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Refereed article

Japanese Climate-Related Aid to South East Asia: Furthering "Weak", "Medium" or "Strong" Sustainability?

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Summary
In the last 20 years, Japan has emerged as a significant donor of climate-related aid to countries in South East Asia through a number of channels such as environmental Official Development Assistance (ODA), the Clean Development Mechanism (CDM), Fast-Start Finance (FSF), and the now rapidly developing Joint Credit Mechanism/Bilateral Offsetting Mechanism (JCM/BCOM). While furthering "sustainable development" is the declared intention behind these efforts, as used by the international community this concept is extremely vague. According to the Triple Bottom Line (TBL) model, sustainability can be broken down into economic, ecological, and social dimensions. This paper looks at the four mechanisms listed above, and asks how far the projects that Japan has funded through them in South East Asia really are conducive to the furthering of sustainability in specifically ecological and social terms. The results show that, with concern to Japan, it is very much still a mixed picture when it comes to climate-related aid. The country's support of others vis-à-vis the environment includes donations to a number of large infrastructure projects having detrimental side effects, both environmental and social, as well as to many smaller projects that are indeed beneficial to both humans and the environment. In addition the analysis brings to light some of the difficulties posed by factors such as different reporting standards for different mechanisms, and the inconclusive project descriptions encountered when researching this subject. It also shows how the lack of a precise consensual definition for the term sustainable development leads to countries funding even environmentally and socially harmful projects in the name of addressing climate change under the United Nations' climate protection process.

Keywords: Japan, climate change, South East Asia, official development assistance, sustainable development, Kyoto Protocol

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Introduction

Climate change is one of the most pressing issues of today, and the response to it will determine the course of future global development and economic growth. Studies by the United Nations' Intergovernmental Panel on Climate Change (IPCC) warn that the effects of climate change will lead to disruptions in food production, a scarcity of fresh water, and an increase in natural disasters and other phenomena that, in turn, will result in a greater risk to livelihood, health, and the overall quality of life. Naturally, different world regions are affected by this phenomenon to different degrees. As such, developing countries are viewed as the most vulnerable due to their having fewer resources with which to adapt to these effects — be they social, technological, or financial (Climate Change Secretariat [United Nations Framework Convention on Climate Change (UNFCCC)] 2010).

According to a study by the Asian Development Bank (ADB) entitled *Economics of Climate Change in East Asia*, South East Asia is among the most vulnerable regions in the world (ADB 2013). Not only is this region highly vulnerable to the effects of climate change, but adaptation and mitigation measures depend to a large extent on financial assistance and technology transfer from developed countries (Sahraie 2011: 12). Looking at the assistance provided to South East Asia, it became a region of interest to Japan concurrently with the latter's economic rise — Japan remained the lead donor of Official Development Assistance (ODA) in Asia up until 2007 when it ceded this status to the United States (Potter 2012: 12). This "Asian bias" in Japan's ODA strategy resulted from "a combination of the evolution of the aid program from post-war reparations, Japan's commercial and strategic interests, and the strategic and political importance of the region" (Potter 2012: 15).

At the time of the 1992 United Nations Conference on the Economy and Development (UNCED) in Rio, the issue of climate change had already become prominent on the international stage and it was there that Japan declared its intent to become an environmental leader. The main mechanism for fulfilling this pledge was to increase environmental assistance to vulnerable countries worldwide. Accordingly, it raised the ratio of environmental ODA to overall ODA from 4.8 percent in 1986 to 20 percent by 1996 (Schreurs 2000: 128–129). The ratio continued to rise throughout the late 1990s, to reach an average level of about 30 percent of total ODA by 2003 (Ministry of Foreign Affairs Japan (MOFA 2005: 6). In addition to ODA, Japan became a major contributor to climate-related aid schemes agreed under the auspices of the United Nations such as the Clean Development Mechanism (CDM) and Fast-Start Finance (FSF) (Climate Funds Update 2013). Given the importance that such contributions had for Japan in achieving its Kyoto Protocol greenhouse gas emission reduction targets (Torres 2013), as well as for creating an image of a country actively contributing to global efforts to address climate change, under the UN-centred Rio Process, it can be rightly claimed that climate-related aid is a core aspect of Japan's climate policy.

Much has been written about Japanese ODA, beginning with ODA being used as a foreign policy tool to fulfil the country's duty of "burden sharing" within the US–Japan security alliance (Yasutomo 1986) — as well as an emphasis on ODA as a method for opening up markets and furthering Japan's commercial interests abroad (Arase 1995; Okano-Heijmans 2012). More recently, attention has been given to the apparent securitisation trend (Potter 2012; Söderberg 2014). ODA is mainly dispersed through bilateral channels, with a substantial amount handed out as yen loans — leading to it being labelled "tied aid" (Arase 1995; Asuka-Zang 2003; Potter 2012). Regarding the underlying ODA strategy, a number of authors have illuminated a prevalent focus therein on infrastructure-related development (Potter 2012; Söderberg 2014; Yamaguchi 2003), that is more pronounced in the case of Japan than it is elsewhere (Söderberg 1996). Some criticise the detrimental effects of such infrastructure projects on the natural environment of recipient countries, such as in the case of large hydropower projects (Schreurs 2004) or of the construction of roads, dams, and ports particularly — in South East Asia the latter contribute significantly to tropical deforestation (Dauvergne 1997). In response to such criticism and the "green" paradigm shift induced by the UNCED in 1992, environmental impact assessments became part of the ODA process in the early 1990s (Kim 2009).

Following the introduction of environmental impact assessment and ODA designated for environmental projects, David Potter (1994) examined such ODA. He pointed out the ambiguity of the main underlying concept, namely the notion of environmental protection. This premise refers to the oft-cited but nevertheless vaguely defined concept of "sustainable development" found in the 1987 Brundtland Report, which also forms the basis for Japan's environmental ODA programme. He concluded that adopting such a vague definition allowed for an allocation of funding for environmental protection activities that fit best with Japan's existing infrastructure-oriented aid profile during the early years of environmental ODA (Potter 1994, 206–207). A study by Hideka Yamaguchi (2005) examined Japanese ODA disbursements in the energy sector from 1993 up until 2002 to illuminate how far disbursements corresponded to the articulated aim of inducing and supporting sustainable development. She concludes that, despite pledges to increase environmental benevolence, Japan's "ODA strategy still actively facilitates fossil fuel-based and larger scale hydropower projects, which have little capacity to enhance environmental conditions in aid-recipient nations" (Yamaguchi 2005: 421). In other words, both Potter (1994) and Yamaguchi (2005) conclude that Japan has continued to fund environmentally questionable projects — despite the country's pledges to the contrary.

In short, the literature highlights economic interests as a driving factor behind Japanese ODA and calls attention to critical aspects such as the above average focus therein on infrastructure projects and their detrimental impact on the natural

environments of recipient countries. What is missing in the studies done to date, though, is an assessment of the nature of environmental ODA and aid distributed through climate-related mechanisms specifically in terms of their environmental impact.

This paper attempts to fill this gap by applying a sustainable development lens to both environmental ODA and assistance provided by Japan, through climate-related aid mechanisms under the UN, to South East Asia. In other words, it assesses in how far Japan's climate-related aid is conducive to the genuine realisation of the pledge made at the 1992 UNCED that the country would become a global environmental leader and assist other countries in their efforts to follow the path of sustainable development. The focus here is on South East Asia as a case study because of its strong demand for assistance in addressing climate change and also due to the fact that, over the last 20 years, Japan has provided substantial amounts of climate-related aid to the region on the basis of the officially stated aim of furthering sustainable development there.

Regarding the structure of this paper, it investigates the four channels used for disbursing Japanese assistance according to the order in which they came into existence. It thus begins with environmental ODA, which also incorporates climate change-related aid, as the most longstanding such channel. It then turns to the CDM and FSF under the UNFCCC and finally looks at the Joint Credit Mechanism/Bilateral Credit Offsetting Mechanism (JCM/BCOM) recently set up by the Japanese government. After laying out the related data for each channel, it discusses the nature of the projects funded — specifically in terms of the different dimensions of sustainable development explained in the next section.

Sustainability and Development

As the words "development assistance" imply and the nomenclature United Nations Conference on Environment and Development highlights, the issue of environmental protection — including climate change adaptation and mitigation — is closely related to issues of development. This is exemplified above all by the idea of sustainable development, which constitutes one of the principle concepts in the aforementioned UNFCCC that originated out of the global gathering in Rio. The oft-cited definition of sustainable development from the Brundtland Report states that it:

> […] is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development: 41).

This rather vague definition aims to successfully include ecological, economic, and social aspects, as well as to integrate different strands of developmental theory (Hauff, Kleine 2009: 7). As part of the Rio Process following the UNCED, the so-called Triple Bottom Line (TBL) model has gained in importance. It stresses the

necessity of also taking into consideration economic, ecological, and human factors as equally important dimensions of sustainability (Hauff and Kleine 2009: 11).

In the years since, a controversy has emerged about the relationship between the economic and ecological dimensions — as exemplified by the debate between Neoclassical Economics and Ecological Economics. Neoclassical Economics posits that limits to economic growth spelled out by the Club of Rome can be circumvented by technical progress, and that no imperative to preserve certain ecosystems exists (Hauff and Kleine 2009: 26–28). Ecological Economics, on the other hand, takes the idea of ensuring the preservation of ecosystems as the starting point for sustainability arguments. In light of the irreversibility of ecosystem destruction, it questions the claim by Neoclassical Economics that ecological capital can easily be substituted (Hauff and Kleine 2009: 30–31).

These approaches represent two opposing poles within the sustainability debate wherein one party claims that growth and sustainable development can go "hand in hand" while the other assumes that sustained economic growth will irrevocably damage the environment, while also eventually reaching its limits (Hauff and Kleine 2009: 33). In other words, Neoclassical Economics — which regards economic growth in a positive light — represents what is also referred to as "weak" sustainability, while Ecological Economics puts more emphasis on the environment and thus exemplifies "strong" sustainability (Hauff and Kleine 2009: 15–17). However, both positions pay little attention to the social dimension of the TBL model. A recent working paper by the Organisation for Economic Co-operation and Development (OECD) has attempted to draw attention to "human wellbeing" as an important aspect of development. Echoing increasing calls for considering the human or social dimension of development, it claims that "the concept of well-being is relevant for countries of *all* levels of development" (Kolev et al. 2014: 8–9; italics in the original).

Correspondingly, this paper takes into account social aspects alongside the economic and ecological dimensions of sustainable development in devising analytical categories for discussing the nature of the climate-related aid given by Japan to South East Asia. Due to the prior emphasis in the literature on the economic drivers behind Japan's assistance, the focus of the discussion here will rather be on the ecological and social dimensions thereof. In other words, the projects funded by Japan are examined in light specifically of their environmental and social impacts. These assessments are based on only a few basic criteria, since formulating an elaborate analytical scheme would exceed the scope of this particular paper. But before deliberating on the analytical categories, a few words about the collection and processing of data are in order.

For each of the four bilateral funding channels, information is presented in the following manner: If data availability permits it, a graph is included to illustrate the amount of funding per sector as a percentage of the total amount disbursed; a second

one displays the number of projects realised in each sector. While funding amounts below 2 percent of the overall total are not broken down further, all projects are listed even if the total number of realised projects is as small as one. While the former is representative of the way in which ODA data is typically presented, the latter allows for a different perspective to be taken.

The data is collected from a number of different sources: ODA data is taken from Mori (2011) and reorganised so as to show the amount of funding disbursed for each sector. Data on CDM projects comes from the UNFCCC CDM Database and FSF data from the Climate Funds Update Database. In both cases, all projects listed as being funded by Japan where one of the ASEAN member states has been a recipient were extracted into a table including relevant information such as the nature of the project and the amount of funding disbursed. These tables serve as the base for calculating both the amount disbursed per sector and the number of projects within each. In case the project description in the database was insufficiently elaborated, the one provided by the responsible aid agency in Japan was consulted as well.[1] For the JCM/BCOM, a factsheet provided by the Institute of Global Environmental Studies in Japan was used and supplemented with recent Japanese Ministry of the Environment factsheets. The data was extracted and reorganised in the same manner as for the other funding channels.

Turning to the analytical categories, the environmental dimension here is understood to include climate-related criteria and in essence assesses how far projects are conducive to the reduction of CO_2 emissions and the preservation of the natural environment. Social sustainability focuses, meanwhile, on social networks and access to basic commodities such as clean water and food especially for weak and disadvantaged members of society. In evaluating these two dimensions, more weight is given to long-term effects than to short-term ones. If a project category has detrimental effects on the natural environment as well as on members of society — in other words, it scores low on both ecological and social sustainability — it is taken to resemble "weak" sustainability. Project categories scoring low on one and high on the other dimension are labelled "medium." In turn, project categories furthering both social and ecological sustainability are regarded as examples of "strong" sustainability. As the criteria outlined here are not definitive, but rather form a continuum, each project category is discussed so as to illuminate the reasoning behind each chosen classification. In order to avoid a doubling of arguments and boring the reader, each project category will be discussed only once. The results are then summarised in graph format in the Conclusion.

1 In most cases, the databases consulted provided a link to such a project description. If and when this was not the case, the listed projects number and name being entered into a search engine yielded the same result.

Climate-related aid by Japan

The four channels for climate-related aid discussed here — environmental ODA, the CDM, FSF, and the JCM/BCOM — differ both in their duration and monetary scale. To provide an overview of these differences, Table 1 below includes also some basic information such as the context in which the respective channel is embedded, the duration of disbursement, as well as the total amount of money funnelled through each to recipients in South East Asia. For environmental ODA, the duration and amount given is that for the time period 1995–2005.

Table 1

Name	Environmental ODA	CDM	FSF	JCM/BCOM
Context	Japan's official development assistance	UNFCCC, Kyoto Protocol	UNFCCC, Copenhagen Accord	Japan's official development assistance, lobbying for inclusion in the UNFCCC
Duration	1995–2005	2005–2013	2009–2012	2010–?
Recipients	Not only ASEAN members, but others as well	Cambodia, Indonesia, Malaysia, Singapore, Thailand, Vietnam	All ASEAN members states except for Brunei	Vietnam, Laos, Indonesia, Cambodia, Myanmar
Amount (USD)	3.8 billion	0.5 million	4 billion	feasibility study phase

ODA data taken from OECD Database QWIDS; CDM data taken from UNFCCC CDM Project Database; FSF data taken from Climate Funds Update 2013; JCM/BCOM data taken from Ministry of Environment Japan (MOE) (2015)

Environmental Official Development Assistance

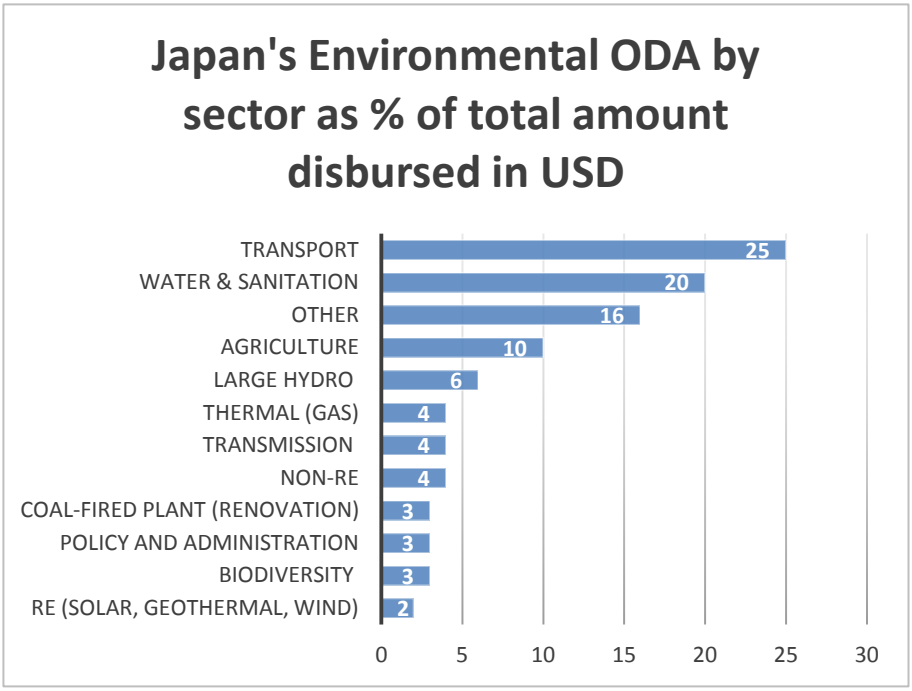
Environmental ODA constitutes the most long-running form of climate-related aid by Japan, and is defined by the OECD as:

> ODA […] has the environment as its primary purpose and such which has the environment as an important secondary purpose. This definition is based on the notion that environmental protection should not be carried out only within the environmental sectors, but in all sectors through changes in, for example, production methods or decision making (Mori 2011: 5).

Such a broad definition allows for a whole range of measures to be classified as environmental ODA. Despite environmental ODA already emerging in the late 1980s, the timeframe of this paper begins in the mid-1990s. The reason being this is

that it was not until 1992 that environmental conservation was embraced in the first ODA Charter, which stipulated that "environmental conservation and development should be pursued in tandem" (MOFA 1992). Around the same time, Japan announced its desire to become a global environmental leader and subsequently expanded the amount of capital dispersed and the range of sectors covered. The date chosen here is not limited to environmental aid given to South East Asia, but rather covers Japanese environmental aid in general between 1995 and 2005. The exact number of projects per sector cannot be shown due to the aggregated nature of the data retrieved.

Figure 1: Data taken from Mori 2011 and reorganised by the author



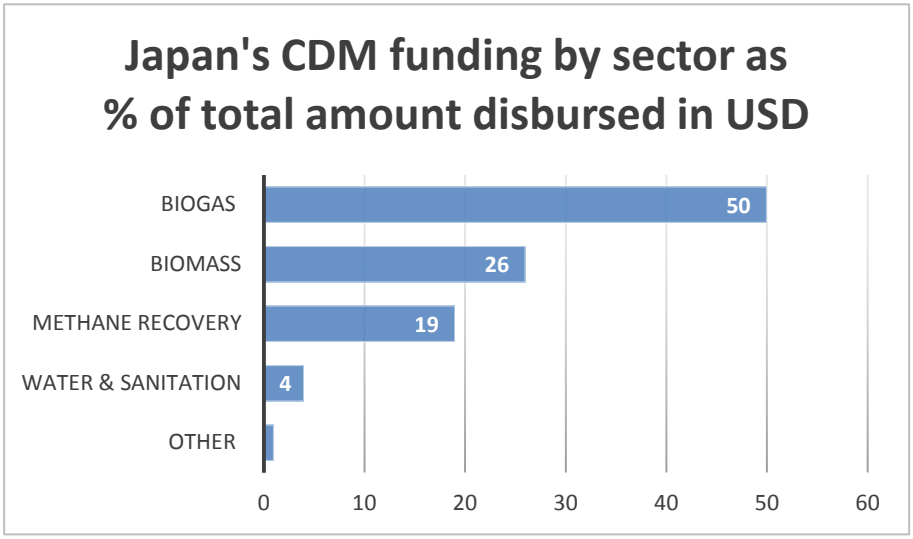
Clean Development Mechanism

In 1997, the Kyoto Protocol was adopted in Kyoto, Japan, with it constituting the first legally binding climate change agreement reached under the UNFCCC. It committed its signatories (so-called "Annex 1" countries) to greenhouse gas emission reduction targets and, in addition, established the CDM as one means by which to achieve these. The intent of the CDM is stated in Article 12 of the Kyoto Protocol as follows:

> The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3 (United Nations 1998: 11).

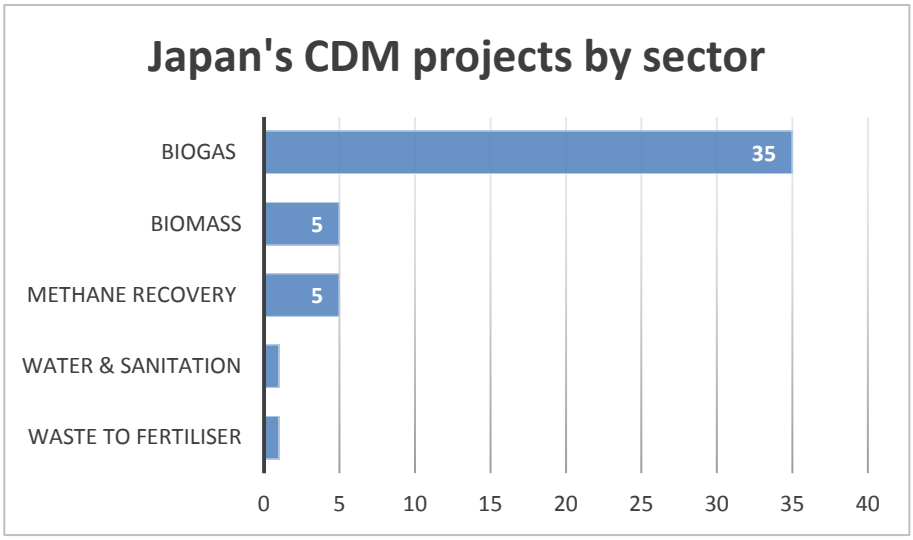
The CDM commenced working in tandem with the Kyoto Protocol, entering into force in 2005. According to the UNFCCC CDM Project Database, Japan funded 44 projects in South East Asia between 2005 and 2013 with a total value of almost 500,000 USD, most of which pertained to either waste handling/disposal or to energy industries according to the UN CDM classification.[2] These broad categories have been broken down further here on the basis of which kind of waste was being treated and how it was used to produce energy. This is done in order to show the differences therein, and so as to also later allow for a discussion of them in relation to the different sustainability dimensions.

Figure 2: Data taken from UNFCCC CDM Project Database and reorganised by the author



2 Other publications such as the CDM Project Database for Japan put together by the Institute for Global Environmental Strategies list a different number of projects. The figure presented here was retrieved from the database using the advanced search function, on the basis of the following search criteria: no title, any sector, all scales, any methodology, ASEAN member countries as host countries in alphabetical order, and Annex I Country Japan (with no further restrictions on the remaining search criteria such as status, registration date, and so on).

Figure 3: Data taken from UNFCCC CDM Project Database and reorganised by the author



The realised reductions in greenhouse gas emissions should be achieved further to projects that would also have been realised in the absence of the Kyoto Protocol (United Nations 1998). This requirement seems to be taken rather lightly by Japan, as made evident in the country's ODA White Paper of 2007:

> Japan believes that ODA can be used for CDM projects if both donor and recipient countries confirm that it does not lead to the diversion of ODA. […] Japan intends to continue the promotion of CDM projects in that way (MOFA 2007).

However, despite the declared intent to use ODA to further CDM projects, this is not actually the case with projects in South East Asia. Out of the 44 projects undertaken by Japan there to date, only one has omitted to make a clear statement about foregoing ODA or public funding (UNFCCC). The last CDM project by Japan was approved in February 2013 (UNFCCC).

Fast-Start Finance

In 2008, Japan announced the "Cool Earth Partnership" as a bilateral initiative based on the pledge to "extend the hand of assistance to developing countries" so as to support their efforts in reducing greenhouse gas emissions under the terms of the Kyoto Protocol (Cabinet 2008: 1). In 2009, however, the FSF was established as a new global funding mechanism by the Copenhagen Accord of that year, which stated that:

> The collective commitment by developed countries is to provide new and additional resources, including forestry and investments through international institutions, approaching USD 30 billion for the period 2010–2012 with balanced allocation between adaptation and mitigation (UNFCCC 2010: 7).

The FSF, aimed at helping developing countries address climate change, thereafter replaced the Japanese government's aforementioned Cool Earth Partnership. In total, Japan pledged 15 billion USD out of which 4 billion USD were disbursed to countries in South East Asia (Climate Funds Update 2013).

As with the CDM, funding provided through the FSF is supposed to reflect "new and additional" commitments (Climate Analytics: 3). Regarding Japan's contributions thereto, it is rather difficult to distinguish FSF projects from environmental ODA due to different reporting methods. As a result, projects might end up being counted into either only one or alternatively both schemes (Kuramochi et al. 2012: 3). Alongside its bilateral ODA, which mainly consists of the provision of loans, grants, and technical assistance, Japan also contributes financially to multilateral aid agencies. Taking an overview of Japan's FSF projects as of February 2012 — so-called "Other Official Flows," meaning funding other than ODA — they are almost exclusively going to multilateral aid agencies and research networks (UNFCCC 2012). This implies that the funds for Japan's FSF projects in South East Asia are largely taken out of the country's ODA budget. As such, this paper tentatively concludes that a substantial portion of projects discussed here can be counted as being financed through ODA. This begs the question of whether these projects would have been realized with environmental ODA anyway, and, further, which ones have been implemented above and beyond the existing environmental ODA scheme. Considering that more than half of the money that Japan originally pledged it did so through the Cool Earth Partnership in 2009, and then transferred into the FSF once it had been eventually set up, the funds cannot be regarded as being wholly new ones (Kuramochi et al. 2012: 17). Consequently, it can be said with certainty that not all FSF funding exists in furtherance to previously allocated amounts — even if precise numbers for these sums cannot be given due to a lack of conclusive related reports or evidence.

Figure 4: Data taken from Climate Funds Update Database and reorganised by the author

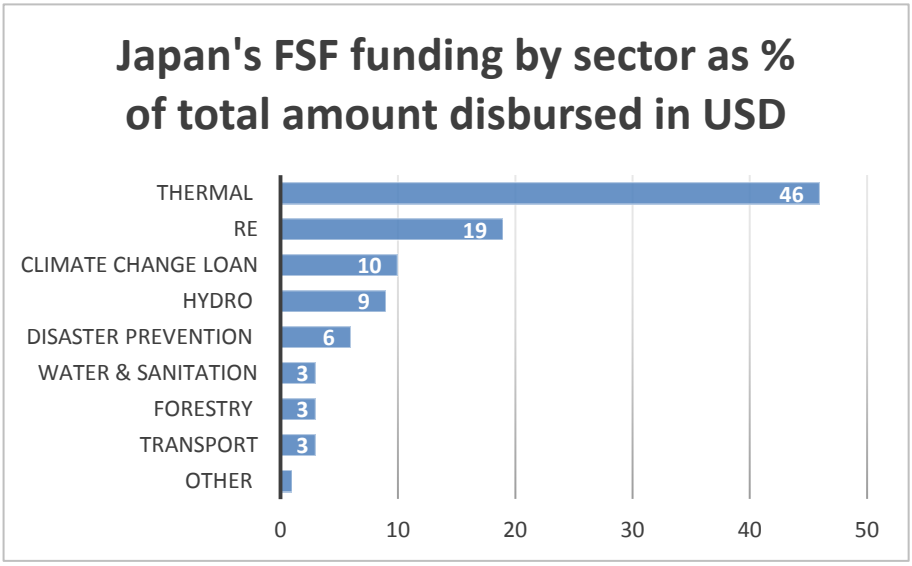
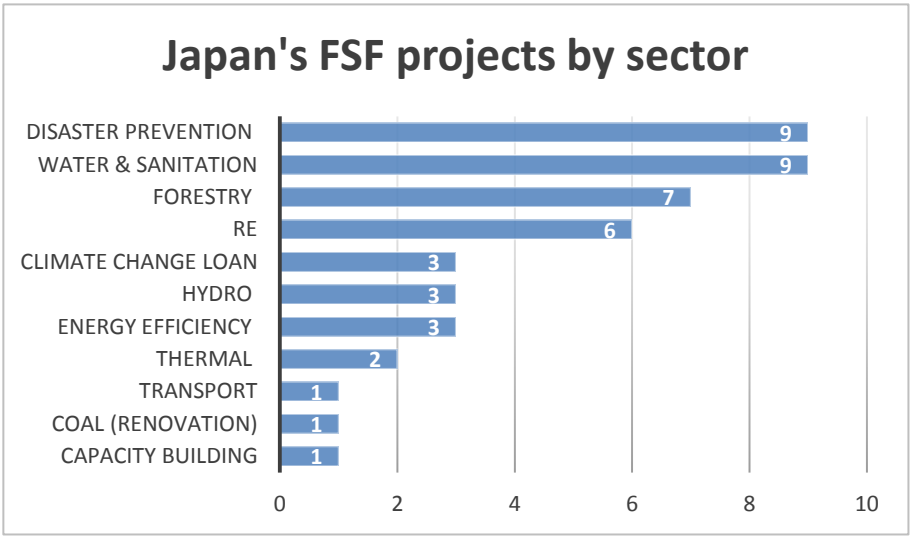


Figure 5: Data taken from Climate Funds Update Database and reorganised by the author

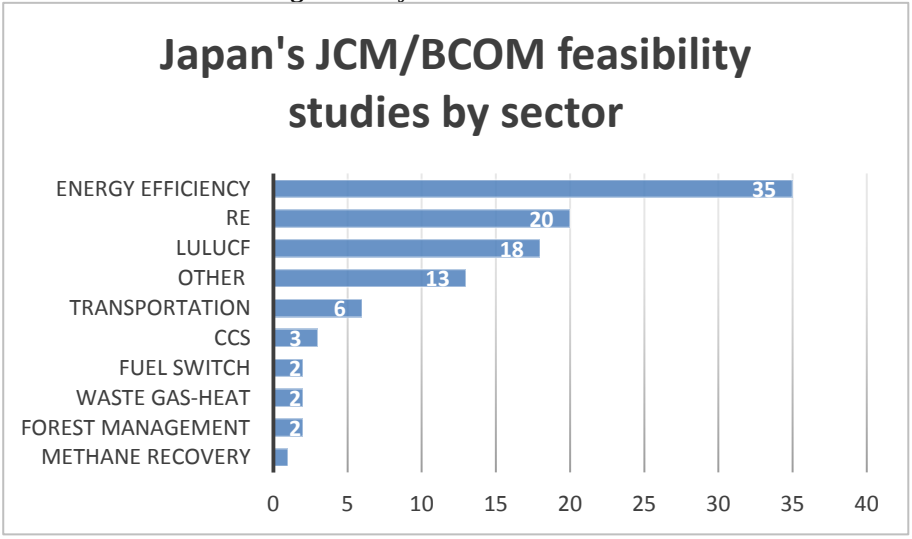


Joint Credit Mechanism/Bilateral Credit Offsetting Mechanism

In 2010, Japan set up the aforementioned JCM/BCOM initiative. At the 18th Conference of the Parties to the UNFCCC, held in Doha in 2012, Japan provided detailed information on such things as modalities and procedures for the JCM/BOCM. Additionally, it began lobbying to have it included as an offsetting mechanism in a follow-up agreement to the Kyoto Protocol (CDC Climate Research 2012: 3).

The 11 countries that have applied for funds from the JCM/BCOM initiative up to now also include five South East Asian ones: Cambodia, Indonesia, Laos, Myanmar, and Vietnam. Since no projects have actually been realised so far under this mechanism, research for this paper turned to the feasibility studies conducted by the end of 2014 in order to attain an impression of the sectors and energy sources considered to form part of this scheme. It is not possible to present the amounts of funding needed by sector, as feasibility studies omit estimates of the costs or funding required. The discussion of JCM/BCOM projects is based on the assumption that the feasibility studies are representative of future projects. The issue of what constitutes additional funding will become relevant if the JCM/BCOM is accepted as an offsetting mechanism under a UNFCCC climate agreement.

Figure 6: Data taken from MOE, CEG 2012; MOE 2014; Takahashi et al. 2014 and reorganised by the author



Discussion of findings

After laying out the obtained data for each disbursement mechanism in the previous section, the ensuing one turns to a discussion of these findings in terms of the

aforementioned analytical categories of weak, medium, and strong sustainability. The different project categories are discussed for each mechanism, beginning with the largest amount of funding and then progressing in descending order.

Environmental Official Development Assistance

Transportation received the largest share of environmental ODA funding. Regarding the environmental dimension, better public transportation options have a positive long-term impact, due to the dispensing with the need for people to purchase and regularly use a car — which obviously results in lower overall greenhouse gas emissions. Turning to the social dimension, there is a chance of there being a possible negative short-term impact on local inhabitants, due to their resettlement elsewhere to facilitate construction or due to the impact of large-scale construction on the daily lives of the people living in surrounding areas. However, in the long term public transportation has a positive effect on people's lives by providing passage to and from possible job opportunities even for those people unable to afford a car. To sum up, the transport sector has substantial positive effects in the long run and thus is categorised as strong in terms of sustainability.

Water and sanitation, as the second-biggest sector covered by environmental ODA, can be seen as positive in terms of its environmental and social dimensions. It ensures that less toxins and other substances harmful to the environment are released back into the natural hydrological cycle, which also has a positive effect on the livelihoods of people dependent on this water for their daily lives. As such, this sector belongs to the category of strong sustainability.

A substantial sum of money was also disbursed for improving agricultural methods by making them less intense in terms of land use, and of adapting them to the effects of climate change (such as limited irrigation and reduced water resources). As a result, the need to constantly cultivate new land in order to feed an increasing population size decreases — this would otherwise constitute a threat to existing ecosystems. Regarding the social dimension, these measures help secure supplies of staple foods in the face of rising demand and changing climatic conditions. Thus, projects in the agricultural sector are conducive to both environmental and social sustainability and are, therefore, classified as strong.

Large hydropower plants, including as part of their inception the construction of dams, constitute an energy source that does not produce CO_2. However, the construction of a dam with a large water reservoir is highly intrusive in terms of its negative impact on both biodiversity and on forests within the local ecosystem. In addition a dam requires people living in the designated watershed areas to be resettled elsewhere, which results in the permanent loss of their homes, fields, and often social structures as well. With these detrimental effects on both dimensions in mind, large hydropower projects take their place in the category of weak sustainability.

Another energy-related sector present in Japanese environmental ODA to South East Asia was the construction of gas-fired power plants. In terms of environmental impact, they emit about 50 percent less CO_2 than coal-fired power plants do. Pollution and smog caused by gas-fired power plants have a lesser effect on people's physical health than a coal-fired power plant does, but more impact than renewable energy sources do. In the same vein, while there are no obvious negative social effects here it cannot be claimed that there are positive ones either. Therefore, gas-fired power plants falls into the category of medium sustainability.

The renovation of existing coal-fired power plants has a positive impact on the environment, based on the reduction of greenhouse gas emissions from the plants in question. However, renovating a coal-fired power plant prolongs its existence and keeps recipients on a long-term path of coal use. It should also be pointed out here that these renovations are mainly done on power plants previously funded by Japanese ODA. Thus, it can also be described as an attempt to mitigate the negative impacts of past ODA efforts. Regarding the social dimension, the reduction of emissions from these plants and the mitigation of energy loss have a positive effect on people's bodily health. Overall, these efforts are categorized as of medium sustainability — though ultimately due to their remedial rather than to their preventive nature.

Turning to the renovation of old transmission lines and pipelines, these projects mitigate the energy loss from power being transported over a distance and thereby help to decrease the overall need for energy generation by ensuring a better use of existing energy. Therefore, the projects help to decrease CO_2 emissions from electricity production as well as to plug the environmentally damaging consequences of leaking pipelines. Decreasing air and soil pollution is also positive in social terms, resulting in strong sustainability.

Biodiversity conservation projects have a positive effect regarding the environmental and social dimensions. They help preserve existing and endangered ecosystems and their native species, and thereby also helps to sustain a source of food and income for those people dependent on the existence of the ecosystem in question. As such, these projects carry strong sustainability.

Another sector that has received a degree of funding is that of policy and administration. Since even the best environmental and climate protection policy is practically worthless if it is not properly implemented and monitored, efforts to assist countries in building up their capacities to effectively govern such policies have a positive impact. Successful implementation and monitoring can ensure that people who would otherwise have been adversely affected by environmental degradation in their daily lives do not have to suffer such a fate, which resembles a positive effect in a preventative sense. Therefore, policy and administration constitute a sector with strong sustainability.

Renewable energy projects, such as wind power and biomass, have a positive impact on the climate due to them constituting a CO_2 neutral energy source. Also, most projects exist on a comparatively small scale and follow a decentralised setup, which make them less intrusive into the existing ecosystem and require fewer transmission lines to get the energy to where it is needed. The prevention of greenhouse gases being released into the atmosphere also has a positive impact on people's livelihood by contributing to cleaner air to breathe, and decentralized energy projects provide chances for local residents to be involved in both the project's development and its later management. Therefore, such renewable energy projects constitute an example of strong sustainability.

Another sector under environmental ODA, so-called "non-renewable energy projects," cannot be clearly categorised due to the vague nature of associated project descriptions. In effect, large hydropower projects fall into the category of weak sustainability, constructing gas-fired power plants and renovating coal-fired ones is regarded as being of medium sustainability, while the public transport sector, water and sanitation, agriculture, the renovation of transmission lines and pipelines, biodiversity, environmental policy and administration, as well as renewable energy all pertain to what can be called strong sustainability.

Clean Development Mechanism

Turning to projects funded under the CDM, the biggest share were made up of those that first generate biogas from industrial waste water and, in a second step, electricity from the retrieved gas. Such projects have a twofold positive impact on the environment: they decrease, first, the volume of methane released from industrial waste water treatment in open ponds and, second, ensure that the water is of better quality when it is released back into the hydrological cycle. The necessary equipment for this is set up on the industrial production site itself and, therefore, does not result in additional damage being done to the environment. At the same time, less water pollution and a reduced amount of greenhouse gases being released into the atmosphere also have a positive effect on the health of people living in the vicinity of these industrial production sites. Therefore, due to the positive effects for both people and the environment, this project category resembles strong sustainability.

Another large proportion of funding went into biomass projects for energy production from organic industrial waste, such as rice husks and empty fruit bunches. These are classified as strong for the same reasons that renewable energy projects under environmental ODA are. In addition, using organic industrial waste ensures that land used for agricultural purposes in the area is not turned into land for biomass production, thereby helping to secure food production while also enabling energy generation.

The next project category, methane recovery from waste landfills, constitutes a resource-intensive way of processing garbage compared to other treatments, such as recycling. Also, the method is still rather inefficient and tends to release methane into the air and, thereby, contributes to climate change. At the same time, it does nothing to prevent the pollution of land surrounding the landfill site, which, in turn, also negatively affects the health of people and animals living in the area. Thus, these projects are seen as constituting weak sustainability.

Projects in the category of water and sanitation resemble strong sustainability based on the discussion of such projects in the environmental ODA section. To sum up, biogas from industrial waste, biomass, as well as water and sanitation projects all exhibit strong sustainability, while methane recovery falls into the weak sustainability category.

Fast-Start Finance

Thermal power plants, which received the largest amount of funding, are classified as weak following the arguments brought forward in the environmental ODA section. An interesting aspect here is that all the funding went into constructing a new coal-fired power plant and expanding an existing one in Indonesia. Following the arguments above, renewable energy projects are seen as strong and large hydropower projects regarded as weak in terms of their sustainability. The third largest project category, entitled “climate change”, cannot be categorised into any of the three possible ones, due to highly vague project descriptions that do not allow for any inferences to be made as to their exact nature.

Disaster prevention projects encompass a whole range of activities, but the basic idea behind them consists of protecting both humans and the environment from the effects of natural disasters. Therefore, in theory, they can be seen as strong, both in terms of the ecological and social dimensions. Since, however, about half the ascribed funding actually went into infrastructure reconstruction efforts in the Philippines without particular attention being paid either to their environmental or their social dimension, the overall sector has to be classified as medium here.

Transport, as cited above, resembles strong sustainability. The two smallest project categories, water and sanitation, forestry, fall into the category of strong sustainability. The arguments brought forward above also apply, under this mechanism, to water and sanitation. Forestry as a project category is aimed at preserving or managing woodlands in a way that prevents deforestation. It has a positive impact on the environment since the forest is home to many species and plants and prevents the irrigation of land that might otherwise be lost. The preservation of such habitats, including native species and plants, also avoids severe negative effects on the daily lives of people living in and around the forest, who depend on the natural resources that it provides. It is, therefore, also regarded as a project category with strong sustainability.

Summing up, both thermal power and large hydropower projects are of weak sustainability. Disaster prevention in this particular case can be said to carry medium sustainability. Renewable energy projects, water and sanitation, forestry, as well as public transport all exhibit strong sustainability meanwhile.

Joint Credit Mechanism/ Bilateral Credit Offsetting Mechanism

The arguments supporting the biggest sector, energy efficiency, resemble those for renovating transmission lines in the sense that reducing energy demand is conducive to the preservation of the environment and human health by consequently scaling back the demand for electricity generation and emissions in the first place. Thus, it is an example of strong sustainability. The renewable energy sector also falls into the category of strong sustainability following the discussion above. Land use, land-use change, and forestry (LULUCF) covers a range of projects in the arena of agriculture and forestry and, in line with the previous two sectors, is similarly regarded as strong in terms of sustainability. For the sectors of transportation, forestry, and methane recovery, the classification follows the same logic explained in detail above and thus they resemble, respectively, strong, strong, and weak sustainability.

Carbon capture and storage (CCS) is a project category that was not prevalent under the other mechanisms. While reducing carbon emissions by capturing them before they are emitted into the atmosphere is indeed positive, the question of storage remains controversial. The possibility that storing large amounts of CO_2 in one place does harm to the environment and to the people and animals living in that location has not been completely ruled out yet. With these uncertainties, it is thus regarded as only pertaining to medium sustainability.

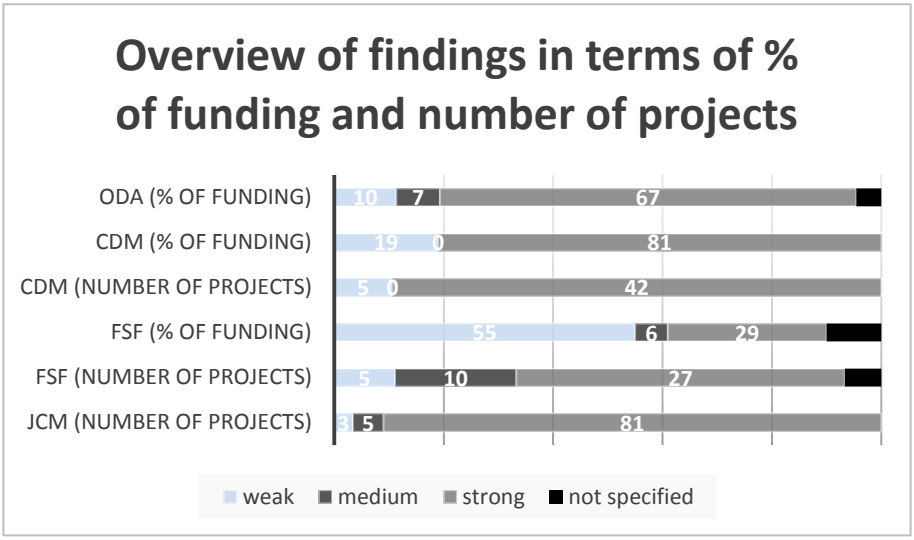
Fuel switch projects that facilitate a transition from using coal or oil to gas instead are regarded as of medium sustainability here based on the arguments introduced earlier vis-à-vis the construction of gas-fired power plants. Using waste gas for heat generation is, like with methane recovery, put into the category of weak sustainability. In short, while energy efficiency, renewable energy, LULUCF, forestry, and public transportation pertain to strong sustainability, gas-fired power plants, fuel switch technology, and CCS resemble medium sustainability, and waste gas-generated heat as well as methane recovery are, meanwhile, of weak sustainability.

Conclusion

Over the last 20 years, Japan has provided substantial amounts of climate-related aid to South East Asia with the officially stated aim of furthering sustainable development in the region. This paper asked how far projects funded there by Japan in the name of environmental and climate protection are conducive to realising the

country's pledge in 1992 to become a global environmental leader. To this end, the projects that have been funded in South East Asia since the mid-1990s were thus analysed in light of their sustainability credentials.

Figure 7: Data taken from previous graphs and reorganised by the author according to the discussion of sustainability dimensions



The results of this study are shown in graph format in Figure 7, revealing both differences and similarities between the four different funding channels —ODA, CDM, FSF, and JCM/BCOM — that were specifically scrutinized. It shows that while funding for projects with strong sustainability dominates both environmental ODA and CDM, the contrary is the case for FSF — with over half the funding herein being disbursed for weak sustainability projects, such as thermal power and hydropower. Presenting both the amount disbursed and the number of projects realised clearly shows that the level of funding invested does not necessarily match up with the number of projects realised. This is illustrated most clearly by the five big energy infrastructure projects situated in the weak sustainability category, which between them account for over half of the funding disbursed under the FSF.

On the other hand, it shows that Japan funds significantly more small-scale projects, which are less cost intensive and appear insignificant in the graphs when simply looking at the amount of funding disbursed. Considering the apparent tendency of large energy infrastructure projects with weak sustainability to be cost intensive and the opposite, meanwhile, being the case for projects with strong sustainability, it becomes clear that the amount disbursed is not the decisive factor — rather the nature of the projects funded is. Extrapolating this to JCM/BCOM, the focus on

projects with a strong sustainability in the feasibility studies does not necessarily mean that this focus will be represented as intensely in the eventual funding pattern.

Other noteworthy aspects brought to light pertain to the additionality of funding and the difficulty of finding conclusive data. Regarding the additionality requirement, it can be said for the FSF that a certain number of the projects were clearly funded using ODA money. The difficulties in ascertaining exactly how many projects this applies to highlights both the obscurities that result from the different reporting mechanisms used and the highly diffuse nature of reporting. In addition, some project descriptions are so vague in nature that it is nearly impossible for scholars to make out exactly what they translate into in practice.

Returning to the original aims spelled out at the beginning of this paper, the analysis shows that while Japan funds many projects that contribute to more sustainable development in recipient countries a substantial amount of money still flows also into projects related to energy infrastructure — with detrimental effects upon the environment. At the same time, the analysis reveals that such infrastructure projects should not be blanket demonised as they differ widely in their sustainability levels — as illustrated, for example, by the strong sustainability of public transportation projects. To conclude, environmentally harmful projects are still a part of Japan's aid portfolio — but they are complemented by a large number of smaller and less costly projects with strong sustainability, as well as by large-scale projects for sustainable urban development.

Considering the pledge made in 1992 by Japan that it would become an environmental leader, the continued funding of environmentally and socially detrimental projects in the name of sustainable development is problematic. It shows that the criticism brought forward by earlier studies of environmental and energy-related ODA is, in part, also applicable to the assistance provided through UN climate mechanisms. Focusing instead on projects with strong sustainability would be more conducive to realising the country's articulated leadership aim. In this regard the JCM/ BCOM feasibility studies' focus on such projects bodes well, but it remains to be seen which projects will ultimately be realised.

One last aspect that should be pointed out here is the lack of attention that has been paid to the climate and sustainability strategies of the respective recipient countries, since they also determine the nature of the projects implemented in the name of furthering sustainable development. These, unfortunately, could not be addressed in this paper and are pointed out, therefore, as an area that would profit from further research.

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