

A Study of the Financing System Possibilities for Adaptation to Climate Change

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Abstract

This research explores the potential of financing systems - the provision of money on agreed terms to facilitate a project - to increase the effectiveness and efficiency of institutions which promote adaptation to climate change. Two approaches are used: 1) indicators to evaluate environmental institutional performance (Mitchell, 2007) ; and 2) the analysis of a case study of Samoa, a small island developing state in the Asia-Pacific region, which are vulnerable to climate impacts. The research is based on the hypothesis that the most effective financing system for adaptation to climate change is one where global financing organizations provide grants directly to local organizations.

Financing systems like that operated so far by the Global Environmental Facility (GEF) typically fund national or regional projects focused on environmental issue areas. This will fail to account for the wide range of climate impacts, resources, and socio-cultural aspects found particularly in large nations. I am following the financing system of the modality of GEF Small Grants Programme which is conducting direct funding to local organizations. I believe that this type of system has a potentially better mechanism to achieve adaptation to climate change: it addresses interlinked issues prioritized according to the specific needs of community stakeholders. This financing system will also generate better performance, especially in terms of cost-efficiency, transparency and stakeholder participation.

To assure the effectiveness of the financing system for adaptation to climate change, more theoretical development of environmental institutional performance indicators for climate adaptation and case study selection are necessary.

1. Introduction

1.1. Financing issues of climate adaptation

Adaptation to climate change, a measure that responds to climate impacts, has receiving increased attention in the international climate change negotiation. Social scientific research on climate adaptation is less developed compared with climate mitigation research. Furthermore, few institutions on adaptation have been built so far. However, the climate impact is already seen in various fields like ecosystems and agriculture, and some climate impacts are unavoidable. Also, developing countries are expected to suffer more adverse climate impacts than industrialized countries (IPCC, 2001), which are mainly responsible for creating climate change problem.

This adaptation issue is increasingly becoming a point of contention between developing and industrialized countries. While the developing countries are calling for financial and technical assistance for climate adaptation, the industrialized countries are reluctant to provide assistance because of the uncertainty associated with adaptation costs. Most of the industrialized countries continue to discuss mitigation policies with an expectation that the developing countries join the post-Kyoto policy discussion. Developing countries are not willing to do so until the industrialized countries are willing to discuss climate adaptation and mitigation policy concurrently. Thus adaptation will be vital issue in the discussion on building future climate policy framework.

Financing issues are likely to become especially important in the institution-building for climate adaptation. It is for this reason that adaptation is mainly a developing country issue, and it is impossible to provide substantial support to the adaptation of developing countries unless we consider the way to collect and provide adaptation-related funds

This research explores the potential of financing systems - the provision of money on agreed terms to facilitate a project - to increase the effectiveness and efficiency of institutions which promote adaptation to climate change. Two approaches are used: 1) indicators to evaluate environmental institutional performance (Mitchell, 2007) ; and 2) the analysis of a case study of Samoa, a small island developing state in the Asia-Pacific region, which are vulnerable to climate impacts. The research is based on the hypothesis that the most effective financing system for adaptation to climate change is one where global financing organizations provide grants directly to local organizations.

As climate impacts and features, resources, and institutions of natural and social systems differ from community to community, required climate adaptation measures to climate change vary by community. Therefore they require local efforts. Financing systems like that operated so far by the Global Environmental Facility (GEF) typically fund national or regional projects focused on environmental issue areas. This will fail to account for the wide range of climate impacts, resources, and socio-cultural aspects found particularly in large nations. I am following the financing system of the modality of GEF Small Grants Programme which is conducting direct funding to local organizations. I believe that this type of system has a potentially better mechanism to achieve adaptation to climate change: it addresses interlinked issues prioritized according to the specific needs of community stakeholders and may reduce intermediary costs.

Although the U.N. Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol do not define which organization should finance adaptation, not only the GEF but also other various financing systems such as ODA (ODA; Official Development Assistance) and NGOs (Non-governmental Organizations) or NGDOs (Non-governmental

Development Organizations) are able to provide money for adaptation. However, currently the GEF plays the central financial role in adaptation projects. The GEF operates the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF) which are funded by voluntary contributions from individual countries under the umbrella of the UNFCCC Conference of the Parties (COP)¹. There is also Strategic Priority on Adaptation (SPA), which implements financial support for adaptation projects as a part of the GEF Trust Fund.

In this study, I focus on the GEF financing systems, that GEF is an only organizations that operates above adaptation-related funds, and able to finance various activities involved climate adaptation, such as problems of international waters and biodiversity.

1.2. The GEF and climate change

The Global Environment Facility (GEF), established in 1991, helps developing countries fund projects and programs that protect the global environment. Currently, the GEF is the largest funder of projects to improve the environment². The GEF is managed by three implementing agencies, the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), as well as the World Bank together with seven other GEF Executing Agencies³. In addition, bilateral development cooperation agencies and NGOs are involved in the GEF activities. The GEF grants support to six different issue-areas, biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. The GEF also finances developing countries which meet the goals of four international conventions (UNCBD, UNFCCC, UNCCD, Stockholm Convention⁴), and fulfill the function of the four conventions' financial mechanisms⁵.

The GEF established the Strategic Priority on Adaptation (SPA) operated by GEF Trust Fund, in response to the guidance at the COP7⁶. An initial US\$50 million pilot is ongoing and several projects are under preparation (GEF, 2005a). The GEF decided to fund 10% (US\$5 million) to Community-Based Adaptation (CBA) projects in 2004. In collaboration with UNDP-GEF, The GEF Small Grants Programme (SGP) developed CBA projects.

Small Grants Programme (SGP) ⁷

The SGP, funded by the GEF Trust Fund, was launched to support activities of non-governmental and community-based organizations in developing countries address environmental issues of the GEF focal area. The maximum grant amount per project is

¹ There is no official decision on the operating organization for Adaptation Fund.

² GEF <http://www.gefweb.org/>

³ U.N. Food and Agriculture Organization (FAO), U.N. Industrial Development Organization (UNIDO), African Development Bank (AfDB), Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD), Inter-American Development Bank (IDB), International Fund for Agricultural Development (IFAD)

⁴ UNCBD: UN convention on biodiversity, UNCCD:UN Convention to Combat Desertificat, Stockholm Convention: Stockholm Convention on Persistent Organic Pollutants

⁵ The GEF has allocated \$5.7 billion, supplemented by more than \$18.8 billion projects in 140 countries and countries with economies in transition (GEF, 2005a).

⁶ Decision 6/CP.7

⁷ UNDP GEF <http://sgp.undp.org/index.cfm>

US\$50,000, with averages around US\$20,000. Grants are channeled directly to Community Based Organizations (CBOs) and NGOs.

The GEF also supports the management of the LDCF⁸ and the SCCF⁹ which were established at COP7. The LDCF is funded for addressing the extreme vulnerability and poor adaptive capacity of the Least Developed Countries (LDCs). The SCCF is funded for (a) adaptation to climate change, (b) technology transfer, (c) energy, transport, industry, agriculture, forestry, and waste management, and (d) economic diversification. The GEF manages above three adaptation funds currently totaling US\$200 million. There are the SPA: US\$ 50 million approximately, the LDCF: US\$ 90 million approximately, and the SCCF: US\$60 million approximately¹⁰.

The GEF operates all for the adaptation related funds. The SCCF and LDCF (and AF) must follow the decision of the COP, while the SPA which is funded by the GEF Trust Fund, and follow the ten operational principles of GEF Operational Strategy. The GEF operational strategy includes projects that are country-driven and based on national priorities, funding to meet the agreed incremental costs of measures to achieve agreed global environmental benefits, and cost-effective and achievable sustainable development. The concepts of “global environmental benefits” and “incremental costs” especially limit the implementation of adaptation projects because adaptation activities generate local rather than global benefits, making it difficult to apply concepts such as “incremental costs“, as mandated by the convention and the GEF’s constituent Instrument of Establishment (Yamin and Depledge, 2004, p.234). Furthermore, the definition of adaptation to climate change is still vague. It is not clear what specific adaptation activities the GEF is able to finance.

Although there are various possible ways of financing climate adaptation, the GEF is the only organization that operates adaptation-related funds at the moment. The GEF has started pilot climate adaptation projects and is able to fund various issue-areas which are related to climate adaptation. Since the GEF is currently playing a central role in supporting climate adaptation, I analyze the GEF financing systems for climate adaptation.

2. Analytical background

I analyze the performance of financing systems for climate adaptation by using some indicators to evaluate institutional environmental performance. Few institutions for adaptation have been built so far, and there is no determined financing system for climate adaptation. I compare two different existing GEF financing systems to show the validity of my hypothesis, the most effective financing system for adaptation to climate change is one where global financing organizations provide grants directly to local organizations. The existing financing systems are: 1) GEF Small Grants Programme (the GEF provides grants directly to Community-based Organizations (CBOs) and NGOs); 2) GEF national and

⁸ UNFCCC http://unfccc.int/cooperation_and_support/funding/ldc_fund/items/2601.php

⁹ Although Adaptation Fund, which will be financed from the share of proceeds (2%) on the Clean Development Mechanism (CDM), was established at COP7, it has not decided what organizations will manage it.

¹⁰ GEF <http://www.undp.org/gef/adaptation/funds/04a.htm>

regional program¹¹ (the GEF provides grants to regional organizations or/and national governments). I use the data of Samoa which belongs to the Least Developed Countries (LDCs) and the Small Island Developing States (SIDS), and is known as a country vulnerable to climate change.

2.1. Theoretical framework: Environmental institutional performance studies

2.1.1. Theoretical background

The field of environmental institutional performance is still new. The Institutional Dimensions of Global Environmental Change (IDGEC), an international research project, has developed this field as one of the research foci. It studies why some institutional responses are successful than others? (Young et al., 1999a) The progress of the performance research has been reviewed by Ronald Mitchell (Mitchell, 2007). The performance analysis seeks to identify how much an institution contributed to achieving a specified goal (Mitchell, 2007). He describes that the questions of performance engage two issues: 1) in what dimension should we evaluate institution performance and 2) for any given dimension, how should we go about evaluating performance. Evaluation of environmental institutional performance of IDGEC research has focused on two main viewpoints, evaluation of behavioral and environmental quality relying on comparison of observed outcomes to both counterfactuals and standards of goal achievement, problem resolution, and achievement of collective optima (Mitchell, 2007).

Performance research has made considerable progress in environmentally-related behavior. This research arises from institutional compliance studies, where compliance is defined as whether actors' behaviors conform to the explicit institutional requirements governing those behaviors (Mitchell, 1993; Chayes and Chayes 1993; Mitchell, 2007). After the shortcomings of the concept of compliance to explain the performance became clear, the effectiveness studies (Victor et al., 1998; Young 1999b; Mitchell, 2007) mainly developed performance studies. Effectiveness is generally a measure of the extent to which institutions matter, and is variable because it does not address a variety of normative concerns that surface regularly in efforts to assess the performance of institutions (Young et al., 1999a). IDGEC investigates a number of other aspects of institutional performance, which are beyond effectiveness studies. There is a tendency that behavioral indicators are used by scholars more frequently than environmental qualities indicators, although theoretical conceptions of effectiveness have almost always included both behavior change and environmental quality (Mitchell, 2007). Although there is difficulty in evaluating environmental quality because environmentally-related behavior change may not give positive effects to environmental quality, both behavior change and environmental quality are important in evaluating institutional environmental performance.

Mitchell provides important indicators to evaluate environmental institutional performance. The indicators are not just, environmental quality and environmentally related behaviors, but also leading indicators of institutional performance, economic costs, economic growth and development, equity, social justice, cultural impacts, and good governance (Mitchell, 2007). Although Mitchell provides indicators focusing on evaluating

¹¹ There is no official name for GEF financing system where GEF provides grants to regional organizations or/and national governments. In this paper, I refer to the financing system as GEF national and regional programme. GEF national and regional programme mainly consists of Full Size Projects (FSP) and Medium Size Projects (MSP).

the performance of international institutions, these indicators are also effective in evaluating other multi-level institutions like local, national, regional institutions.

I analyze the performance of financing systems for climate adaptation by using the indicators Mitchell suggests. I use five indicators to achieve the goal of financing system for climate adaptation: cost efficiency, transparency, stakeholder participation, accountability and equity, as important indicators.

2.1.2. The goal of a financing system for climate adaptation

Before I explain more detail about these five indicators, I clarify the goal of climate adaptation and the goal of its financing system.

Adaptation¹² is to enhance the capacity of adaptation¹³ to reduce the adverse effects of existing and future climate change. The effects of climate change are expected to be greatest in developing countries in terms of loss of life and relative effects on investment and the economy (IPCC, 2001). Developing countries, particularly the least developed countries, are generally poorest in the adaptive capacity (IPCC, 2001). Since developing countries are lacking in economic resources to enhance adaptive capacity, the goal of the financing system for climate adaptation is mainly to help developing countries. In order to enhance adaptive capacities of developing countries, and reduce vulnerabilities to adverse climate impacts, the following adaptation activities will be a key.

The appropriate climate adaptation activities are based on local activities. Climate impacts will first adversely effect the lives of people and communities in developing countries, especially in the least developed countries. These people and communities are lacking resources to conduct adaptation activities.

Climate impacts and adaptive capacity vary by community. Adaptation activities should be local activities which reflect the needs of each community. In addition, climate impacts effect various natural environments and society in communities because their lives are in close relation to their natural environment. For example, sea-level rise causes adverse effects to their life through such as the loss of land, soil salinization and shortage of daily life water. Since one climate event causes problems over different sectors and these problems are inter-linked, adaptation activities need to capture the problem of community in a comprehensive way, not within each sector.

Also, the important part of adaptation activities, which differ from other environmental issues like air pollution problem that only deal with the current situation: reduce current pollutant source, adaptation problem need to reduce not only current climate impacts, but also future climate impacts. It is required to anticipate future climate impacts and prepare for them by enhancing each region's adaptive capacity. Although it is

¹² Adaptation: Changing existing policies and practices and adopting new policies and practices so as to secure Millennium Development Goals in the face of climate change and its associated impacts (UNDP unpublished, 2006).

http://www.undp.org/gef/adaptation/climate_change/02c.htm

¹³ Adaptive capacity: The property of a system to adjust its characteristics or behavior in order to expand its coping range under existing climate variability or future change conditions. The expression of adaptive capacity as actions that lead to adaptation can serve to enhance a system's coping capacity and increase its coping range. Adaptive capacity represents the set of resources available for adaptation as well as the ability of the system to use these resources effectively in the pursuit of adaptation (APF 2005).

http://www.undp.org/gef/adaptation/climate_change/02c.htm

required to anticipate future climate impacts, it includes uncertainty. This is especially because the degree of climate impacts largely depends on future climate mitigation activities. In order to prepare for the current and future adverse impacts, the activities need to be flexible and should respond rapidly.

From the above aspects of climate adaptation, climate adaptation will be better if it is conducted on a small scale, at the community level. At the community-level, adaptation problems are much easier to be identified and adaptation is possible to reflect the needs of community and deal with the cross-cutting issues in a comprehensive way. Also such small-size activities are easier to start and are flexible enough to react to the uncertain climate adverse effects of the future. Furthermore, when the activities are based on community and involve local people, this will achieve the sustainability of the activities.

2.1.3. Analytical indicators

An climate adaptation financing system, which enhances adaptive capacity to reduce future adverse effects of climate change, can increase its performance by promoting community level activities. In order to promote this, I hypothesize that the most effective financing system for climate adaptation is where a global organization which has funding resources for climate adaptation provide grants directly to local organizations which conduct adaptation at the community-level. My analysis, the comparison of two different GEF financing systems, is based on the goal of a financing system for climate adaptation, and the following five indicators. The five indicators will be key points to enhance the institutional performance for climate adaptation.

First is cost-efficiency. Since financial resources for climate adaptation are limited it is necessary to use financial resources efficiently. Also, since some communities are receiving adverse effects of climate change, it is necessary to provide grants and assist the activities without delay. The financing system needs to use less money and time and produce large benefits. Second is transparency. This issue is also related to the cost-efficiency issue. In order to achieve cost-efficiency, it is necessary to have clear money flow, where money is used for the intended purpose. Third is stakeholder participation. To maintain the transparency of the financing system, stakeholder participation will be important. Especially in order to promote community-level activities and sustain them, financing system should promote the participation of local people. Fourth is accountability. To make effective utilization of financial resources, to not waste them, enhancing accountability will be necessary. Fifth is equity. Although equity problems are broad, I focus on the aspects of whether adaptation money distribution is done equally and fairly to the recipients. I discuss these indicators more in section 2.3.

2.2. Adaptation and financing system in Samoa

In my analysis, I use the case of Samoa which belongs to the Small Island Developing State and Least Developed Countries. Samoa is one of the most vulnerable countries to climate change. Currently, Samoa receives funding from GEF through both: GEF Small Grants Programme (GEF provides grants directly CBOs and NGOs) and GEF National and regional programme (GEF provides grants to regional organizations or/national governments). Also, Samoa is one of the ten developing countries selected to pilot the Community-Based Adaptation, a financing system which promotes community-based adaptation using SGP modality. CBA began its current design phase in 2005 and the

project will be implemented in 2007-2011.

2.2.1. Overview of Samoa

Samoa is located in the South West Pacific. Samoa consists of two main island (Upolu and Savaii) and eight smaller islands. The total land area is 2,935 square kilometers, and the population is 174,140 (2001), approximately 40000 of whom live in the capital, Apia. Samoan governance comprises of four tiers of organizational structures and authority operating, family governance¹⁴, village governance¹⁵, church governance¹⁶ and state governance¹⁷ (GEF SGP, 2007). The climate is tropical, with a wet and warm (November-April) and dry and cool (May – October) seasons. The temperature almost always ranges between 24 and 32 degree Celsius, annual average precipitation is about 300cm (66% in the wet season). Samoa has received damaged from serious tropical cyclones in 1990 and 1991 (NAPA, 2005).

2.2.2. Climate Impacts and Adaptation in Samoa

In Samoa, there are trends of temperature increase; reduced overall annual rainfall; higher occurrences of high intensity rainfall; increase in the frequency and intensity of tropical cyclones; and sea level rise. Since approximately 70% of Samoan population and infrastructure are located in low-lying coastal areas, sea level rise could exacerbate coastal erosion, loss of land and property and dislocation of the island inhabitants (NAPA, 2005). The high winds and heavy rain damaged agricultural plantations, infrastructure and the country's socio-economic base (NAPA, 2005).

The highly vulnerable sectors to climate change are agriculture and food security (instability of food production), water (water quality problems), biological diversity, health (vector borne and water borne diseases), forestry (forest fires from the drought/dry), Coastal infrastructure and environment, tourism, urban settlement (urban migration) and village communities (NAPA, 2005). Climate impacts cause adverse effects on various sectors. All these impacts will give sever impacts to the life of the local people. Their lives are dependent on the environment and natural resources for their life. As the following figure shows, for example, sea-level rise, storm surges and cyclones, and tropical cyclones will cause loss of land due to erosion from the sea and flooding, inundation of land and sedimentation. Those climate changes will deprive people of their habitat and also affect their food security because of devastation of farmland.

¹⁴ Families governed by a matai (titled holder) system.

¹⁵ 238 village governments exist in Samoa which governed by the traditional authority of the fono.

¹⁶ Parish governance blends traditional governance under matai leadership with introduced organizational structures

¹⁷ Samoa has adopted the Westminster model of parliamentary democracy.

Table 1 Vulnerabilities of communities

COMMUNITY VULNERABILITIES	CAUSES OF VULNERABILITIES (SLR – sea level rise; SSC – Storm surges and cyclones; DRT – drought; FLD – flooding; CVY – climate variations; DFN – deforestation; OHA – other human activities; FFS – forest fires; TCS – tropical cyclones)									
	SLR	SSC	DRT	FLD	CVY	DFN	OHA	FFS	TCS	
Loss of land due to erosion from the sea	✓	✓					✓		✓	
Flooding, inundation of land and sedimentation	✓	✓		✓		✓	✓		✓	
Lack of water supply (quantity) and poor water quality	✓	✓	✓	✓		✓	✓	✓	✓	
Increased health hazards			✓	✓	✓					
Destruction of crops		✓	✓	✓	✓			✓	✓	
Loss of biodiversity, and loss of heritage and land values	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Damage to community assets	✓	✓		✓					✓	

Table 3 Vulnerabilities of Communities

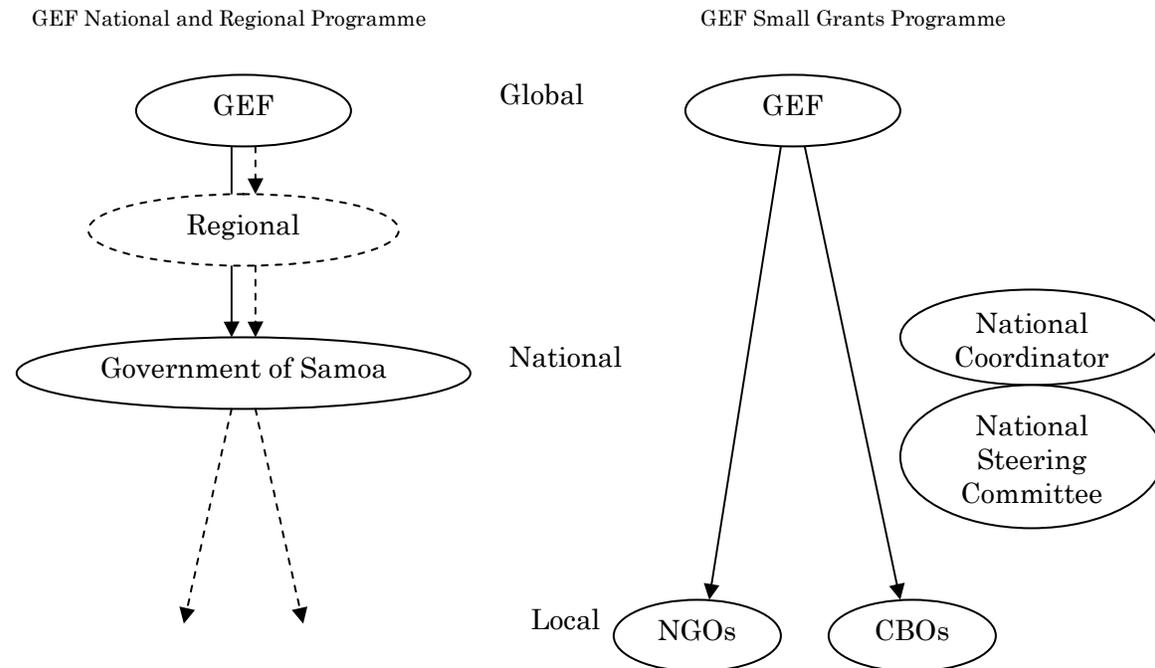
(NAPA, 2005)

The above table shows that causes of vulnerabilities will affect various sectors. Many of the environmental issues could solve by focusing on each sector's issue. For example, increased health hazards are solved as health sector problem and destruction of crops are solved by agriculture sector. However, many other sectors issues are interlinked because their causes overlap. Flooding of water supply and poor quality will affect to increase health hazards. Flooding, inundation of land and sedimentation will affect the destruction of crops. As stated earlier, adaptation need to be implemented by embracing various issues across sectors based on their local needs. To achieve this, the best adaptation activities are at the community-level. Community-level adaptation will also enable to utilize long-standing local knowledge of adaptation. People in Samoa have adapted to various climate events, like cyclones and flooding. Also, the community-level adaptation is good to sustain the activities. By making local people involved in this adaptation, they will be able to identify the issues and implement adaptation by themselves.

In next section, I argue which type of financing system is good to promote community-level adaptation. I focus on two financing systems of GEF.

2.2.3. GEF financing systems in Samoa

Figure 1 GEF financing systems



The above figure shows the existing GEF financing systems in Samoa. The left figure shows the national and regional program financing system, where money goes through national level and/or regional level activities and organizations. This system requires approvals from national governments. This type of financing system is the usual format of the GEF financing systems. The right figure shows another approach where money goes directly to CBOs and NGOs. The GEF projects are implemented by three agencies, the World Bank, the United Nations Development Programme (UNDP), and the United Nations Environment Programme (UNEP). These agencies have different perspectives towards funding. For example, the World Bank supports infrastructure projects, UNDP supports development projects, and UNEP supports environment research projects. The GEF SGP is implemented by UNDP. My analysis is focused on the UNDP-GEF system.

Currently, in Samoa, there are seven single country projects (none of them completed), and eleven regional and global projects (two projects completed). As for single country project, six projects are enabling activities¹⁸, and these projects support national strategies of Samoa. They are not projects which implement practical activities. As for Small Grants Programme, although the programme was just implemented in Samoa in 2005, there are 44 projects and six projects have already completed.

¹⁸ Enabling activities includes inventories, compilation, and analysis of information; and appropriate capacity building, policy analysis, and strategies and action plans to help integrate global environmental objectives and national planning and decision-making (GEF Operational Strategy).

Table 2 GEF projects in Samoa
Single Country and Regional Projects in Samoa ¹⁹

Project Name	Focal Area	Type ²⁰	Grant (US\$M)	Project Stage ²¹	Executing Agency
Single Country Projects					
Preparation of National Biodiversity Strategy and Action Plan, and First National Report to the COP of the CBD	Biodiversity	EA	0.172	CEO Approved (1998)	Division of Environment and Conservation
Marine Biodiversity Protection and Management	Biodiversity	MSP	0.925	CEO Endorsed (1999)	The World Conservation Union (IUCN)
Clearing House Mechanism Enabling Activity	Biodiversity	EA	0.014	CEO Approved (2000)	Division of Environment and Conservation
Additional Funding of Biodiversity Enabling Activity	Biodiversity	EA	0.215	CEO Approved (2001)	Division of Environment and Conservation
Programme of Action for Adaptation to Climate Change	Climate Change	EA	0.2	CEO Approved (2002)	Department of Land, Survey and Environment
National Capacity Self-Assessment (NCSA) for Global Environmental Management	Multi-focal Areas	EA	0.225	CEO Approved (2004)	Ministry of Natural Resource and Environment
Initial assistance to Samoa to meet its obligations under the Stockholm Convention on POPs	POPs ²²	EA	0.373	CEO Approved (2001)	Department of Land, Survey and Environment
Regional Projects					
Expedited Financing of Climate Change Enabling Activities (Phase II) – PICCAP	Climate Change	EA	1	CEO Approved (2000)	SPREP
Implementing Sustainable Integrated Water Resource and Wastewater Management in the Pacific Island Countries	International Waters	FSP	12.723	PDF B (Not yet Approved)	SOPAC
Pacific Islands Greenhouse Gas Abatement through Renewable Energy Project (PIGGAREP)	Climate Change	FSP	5.225	Council Approved (2000)	SPREP
Pacific Islands Oceanic Fisheries Management Project	International Waters	FSP	11.644	CEO Endorsed (2005)	FFA, SPF
Implementation of the Strategic Action Programme (SAP) of the Pacific Small Island Developing States	International Waters	FSP	12.29	Project Completion (1999)	SPREP
Pacific Islands Climate Change Assistance Project (PICCAP)	Climate Change	EA	2.44	Council Approved (1999)	SPREP
Pacific Islands Renewable Energy Programme (PIREP)	Climate Change	MSP	0.7	CEO Approved (2002)	SPREP
Pacific Islands Adaptation to Climate Change Project (PACC)	Climate Change	FSP	11.6	PDF B (Not yet approved)	
South Pacific Biodiversity Conservation Programme	Biodiversity	FSP	10	Project Completion (1991)	SPREP

¹⁹ Only Marine Biodiversity Protection and Management was implemented by IBRD - The World Bank and others are all implemented by UNDP

²⁰ EA: enabling activity, MSP: Medium Size Project, FSP: Full Size Projects

²¹ The number between parentheses shows the year when the project has approved

²² Persistent Organic Pollutants

Small Grants Program projects in Samoa

Project Name	Focal Area	Grantee	Grant (US\$)	Project Status	Dates
Conservation of the Mangrove Ecosystem in Moataa Village	Biodiversity	Moataa – Komiti a Tina ma Tamaitai	1,533	Satisfactorily completed	6/2005 - 9/2005
Green Village – Waste Not Want Not	POPs	Mafutaga Tina ma Tamaitai	1,533	Satisfactorily completed	8/2005 - 11/2005
Coral Gardening Project	Biodiversity	Apai – Alii ma Faipule	1,149	Satisfactorily completed	6/2005 - 8/2005
Education and Public awareness programme on valuing the importance of environment conservation at the community level	Multifocal Area	Gautavai EFKS Youth Group	1,533	Satisfactorily completed	7/2005 - 9/2005
Organic Vegetable Garden and Indigenous Samoan Plants	Land Degradation	Sapunaoa – Komiti a Tina ma Tamaitai	1,533	Satisfactorily completed	6/2005 - 9/2005
Launching of the Samoa UNDP-GEF Small Grants Programme - Country Programme Strategy 2005-2008	Multifocal Area	Tagilima Handicrafts Association	6,000	Satisfactorily completed	4/2005 - 5/2005
Promoting the planting of Samoan Fruit Trees " Organic Gardens"	Land Degradation	Komiti a Faletua ma Tausi- Lepea	1,533	Satisfactorily completed	8/2005 - 11/2005

The GEF has supported initial studies, vulnerability and adaptation assessments, and capacity building, as climate change focal area projects. However, the GEF is in the stage of conducting pilot projects of climate adaptation. There are only a few real climate adaptation purpose projects. Although the GEF is in the pilot stage, since Samoa is already receiving impacts from climate change, some GEF projects are similar to climate adaptation projects. For example, the Marine biodiversity protection and management project of the single country project, and the Implementing sustainable integrated water resource and wastewater management in the Pacific island countries project and the Pacific islands adaptation to climate change project of regional projects are similar to adaptation projects. Also, more than half of the SGP projects are similar to climate adaptation projects, such as the Conservation of the mangrove ecosystem in Moataa village, the coral gardening project, the Taga village forest and water conservation assessment, the Rehabilitation of the community coastal spring project and the Reconstruction of reservoir and preserve natural spring for sufficient water supply for the Samamea village project.

SGP in Samoa

The SGP has just started in the Small Island Developing States region of the South Pacific. Samoa has the largest number of projects now. Since the SGP has prioritized SIDS and LDCs in accordance with the instructions of the GEF Assembly (GEF SGP, 2004), it is expected that the number of SGP projects will increase more in the SIDS.

The following are the key stakeholders which operate SGP financing systems (GEF SGP, 2007).

National Steering Committee

NSC provides overall guidance to country level implementation of the Country Programme Strategy²³ and involves in decision making, selecting projects, monitoring

²³ Each participating country develops a country programme strategy, which adapts the SGP global strategic framework to specific country conditions.

evaluation. The NSC should be composed of voluntary members from NGOs, CBOs, academic institution, scientific institutions, civil society organizations, the UNDP Country Office and the host government. Majority shall be from non-governmental sector.

National Coordinators

NCs carry out day-to-day management of the programme and serve as secretary to the NSCs.

NGOs and CBOs in Samoa

54 NGOs are registered in Samoa. The Samoa Umbrella for NGOs (SUNGO) is the central agency coordinating the work of NGOs in Samoa. Currently, only three NGOs operate in the field of environment conservation and protection and, the rest are involved in various social issues.

CBOs are recognized as any group that has been formally acknowledged within the village system or council. They include women's committee, youth groups, untitled men, church groups, farmer groups, fishermen groups and village matais constituting the village councils.

Among all SGP recipients in Samoa (total 44 projects), 42 recipients are CBOs and only two are NGOs²⁴.

Again, the goal of a financing system for climate adaptation is to enhance adaptive capacity to reduce future adverse effects of climate change. Since climate impacts will cause serious adverse effects for local people, and activities will be localized in Samoa, in order to increase the performance of financing system for climate adaptation is that promote community-level activities.

The most effective and efficient financing system for climate adaptation is where global financial organizations provide grants directly to local organizations. I compare two different GEF financing systems, using five indicators for evaluating institutional performance: 1) cost-efficiency, 2) stakeholder participation, 3) accountability, 4) transparency and 5) equity, and the case study of Samoa. In this paper, I focus on the GEF grants financing. GEF projects are based on co-financing and it is true that co-financing contribution will more or less affect the performance of the GEF financing systems. However, co-funders²⁵ and their contribution vary by project and it will be difficult to compare two systems. I only focus on the GEF grants flow which is a main factor that changes the performance of the financing systems.

3. Analysis of GEF financing systems

3.1. Cost-efficiency

I see costs in terms of both money and time. As stated earlier, since there are limitations in financial resources for adaptation, it is essential to consider cost-efficiency of

²⁴ Tagiilima Handicrafts Association and Matuaileoo Environment Trust Inc.

²⁵ International organizations, regional organizations, government, bilateral aid organizations co-finance national and regional programme in Samoa. NZAID (approximately US\$514,050) co-finance programme level of SGP in Samoa. In the project-level, co-finance is mainly in-kind.

money. Current official amount of climate adaptation financial resources is US\$ 200 million, totaling from the SPA, the SCCF and the LDCF. The SPA has only US\$ 50 million. These resources are expected to increase, however, the donor country's contribution to the SCCF and the LDCF are voluntary based contributions, and funding climate adaptation has little incentive for donor countries because adaptation activities mainly generate local benefits in developing countries, and less global benefits. Also the uncertainty of future climate impacts, discourages them from contribute funding. Therefore we cannot expect any dramatic increases in adaptation funding resources. Meanwhile, some developing countries have already received impacts and are expected to suffer more in the future. It is essential to use these funds in a cost-efficient way.

In regard to time issue, adaptation projects are expected to being implemented soon after planning is finished. Climate adaptation needs to respond to not only current climate change but also future climate change. Climate change happens gradually in some places, however in some places, it will appear drastically. Also, the situation of the natural environment and the socio-economic environment vary by community. To keep making adaptation activities meet local needs and reflect the future impacts, projects should respond rapidly. Financing systems for adaptation need to assist to start projects in a short time.

Thus, an important aspect of financing system for climate adaptation is that it generate large benefits but requires less money and time, increasing cost-efficiency. In this study, I focus on cost-efficiency rather than cost-effectiveness. "Cost-effectiveness simply sees whether the benefits exceed institutional costs, while cost-efficiency institutions are those whose cost/benefit ratios exceed the corresponding ratios for other institutions addressing the same problem (Mitchell, 2007)." In comparing the financing systems, cost-efficiency is important.

Although this cost-efficiency is important, soon we face the difficulty of evaluating the "benefits" of the financing systems for adaptation. Benefits of adaptation activities are mainly localized and the benefits range in various sectors. It is difficult to evaluate them in terms of benefits of a financing system, especially quantitatively. Referring to the definition of efficiency in Young's paper, "efficiency is a measure of the extent to which problems are solved or behavior is altered with a minimum expenditure of resources (Young, 1999c)", I simply focus on the institutions which use less costs to achieve the goal of financing systems for adaptation: to enhance adaptive capacity to reduce adverse climate impacts in the community level context.

Money

I focus on the money flows of the GEF grants in two financing systems, to see which system is more cost-efficient in supporting community-level adaptation. The financial flow of the SGP, from the GEF to local organizations, is clear, because the GEF grants directly reach to NGOs and CBOs. Also the GEF SGP separates the project money and programme money which are used for arranging this programme. 75% of the total budget for SGP needs to be used for grants making which goes directly to NGOs and CBOs. National level administration authorities, National Steering Committees, do not receive money. For example, in the case of a project in Samoa, "Conservation of the Mangrove Ecosystem in Moataa Village" project in Samoa (completed), the GEF grant (US\$ 1533) was allocated to CBO (Moataa – Komiti a Tina ma Tamaitai) and used for the community-level project.

Meanwhile, country and regional programmes are different. The money goes to regional and national levels. Although recipients are not very clear from their project

documents, the money in regional projects mainly go to the regional activities which are implemented by regional organizations and national governments. For example, in the case of a regional project, "Implementation of the Strategic Action Programme (SAP) of the Pacific Small Island Developing States" project (completed), GEF grant US \$ 12.29 million was allocated to the projects. Although not whole recipients of the project are clear, regional organizations: the Forum Fisheries Agency (FFA) received FFA \$1.915 million and the Secretariat for the Pacific Community (SPC) received US\$1.526 million. The largest proportion (56.22%) of the FFA allocation was used for International Meetings and second largest proportion (34.01%) was used to fund consultancies. The SPC allocation of US\$1.526 million has been used to support three positions in the Oceanic Fisheries Programme of SPC and the expenditure on these three positions amounted to 74% included total costs including their travel, research support and salaries. Although the community will eventually receive benefits from these projects, money was not spent directly on country, directly on community level activities local staffs, and people (Tortell and Tarte, 2004).

The money of single country projects mainly goes to the national level, like national governments. All the single country projects in Samoa have not been completed yet and the projects which are implemented by the UNDP are enabling activities and not practical projects, so, the money for projects implemented by the UNDP goes to national level government, and little is used on community-level activities.

Since there is a lack of completed projects data in Samoa, and the recipients of regional and national projects are complicated and not clear like SGP, where money is spent directly on community activities. This is mainly because the purpose of the projects in Samoa. Most of the national and regional projects in Samoa seek to build national or regional strategies, and network to create networks.

By considering, cost-efficiency aspects of financing systems for adaptation which promote community-level activities, I can conclude as follows: the GEF national and regional financing systems provide larger grants to projects than GEF SGP financing system. However as the former financing systems provide few grants for community-level activities because of intermediary costs, it will be difficult to promote community-level adaptation activities. The SGP financing system is more cost-efficient in that it generates less cost and achieves more adaptation goals.

Time

Next I see the cost-efficiency from the aspect of time. The following is the project cycle, the time until implementing projects in Samoa. The time varies with projects and these are approximate time periods of the process.

- Single Country Projects: approximately three to five years²⁶
- Regional Projects: shorter than country projects, two to three years
- Small Grants Programme Projects: about 4 months minimum and 6 months maximum.

When we see the administrative process of the whole project cycle there are differences between national and regional programmes and the Small Grants Programme.

For the national and regional programmes, GEF requires many approvals of

²⁶ In the GEF Council Meeting on December 5, 2006, GEF introduced a redesigned project cycle where a proposal takes, on average, no more than 22 months from identification to start of implementation, compared to 66 months currently.

government and GEF committees. The following is the main administrative process of one project.

Government endorsement → STAP expert technical review → Council Approval → STAP and Implementing Agencies review → CEO endorsement → Approval by Implementing Agency and Recipient Country → Reporting and project implementation review → Monitoring and Evaluation.

On the other hand, the SGP's administrative process is much simpler than that of national and regional programmes. SGP require less reporting and administrative burdens.

Review and screen proposals by NCs → NSCs review → Approval by NSCs → Final reporting → Monitoring and Evaluation

Especially for the SIDS and LDCs like Samoa, as the country is small and has less capacity in national government, in order to implement national and regional programme, especially single country projects, it will consume a lot of time and also it will be burdensome to the government. Samoa currently receives grants for only some single country projects. The reporting and other administrative requirements tend to consume too much of the available resources; rigid project schedules also add to project inefficiencies because specific project circumstances are often not taken into account (GEF, 2005b). While the GEF SGP financing system will shorten time, as well as, will assure money for community-level activities. A better financing system which able to accomplish smaller goals using less time and money but is also flexible and low risk.

3.2. Transparency

Next, financing systems for climate adaptation require transparency, especially to improve its cost-efficiency. Also, transparency increases the incentive of donor countries to make a contribution. I use the term transparency to mean whether the money is used for the intended purpose. In the process of financing, there is a possibility that money is used for unintended purposes. Funding resources for climate adaptation may be rather easier to use in different purposes because the adaptation activities are sector cross-cutting issues and vary by community. The definition of adaptation activities is broad. Without transparency, it will cause (intended or non-intended) misuse of money among stakeholders. This will lessen the performance of financing system for adaptation. Especially, it will lower cost-efficiency and also discourage donor countries to contribute funding because they are not clear what they are funding.

As explained in the cost-efficiency section, when we focus on the financial flow of GEF national and regional financing system, money is mainly used in regional or/and national level activities and organizations. From the project reports of the national and regional programme in Samoa, although they are informative and technical report (they are revised again and again), specific money flow and recipients are not visible. On the other hand, under the SGP financing system, although each project does not have detailed technical reports like GEF national and regional financing systems, the size of grants and projects are small and local recipients are very clear. In terms of the identification of local recipients, SGP financing system is considered very transparent. This system will enable consistent communication between donor and recipient, and confirm the purpose of the adaptation projects and the usage of the grants.

In addition, to enhancing transparency of financing system, the transparency of the inner system of each stakeholder is also important. I refer to this issue in the part on accountability.

3.3. Stakeholder participation

Third is stakeholder participation. If only certain stakeholders are involved in the process of financing, then money usage would be distorted. Diverse stakeholder participation will enhance transparency. Most of the process of financing for developing countries has been done by a top-down approach. However in order to promote community-level activities and sustain them, it is necessary to promote the participation of local stakeholders. By local stakeholder participation, local needs will be more easily identified. Also, since the local people can gain capacity to sustain activities after the projects finish. Stakeholder participation, especially local stakeholders, is important to increase the financing system for climate adaptation.

Stakeholders involved in the GEF national and regional financing systems are mainly regional organizations and national governments. In the case of the regional project in Samoa, Implementation of the SAP of the Pacific SIDS, major and powerful stakeholders in the process were regional organizations in the South Pacific regions like SPREP, FFA and SPC. As the projects report shows, in this regional projects “there was a low level of stakeholder involvements and the almost total absence of participation by the public, NGOs and the private sector” (Tortell and Tarte, 2004). Needless to say, few community level stakeholders participated. The process of national and regional financing system is rather top-down.

Ms. Leilani Duffy, a National Coordinator of UNDP-GEF SGP in Samoa explains the problems of a top-down approach:

“Before the trend in project implementation was always a top-down approach where government and development partners trend to come up with ideas and expect to implement them through projects, which consultants are brought in from overseas to do it. However, this approach to project implementation is never sustainable, as well it creates a situation where local people in communities are dependent on government and their development partners to provide solutions to provide environmental problems, whereby they themselves (local/ indigenous people) have always managed to adapt to situations in the past, but now people are becoming dependent on AID support to solve the problem (Duffy, 2007²⁷)”

The stakeholders which solve the community-level problems practically are local organizations and people. In order to meet the needs of activities at the local level, proactive participation of local actors is necessary. The SGP financing system requires NGOs and CBOs to make proposals of the projects. By involving them from the proposal process and providing grants directly to them, they will be able to identify their problems and recognize their needs. Also there is a fact in Samoa that local governments are supportive of SGP activities of NGOs/CBOs and they provide technical supports (Duffy, 2007²⁸). This local network is important to promote climate adaptation in communities.

The SGP has national level administration authority. This is not based on national

²⁷ Interview with Ms. Leilani Duffy (March 14, 2007)

²⁸ Interview with Ms. Leilani Duffy (March 14, 2007)

government like national and regional programmes are. As for SGP, the National Steering Committee (NSC) reviews and approves local projects. NSC does not consist of only national government, but includes NGOs, CBOs, the business community, consultants, civil society, academia, and the UNDP Country Office. The NSC in Samoa consists of nine members; 1) Samoa Umbrella NGO (chairman of the NSC); 2) Secretary General National Council of Churches; 3) Ministry of Finance; 4) Ministry of Natural Resource Environment and Meteorology; 5) President Samoa Association of Manufacture Enterprise; 6) Local Consultant Adaptation and Climate Change; 7) Civil Society on Invasive Species and Pest Diseases; 8) Head Science Faculty National University Samoa; 9) UNDP Country Office: NDP ARR Environment and UNDP Resident Representative.

This diverseness of stakeholders in the national administration authority, national steering committee, will reflect local people's voices more than if it only consists of national government. Generally, national government people have much stronger influence than local organizations people in decision-making. This diverseness of administration authority will increase transparency and avoid problems like abuses by one powerful actor.

From the viewpoint of diverseness of stakeholder participation, and proactive participation of stakeholders in local organizations, NGOs and CBOs, the SGP is better financing system for adaptation than national and regional programmes.

3.4. Accountability

Other important factor to achieve effective utilization of financial resources is an enhancement of accountability. "Accountability regarding the use of scarce resources is often of paramount concern, particularly in the case of donor-financed facilities. Without adequate accountability, the targeted groups are unlikely to receive the benefits of donor-assisted projects, and resource can more easily be wasted (Ostrom and Schroeder, 1999)" This accountability issue affects the cost-efficiency and transparency of institutions.

The GEF council agrees that an Implementing Agency (World Bank, UNDP, UNEP) should continue to have direct accountability to the GEF Council for its GEF-financed activities (GEF/R.3/CRP.1). In order to enhance accountability of Implementing Agency, it is necessary to increase accountability of recipient stakeholders at different levels - regional, national, and local.

As for GEF national and regional financing system, accountability is mainly given to regional and national executing agencies. In Samoa, that is the government of Samoa and regional organizations in the South Pacific Regions. When we conduct community-level adaptation projects using this system, national governments and regional organizations are responsible to local projects. Merit of giving accountability to national and regional level, especially to national government, is that it will be able to maintain community-level adaptation under national policy. However, the drawback is that local stakeholders become dependent on the instruction of national government and donors. It will become difficult to expect proactive participation of local stakeholders in conducting community-level adaptation. Also, as argued in the stakeholder participation part, the projects will not reflect the local voices, their needs.

While, executing agencies of the SGP financing system are NGOs and CBOs. The administration authorities of SGP, NSC and NC, consist of diverse stakeholders. Although the SGP mainly gives accountability to the national administration authority, local executing agencies also receive accountability because they receive money directly, implement projects and make reports by their initiative. The merit of giving accountability

to both national administration authority (which consist of diverse stakeholders not occupied by government) and NGOs and CBOs, is that it will enable local stakeholders to be involved in the projects which reflect their needs. However, there is a concern that national government will not be supportive in conducting climate adaptation when local stakeholders do not have enough capacity or government may evade the responsibility of conducting adaptation as national policy. In Samoa, although all projects which have completed so far are reported as satisfactory completed, some SGP projects are slow, probably because of the lack of capacity in these NGOs and CBOs. For example, the Conservation of the Tiavea-uta indigenous forest area project has been very slow and they have not implemented some of the activities they highlighted in the work plan. The Conservation of the Satuiatua indigenous forest area project has been very slow, because community has been focusing mainly on the election.

By comparing two financing systems in terms of accountability, it is difficult to state which system is better for climate adaptation. The better accountability of financing system for climate adaptation largely depends on the capacity of governments, NGOs and CBOs. This capacity includes, for example, financial resources, transparency of organizations, and technical knowledge.

3.5. Equity

The last point is equity. Although equity problems are broad, I focus on the aspects of whether adaptation related funds are distributed equally and fairly to developing countries. There are many different ways to distribute money in terms of equity. For example, distribution can be done depending on the size of population, economic power, the frequency of climate disaster, in the regions, countries and local areas. Also, from a more ethical viewpoint, the better distribution may be depending on developing countries' contribution to climate change, emission of greenhouse gases.

I consider the important point in distributing grants for climate adaptation, is to preferentially allocate grants to communities which are vulnerable to climate change, than by depending on a whole countries situation. Vulnerabilities vary by community within country, especially in large countries. Vulnerability is evaluated by aspects of natural environment and socioeconomic power. Theoretically, the SGP financing system has better potential to allocate financial resource depending on local needs than national and regional ones. In SGP, allocation of funds is not done at the national level but at the global level, according to local needs and absorptive capacity of the NGOs and CBOs in each country.

Since SGP is at the stage of gradually involving countries in the programme, and as their starting years are different, it is difficult to state the tendency of grant allocation among countries and within countries from the empirical data. For example, Small island states like Samoa have just joined the programme while other countries like Philipines and Indonesia have been involved in the programme for more than ten years. The following chart shows the current resource allocation of SGP grants and other grants (national and regional programmes) by country in the Asia Pacific Region. Although we need to be aware of the differences of SGP starting year among countries, and that less than half of GEF recipient countries have implemented SGP projects, there are differences in grant allocation for each country between SGP and national and regional programmes (Table 3). For example, Sri Lanka and Thailand started SGP in the same year. The share of national and regional programme grants allocation (4) is much higher for Sri Lanka according to the difference of the size of national land and population. However, the SGP share (3) is

opposite. The ratio of SGP grants in Sri Lanka is higher than that of Thailand. Indonesia and Jordan case have same tendency. This shows the possibility that SGP provides grants by reflecting on the needs of community, not on country size (national land and population), which are generally important factors in determining resource allocation to developing countries.

Table 3 GEF grants allocation

	(1) SGP grants (US\$ M)	SGP start year	SGP project numbers	(2) GEF total grants exclude SGP grants (US\$ M)	(3) Share of (1) grants allocation ²⁹	(4) Share of (2) grants allocation ³⁰
Philippines	5.43	1992	197	111.77	12.8%	15.6%
Jordan	3.87	1993	125	17.64	9.2%	2.5%
Indonesia	3.22	1993	205	89.23	7.6%	12.4%
Pakistan	3.76	1994	158	43.69	8.9%	6.1%
Sri Lanka	3.61	1994	225	35.37	8.5%	4.9%
Thailand	2.94	1994	259	17.27	7.0%	2.4%
Papua New Guinea	1.35	1994	118	26.24	3.2%	3.7%
India	4.39	1996	191	161.27	10.4%	22.5%
Nepal	2.64	1998	76	10.12	6.2%	1.4%
Palestinian	2.44	1999	81	45.01	5.8%	6.3%
Vietnam	2.26	1999	101	48.49	5.3%	6.8%
Bhutan	0.83	1999	37	12.91	2.0%	1.8%
Malaysia	1.82	2001	54	26.65	4.3%	3.7%
Iran	1.7	2001	78	16.4	4.0%	2.3%
Mongolia	0.94	2003	109	13.21	2.2%	1.8%
Syrian Arab Republic	0.44	2005	11	10.15	1.0%	1.4%
Samoa	0.17	2005	45	1.75	0.4%	0.2%
Micronesia	0.16	2005	5	1.26	0.4%	0.2%
Cambodia	0.16	2005	5	17.36	0.4%	2.4%
Yemen	0.13	2006	5	11.55	0.3%	1.6%
Total	42.26			717.34		

(GEF, 2005c; GEF, 2007)

Although SGP has no clear indicator to decide resource allocation now, the SGP financing system has much more potential to allocate funds depending on the community-level situation, than national and regional. Therefore, I presume the SGP financing system is better system for climate adaptation.

The GEF has just introduced a new rule for allocating GEF financial resources in 2006, called Resource Allocation Funding (RAF)³¹. Currently, RAF has been used in only climate change and biodiversity focal area. RAF uses two criteria: 1) resources based on each country's potential to generate global environmental benefits and 2) the project performance. A financing system which enables equal and fair resource allocation for

²⁹ (3) = Each country allocation of (1) / Total of (1)

³⁰ (4) = Each country allocation of (2) / Total of (2)

³¹ Only the schemes of climate change and biodiversity focal area have completed.

adaptation also requires common indicators to evaluate community level vulnerability. However, it will be more detailed and complicated to make the allocation equally and fairly. In Samoa, the community vulnerabilities were, for example, loss of land due to erosion from the sea, flooding, inundation of land and sedimentation, increased health hazards and damage to community. The difficulties will be the way to select and prioritize indicators to evaluate these issues of different sectors.

4. Implications for environmental institutional performance indicators and for financing system for adaptation

I compared two different existing GEF financing systems, national and regional programme financing system and small grants programme financing system, to show the validity of my hypothesis, the most effective financing system for adaptation to climate change is one where global financing organizations provide grants directly to local organizations. I used five indicators to evaluate institutional performance, and the case study of Samoa. This analysis is based on the idea that an adaptation financing system, which enhances adaptive capacity to reduce future adverse effects of climate change, can increase its performance by promoting these community level activities. This is explained by the case of small island developing states like Samoa which have already received climate impacts and will expect to receive more in the future. Climate impacts will affect the life of community people first because their life is based on their natural environment. Sustainable and effective adaptation will be community-level adaptation which deals with various sectoral issues in a comprehensive way and is able to reflect the variable climate impacts flexibly and rapidly.

The results of the analysis of GEF financing systems using five institutional indicators are as follows. From the viewpoints of cost-efficiency (whether the projects use less money and time to achieve adaptation goals), transparency (whether money is used for intended purpose), stakeholder (whether local stakeholders participates in the process), the GEF SGP financing system is a better system for adaptation than GEF national and regional financing system. The SGP finance system requires much less money and time to do community-level adaptation activities, money is more likely to be used for adaptation purpose, and involve various stakeholders, especially local stakeholders in the financing process.

As for the indicator of equity (whether money is allocated equally and fairly), in the aspect of allocating funds depending on local needs rather than the national level, the SGP should be a better financing system than national and regional programme for adaptation. However, there is a lack of data of SGP projects and indicators for evaluating local needs, to prove the equality. In terms of accountability, I could not conclude which system is better because the better accountability of financing system for climate adaptation largely depends on the capacity of governments, NGOs and CBOs.

I argue the future tasks and implications for developing environmental institutional indicators to evaluate the performance of financing system for climate adaptation, based on some implications for building a financing system for climate adaptation from the case study of Samoa.

Interaction among five institutional performance indicators

In this analysis, I use five institutional indicators to evaluate a financing system for

climate adaptation, especially which promotes the community level activities. These indicators are not all independent. Some indicators are interacted and some have win-win relationship, but some do not. This interaction will affect to the performance of financing system. For example, accountability and transparency achieve cost-efficiency in terms of not wasting funds. Diverse stakeholder participation on the national level administration authority like SGP NSCs, will increase transparency. On the other hand, diverse participation will distribute responsibility and may affect accountability. The concept of equity, which allocates funds depending on degree of vulnerability of each community, may prevent achieving cost-efficiency. It is necessary to make clear interaction among these indicators, and explore how we can maximize performance of the system. If the indicators conflict, we need to find the best preference orders for them.

In addition to the above challenge, studies are necessary for the following indicators which are also important to evaluate the financing system for climate adaptation.

Other important five indicators

1) Indicator to evaluate the system of stakeholders

If the stakeholders such as national governments and local organizations do not have a suitable system like democratic and transparent system and enough capacity, it is impossible to solve accountability and transparency problems. It is necessary to develop indicators to evaluate the characters, and the system of each stakeholder.

2) Indicator to evaluate how much the institution reduced climate impacts

Most of the adaptation projects have not finished yet. By considering the features of climate adaptation, I believed that promoting community-level activities is most important. This has been explained in the case of Samoa. However, to evaluate the performance of the financing system precisely, it is necessary to have indicators to evaluate how much the financing system (projects) reduces climate impacts by enhancing adaptive capacities.

3) Indicator to evaluate the effect of linkage among different financing systems

As stated earlier, GEF programme is based on co-financing with bilateral/multilateral aid organizations, national governments, and the business community. Currently, GEF is the only organization which manages global adaptation related funds. However, given the lack of financial resources and restriction of adaptation activities by GEF rule (need to achieve global environmental benefits, while adaptation projects rather produce local benefits), it is also better to enhance the contribution from GEF co-funders or/and other financing systems. In Samoa, various bilateral and multilateral developing aid organizations, NZAID, AusAID, European Union, UNESCO, World Bank, UNDP, UNEP, FAO, Canada Fund, supports protection and sustainable development (GEF SGP, 2007) through or not through GEF financing system. Other than GEF SGP, there are following financing system which promotes community activity in Samoa.

Table 4 Other financial resources which promote community activities in Samoa

Example of Community based projects					
	Project	period	Funding	US\$ ³²	community activity
1	Capacity Building for the Development of Adaptation Measures for Pacific Island Countries (CBDAMPIC) in Samoa	2002-2005	Canada International Development Agency (CIDA)	200,000	two coastal communities: 1) the high level of coastal erosion; 2) prone to flooding and poor water quality
2	Samoa Infrastructure Asset Management Project Phase 2 under Risk Adaptation Measures Small Grant Scheme (RAMSGS)	2004-2008	World Bank (total)	115,385	Coastal communities to strengthen the resilience of local coastal communities to withstand the impacts of natural hazards
3	Cyclone Recovery Emergency Project (CERP)	2005-2006	World Bank (total)	4,470,000	Coastal resilience recovery
Small Grants to NGOs and CBOs					
4	AusAID Small grant scheme (no specific target sector)		AusAID	Max (per project) 7,692	
5	European Commission micro-projects	4- year cycle 2002-2007	EC		Revitalize village economies through the construction and operation of education, health, agriculture and other facilities
6	Japanese International Cooperation Agency (JICA) Grassroots Grant Aid program for communities		JICA	Max (annual) 96,154	Community infrastructure developments for school buildings and water tanks
7	NZAID operate funding schemes to support the Government Strategy for Development		NZAID	(Per project) 1,923	NGOs and CBOs can apply directly to the New Zealand High Commission Office for the grants

(GEF SGP, 2007)

The linkage between other financing systems, especially community based programme, have potential to promote community-level adaptation. In order to evaluate effects of linkage, it is necessary to evaluate the performance of financing system, by seeing the effects of linkage of different systems

4) Indicator to evaluate the effect of the network to enhance knowledge and technology sharing

As climate adaptation is a new problem, currently most of the local people and organizations do not have technical knowledge. To increase cost-efficiency, knowledge and technology sharing among stakeholders, like communities, countries and academia is important. Community people in small island states like Samoa, have adapted to climate change and they have their local knowledge. If this local knowledge, scientific knowledge of anticipation of future climate change by academia, and the experience of other communities and countries are accessible, it will better increase the cost-efficiency of financing system than implementing activities individually. Among small island developing states, as they have similar geographic dimensions, they will suffer similar damage from climate change. For example, most small island developing states are suffering from a loss of land and soil salinization caused by sea-level rise and high tides. Currently, SGP NCs Samoa has received experience and knowledge from NCs Philippines,

³² 1 US\$ = 2.6SAT

and this kind of knowledge and technologies sharing network will be important. An indicator to evaluate the effectiveness of this network is necessary to evaluate performance of the financing system.

5) Indicator to evaluate performance before all projects are finished

In this analysis, I used the projects data of Samoa which is a small island developing state and has already received climate impacts. Many of the GEF projects in Samoa are on going and have not completed yet. As both national and regional program and SGP are lacking project data, especially project cost data, I could only analyze a few cases. Since GEF is still conducting pilot projects for climate adaptation, and especially the adaptation projects which use SGP modality called CBA project will start this year, it will take a long time to complete them. In evaluating new system like financing system for climate adaptation, more studies are needed to find indicators to evaluate programmes during the process not only when all projects have completed. For example, as for costs, we should see a detailed breakdown of costs and explore what costs are needed to be used for, in the process of projects.

5. Conclusions

I evaluated the performance of financing systems for climate adaptation by using five indicators, cost-efficiency, transparency, stakeholder participation, accountability, and equity and the case study of Samoa. Few institutions on adaptation have been built so far, and there is no determined financing system for climate adaptation. I compared two different existing GEF financing systems to show the validity of my hypothesis, the most effective financing system for adaptation to climate change is one where global financing organizations provide grants directly to local organizations. The existing financing systems are: 1) GEF Small Grants Programme (the GEF provides grants directly to NGOs or CBOs); 2) GEF national and regional program (the GEF provides grants to regional organizations or/and national governments). My hypothesis is based on the idea that community-level adaptation is most important to enhance adaptive capacity and reduce climates impacts.

According to my analysis, GEF Small Grants Programme financing system is a better system to promote community-level adaptation activities than that of national and regional programme, in terms of cost-efficiency, transparency, stakeholder participation and rather equity. Although more accountability are necessary due to a lack of data, it is able to conclude that GEF SGP financing system is most effective for adaptation in small island developing states like Samoa.

To assure the effectiveness of the financing system for adaptation to climate change, more theoretical development of environmental institutional performance indicators for climate adaptation and case study selection are necessary.

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