar global public good rationale for a purported “adaptation market”.¹¹ Effective demand for investing in or subsidising adaptation, which has no direct benefits for a spatially and economically distant buyer, thus needs to be based in something else, such as indirect benefits (economic, strategic, political or security), altruism or ethics.¹²

Let us consider instead a market for *adaptation finance* with developed countries as buyers, where the commodity is associated with perceived moral gains and international reputation, in general or specifically by honouring the Copenhagen Accord finance commitments (see above). The focus then shifts upstream from adaptation results on the ground to adaptation project expenditure. The actual “commodity” bought would be the *proof or “credit” that the buyer has spent money on an adaptation project*. With this kind of commodity definition, ownership and selling rights pertain to the project developer. Thus far in projects funded from the adaptation funds listed in Table 1, project developers are rarely the ultimate adaptation beneficiaries. Instead, project developers are typically multilateral agencies (e.g., UNDP, UNEP, FAO), national agencies (e.g., a ministry, agency or research institute), or local or global NGOs. This separation between (hypothetical) commodity owner and beneficiaries raises issues regarding the equity, quality and effectiveness of projects to deliver adaptation

¹⁰ Activities that reduce emissions may also give rise to, and indeed be primarily motivated by, various private or local public environmental and non-environmental benefits, such as mitigated local air pollution, energy savings, economic opportunities, and improved health (i.e., multiple externalities) (Ostrom 2010). However, current carbon markets have been created independently of such benefits. In theory, the same emission reduction activity or investment could thus give rise to parallel commodities (of which one is emission reduction credits), to be sold in parallel markets.

¹¹ Note that Butzengeiger-Geyer, S, et al. (2011) discuss how market mechanisms (e.g., subsidies, taxes, tradeable quotas, competitive tendering) could be used for adaptation. However, they do not discuss the current lack of adaptation targets or quotas or their feasibility, particularly at the global level – in other words, the demand-side.

¹² Note that Levina (2007, p.36) suggests possible substantive global adaptation goals that could be adopted under the UNFCCC, such as “All LDCs and other low income countries receive adequate assistance for the establishment of early warning centres for each type of prevailing disasters”, “% of population living on flood plains with a high risk of floods” and “% of land lost to sea level rise every 5 years/decade”. In theory, these could possibly be converted into substantive, non-monetised ‘quotas’ for developed countries using some burden-sharing principle, similar to emission quotas, but the methodological challenges are likely prohibitive.

benefits on the ground, considering that the value of the adaptation finance “credit” should reasonably reflect the size of adaptation benefits on the ground in some proportional way. Unless there is strong monitoring and evaluation, there is a risk that credits are inflated in comparison to the benefits that the finance supplied gives rise to.

Ineffective or even mal-adaptation is a well-known risk in the adaptation literature (see Barnett and O’Neill 2010; Miller and Bowen 2010; Moser and Ekstrom 2010). Existing evaluations of the funds and their projects have not investigated the ultimate effects in terms of adaptation benefits, but focus mainly only the upstream operation of the funds themselves (COWI and IIED 2009; GEF 2010). In some cases it is also too early to assess effects and outcomes on the ground (in particular, the Adaptation Fund and the Pilot Program for Climate Resilience). One reason for introducing the direct access modality in the Adaptation Fund was the concern that due to multilateral agencies’ limited understanding of local context, the projects they implemented would be less effective.

Looking to the future, it is unlikely that control and verification of effectiveness can be as systematised for adaptation projects as for carbon offset projects (although some recent work points to two commonly used health policy indicators as promising candidates; see Stadelmann et al. 2011). Whereas standard methodologies and measurement equipment can be used to verify emission reductions, the diversity and locally specific nature of adaptation means that monitoring and evaluation must be more tailored to each specific project, with the implication of potentially higher transaction costs. There are fewer panacea technologies and options, less direct causality between investment and effects and more difficult attribution problems, and a more limited set of lessons learnt for adaptation, compared with mitigation. Ensuring strong incentives to ensure effectiveness of projects to deliver adaptation benefits on the ground, as opposed to just generating projects, would thus be an important task for international regulators, in this case the COP of the UNFCCC.

The question of equity of ownership is also raised. On one hand, current practice is that it is the vulnerability of the local community that merits international funding and determines its size (in theory), rather than the proven skills of the project developer. This suggests that rewarding the latter through project management fees would be unfair. This has been particularly sensitive when the project developer is a multilateral agency and the “profits” earned do not necessarily stay within the local or national economy. On the other hand, it can be regarded as just that project developers are owners, with a profit-making opportunity (in terms of project management fees), since they may secure adaptation investment capital and benefits that would not otherwise have materialised in a particular community due to capacity constraints. Furthermore, an internationally funded adaptation project may also open business opportunities for local suppliers.

4.3 Commensuration and differentiation

If commensuration is controversial and contested in relation to emission reduction credits (see above), there are likely to be many more problems with adaptation. This holds regardless of whether we consider adaptation finance “credits” rather than adaptation benefits as the commodity, as it was argued that they would need to demonstrate some proportionality to expected benefits on the ground. Only by looking at the few examples referred to in section 3 and Table 2 above, it is clear that adaptation is a multi-sectoral phenomenon providing a wide range of types of benefits (e.g., health, economic and livelihoods, disaster prevention, food security, ecosystem services, biodiversity). Another common way to describe the diversity of adaptation responses is by placing them along a continuum: from technological and infrastructure addressing the additional climate change “wedge” (see above) to economic

diversification strategies in communities suffering from multiple stressors (McGray et al. 2007). In addition, adaptation benefits play out over a range of different geographical and time-scales. Finally, the whole idea of abstracting and measuring adaptation conflicts with the view that adaptation should be “normalised” and integrated into existing policy sectors and processes (Dovers 2009; Dovers and Hezri 2010) and not be seen as an additionality in a “pollutionist” way (see Section 2).

Nevertheless, indicators and metrics have been proposed and used. Generally, there is a much larger literature and more proposals for measuring vulnerability and adaptive capacity as underlying variables and premises (see Eriksen and Kelly 2006; Klein 2009; Barr et al. 2010; Füssel 2010; Hinkel 2011), than for adaptation actions and outcomes. Part of the difficulty lies in going beyond the direct project activities (e.g., purchase of inputs) to indicators capturing resulting benefits (e.g., reduced risk of flooding), but not too far to indicators describing conditions that are hard to attribute to a project (e.g., national economic growth). This is illustrated in the set of indicators proposed by Levina (2007, p.39); see Box 1. While making, for our purposes, the useful distinction between process and results, indicators for the latter would often be difficult to measure at sub-national and project levels or to attribute to one particular project.

Box 1. Proposed adaptation indicators

Indicators of result-oriented adaptation actions:

- Prevalence of underweight children under five years of age.
- Proportion of population below minimum level of dietary energy consumption.
- Share of preserved coastal wetlands.
- Human and economic loss due to hydro-meteorological disasters.
- Percentage of land lost to sea-level rise.
- Proportion of population with sustainable access to an improved water source, urban and rural.
- Proportion of population living on flood planes

Indicators of process-oriented adaptation actions:

- Availability of national climate change impacts and vulnerability assessments.
- Availability of national adaptation strategies with identified adaptation priority actions.
- National reports on integrating adaptation into sectoral policies and planning.
- Amount of GEF funding directed for community adaptation projects (developing country Parties only).

Source: Levina (2007, p. 39).

The Adaptation Fund has recently adopted a results-based framework including indicators, which is included in an annex to this paper. A similar adaptation monitoring and assessment tool has been developed for the Least Developed Countries Fund and Special Climate Change Fund by the GEF.¹³ Of the seven outcomes identified by the Adaptation Fund Board, only three (Nos. 4, 5, 6) relate to measurable adaptation outcomes on the ground, with the rest relating to processes and adaptive capacity. The indicators associated with those three outcomes suggest that they are far more ambiguous and imprecise than their mitigation counterpart: measuring emission reductions in tCO₂e. For example, one indicator does not specify a unit of measurement (4.2). Some indicators involve abstract and undefined terms such as “access to livelihood assets” or “sustained climate-resilient livelihoods” (6.1 and 6.2). Finally, two indicators measure quantitatively only (frequency) the development or strengthening of assets or infrastructure, with no concern for the quality (4.1.1 and 4.1.2). It would be tempting to argue that adaptation has a much greater quality dimension than

¹³ See http://www.thegef.org/gef/tracking_tool_LDCF_SCCF

mitigation, but that is questionable given the sustainability concerns associated with the CDM and the development of additional standards such as the Gold Standard.

Beside technical difficulties in developing a common metric for adaptation benefits, tendencies to differentiate between adaptation benefits generated in different contexts can also be seen (see Strippel and Lövbrand 2010). Building on the framing of adaptation finance as restitution, many of the new adaptation funds emphasise the principle of “country-driven” projects, which involves contextualising adaptation in the local and the specific rather than finding generic and standardised project approaches. It follows that the choice of indicators, which is inevitably normative according to Klein (2009) and Hinkel (2011), should reflect local or national preferences (for example, whether an agricultural adaptation project should be measured in terms of the value of saved crops, the distribution of saved crops among the relevant population, or improved food security). It is also easy to imagine analogues within the adaptation domain to the differentiation between “luxury” and “subsistence” emissions (see above). Among the 36 project proposals submitted to the Adaptation Fund in its first 18 months, there is a wide diversity in terms of the type of adaptation activities proposed, the socio-economic conditions of target communities, and how much funding is sought per beneficiary (Persson and Remling 2011). Countries that have had their projects approved or endorsed include Uruguay at the high development end and Senegal at the low development end.

To sum up, this very brief review of available adaptation indicators and metrics suggests that commensuration is neither currently possible nor taking place. However, if the agents in the adaptation finance “market” are satisfied with using project budgets/costs as a rough proxy for the adaptation benefits they may or may not lead to, projects are indeed commensurate and also monetised. Arguably, even if commensuration to the level achieved in carbon markets is not possible, there are still trends towards increasing standardisation and abstraction in adaptation finance, which merit further study. Increasingly, international institutions use results-based frameworks, with the stated goal of improving efficiency in public administration. It is important to establish what kind of “results” they define, whether they are consistent with the principles of the particular fund, and whether they introduce bias for any particular type of adaptation and any particular agents. Such defined results may trump original objectives for a particular fund and what kind of adaptation it should support, thus providing “de facto” definitions that are not always perceived as legitimate.

4.4 Valuation and creation of a marketplace

As discussed in section 4.2 above, due to the lack of effective international demand for adaptation benefits, in turn due to the absence of any form of adaptation quotas, a politically created market for adaptation similar to carbon markets does not exist. Adaptation-related goods and services with private and local benefits will continue to be traded on already existing markets, at market prices. However, as noted above, one could possibly talk of adaptation finance “credits” as emerging commodities. This commodity and market is created by the commitments to provide adaptation finance. Demand for this kind of commodity could be bolstered if emission reduction targets and mitigation quotas in an international agreement were exchangeable against the provision of adaptation finance. However, such a proposal is not on the table and would likely be politically sensitive, because not all value mitigation and adaptation equally.

Assuming there is such an emerging commodity as adaptation finance “credit”, can its related marketplace, supply and demand be empirically observed? Further, are there examples of valuation and trading? On the *supply* side, the 48 completed NAPAs and other similar

adaptation plans are the clearest examples. The NAPAs provide pre-defined projects ready to be “sold” to financiers, and at least 16 of them have been (see Table 1). By 2008, the 38 NAPAs completed thus far had identified 385 projects at a total cost of USD 1.5 billion (UNFCCC 2008). There is thus a large gap between this available supply of projects and global estimates of adaptation investments needed (in the order of USD 100 billion per year by 2030). There has been frustration among developing countries that developed countries have not funded more NAPA projects already and used this resource. At the same time, actors from both sides have been concerned about quality of NAPAs, lack of local and national ownership of the programme, and their low status in the wider UNFCCC process. It remains to be seen whether the new adaptation planning format proposed in the Cancún Adaptation Framework will help to increase the supply of new and/or better projects.

Demand for adaptation finance credits has already been discussed: it could theoretically be based on indirect benefits (economic, strategic, political or security), altruism or ethics. Game-theoretical modelling suggests that there are incentives for developed countries to provide adaptation finance if it serves as a strategic device to induce the recipient country to increase its level of mitigation commitment (Buob 2009; see also Rübhelke 2011).

While decisions to provide adaptation finance, how much and to what countries may be made at the highest levels of a national government, decisions on which particular projects to support are made at lower administrative levels in the case of bilateral finance and by multilateral institutions’ management and administrative staff in the case of multilateral finance. When making project-level decisions, there may be a risk that the motive of spending budgets overrides quality concerns (as well as possible strategic aspects).

A form of *marketplace* for adaptation projects can be more clearly observed. Buyers would be developed countries, not individuals or firms as with carbon offsets. Sellers would be project developers, which may in some cases be the national government of the developing country itself. The UNFCCC secretariat has been given the task to facilitate the coordination of buyers and sellers. On the supply side, it has organised a database of NAPA projects.¹⁴ On the demand side, it has produced an adaptation funding interface, where prospective project developers can search for existing funds, their scope and criteria.¹⁵ In addition, the independent website Climate Funds Update provides information on both existing funds and funded projects. These resources help reduce transaction costs.

Regarding *valuation*, the lack of appropriate metrics as discussed above remains a crucial obstacle. If adaptation cannot be commensurated and abstracted into one unit (comparable to tCO₂e), how could then that unit be priced in a market? If we instead consider adaptation finance “credits”, it was suggested that they should reasonably be proportional to the value of adaptation benefits generated by a project. But is the project budget a good proxy for this value? Taking the Adaptation Fund as an example, project proposals submitted so far have lacked transparency in their budgeting and have poorly identified and assessed benefits and cost-effectiveness (Persson and Remling 2011). To the extent that beneficiaries are identified, the funding requested per beneficiary differed by four orders of magnitude.

Considering *trading* in the adaptation finance marketplace, the cumulative volume of bi- or multilaterally funded adaptation projects is 233 projects, and the cumulative total value is nearly USD 1 billion according to the Climate Funds Update database (as of September

¹⁴ See http://unfccc.int/cooperation_support/least_developed_countries_portal/napa_priorities_database/items/4583.php.

¹⁵ See http://unfccc.int/adaptation/implementing_adaptation/adaptation_funding_interface/items/4638.php.

2011). The completeness of this database is uncertain, but it can be concluded that the number of “trades” is not negligible, even before the new adaptation finance promised with the Copenhagen Accord has started to be disbursed. Still, the adaptation finance market is small compared with the global carbon market, valued at USD 142 billion in 2010 (Linacre et al. 2011). Although the term trading can be used in this illustrative way, a logic of allocative efficiency as in carbon markets (trading will take place until marginal emission reduction costs are the same) does not apply. In carbon markets, buyers can choose whether to reduce emissions themselves or buy credits. In the adaptation finance market, there is no such option, but finance must be spent in developing countries.

Finally, considering the emergence of a *professional industry* and *new institutions*, similarities can be found with carbon markets, though on a smaller scale and with less-precise functions. Considering that project management fees could amount to 7-10% of the total level of project funding (cumulative USD 1 billion), revenues in the tens of millions are possible for implementing agencies. The cost of formulating project proposals is also an effective entry barrier for less well-resourced project developers. The number of consultants, government officials and other professionals working with adaptation finance can be expected to grow significantly. A conservative estimate is that 25 staff are needed per USD 100 million in disbursements (Ciplet et al. 2010). If adaptation finance were to increase to USD 10 billion per year, this would mean 2,500 employees in the funding institutions alone, far more than today.

With regards to *emerging institutions*, it is likely that monitoring and verification of provision of adaptation finance will be addressed in future agreements under the UNFCCC, including in relation to the Standing Committee and the Green Climate Fund. Currently, some civil society groups have voluntarily taken on these tasks and report data online.¹⁶ They lack the mandate to require standardised reporting methods to be used, however. When it comes to monitoring and verifying adaptation benefits from projects on the ground, there are no audit institutions such as for the CDM. Instead, funders, beneficiaries and other stakeholders must rely on self-evaluation by the developer or on larger evaluations of the entire fund that financed the project. It remains to be seen whether the new UNFCCC Adaptation Committee will play any role. To address the lacking accountability mechanisms, both for provision of funding and project outcomes, some civil society organisations recently created a watchdog function.¹⁷

5. CONCLUSION AND FUTURE RESEARCH

The aim of this paper was to explore the potential for an “adaptation market”, akin to carbon markets, to develop in conjunction with expanding adaptation finance flows. To place the question in context, it drew on concepts from Earth system governance as well as economic theory on adaptation, and looked at the notion of commodification in Marxist and post-structuralist literature. As an exploratory study, this paper is limited to scratching the surface on empirical data on adaptation finance trends and developments. However, some clear conclusions can be drawn.

An examination of adaptation benefits as a potential commodity shows there is no international demand; with this definition, commodification as an analytical framework is neither feasible nor particularly relevant. The reason is that adaptation generates mainly local

¹⁶ See www.climatefundsupdate.org and <http://www.wri.org/publication/summary-of-developed-country-fast-start-climate-finance-pledges>.

¹⁷ See www.adaptationwatch.org.

and private benefits, not a global public good. Neither is it likely that (non-monetary) adaptation quotas would be negotiated in an international agreement.

However, if the commodity definition is changed to “credits” for spending adaptation finance, conditions change. Adaptation projects generating such credits can be owned and privatised. A marketplace has started to be constructed. A professional industry and new institutions are emerging around it. Other key properties and elements of a commodification process cannot be observed, however. Means for commensuration and abstraction of adaptation benefits and activities do not exist, although a trend towards standardisation was identified. Neither does trading for the purposes of allocative efficiency take place in any way similar to on carbon markets.

To conclude, the commodification of adaptation finance is far from imminent. However, examining adaptation in this framework does shed light on unanswered research and policy questions around the political economy and governance of adaptation finance. It particularly shows the need for a closer look at whether incentives for effectively delivering adaptation benefits from projects are sufficiently strong, and whether project beneficiaries have the capacity to hold project developers and funders accountable for project performance. A system or market where performance and effectiveness are measured in terms of spending budgets on time and which takes credit for that alone will benefit no one in the long run. There is also a need for more, empirically testable research on potential indirect economic, political, strategic or security benefits as possible motives for providing adaptation finance. Finally, it is important to study the distribution of adaptation finance across countries, sectors and communities to see whether there are any sources of bias in institutions and the professional industry.

ACKNOWLEDGMENTS

An earlier version of this paper was presented at the European Consortium for Political Research workshop ‘Transformation of Global Climate Governance’, at the ECPR Joint Sessions in St. Gallen, Switzerland, 12-17 April 2011. The author is grateful for excellent comments from the workshop participants as well as from Richard Klein and Marion Davis at the Stockholm Environment Institute.

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ANNEX: ADAPTATION FUND STRATEGIC RESULTS FRAMEWORK

EXPECTED RESULTS	INDICATORS
Goal: Assist developing-country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change in meeting the costs of concrete adaptation projects and programmes in order to implement climate-resilient measures.	
Impact: Increased resiliency at the community, national, and regional levels to climate variability and change.	
Outcome 1: Reduced exposure at national level to climate-related hazards and threats	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis
Output 1: Risk and vulnerability assessments conducted and updated at a national level	1.1. No. and type of projects that conduct and update risk and vulnerability assessments 1.2. Development of early warning systems
Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks 2.2. Number of people with reduced risk to extreme weather events
Output 2.1: Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events
Output 2.2: Targeted population groups covered by adequate risk reduction systems	2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased 2.2.1. Percentage of population covered by adequate risk-reduction systems 2.2.2. No. of people affected by climate variability
Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses 3.2. Modification in behavior of targeted population
Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.1. No. and type of risk reduction actions or strategies introduced at local level 3.1.2. No. of news outlets in the local press and media that have covered the topic
Outcome 4: Increased adaptive capacity within relevant development and natural resource sectors	4.1. Development sectors' services responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress
Output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.1. No. and type of health or social infrastructure developed or modified to respond to new conditions resulting from climate variability and change (by type) 4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)
Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress	5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress
Output 5: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)
Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1. Percentage of households and communities having more secure (increased) access to livelihood assets 6.2. Percentage of targeted population with sustained climate-resilient livelihoods
Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.1. No. and type of adaptation assets (physical as well as knowledge) created in support of individual- or community-livelihood strategies 6.1.2. Type of income sources for households generated under climate change scenario
Outcome 7: Improved policies and regulations that promote and enforce resilience measures	7. Climate change priorities are integrated into national development strategy
Output 7: Improved integration of climate-resilience strategies into country development plans	7.1. No., type, and sector of policies introduced or adjusted to address climate change risks 7.2. No. or targeted development strategies with incorporated climate change priorities enforced

Source: Adaptation Fund Board (2011)

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