



Climate Finance: Perspectives on Climate Finance from the Bottom Up

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Abstract

Tens of billions of US dollars are programmed from developed to developing countries to assist them in dealing with the impacts of climate change or to reduce greenhouse gas emissions. This is the world of climate finance, a stream of money which includes public funding set to swell to \$100 billion yearly by 2020. These sums conceal agenda-setting stories on how different countries are coping with climate change. Drawing on data analysis and interviews with beneficiaries of climate finance, this article examines local and adaptation funding as two entry points into the field, connecting different perspectives on climate finance.

Keywords Sustainability · Development · Climate finance · Green climate fund · Climate change · Adaptation · Mitigation

Introduction

Many households in the Soc Son district, a rural area in the Red River Delta region North of Vietnamese capital, depend on biogas digesters for cooking, heating, and electricity. Until 2017, the Vietnam Biogas Programme has helped build 158,500 domestic biodigesters, providing energy to 790,000 people in 55 provinces, creating about 2500 new jobs, and reducing around 800,000 tonnes of CO₂ equivalent per year (SNV 2018b). The Vietnam Biogas Programme was founded in 2003 by the development organization SNV supported by the Netherlands Ministry of Foreign Affairs (MFA) (SNV 2018a), aiming to exploit biogas technologies. SNV provides technical assistance to the programme, under Vietnam's Ministry of Agricultural and Rural Development (SNV 2018b). Biogas is a mixture of gases produced by the breakdown of organic matter, which can include agricultural waste and pigs manure; and gas engines can convert energy into electricity and heat (Clarke Energy 2018) (Fig. 1).

How does this project connect with global trends? Each year, tens of billions of dollars are programmed from

developed to developing countries to assist them in dealing with the impacts of climate change or reducing greenhouse gas (GhG) emissions. Global climate finance includes multiple sources of funding of very diverse nature.

There is no consensus about what climate finance is; for the purpose of this article, it is to be understood as finance for climate change related activities, which can include reducing emissions, improving greenhouse gas sinks, increasing resilience and reducing negative impacts. Climate finance can be mobilized through private means (e.g. equity, remittances, household spending, companies, religious and non-governmental organizations and foundations) and public means (e.g. domestically raised funds, bilateral and multilateral funds, tax schemes, and subsidies). While public funding may be *public* in source, it does an important job at mobilizing significant amounts of private funding. For example, the Vietnamese biogas programme is supported by both bilateral funding (public), and household and commercial investment (private).

On its way from donors and investors to recipients, global climate finance—including national and household monies—can take different pathways too. For example, climate finance can move straight from government to government. Financial instruments that mediate between sources, intermediaries and recipients include grants, low-cost project debt, project-level market rate debt and equity, and balance sheet financing. As seen later, the choice of one instrument over another is significant.

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Fig. 1 The top of the biogas digester being built on Interviewee 4's land (left). Interviewee 3 showing her biogas digester (right). *Source:* Pictures taken by the authors



The Vietnam Biogas Programme is linked to international climate finance first as a recipient of bilateral funding from The Netherlands. Second, although carbon credits are not typically considered a financial instrument or part of climate finance, Vietnam Biogas Programme could be said to be linked to global finance via its registration under the Voluntary Gold Standard, the certification paradigm for projects reducing carbon emissions, which allows it to sell carbon credits in the carbon market (SNV 2013). Each biogas digester equals five carbon credits a year for 251 years, each credit equates one tonne of CO₂, and 10,000 credits are sold at around \$5 at the time of writing, according to Interviewee 1, an expert on renewable energy from SNV. While the price of carbon credits is low, there is hope that this market will grow in the future, she says.

Scholarship has focused typically on one aspect of climate finance. For example, Overseas Development Institute looks at approved projects supported by public multilateral climate funds while the Climate Policy Institute focuses on total global climate flows, excluding the carbon markets. Meanwhile, D'Orazio and Popoyan highlight the role of central banks and financial regulators in supporting the transition to a low-carbon economy (D'Orazio and Popoyan 2019).

The idea here is to identify what these different perspectives have in common with respect to local climate finance—invested in local projects, as opposed to national and international level initiatives—and adaptation climate finance—devoted to acclimate to the irreversible environment changes—, linking community realities with the large-scale trends and challenges of climate finance and offering a comprehensive view.

What follows is a description of climate finance, taking into account both private and public funding, both global and transfers from developed to developing countries, as well as the different instruments employed to funnel money from donors and investors to recipients.

Climate Finance Transfers

There are diverse scholarly views on how big the volume of global climate financing delivered by developed to developing countries is (Yamineva 2016). Climate Policy Initiative estimated global climate finance flows from governments, commercial financial institutions, private equity, venture capital, institutional investors, project developers, corporate actors and households was \$437 billion in 2015 (Buchner et al. 2017). Of this total amount, \$299 billion originated from private actors investing mostly in renewable energy in China and rooftop solar power in the US and Japan, and \$138 billion from public actors via bilateral and multilateral institutions (Buchner et al. 2017). In 2016, there was a 12% drop to \$383 billion overall, mostly determined by a fall in private money (to \$242 billion), caused by decreasing technology costs and other factors (Buchner et al. 2017). Buchner et al. look at worldwide private and public finance, including bilateral finance and funding from the multilateral development banks (MDBs) and others (i.e. UN system contributions), as well as less concessional finance (i.e. non-official development assistance [non-ODA]) and even household spending. Apart from commercial financial institutions, there are other private actors in the international climate finance landscape such as institutional investors (\$2 billion in 2016), corporate actors (\$38 billion), households (\$31) and project developers (\$137 billion) (Buchner et al. 2017). The bottom line is that private finance flows are considerably higher than public climate finance. (An updated view on climate finance by Climate Policy Initiative sets climate finance flows for 2015 in 472 billion and 455 billion for 2016).

Much more funding will be needed to keep the world under a 2 °C rise in temperature. The Organisation for Economic Co-operation and Development (OECD) estimates that there is an investment need only in infrastructures of about \$7 trillion per year from 2016 to 2030 (OECD 2016c). Currently, global private and public climate finance is just a fraction of what is needed overall. That is why, despite being

significantly lower than what is required, public finance plays a vital role as a catalyst of climate funding.

Public Climate Funding

Public climate money from donor countries to developing countries is mostly routed through national (\$58 billion in 2016), bilateral institutions (\$19 billion) or multilateral institutions including UN agencies and development banks (\$46 billion) (Buchner et al. 2017).

Although many developed countries transfer climate-related funding via bilateral institutions, like The Netherlands's MFA investment in the Vietnam Biogas Programme, there is no consensus about how much money is invested bilaterally. According to the OECD (which combines money having both 'significant' and 'principal' climate objectives, and concessional and non-concessional funds through bilateral and multilateral climate-related development finance), bilateral climate-related development finance surpassed \$30 billion in 2016, maintaining a growing trend (OECD 2016b). OECD typically takes into account flows from Development Assistance Committee (DAC)—a forum gathering many of the largest donors such as The Netherlands—, including official development assistance as well as other transfers. OECD talks about 'climate-related development finance' rather than strictly climate finance.

Global donors and investors can also deposit climate money into dedicated multilateral climate funds, which include the Adaptation Fund (AF), the Clean Technology Fund (CTF), the Least Developed Countries Fund (LDCF part of the Global Environmental Facility at the World Bank), and the Special Climate Change Fund (SCCF), among other public multilateral climate funds. Although most dedicated funds channel public money, at least one, the Breakthrough Energy Coalition fund, led by US magnate Bill Gates, is a private facility comprising 28 investors enabling clean energy projects (Breakthrough Energy Coalition 2018).

Recipients of the global climate finance comprise both public entities (receiving mainly grants, low-cost project debt and project-level market rate debt, amounting to \$52 billion in 2016) and non-governmental organizations and foundations (\$2 billion), as well as private-public entities (\$4 billion) and private companies (\$288 billion); while a significant portion of the recipients is classified as 'unknown' (\$68 billion) in Buchner et al. (2017).

Climate Finance's Framework

These sums conceal agenda-setting stories on how they are being gathered and employed, and how different countries are coping with the consequences of global warming. Ultimately, the climate funds architecture—and the acronyms soup that

represent it—has to do with how humanity deals with the melting glaciers and ice, the deforestation process, the changing weather patterns everywhere and the impact of extreme climate-related events on people. However, evaluating this issue is not straightforward.

The technology, schemes, and infrastructure types needed for climate change mitigation and adaptation range from biodigesters and micro-scale rooftop solar voltaic fixtures to large-scale offshore wind parks; from the restoration of mangroves to the climate-proofing of large infrastructures. These projects are being implemented in equally varied contexts, from rural, agriculture-based regions such as the Soc Son district, to urban and manufacturing centres of China and the sands of the High Atlas of Morocco. Even more wide-ranging is the private financial landscape spanning from domestic banks and micro-finance institutions to large infrastructure and institutional investors.

Many factors—such as the lack of homogeneous standards in labelling projects, the shortage of information on private adaptation, the different scales and methodologies employed by scholars to look at climate finance—make it challenging to identify climate finance trends. For instance, MacClune notes that a 'lack of transparency in global finance flows' makes it difficult 'to track funding for adaptation'; in some cases, the lack of traceability makes it hard to pin down what countries declare they are contributing (MacClune 2017).

The objective here is not to provide a comprehensive analysis of global climate finance, but to offer some insights about how the micro and macro perspectives on climate finance connect by looking at the most recent information on multilateral public climate funds and capturing what the most relevant literature indicates about overall trends on local and adaptation funding. The data on multilateral climate funds comes from Overseas Development Institute (ODI)'s Climate Funds Update (CFU), which focuses on the projects approved and supported by public multilateral climate funds (but does not provide information at beneficiary level). CFU's data is cumulative since 2003. Vietnam—one of the most hazard-prone countries in the world—is employed here as a pivotal example which serves to shed some light of the situation on the ground.

First, we describe the framework, methods and materials employed in this article; then, we deal with the analysis of the data on local and adaptation climate finance; and finally, we offer some considerations for further discussion.

Materials and Methods

In line with its aim to bridge local realities with global trends, this study combines qualitative methods at the community level and quantitative methods at the macro level. Data for this study has been produced from three sources.

The first source of data is a field trip to Hanoi and the Soc Son district from 17 to 23 June 2018,¹ where semi-structured interviews were conducted with dome masons, project managers, and representatives of the Vietnam Biogas Programme and beneficiaries in the community where biogas units were being built. Interviewing allows understanding the world from the interviewees' points of view (Packer 2010: 10), and allowed us to examine the conditions in which climate funds are invested on the ground. Interviewee 1 is an expert on renewable energy, and interviewee 2 is the coordinator of the cook-stoves programme at SNV; interviewees 3, 4 and 5 are beneficiaries of the programme; and Interviewees 6 and 7 are masons. The idea here is to link climate finance to real people.

Second, the authors have had access to the latest data (2016) from the Climate Funds Update (CFU), an initiative set up by the ODI in 2012, which gathers data from multiple sources including international funds, such as CTF, AF, the Pilot Program for Climate Resilience, the Global Environment Facility, LDCF, the Forest Investment Program, the Forest Carbon Partnership Facility, the Scaling Up Renewable Energy Program, and SCCF. In total, CFU looks at 23 public multilateral climate funds. We set up a database with data from the CFU, and interrogated it about the presence of adaptation funding in public funds.

Third, specialized literature helped create the context for this article. We identified relevant data analysis on climate finance that let us look at local and adaptation flows. There are different datasets from other authors' studies used to bring figures into the text. We make clear when switching from one to the other, and what is and what is not included in these figures (e.g. public versus private). However, the objective is not to look at absolute numbers, over which there is no consensus whatsoever, but to examine what the proportion of local and adaptation climate finance tell us and whether there are common trends.

Two Dimensions: Local and Adaptation Finance

The two dimensions studied here—the local realities of rural Vietnam and the sphere of adaptation within climate finance—offer different views on the divide separating discourses and macro-level numbers from realities on the ground.

¹ The authors are grateful to Thomson Reuters Foundation, which funded the trip. The interviews were conducted during the course of a workshop on climate finance.

The Missing Local Dimension

The issue of whether finance gets to the right local actors is a central one to both climate finance and development. But there is consensus about how difficult it is not only to programme but to track local funding (Brooks et al. 2011). Thomas, for example, examines the opportunities for climate finance to have positive outcomes in adaptation and mitigation at a local level in mangrove forests, seagrass meadows and tidal salt marshes to conclude that there is a) a pervasive lack of scientific studies in this area, especially from a private sector perspective, and b) there is 'confusion over the nature and role of important concepts including private and public sector finance and instruments', among others (Thomas 2014: 22). Meanwhile, Mori-Clementa and Bednar-Friedl note that, while mitigation impacts of climate finance are typically analyzed extensively, development impacts—which are found locally—are rarely quantified (Mori-Clementa and Bednar-Friedl 2019). At a larger scale, this fuzziness leads to no one knowing how much climate-related money is flowing to the local level exactly—whether you look at global funding including national and domestic investment or only funding from developed countries. Therefore, numbers on local climate-related investment have to be handled carefully.

Looking only at public multilateral climate funds, an IIED's rough estimate for 2003–2015 indicates that only 11% of approved climate finance (or \$1.6 billion) was invested locally (Soanes and Shakya 2016). The rest of the money in climate funds support characteristically high-impact, large-scale mitigation efforts at national and international levels, from renewable-energy systems to cross-border cap-and-trade mechanisms aimed at controlling pollution by providing flexible incentives to achieving emission reductions (Soanes et al. 2017).

IIED's analysis of public multilateral climate funds suggests that a combination of factors contribute to the lack of local projects in the climate funds' portfolios, including investment strategies 'prioritising large-scale results'; conventional financing mediators (i.e. development banks) avoiding small-scale projects with higher management costs; 'risk-averse funding strategies'; too little support for investing in local capacity to administer funds; and 'poor enforcement of policies for community engagement' (Soanes and Shakya 2016). The lack of influence of local actors in climate finance decision-making and processes could also be part of the problem. Despite the well-documented value of local knowledge in ensuring sustainability of interventions, international representatives can still influence people away from locally valued and contextually relevant (climate) action (MacClune 2017: 16).

The level of support that a specific local project gathers can depend also on how *smart* recipients are at submitting



proposals and negotiating their terms, which requires large teams of skillful negotiators that are not easy to assemble in small communities (Gutiérrez 2016). Even if they can set up specialized teams, there are other deterrents. Sub-national players have built capacity only to discover that the targeted funds were empty (MacClune 2017). For example, the LDCF, which depends on voluntary contributions, dried up as a group of developing nations were working on bankable proposals (MacClune 2017). Local conditions, such as legal environments and property rights, can affect investments negatively too (Ojah et al. 2010). Other authors point to the level of ability of investors to mobilize the required funds (Fankhauser et al. 2016). And looking at the REDD+ programme, Williams and Dupuy consider corruption among the local issues to tackle (Williams and Dupuy 2018).

An area where the deficiency of local investment is clear is water management. Water is an issue that is mostly local, as well as adaptation-related (which can also be evaluated as cross-cutting). In line with the lack of local focus, only a fraction of the total multilateral public climate funds spending were allocated to water projects in 2017 (\$639 million or 4%) (Watson et al. 2017).

However, IIED says local programmes can deliver ‘triple-wins’, as they offer sustainable results at low costs, strengthen local capacity and deliver economic development benefits which can be climate-smart, such as resilient livelihoods (Soanes and Shakya 2016). The Vietnam Biogas Programme seems to confirm this idea of triple-wins (see Fig. 2).

Although none of the beneficiaries of the programme have received any direct subsidy to build their biogas units, which cost from \$700 to \$1000, they seem to be happy with the results. Interviewees 3, 4 and 5 have paid for their biogas units with their savings or with loans from neighbours and relatives; however, they declare they expect to profit from them. Interviewee 4, who is building a big biogas unit, says her family will be able to sell the redundant gas to neighbours; while Interviewee 3 estimates that she will break even and be able to sell pigs at \$100 each while keeping her biogas unit running next year. Interviewee 5 will use the remaining pig waste as fertilizer for agricultural production. Interviewee 1 says local capacity and development have been strengthened by the SNV’s support, which is translated in the creation of a wide network of skilled biogas constructors and a growth building activity in the area. Interviewee 7, a mason, has built hundreds of units and has reached a point where he is able to hire a 15-member crew to build more and train others.

Despite its benefits, IIED concludes that the proportion of public multilateral climate funds reaching local levels is ‘imbalanced’ and suggests significant funding should build more resilience at the bottom since supporting initiatives locally, on the frontline of climate change, is in the climate

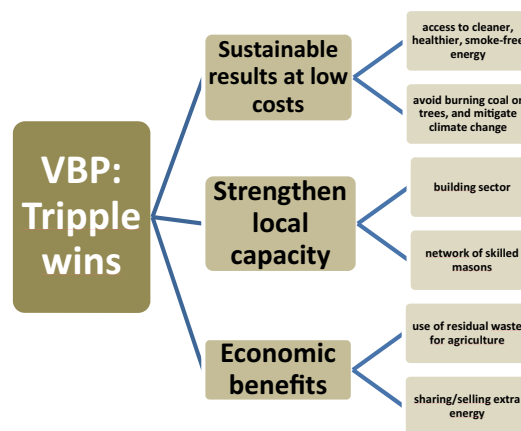


Fig. 2 VBP’s triple wins. Source: Elaborated by the authors based on (Soanes and Shakya 2016)

funds mandates (Soanes et al. 2017). Thanks to the biogas project, the inhabitants of the Son Soc district have access to cleaner, healthier, smoke-free energy, which allows them to avoid burning coal or trees, and mitigate climate change; but they still have to adapt to stark climate change impacts.

To bridge climate funding and local needs, there are ongoing efforts under a number of public multilateral climate funds (e.g. Green Climate Fund and AF), which have set up a Direct Access Entities mechanism to help organizations in developing countries prepare to become Accredited Entities that can then submit proposals for funding (Green Climate Fund 2017). The GCF announced recently too that it would simplify the procedures for small scale projects under \$10 million, reducing paperwork from seventy to twenty pages and making it easier for small actors to apply for funding (Green Climate Fund 2017).

However, as Vanderheiden points out, the GCF faces ‘a significant ambition gap in pledges to fund its operations’, as contributions are voluntary and not based on the ‘common but differentiated responsibilities’ principle that reign the UN Framework Convention on Climate Change or UNFCCC (Vanderheiden 2015). During the Paris Summit in 2015, it was decided to set up a mechanism—i.e. GCF—to channel \$100 billion yearly by 2020 (OECD 2016a). Established under the framework of the UNFCCC, the GCF had raised \$10.3 billion equivalent in pledges from 43 governments at the time of writing (Green Climate Fund 2018c). The GCF plans to expand its current portfolio of 53 projects in 73 countries, amounting to about \$2.64 billion, to more than 100 projects worth \$9.2 billion (Green Climate Fund 2018a). To be precise, according to the latest CFU data, the GCF has \$10.30 billion in pledges, \$6.41 billion in deposited funds, \$2.65 billion in approved funds and \$131 million in disbursed funds, as seen in Fig. 3, which shows that most of the pledged money has not yet been disbursed, although

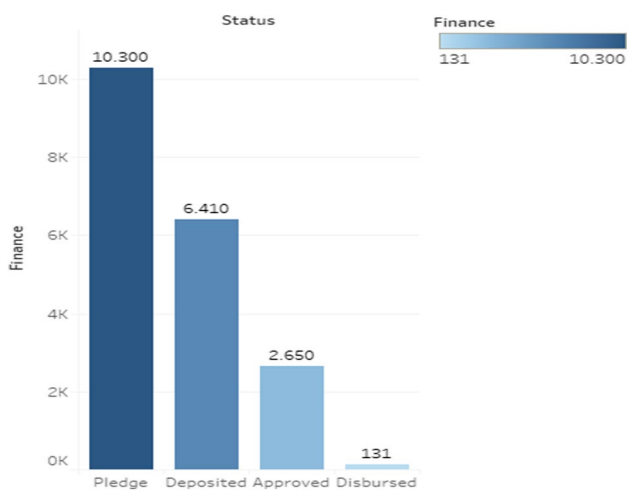
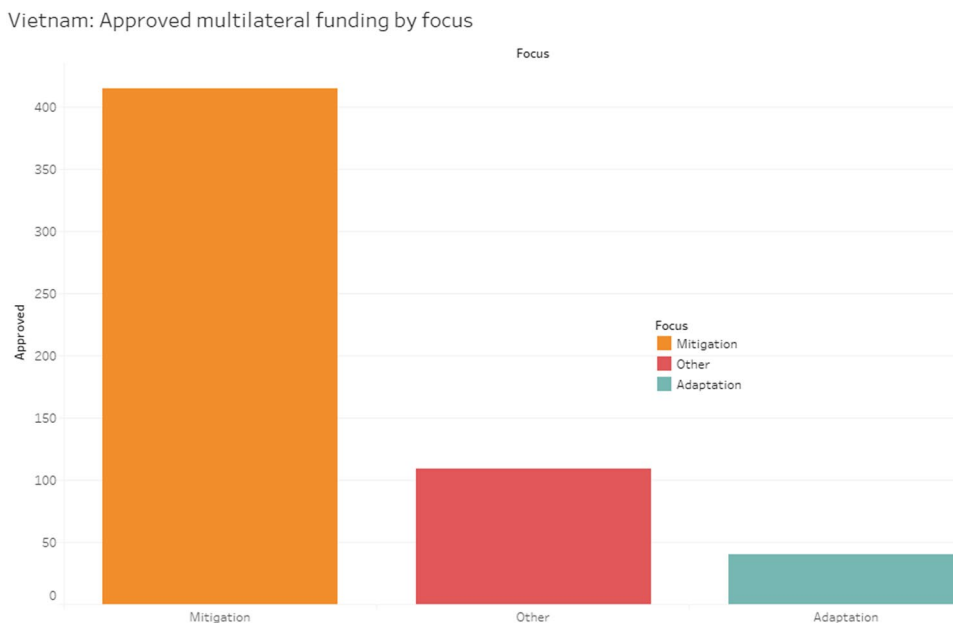


Fig. 3 Track record of the GCF in \$ million. *Source:* Elaboration by the authors based on latest ODI’s CFU (2018) data

Fig. 4 Focus of multilateral climate funding approved for Vietnam (in \$ million). *Source:* Elaboration by the authors based on ODI’s Climate Funds Update (2018) data



73.6% are funds focused on mitigation, while only 9.62% corresponds to projects labelled as adaptation initiatives (see Fig. 4).

Mitigation strategies are addressed at reducing GhG heat-trapping emissions; while *adaptation* strategies are focused on helping countries adjust to irreversible climate changes. Most projects bankrolled by climate finance can be classified as one type, although there are *climate-smart* initiatives that increasingly tackle both mitigation and adaptation initiatives. Meanwhile, UN programme REDD + (not a climate fund) is devoted to reducing emissions from deforestation and forest degradation (Maxwell 2010).

Looking at Africa, Adenle et al., who conduct a series of interviews with stakeholders at all levels, note that that ‘adaptation faces many constraints’, including the lack of climate data, scenarios and impact models, the limited adaptation response so far, with inadequate engagement with local expertise, insufficient adaptation finance and challenging

there are many reasons why this could be the case, including lack of data.

In sum, local climate finance remains blurred and also a challenge.

Adaptation Finance: A Gap Between Rhetoric and Reality

Apart from what Vietnam receives as bilateral funding, according to the latest information from ODI’s Climate Funds Update (CFU)—which looks at public multilateral funds—, there is a total of \$414.4 million in cumulative multilateral climate finance approved for Vietnam, of which

procedures to access it (Adenle et al. 2017). Vietnam needs adaptation funding to cope with climate change. Frequent typhoons, floods, landslides and droughts, together with other factors such as high population density, low-lying land and high levels of poverty concentrated in coastal areas, were responsible for losses equal to 1.5% of its annual gross domestic product between 2001 and 2010 (USAID 2017). Climate projections for this country include an increase in temperatures, more severe weather events and an upsurge in sea levels (IPCC 2014).

Developing countries themselves are investing growing amounts of their national budgets in climate action (Bird

et al. 2016), although it will not be enough. Vietnam's Nationally Determined Contributions (NDCs)—released on occasion of the Paris Agreement in 2015—states, for example, that the national budget will be able to meet approximately only one-third of the financial needs to implement adaptation measures from 2021 to 2030, and 'will seek international support and private sector investment for the remainder' (Vietnam 2015). In fact, NDC's implementation in vulnerable nations relies on significant additional public financial support, as already highlighted in the conditional elements of the NDCs (Bird 2017).

The adaptation/mitigation divide is indeed deeply political. Developing countries—most of them not responsible for climate change, as they accumulate low historical levels of GhG emissions—are vulnerable to climate change and need to acclimate to its irreversible impacts; meanwhile, cutting emissions is a priority for developed donor countries (Adger et al. 2003). The richest 10% nations produce 50% of the Earth's climate-harming fossil-fuel emissions (Oxfam 2018). Vietnam is among the countries that contribute less to climate change, with only a 0.57% of global fossil fuel CO₂ emissions (Emissions Database for Global Atmospheric Research 2018). Although Vietnam was an impoverished country not long ago, it is currently classified among low and middle-income countries, and its economic growth is stabilizing at a 6.5% annual rate (World Bank 2018). Namely, for this country, it is vital to grow while coping with a changing climate, which will require international finance.

However, without indulging in the difference between adaptation and mitigation finance, a few facts are clear: overall, only \$22 billion of global public and private funding were destined to adaptation projects in 2016, and \$5 billion focused on dual benefits globally; in contrast, \$382 billion was dedicated to mitigation projects (Buchner et al. 2017), as shown in Fig. 5.

There is no consensus either about how much money is needed for adaptation purposes. Projected annual requirement estimates for adaptation by 2030 range from of \$30 billion to \$100 billion globally, depending on the source (World Bank 2009).

On paper, dealing with the inevitable impacts of climate change through adaptation strategies is a policy priority considered complementary to mitigation strategies. Accordingly, both Burch, and Kern and Alber note a paradigm shift in policymaking towards integrating adaptation into mitigation policies at different policy levels (Kern and Alber 2008; Burch 2010). Evidence supports this approach; for example, developing and adapting locally without mitigating globally (e.g. using coal-based energy to develop an industrial sector) can bring people who have crossed the threshold of poverty back into penury; likewise, mitigating without allowing people to adapt puts them at risk (Gutiérrez et al.

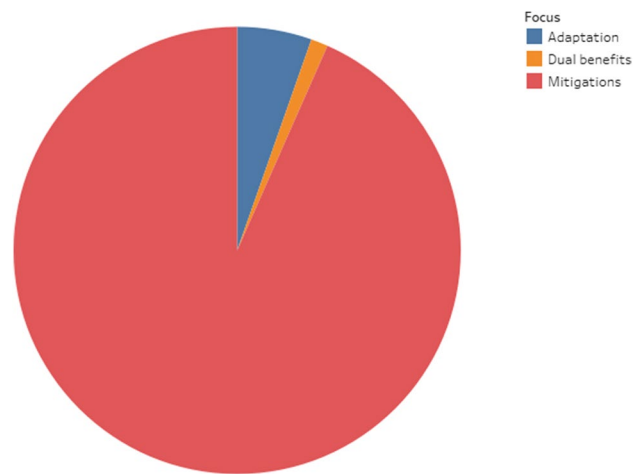


Fig. 5 Distribution of overall climate funding (private and public) according to focus. *Source:* Elaboration by the authors based on Buchner et al. (2017)

2014). Thus, increasingly policy narratives and public statements support climate-smart development, which integrates economic, social, and environmental elements concurrently by promoting production systems that increase productivity and resilience while reducing GhG emissions (Akbar et al. 2014). But there is a gap between policy and practice. While mitigation initiatives are being implemented at all levels, from the local (e.g. the Vietnam Biogas Programme) to the international, adaptation remains mostly local. More than 50% of money invested locally by public multilateral climate funds is directed towards adaptation projects (Soanes et al. 2017); thus, the lack of local approaches in climate finance runs parallel to low levels of adaptation funding.

When one looks at the climate finance landscape, mitigation strategies are prevalent too. Although they are not comparable, a look at the distribution of climate finance across focus areas in different analyses shows a big gap between adaptation and mitigation finance. According to Buchner et al. (2017), 93% of the global climate finance (private and public) in 2016 was destined to mitigation strategies and only 5.3% to adaptation. The latest data on multilateral public finance in Vietnam from the CFU shows a distribution of 73.6% of approved public funding for mitigation and 9.62% for adaptation. Meanwhile, in 2014–2015, 60% of public bilateral climate-related development finance focused on mitigation, 27% on adaptation, and 13% on both mitigation and adaptation (OECD 2016b). Finally, Oxfam notes that the global shares of mitigation versus adaptation finance in 2013–2014 were 67% to 16% respectively (2016). This simplistic comparison does not take into account the incremental costs of a project versus total costs or the impacts of the project that can lead to avoided losses and population resilience. For example, some funds, such as the LDCF, demand

a business-as-usual development plan and will only sponsor the increment (i.e. the additional finance required to lessen any climate—caused risks). Incremental costs are complex to estimate and the GCF issued guidelines for incremental cost calculation only in 2018 (Green Climate Fund 2018b). Thus, the above mentioned comparison is quite crude. But although the methodologies and the datasets of these authors undoubtedly differ, mitigation strategies emerge in the four analyses as the ‘overriding policy approach to climate change’, in Weyrich’s words (Weyrich 2016).

Among the challenges that determine this trend, MacClune highlights ‘ways of accessing finance that are remote from the issue on the ground’, a fracture in finance streams for dealing with climate change, each with its own funding mechanism, and a focus on ‘top–down, bankable projects’ (MacClune 2017), reasons that echo the obstacles for local climate funding. Another factor driving money towards mitigation is the difficulty of measuring adaptation impacts at the local level, since adaptive capacity is a multifaceted issue involving long-term goals, which can be reduced to, even confused with, other outcomes such as increased productivity (GIZ 2016; Klinsky 2014; Neubert et al. 2011; Zommers and Alverson 2018).

There are other reasons why climate finance has mainly focused on mitigation. Biesbroek et al. point out biases in intervention strategies resulting from the choice of analytical lens applied to study barriers to adaptation (Biesbroek et al. 2014). Looking at a subnational level, de Oliveira highlights the long implementation history of mitigation versus adaptation policies (de Oliveira 2008) as a reason for a predisposition in favour of mitigation policies. Huggel et al. indicate the lack of integration of both social and physical climate sciences and scientific and non-scientific actors into problem-framing, as well as the need to increase the quantity and quality of data from remote areas (Huggel et al. 2014). Weyrich alludes to a lack of clarity in framing adaptation (e.g. there is no consensus about whether *barriers* to adaptation are the same as *limits* to adaptation) (Weyrich 2016).

The shortage of money is a constraint to address adaptation needs. Looking at a subnational level, D’Almeida Martins and Ferreira note that adaptation is in the most preliminary level of policy design if compared with mitigation in an urban context, and that the cities in which reported adaptation measures are at the most advanced status are located in high-income countries, with exceptions such as Quito (D’Almeida Martins and Da Costa Ferreira 2011), a city that is very vulnerable to climate change impacts (Gutierrez 2015). That is, when cities have access to funding, they seem to invest in adaptation.

There could be more factors, such as commercial interests especially in the energy sector. These authors could not find literature linking private sector’s interests directly with the preference of climate finance for big mitigation projects. But

the fact is that energy companies are benefitting from climate finance too. Moreover, the energy sector accounted for the most significant share (29%) of climate-related finance in 2016, followed by the transport and storage (16%) and agriculture, forestry and fishing sectors (11%) (OECD 2016b).

Other studies point to the fiscal benefits of investment in mitigation projects vis-à-vis adaptation projects. Renewable energies, for example, attract tax benefits and other incentives in many countries (Sen and Ganguly 2017).

The Role of Public Funding for Local and Adaption Strategies

Public international funding from developed countries is fundamental for developing countries that need to adapt to irreversible changes, in part because it is allocated following other criteria than just commercial consistency and is less risk-averse. Although there is no consistent information on private adaptation funding, the percentage of public funding devoted to adaptation seems higher than what we know of private funds. Indeed, in 2017, increasing amounts of public multilateral public money were channelled towards adaptation strategies, directly addressing the ‘bias towards mitigation projects’ (Watson et al. 2017).

The financial instruments employed to channel climate finance towards local and adaption needs is crucial. Projects at subnational level may be only viable if they rely on grants, which are cash transfers and in-kind support which do not require repayment or interests. And governments in developed countries seem more inclined to award grants than private institutions (see Fig. 6). Commercial loans, not grants, accounted for the highest share of climate-related development finance (both bilateral and multilateral) overall (69%), and 83% of the loans were devoted to energy (i.e. mostly mitigation) projects (OECD 2016b). In comparison, the share of total finance targeting adaptation is highest for low-income countries ‘with grants being the predominant instrument’ (OECD 2016b). Namely, grants are connected to adaptation issues and low-income countries. This is not to say that public finance favours grants; any government would rather have returns on investment. But public finance is often the only way to provide concessional funds, which can unchain resources where they are needed (African Development Bank Group 2018). Consequently, grants are an important vehicle in the distribution of public multilateral funds.

Although there is no unanimity about it, Oxfam is critical of the lack of private funding available in the form of grants. ‘Grant instruments play an essential role in ensuring that those hit first and hardest by climate change get the help to which they are entitled’, while private finance and loans ‘will struggle to meet the essential adaptation needs of poor and marginalized people’ (Oxfam 2016).

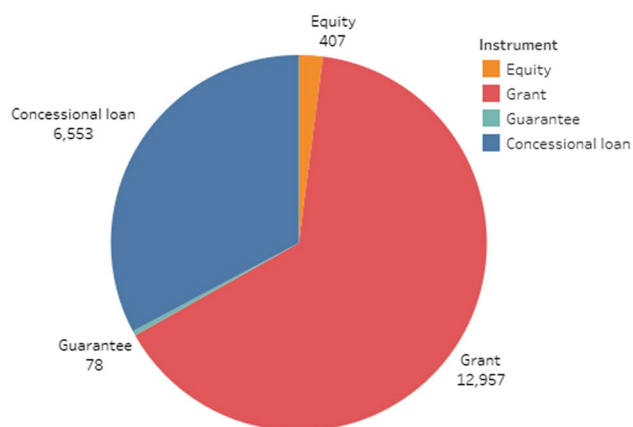


Fig. 6 Distribution of public multilateral funds funding according to instrument (in US\$ mill.). *Source:* Elaboration by the authors based on ODI's CFU data

Table 1 Issues in climate finance. *Source:* Elaborated by the authors

Gaps in climate finance	
	Lack of local finance and voices in top-down approaches
	Gap in adaptation funding vs mitigation funding
	Difference in timescales (e.g. how politics and climate change are measured)
	Disparity between donor's rhetoric and investments
	Lack of data and analysis of local realities

Therefore, adaptation funding in the form of grants is very important for developing countries that need to strengthen their adaptations strategies. The bottom line for the people of the Red River Delta, for example, is that their adaptation needs are still to be met. Yes, the beneficiaries of the Vietnam Biogas Programme have access now to cleaner, cheaper energy, but they still have to face scorching hot climate, flooding, and torrential rains.

Discussion: Five Avenues to Explore

The data and the interviews show there are at least five issues separating local needs, community narratives, and projects affecting people's lives, on the one hand, and on the other, global politics (see Table 1).

Although nobody has been able to measure exactly how much climate funding is funnelled towards local projects, there is consensus about the fact that big national and international projects are attracting most climate finance. The first gap is, therefore, identified at a local level, as ordinary people's voices in developing countries are yet to be heard at climate finance decision-making processes.

A second gap emerges by looking at the focus of climate finance, since adaptation strategies are attracting a smaller piece of the pie than mitigation strategies, no

matter the perspective chosen to look at them. How small this percentage is depends on the author, dataset, and timeframe they choose.

A third gap can be identified when looking at timescales. MacClune says that a challenge for climate adaptation has been the divide between the timescales of climate change, measured in decades, and of local interests, 'usually 'now' with some consideration for the next 2–4 years' (MacClune 2017: 16). In the same vein, another challenge in climate finance is that politics works in 4–5 year periods. The fact that a country can commit to a contribution (e.g. former US president Barack Obama's \$3 billion pledge to the GCF), and shortly after pull out of its commitment (e.g. US president Donald Trump's withdrawal from the Paris Agreement) depending on who is in government hinders progress in the fight against climate change.

In effect, a fourth gap separates donor's rhetoric and

political will. From the point of view of donors, policy is increasingly integrating adaptation narratives; however, real commitment is demonstrated in numbers. The lack of political will continues to haunt public climate finance as leaders from rich countries increase or reduce their contributions according to their ideologies instead of scientific facts and proven needs. In fact, 'lack of commitment from political leaders' is one of the main factors hindering climate action identified by D'Almeida Martins and Ferreira (D'Almeida Martins and Da Costa Ferreira 2011), among other authors.

Finally, there is also a gap in data and transparency to address this issue. How much of climate funding is really invested and needed locally? How can adaptation's impacts be measured effectively? Where will the required funding to face a changing climate come from? The answers to these questions remain largely unclear.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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