

## 適応策のための資金供与制度

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## Financing Systems for Adaptation – Comparison of South Pacific Island States –

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### Abstract

The adverse effects of climate change are expected to affect developing countries to a greater degree than industrialized nations. Poorer countries lack the financial resources and technology to implement adaptation activities against climate change. Consequently, financing is a vital issue in creating international institutions for adaptation. This study explores effective and high-performance financing systems to promote adaptation activities in developing countries that are vulnerable to climate change. Two approaches are used: 1) a new analytical framework and criteria, based on studies of international politics and development financing, evaluate the effectiveness and performance of existing financing systems for adaptation; and 2) an analysis of case studies of Samoa and Tuvalu, which have different degrees of vulnerability to climate change. The results indicate that effective donor-recipient combinations differ between Samoa and Tuvalu because of different adaptation needs, domestic situations, and the relationships between donors and recipients. This research implies that financing systems for adaptation need to be best match-based with regard to the needs and national situations of the developing countries and the characteristics of the financing systems.

**Key Words:** Adaptation, climate change, effectiveness and performance, financing systems, South Pacific Island States

### 1. Introduction

The impact of climate change<sup>1</sup> is already evident in various sectors worldwide (e.g., ecosystems and agriculture) and is often unavoidable. Moreover, climate change is expected to have a greater impact on developing countries than industrialized countries (IPCC, 2007<sup>1</sup>) because of geographical disadvantages and a lack of financial resources and technologies to implement climate change adaptation processes (measures in response to climate change impacts). Significant climate change impacts will ultimately constrain the ability

of developing countries to attain their objectives of poverty eradication and sustainable development. Ironically, industrialized countries are primarily responsible for many of the problems that cause climate change. Developing countries are calling for financial and technical assistance with adaptation measures as compensation for the harm imposed on them (Klein and Persson, 2008<sup>2</sup>).

Financing is likely to be a key element to promote adaptation measures in developing countries (e.g., Hicks et al., 2008<sup>3</sup>; Horstmann, 2011<sup>4</sup>). The United Nations Framework Convention on Climate Change (UNFCCC)

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has called for industrialized countries to assist developing countries “that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects” (UNFCCC, Article 4, paragraph 4). Further, at the 16<sup>th</sup> Conference of the Parties (COP) of the UNFCCC, the Cancun Agreements included a total of US\$30 billion in fast-start financing from industrialized countries to support both mitigation and adaptation in developing countries up to 2012, as well as the intention to raise a further US\$100 billion per year by 2020 (Decision 1/CP.16).

Although estimates of adaptation funding in developing countries are still vague because of the complexity and variety of adaptations, they all indicate figures that are (or will be) in the ballpark of tens of billions of US dollars per annum (UNDP, 2007<sup>5</sup>); UNFCCC, 2007<sup>6</sup>) or even higher, at US \$70–100 billion each year at 2005 prices (World Bank, 2010<sup>7</sup>).

Over five years ago, multiple donors have begun to finance pilot adaptation projects in developing countries. However, neither discussion nor research has sufficiently progressed to build financing systems dedicated to funding adaptation in these countries. Therefore, these financing systems must be analyzed, because it is impossible to meet the needs of adaptation in developing countries unless we consider effective ways of collecting and providing adaptation-related funds. Furthermore, the analysis of financing systems reveals effective linkages among multiple actors, particularly multiple donor agencies and recipients at regional, national and local levels, which implement adaptation measures in developing countries.

This study explores financing systems that are effective and perform well in the promotion of adaptation activities in vulnerable South Pacific Island States. Two approaches are used: 1) a new analytical framework and criteria are used to evaluate the effectiveness and performance of existing financing systems for adaptation, which are based on studies of environmental institutional effectiveness and performance in the field of international politics, and aid effectiveness and performance in development financing; and 2) an analysis of case studies of Samoa and Tuvalu, which

are both classified as Small Island Developing States (SIDS) and Least Developed Countries (LDCs), but have different degrees of vulnerability to climate change (Tuvalu is the more vulnerable). Samoa and Tuvalu are compared to determine whether the effective donor-recipient combination promoting adaptation activities is the same among South Pacific Island States when vulnerabilities to environmental change and climate change differ. New analytical framework and criteria are applied to evaluate the effectiveness and performance of existing financing systems for adaptation in the two countries. There are two major financing criteria: the Global Environment Facility (GEF) and bilateral Official Development Assistance (ODA). Their major funding targets are regional, national, and local actors.

Financing systems for adaptation include both environmental aspects (to address climate change) and developmental aspects (to enhance the adaptive capacity of developing countries). There are a number of studies that evaluate the effectiveness and performance of environmental regimes/institutions and development aids, and their research findings provide important factors to evaluate financing systems for adaptation. However, the existing theories cannot directly apply the analytical framework and criteria (which are used to evaluate environmental institutions and development aids) to financing systems for adaptation, because neither of the studies evaluate environmental financing systems and adaptation problems are in many ways different from other environmental problems.

Adaptation measures differ in a number of ways. First, adaptation measures are more difficult to support than other environmental measures because adaptation requirements vary among communities. Second, adaptation measures need to examine not only how best to reduce the current impact rendered by the climate, but also how to anticipate and react to the impact of present and future climate change (which, of course, involves uncertainty because the degree of impact largely depends on future mitigation activities). Third, the causal mechanisms linked to climate change are not as simple as those of other environmental problems (e.g., the amelioration of particular pollution-contaminated sources).

Although this analysis only focuses on Samoa and Tuvalu, this research identifies the key factors of effective and well performing financing systems, which are relevant to adaptation in many developing countries. In addition, this research shows that theories from the fields of international politics and development financing are applicable in the evaluation of environmental financing systems (for adaptation) as each compensates the other's limitations. These results not only contribute to the discussion and research regarding the building of financing systems for adaptation in developing countries, but also to the development of those two research fields and the study of environmental financing systems.

## 2. Research and discussion on adaptation financing

The funding of adaptation in developing countries has begun to receive attention in the relevant literature (Kantha et al., 2006<sup>8</sup>); Klein et al., 2007<sup>9</sup>); Möhner and Klein, 2007<sup>10</sup>); Müller, 2008<sup>11</sup>); Barr et al., 2010<sup>12</sup>). However, the discussions and research have not made much progress toward building effective and efficient adaptation financing systems in developing countries.

Currently, three major mechanisms have the potential to support adaptation in developing countries: 1) funding adaptation through adaptation-related funds under the UNFCCC and the Kyoto Protocol, and the GEF Trust Fund; 2) integration with development; and 3) insurance (Bouwer and Aerts, 2006<sup>13</sup>); Burton et al., 2006<sup>14</sup>); Kantha et al., 2006<sup>8</sup>); Linnerooth-Bayer and Mechler, 2006<sup>15</sup>); Levina, 2007<sup>16</sup>); Flåm and Skjærseth, 2009<sup>17</sup>).

As for the first mechanism, the GEF not only operates their GEF Trust Fund, but plays a central role in operating adaptation-related funds under UNFCCC and the Kyoto Protocol. GEF operates the Special Climate Change Fund (SCCF) and the Least Developed Country Fund (LDCF), which are funded by voluntary contributions from individual countries under the UNFCCC umbrella. GEF also acts as the temporary secretariat of the Kyoto Protocol's Adaptation Fund (Decision 1/CMP.3). The second mechanism of integration is implemented mainly through ODA. The first two mechanisms are based mainly on public funds. In contrast, with regard to insurance, both the

public and private sectors (e.g., private insurance companies) play key roles in operating the fund.

This research focuses mainly on the two leading funding bodies in adaptation-related projects in developing countries, GEF and bilateral ODA, with a focus on bilateral ODA, which accounts for the majority of total ODA.<sup>2</sup> This paper does not discuss insurance, because it is still relatively new and there are currently proposals to incorporate insurance with the other two mechanisms (Linnerooth-Bayer and Mechler, 2006<sup>15</sup>).

To date, much discussion has focused on how to mobilize adequate bilateral and multilateral funds to promote adaptation in developing countries. However, there has been less discussion regarding effective and efficient ways to allocate these funds (Atteridge et al., 2009<sup>18</sup>); Persson et al., 2009<sup>19</sup>).

The means of providing funds is also important, because financial resources for adaptation remain limited. For example, as of March 31, 2011 with regard to current adaptation-related funds under UNFCCC and the Kyoto Protocol, SCCF has received approximately US\$142.9 million, and LDCF approximately US\$243.7 million (GEF/LDCF.SCCF.10/Inf.2). As of January 31, 2011, the Adaptation Fund received approximately US\$224.5 million (AFB/EFC.5/8). With regard to bilateral ODA, the French Development Agency financed approximately US\$444 million, the Japan International Cooperation Agency (JICA) financed approximately US\$2.268 billion, and the German Development Bank financed US\$588 million for adaptation in 2008<sup>3</sup> (Atteridge et al., 2009<sup>18</sup>).

When meeting the adaptation needs of developing countries, it is important not only to consider effective financial mechanisms for raising funds, but also to contemplate how these would be best used by developing countries (Kantha et al., 2006<sup>8</sup>); Müller, 2008<sup>11</sup>). As adaptation activities involve multiple actors at regional, national and local levels, the optimal financing targets also need to be examined. By illustrating concrete and optimal ways of allocating funds to developing countries, donors will be more aware of the countries' needs and how aid contributes to resolving adaptation issues, and will possibly become more actively engaged.

### 3. Research methods

#### 3.1 Analytical framework and criteria to evaluate financing systems for adaptation

##### 3.1.1 Existing studies to evaluate financing systems for adaptation

Although financing issues are an important element in establishing institutions for adaptation, there has been no analysis of effective donor-recipient combinations in financing systems for adaptation among developing countries. A number of existing papers on adaptation have illustrated the financial mechanisms used to fund adaptation (e.g., Bouwer and Aerts, 2006<sup>13</sup>); Flåm and Skjærseth, 2009<sup>17</sup>); Atteridge et al., 2009<sup>18</sup>); Persson et al., 2009<sup>19</sup>). For example, Bouwer and Aerts (2006)<sup>13</sup>, Flåm and Skjærseth (2009)<sup>17</sup>, and Persson et al. (2009)<sup>19</sup> outline the issues of adaptation funding and describe the funding options within and outside the UNFCCC. Atteridge (2009)<sup>18</sup> provides an overview of the bilateral finance institutions that finance not only mitigation but also adaptation. However, none of these papers have actually evaluated the effectiveness and performance of adaptation financing systems.

Although there are two major studies on adaptation funding evaluation criteria (Müller, 2008<sup>11</sup>); Frankel-Reed et al., 2009<sup>20</sup>), the existing criteria neither adequately evaluates the effectiveness and performance of financing systems for adaptation nor assesses the donor-recipient combination at different levels.

Müller (2008)<sup>11</sup> describes the key to the acceptability of international adaptation funding as whether or not it is new and additional, predictable, appropriate, equitable, and adequate. The criteria of Müller's study are based on the discussions and principles of the UNFCCC, and while they are able to evaluate the financing systems that follow UNFCCC principles they cannot evaluate the actual effectiveness of financing systems in the implementation of adaptation activities in each developing country. In addition, the evaluation criteria of Müller's study mainly evaluate the financing systems in terms of raising funds, and the criteria are not able to evaluate whether the funds are used effectively and efficiently by each developing country. In contrast, the evaluation

criteria study of Frankel-Reed et al. (2009)<sup>20</sup> focuses on evaluating adaptation projects and programs and cannot be used for evaluating financing systems.

Thus, this paper presents a new analytical framework and criteria that are able to evaluate financing systems for adaptation in terms of both their fund-raising capacities, their effective and efficient use, and their actual effectiveness in each developing country.

##### 3.1.2 New analytical framework and criteria

As mentioned above, because financing systems for adaptation include both environmental aspects to address climate change and developmental aspects to enhance the adaptive capacity of developing countries, the new analytical framework and criteria are based on two different fields of study—international politics and development financing—both of which provide important perspectives on evaluating financing systems for adaptation. Studies that evaluate environmental institutions in international politics have advanced our understanding of the complex causal pathways through which environmental institutions produce outcomes and impacts related to environmental improvements, and contributing factors in the effectiveness and performance of environmental institutions (e.g., Haas et al., 1993<sup>21</sup>); Victor et al., 1998<sup>22</sup>); Young 1999<sup>23</sup>); Young et al., 1999<sup>24</sup>); Miles et al., 2002<sup>25</sup>); Mitchell, 2008<sup>26</sup>). Research evaluating development aid has advanced our understanding of the process by which aid produces outcomes and impacts (e.g., raising economic growth, reducing poverty, and promoting sustainable development) and the factors that contribute to its effectiveness and performance (e.g., Ostrom et al., 1993<sup>27</sup>); Burnside and Dollar, 2004<sup>28</sup>); Collier and Dollar, 2002<sup>29</sup>); Clemens and Radelet, 2003<sup>30</sup>); Addison et al., 2005<sup>31</sup>); Sagasti et al., 2005<sup>32</sup>); Hicks et al., 2008<sup>33</sup>). Although the new analytical framework and criteria used here are based on research findings regarding factors that promote the effectiveness and performance of environmental institutions and development aids, existing theories cannot be applied directly to the analytical framework and criteria used to evaluate environmental institutions and development aid in financing systems for adaptation. As mentioned above, this is because the studies have not evaluated environmental financing

systems, the financing systems for adaptation.

To create an objective and comprehensive analytical framework and criteria to evaluate the effectiveness and performance of financing systems for adaptation (effective linkages between donors and recipients), the criteria are not only selected based on 1) research findings in international politics and development financing; but also include, 2) two important factors in financing adaptation in developing countries: the recipients' accessibility to funds to implement adaptation and the effective and efficient use of financial resources to meet adaptation needs; 3) the Organization for Economic Co-operation and Development (OECD) Development Assistance Committee's (DAC) criteria for evaluating development assistance, which is most widely used to evaluate developmental projects and programming (relevance, effectiveness, efficiency, impact, and sustainability); and 4) the intrinsic characteristics of adaptation.

The financing systems are analyzed using the following steps. First, the effectiveness of the financing systems (i.e., whether each financing system makes a difference in promoting adaptation) is analyzed. For those financing systems that have effects (made some difference to the promotion of adaptation), their performance (i.e., whether the financing system promotes adaptation in better performing ways than others) is then analyzed to explore the most optimal performing financing system.

The effectiveness of financing systems is evaluated by focusing on whether the financing systems change the activities of people, and modify the policies and institutions that aim to promote adaptation, by comparing their outcomes to those when there is no funding. If a financing system for adaptation has not made any difference, then there is no point in it being established. Therefore, it is necessary to determine whether or not financing systems have made any difference. The research regarding the effectiveness of environmental institutions, where the effects are evaluated mostly by outcome (e.g., behavioral change) (Young et al., 1999<sup>24</sup>); Miles et al., 2002<sup>25</sup>), analyze the effectiveness of financing systems by focusing on the outcomes/behavioral changes induced by financing systems.

Second, if the financing systems are found

to induce behavioral changes (outcomes) and are viewed as being effective, the more optimally performing financing systems for adaptation measures are analyzed using five performance criteria: flexibility, adequacy, cost-effectiveness, the chain of accountability, and sustainability.

Flexibility indicates 1) whether the project can be implemented with a short period of time and 2) the ease with which it can finance adaptation activities (whether it is easier to provide funds for adaptation activities to particular recipients). As the future impact of climate is uncertain, financing systems (and the adaptation activities they support) need to be flexible and able to rapidly respond to changing situations. If the time needed to implement the project is short enough, it will be easy to plan and implement new projects quickly, and to respond immediately to unexpected climate change impacts. In addition, as climate change impacts are uncertain, developing countries will require financing systems that are easily able to finance adaptation activities in their countries. Thus, which type of financing system is easier for recipients to obtain adaptation funding from is also analyzed. Flexibility, along with a similar factor, adaptability,<sup>4</sup> is viewed as an important factor that can enhance aid effectiveness and performance (Ostrom et al., 1993<sup>27</sup>; Sagasti et al., 2005<sup>32</sup>).

Adequacy refers to whether the amount of money and financing systems are adequate to meet adaptation needs in the developing countries. Developing countries require adequate finance to begin to implement adaptation projects because they usually lack the resources for such activities. In addition, the financing systems need to be present at various levels to meet the needs of adaptation in developing countries. For example, if a developing country requires adaptation activities at the local level, an appropriate financing system is one that provides grants at the local level. Adequacy regarding the type of financing systems is related to the criteria of "relevance" in the DAC Criteria for Evaluating Development Assistance. Both adequacy criteria measure whether an aid activity suits the priorities of the target groups. In addition, adequacy is viewed as an important factor that enhances aid effectiveness and aid performance (Sagasti et al., 2005<sup>32</sup>).

Cost-effectiveness indicates whether 1) the flow of money is transparent; 2) there are real efforts to reduce costs; and 3) the financial institutions are adequately experienced in implementing adaptation projects. As financial resources for adaptation are limited, it is necessary to use them efficiently. This study tries to analyze cost-effectiveness (asking which financing system uses the least costly resources to achieve the implementation of adaptation projects) by focusing on the three factors (discussed above) that are considered to reduce the costs. The concept of cost-effectiveness is quite clear. The cost-effectiveness of an institution is evaluated in terms of whether the institutional benefits exceed institutional costs (Mitchell, 2008<sup>26</sup>). Although the concept is simple, institutional costs and benefits are not always easy to evaluate because of the lack of data related to costs, and due to the difficulty in defining the outcomes of institutions in monetary terms. Because it is also difficult to evaluate the outcomes of financing systems for adaptation in monetary terms, this research focuses on the factors that are considered to reduce costs and do not require the evaluation of financing systems results in monetary terms. Cost-effectiveness is an important factor in enhancing the effectiveness and performance of environmental institutions and development aid (Ostrom et al., 1993<sup>27</sup>; Sagasti et al., 2005<sup>32</sup>; Mitchell, 2008<sup>26</sup>). Efficiency, similar to cost-effectiveness, is viewed as an important element of the DAC criteria.

The chain of accountability refers to whether the recipients actually use the money for adaptation activities. This will be evaluated by identifying the capabilities of recipients at regional, national, and local levels to implement the necessary projects and manage adaptation-related funds. "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 resources can more easily be wasted" (Ostrom et al., 1993, p. 115<sup>27</sup>). Funding for adaptation may be easily used for different purposes, because adaptation activities cover a wide range of sectors. To use the money for intended purposes, the actors who are involved in the financing process are

required to have a high capability for undertaking implementation projects and managing funds. It is also important to have transparent governance systems that ensure the money will not be misused. The capability of recipients to implement projects and management funds is similar to the absorptive capacity of developing countries, which Müller (2008)<sup>11</sup> defined as the capacity to carry out the necessary adaptation measures. Accountability is important in enhancing the effectiveness and performance of environmental institutions and development aid (Ostrom et al., 1993<sup>27</sup>; Sagasti et al. 2005<sup>32</sup>; Mitchell, 2008<sup>26</sup>).

Last, sustainability denotes whether the implemented adaptation measures are continued after completion. Because many projects have yet to be completed, their sustainability is analyzed by identifying the recipients' capabilities and governance systems. As climate change is expected to have an impact on developing countries in the future, adaptation measures need to be implemented and continued even after the projects are completed. Sustainability is a DAC Criteria for Evaluating Development Assistance. Furthermore, if the projects are small-scale (community-based projects), this research will also try to analyze whether they will spread to other areas/communities after the projects are implemented. If so, the projects will be more sustainable because they will involve more people in different communities. The spread of the projects is related to the DAC criteria "impact".

These criteria are important in analyzing the efficacy and performance of a financing system when compared with other financing systems. Table 1 summarizes the rationale of the analytical criteria. It shows the relationships between analytical criteria, research regarding environmental institutional effectiveness and performance and aid effectiveness and performance, OECD DAC criteria, and the characteristics of adaptation. The analytical framework and criteria possess important common elements to evaluate the effectiveness and performance of these financing systems and are applicable not only to the cases of Samoa and Tuvalu, but also to other developing countries.

### 3.2 Case studies of South Pacific Island States

The effectiveness and performance of the

**Table 1** Rationale for Selecting Analytical Criteria

	Theoretical background	Recipients' accessibility to funds/ effective and efficient use of funds	OECD DAC criteria	Adaptation
Effectiveness	Environmental institutional effectiveness	Effective and efficient use of funds	Effectiveness	Adaptation behavior
Flexibility	Aid effectiveness and performance	Accessibility to funds		Uncertainty of adaptation
Adequacy	Aid effectiveness and performance	Accessibility to funds	Relevance	Financial resources for adaptation
Cost-effectiveness	Environmental, institutional/aid effectiveness and performance	Effective and efficient use of funds	Efficiency	Financial resources for adaptation
Chain of accountability	Environmental, institutional/aid effectiveness and performance	Effective and efficient use of funds		Adaptation purpose
Sustainability		Effective and efficient use of funds	Sustainability/ impact	Sustaining adaptation

**Table 2** Classification of Financing Systems

		Financing targets		
		Regional	National	Local
Financing sources	GEF	1	2	3
	Bilateral ODA	4	5	6

adaptation financing systems used in Samoa and Tuvalu, two developing countries in the South Pacific region, were analyzed using the above-mentioned analytical framework and criteria. The different financing systems for adaptation were compared and classified as either GEF or bilateral ODA (the two major financing sources) and then as one of the three major financing targets (regional, national, and local actors) (Table 2).

There are no official names for the financing systems used by GEF and bilateral ODA to provide funding to regional, national, and local actors. In this paper, these financing systems will be referred to as follows: 1) GEF regional financing system: the GEF provides grants to recipient countries through regional organizations; 2) GEF national financing system: the GEF provides grants to national actors; 3) GEF small grant financing system: the GEF

provides grants directly to non-governmental organizations (NGOs) and community-based organizations (CBOs); 4) bilateral ODA regional financing system: the bilateral aid agencies finance recipient countries through regional organizations; 5) bilateral ODA national financing system: bilateral aid agencies finance national actors; and 6) bilateral ODA small grant financing system: bilateral aid agencies finance NGOs and CBOs directly.

GEF and bilateral ODA are not entirely separate financing systems. However, this research focuses on the donor trends of each system and does not refer to the relationships between GEF and bilateral aid agencies. Because GEF and bilateral aid agencies finance adaptation-related projects in Samoa and Tuvalu solely by grants, the focus will be on grants from GEF and bilateral ODAs. Furthermore, with regard to the GEF,



the main focus will be on the United Nations Development Programme (UNDP)-GEF grants flow, which significantly influences the effectiveness and performance of the GEF financing systems in Samoa and Tuvalu.

SIDS and LDCs, like Samoa and Tuvalu, are particularly vulnerable to the adverse impacts of climate change. According to studies by the South Pacific Applied Geoscience Commission (SOPAC) and the United Nations Environment Programme (UNEP),<sup>5</sup> Samoa and Tuvalu are highly or extremely vulnerable to environmental change (including climate change) and require adaptation measures. SIDS are dedicating their own resources to undertake several activities to incorporate adaptation principles and practices into planning and investment activities. However, these activities are insufficient and additional financing and technical assistance are required (AOSIS and UNEP, 2008<sup>33</sup>).

The UNFCCC COP has highlighted the necessity of meeting the adaptation needs of SIDS and LDCs, which is reflected in a guide to the Convention's financial mechanisms (Decisions 6/CP.7, 4/CP.9, 7/CP.10, and 1/CP.13). Furthermore, the Cancun Agreements stated that funding for adaptation would be prioritized according to the most vulnerable developing countries, such as LDCs, SIDS, and Africa (Decision 1/CP.16).

Samoa is "highly vulnerable" to environmental change, and is the central case study in this paper for the following reason. Among developing countries that are highly or extremely vulnerable to environmental change in the South Pacific region, Samoa, Fiji, and Tonga have all of the above-mentioned six financing system types. However, Samoa is a leader in adaptation among LDCs and SIDS, and holds the most information on the six financing systems and on adaptation-related projects in general (Laack, 2009<sup>34</sup>).

Next, to capture a broader picture of adaptation financing systems, Samoa and Tuvalu (the latter is "extremely vulnerable" to environmental change) are compared to determine whether the effective donor-recipient combination for the promotion of adaptation activities is the same among SIDS and LDCs, when vulnerabilities to environmental change and climate change are different. Tuvalu, like

Samoa, is a SIDS and LDC and has an extensive coastal zone that is vulnerable to rising sea levels and other extreme climate change phenomena. Climate variability<sup>6</sup> has created adverse effects in coastal zone areas, water supply, and the agricultural sector in Tuvalu.

In the case of Samoa, the effectiveness and performance of financing systems were determined by comparing the six existing financing systems: two major financing sources, the GEF and bilateral ODA, three financing targets, and regional, national, and local actors. With regard to Tuvalu, four existing financing systems were compared: two financing sources, i.e., GEF and bilateral ODA, and two financing targets, i.e., regional and national actors. Tuvalu receives very little funding from the small grant financing systems that offer finance directly to local actors.

This research uses data from pure adaptation projects (adaptation projects that use the words climate change adaptation in the project title or description) and previous adaptation-related projects (previous development projects that included adaptation information) from both primary sources and personal interviews, which were collected up until 2009. Moreover, it focuses on adaptation in coastal zones, water supplies, and the agriculture sector, which are especially vulnerable in Samoa and Tuvalu.

#### 4. Analysis results:

##### Financing adaptation in Samoa and Tuvalu

The effectiveness and performance of financing systems for adaptation in Samoa and Tuvalu were analyzed by using the above-mentioned analytical framework and criteria, as well as the comparative case studies. Because many adaptation projects are ongoing or recently completed, the project data included information from donor agencies or actors engaged in implementing projects. The donor agencies and the practitioners of the projects do not generally discuss the negative effects of their projects. Therefore, this analysis may underestimate the negative impacts. The analysis of the financing systems using the available data shows that the most optimal performing financing systems for Samoa and Tuvalu are the GEF small grant financing system and the GEF regional financing system,

respectively.

#### 4.1 *Background of Samoa and Tuvalu*

Both Samoa and Tuvalu are vulnerable to climate change. However, Tuvalu is more vulnerable than Samoa, and it has already been seriously affected by climate variability because of its geographic conditions.

Subsistence agriculture and fishing are major industries in Samoa and Tuvalu. Although both countries' economies depend on development assistance, Tuvalu has been more dependent on such assistance because the country's revenue sources are unstable and limited.

In Samoa and Tuvalu, climate trends indicate such phenomena as a rise in temperature, changes in rainfall patterns, increases in the frequency and intensity of tropical cyclones, and a rising sea level. A rise in sea level could intensify coastal erosion and result in the loss of land and property, the dislocation of island inhabitants, and saltwater intrusion (GEF, 2008<sup>35</sup>).

In Samoa, the impacts of current climate variability such as floods and tropical cyclones are seen in several limited coastal villages (e.g., Lano and Saoluaifata). However, compared with low-lying Tuvalu, Samoa has a larger and higher altitude landmass, and the impact of climate variability has not been too severe. Tuvalu has already suffered severe damage from current climate variability and extreme events. In particular, tropical cyclones, frequent surging in low-lying and coastal areas, and frequent and significant droughts have adversely affected domestic agricultural productivity, the availability of freshwater, and community livelihoods in Tuvalu (Department of Environment et al., 2007<sup>36</sup>).

According to previous adaptation-related projects and the National Adaptation Programme of Action (NAPA) proposals for Samoa and Tuvalu, Samoa requires less expensive preventive adaptation measures that can be implemented by both national and local efforts, and particularly those that can be implemented by local actors (e.g., coastal defense by planting mangroves and restoration of coastal springs) (Morita, 2008<sup>37</sup>). In contrast, Tuvalu, which is already suffering the severe impacts of climate variability (e.g., agricultural damage by saline water intrusion), requires expensive adaptation measures,

advanced technologies, and a national effort (Morita, 2008<sup>37</sup>).

In Samoa, the key essential adaptation measures for coastal zones are coastal defense and the management of coastal infrastructure to combat coastal erosion. With regard to water supply, the development of water purification and water storage are necessary measures against the issue of water accessibility. In the agricultural sector, the development of alternative farming systems is necessary to counter instability in food production.

In Tuvalu, the necessary adaptation measures for coastal zones include coastal defense construction and training. With regard to water supply, necessary measures include the development of water storage structures, water management, and the desalination of groundwater. In the agricultural sector, salt-tolerant crops should be introduced and training needs to be given regarding new crop cultivation to increase crop production.

Furthermore, compared with Tuvalu, Samoa can more easily access funds and implement adaptation because the Samoan government is relatively large. There are more than 100 staff members in the Ministry of Natural Resources, Environment, and Meteorology (MNREM). There is close coordination among experts at the local UNDP office and the South Pacific Regional Environment Programme (SPREP). Fortunately, Samoa has many policies, institutions, and laws to deal with environmental issues and the implementation of adaptation. In contrast, the Tuvaluan government has small ministries and lacks the appropriate staff (in 2005 only five officers were in charge of national and global environmental issues) and environmental laws, and has a limited capability to access funds and implement adaptation. Further, unlike Samoa, there is no local UN office in Tuvalu, which makes it difficult for the government of Tuvalu to receive regular advice from experts in preparing and implementing adaptation-related projects.

Both countries have a combined system of national (constitutional monarchy) and local traditional village governance (in Samoa, *Fono*, and in Tuvalu, *Kaupule* and *Falekaupule*). Of all the South Pacific countries, the GEF is especially interested in implementing adaptation projects in

Samoa because Samoa works more closely with the GEF to implement adaptation-related projects than with bilateral ODA. In contrast, as a result of the low capabilities and absence of UN offices in Tuvalu, government and local actors work more with regional organizations than with donors.

#### 4.2 *Analysis of financing systems in Samoa and Tuvalu*

##### 4.2.1 Effectiveness

In Samoa, the six financing systems (GEF and bilateral ODA financing systems) promote behavioral changes for adaptation at national and/or local levels by encouraging officials to implement adaptation-related measures or to create policies and strategies. Behavioral changes are also seen among people from certain vulnerable communities, with people implementing community-level adaptation activities.

For example, GEF and bilateral ODA regional financing systems educated national ministers (e.g., MNREM) regarding adaptation and motivated them to create national policies and strategies (e.g., Samoa's Water Resource Policy). These regional financing systems also led national ministries (e.g., Planning and Urban Management Agency) to incorporate adaptation into existing national policies (e.g., Agencies Business Plan). In addition, the benefits of the financial systems also encouraged local communities to understand these measures and to obtain community assistance in implementing adaptation-related community-level projects in the villages, such as Saolufata and Lano (e.g., Nakalevu, 2006<sup>38</sup>; GEF, 2008<sup>35</sup>).

The GEF national financing system encouraged multiple ministries (e.g., Samoa Water Authority and the MNREM) to identify specific adaptation projects for Samoa<sup>7</sup> and to create national strategies and policies related to adaptation. The GEF system has increased opportunities for dialogue among government officials in different ministries and among national-local stakeholders such as NGOs and CBOs (MNREM et al., 2005<sup>39</sup>; MNREM, 2006<sup>40</sup>). The bilateral ODA national financing system has influenced the national strategies and actions of the Ministry of Agriculture and Fisheries and Water Authority, resulting in the implementation of sustainable agriculture, fisheries, forestry, and water adaptation activities.<sup>8</sup>

By providing grants and knowledge directly to the people, GEF and bilateral ODA small grant financing systems have involved people from the community in the planning and implementation of adaptation measures.

In Tuvalu, the four financing systems (GEF and bilateral ODA regional and national financing systems) produced behavioral changes with regard to adaptation at national and/or local levels. Government officials (e.g., Ministry of Natural Resources and Environment, Agriculture, and Lands, and the Ministry of Works, Energy, and Communication) were encouraged to implement adaptation-related measures, build strategies (e.g., Integrated Water Resource Management Plan), and raise awareness among people in vulnerable communities (e.g., Alpai and Senala).

##### 4.2.2 Flexibility

The GEF small grant financing system is the most flexible of the six systems in Samoa, and the GEF regional financing system is the most flexible of the four systems in Tuvalu in terms of the short timeframe required to begin to implement the adaptation projects and the ease with which adaptation-related activities are funded.

###### (1) Time required to implement projects

In Samoa, projects funded by small grant financing systems require less time than projects funded by regional and national financing systems. While the small grant financing system requires approximately 4 to 6 months to begin implementation, the regional and national financing systems require 2 to 5 years.<sup>9</sup> The administrative processes involved in the regional and national financing systems are usually more time-consuming and bureaucratic, and impose many more reporting and administrative burdens on the recipients than the small grant financing systems, which have much simpler administrative processes (e.g., GEF, 2008<sup>35</sup>). GEF regional and national financing systems require the approval of many GEF committees; the bilateral ODA national financing system requires the approval of the Samoan government, bilateral aid agencies, and the implementing agencies.

In Tuvalu, compared with the GEF regional financing system and bilateral ODA regional and national financing systems, which require approximately 2 to 3 years to begin the

implementation of projects, the GEF national financing system is more time consuming. This could be for two reasons. Tuvalu's national government is not yet capable of writing GEF project proposals, and the funding process for GEF national financing system is complex (Tuvalu has to first submit project proposals to the Fiji UNDP office because there is no UNDP office in Tuvalu).<sup>10</sup>

Because the Tuvaluan government has small ministries and lacks staff, the administration processes of the regional financing systems (project proposals are written and guided by experts) provide an easier and quicker means to implement the projects than the national financing systems,<sup>11</sup> particularly the GEF national financing system.

#### (2) Ease of adaptation finance

The present trends of donors in implementing adaptation in Samoa and Tuvalu have made it easier for Samoa and Tuvalu to receive financial resources from GEF than from bilateral aid agencies.

Samoa and Tuvalu have the potential to receive sufficient financial resources for adaptation through funds from UNFCCC and GEF. As mentioned above, GEF has been requested by UNFCCC to finance adaptation, particularly for SIDS and LDCs. Samoa and Tuvalu have already begun implementing several adaptation projects via GEF.

With regard to bilateral aid agencies, however, interest in funding adaptation projects varies from donor to donor, and it is currently easier for Samoa and Tuvalu to obtain financing for pure adaptation projects from GEF than from bilateral aid agencies. For example, in Samoa, the Australian Agency for International Development (AusAID) has started to implement adaptation measures, beginning with neighboring South Pacific SIDS. In contrast, JICA has not implemented pure adaptation projects in Samoa. AusAID and the New Zealand Agency for International Development (NZAID) have supported adaptation-related projects via a GEF small grant financing system in Samoa (GEF SGP, 2007<sup>11</sup>).

#### 4.2.3 Adequacy

In terms of the amount of money and forms of financing systems to meet adaptation needs in the two countries, GEF national and small grant financing systems are performing better than the other four financing systems in Samoa, and GEF

regional financing system is the most optimal performing system in Tuvalu.

#### (1) Financial resources of financing systems

According to GEF and OECD Creditor Reporting System (CRS) databases, in Samoa, GEF national and small grant financing systems have greater financial resources to finance adaptation than other financing systems. First, GEF national and small grant financing systems and bilateral ODA national financing systems are likely to provide Samoa with greater levels of funding than regional financing systems, because a large share of their funds are used for administrative costs.<sup>12</sup> With regard to the average contribution for each adaptation-related project,<sup>13</sup> the number of adaptation-related projects,<sup>14</sup> the projects' timeframes,<sup>15</sup> and the administrative costs of the financing systems used at a regional level, Samoa received only limited funds from regional financing systems when compared with other financing systems.

The annual total contributions from bilateral ODA national financing systems to Samoan water, agriculture, coastal zone (disaster relief), and environmental sectors and the contributions by GEF national financing systems are similar.<sup>16</sup> However, the major bilateral ODA national financing systems provide a very small share of the total amount of each bilateral ODA national financing system to adaptation-related projects,<sup>17</sup> while a large part of the funds from GEF national financing systems are used for adaptation-related projects. Major bilateral aid agencies (AusAID and NZAID) use GEF small grant financing systems to finance adaptation-related projects. A comparison of GEF and bilateral ODA small grant financing systems shows that GEF small grant financing systems have a greater potential to finance these projects.

According to GEF and OECD CRS databases, the GEF regional financing system in Tuvalu appears more likely to provide sufficient funds for adaptation compared with the other three financing systems, which only provide a limited number of projects in Tuvalu.

#### (2) Financing systems

Because adaptation in Samoa requires national and local efforts, national and small grant financing

systems have forms of financing that more adequately meet the country's adaptation needs than regional financing systems in Samoa.

An examination of the major adaptation projects within the three sectors show that adaptation measures, such as coastal defense by planting mangroves, require people's efforts at a local level (Morita, 2008<sup>37</sup>). The small grant financing systems that provide grants directly to NGOs and CBOs are effective in the promotion of local efforts.

Other activities, such as the implementation of the Coastal Infrastructure Management plan and integrated watershed management programs, are adaptation measures that require concerted efforts at a national level (Morita, 2008<sup>37</sup>). Because Samoa has made several national efforts toward adaptation policies and laws, the government has demonstrated its ability to make national plans, devise strategies, and implement adaptation. Therefore, national financing systems are viewed as being effective in the promotion of national efforts.

In contrast, in Tuvalu, regional financing systems have more appropriate forms of funding than national financing systems. Most adaptation measures, such as the desalination of seawater, require advanced techniques and special knowledge in the three sectors. Therefore, it is difficult for local people to implement these measures (Morita, 2008<sup>37</sup>).

Although the regional and national financing systems could support the capacity of the Tuvaluan government to implement adaptation-related projects, the country has limited ministries and fewer national adaptation policies and institutions than Samoa. Because it is difficult to create national adaptation strategies and policies and to implement adaptation projects at the government level, regional financing for projects implemented by regional organizations (e.g., the preparation of project proposals and implementation of projects that require technical expertise) make up for the government's reduced capacity.

#### 4.2.4 Cost-effectiveness

In terms of money flow, cost reduction efforts, and implementation experience, GEF financing systems are more cost-effective than bilateral ODA financing systems in Samoa, and the GEF regional

financing system is the most cost-effective financing system among the four financing systems in Tuvalu.

#### (1) Money flow

GEF has disclosed more information on the distribution of project funds (e.g., budget breakdowns of projects) in project databases and reports than bilateral aid agencies. For example, the Programme of Action for Adaptation to Climate Change in Samoa is funded by GEF national financing system, and the project budget was earmarked for various costs including the salaries of the project management office staff, national experts, regional experts, travel, translation, and printing costs.<sup>18</sup> In contrast, although some bilateral ODA financing systems disclose a simple budget breakdown in the project database (e.g., JICA financing system), budget breakdowns of projects financed by bilateral ODA financing systems in Samoa and Tuvalu are not generally disclosed in the project databases. Thus, the use of GEF financing systems funds is more transparent than bilateral ODA financing systems.

#### (2) Cost reduction efforts

All six financing systems attempt to reduce costs in Samoa. The regional financing systems provide the basis for SIDS to exchange their experiences and knowledge,<sup>19</sup> and networks and dialogue among SIDS could reduce each country's costs for collecting information and scientific knowledge for implementing adaptation. The national financing systems could further reduce project costs by mainstreaming adaptation-related concepts directly to the Samoan government's national policies and decisions. In addition, national financing systems could lessen the Samoan government's administrative burden of diverse operational arrangements by using an aid coordination and harmonization process (Government of Samoa et al., 2006<sup>42</sup>) under the umbrella of the Ministry of Finance. As small grant financing systems do not require excessive government and donor approval, as is the case in regional and national financing systems, small grant financing systems reduce administrative costs by reducing administrative burdens in implementing projects (e.g., GEF, 2008<sup>35</sup>).

With regard to Tuvalu, although all the financing systems attempt to reduce costs, the

regional financing systems are likely to make stronger efforts than the national financing systems, particularly to reduce administrative costs. National financing systems can reduce project costs by mainstreaming adaptation-related concepts directly to the national policies and the decision-making processes of the Tuvaluan government. However, with the limited capability of the government, and the absence of UN offices in Tuvalu, which makes it difficult for the Tuvalu government to receive regular advice from experts, it is not likely that project costs will be reduced by mainstreaming adaptation in the national strategies and policies.

### (3) Implementation experience

Currently in Samoa and Tuvalu, GEF has greater experience in creating adaptation-related strategies and implementing pilot adaptation projects (including on-the-ground activities) in the three sectors. GEF has financed more adaptation-related projects and a greater share of disbursements for adaptation-related projects. The reason that the bilateral aid agencies have less experience in implementing pilot adaptation projects in Samoa and Tuvalu is probably because each donor country has its own priority area and they have not emphasized the implementation of adaptation-related projects in Samoa and Tuvalu so far. The small share of disbursements of bilateral aid agencies for adaptation-related projects (compared with the total bilateral aid agencies' disbursements, as described in 4.2.3), show that bilateral aid agencies have little interest in implementing adaptation projects.

Particularly in Samoa, GEF has financed many adaptation-related projects<sup>20</sup> in response to requests from UNFCCC to support adaptation in SIDS and LDCs. Moreover, GEF has focused on Samoa as a leader in the implementation of adaptation-related projects.

#### 4.2.5 Chain of accountability

In Samoa, all six financing systems have a good chain of accountability in which recipients monitor the appropriate use of money in adaptation activities. All recipients in Samoa—regional organizations, the government, NGOs, and CBOs—are capable of implementing adaptation-related projects and managing the funds.

For example, with regard to regional

financing systems, the responsibility for ensuring accountability is given mainly to organizations such as SPREP, a regional organization that supports adaptation-related projects. SPREP has experience in implementing adaptation-related projects and has implemented several on-the-ground projects. This organization has the knowledge and technology to deal with common adaptation-related issues experienced by South Pacific SIDS. In addition, SPREP works closely with the Samoan government, particularly MNREM, and with CBOs and NGOs, in implementing projects. Because SPREP is capable of preparing and monitoring the projects effectively, and because national and local actors also hold some responsibility in implementing projects, regional financing systems have a good chain of accountability to determine whether the funds are used for the intended purpose.

Regarding national financing systems, accountability generally lies with Samoan government agencies such as the Ministry of Finance and MNREM, which are responsible for implementing adaptation-related activities at a national level. The Samoan government has the knowledge and skills to create national adaptation strategies and policies in the three sectors. For example, MNREM, which plays a central role in adaptation implementation, has a large staff and is one of the best-trained and largest ministries within the Samoan government (GEF, 2008<sup>39</sup>). In addition, Samoa has the lowest incidence of corruption among the South Pacific Island States.<sup>21</sup> Moreover, the Samoan government has a relatively transparent governance system compared with that of other developing countries, which is important in avoiding the misuse of funds.

With regard to the GEF small grant financing system, both the National Steering Committee (NSC) and recipient CBOs and NGOs accept accountability for implementing projects. NSC, which is comprised of stakeholder representatives (from government, academia, the private sector, and the community), checks each community-level adaptation project to determine whether its activities are producing the desired outcomes. NGOs and CBOs also proactively participate in the planning and implementation of projects. Thus, GEF small grant financing systems have a

transparent and effective chain of accountability to ensure not only the proper use of grants, but also that each project meets its community's needs and successfully reduces vulnerabilities. AusAID and NZAID small grant financing systems use the GEF small grant financing scheme. Although the JICA small grant financing system has a different scheme that does not include NSCs (as the project scales are small and the goals are narrow), projects funded by this financing system are fully monitored by the Japanese Ministry of Foreign Affairs in New Zealand, JICA staff in Samoa, and a local consultancy firm (GEF SGP, 2007<sup>41</sup>).

In contrast, in Tuvalu, regional financing systems that have higher operational capabilities appear to have better chains of accountability. Compared with the national financing systems, recipients of regional funding have the resources to monitor the proper allocation of funds in adaptation activities. Regional organizations have the ability to implement adaptation-related projects and manage funds, while the Tuvaluan government does not.

In Tuvalu, NAPA has attempted to involve multiple ministries, NGOs, and community groups in implementing adaptation. However, because the small number of officials has to address many other issues as well, their proactive participation cannot be expected. Consequently, a lack of staff and institutions at the national level reduces their accountability.

#### 4.2.6 Sustainability

In Samoa, GEF and bilateral ODA small grant financing systems are better able to sustain (and expand) their adaptation-related activities than other financing systems, even after the completion of projects.

It is not easy to implement and expand adaptation activities (those financed by regional and national financing systems) throughout the community. Regional organization-led and national government-led projects generally implement adaptation activities through national strategies and policies. However, local stakeholders can participate only in a limited manner, and there are gaps between their knowledge and that of the recipients.

In contrast, although some adaptation activities are difficult for community-level stakeholders

to continue (e.g., water quality improvement projects that require engineering and technical knowledge), most of the projects that small grant financing systems support can be implemented by community-level stakeholders, even after the projects end. In addition, most Samoans still emphasize the importance of traditional Samoan village governance and conform to the rules of their villages.<sup>22</sup> The traditional village governance enhances cooperative ties among people in the community and helps to sustain community-level adaptation activities. Furthermore, projects funded by small grant financing systems are likely to extend those activities to other communities through the involvement of people in the community.<sup>23</sup>

With regard to Tuvalu, because regional organizations have a greater capability than government to implement required adaptation in Tuvalu, and because GEF emphasizes the financing of adaptation in SIDS and LDCs, the GEF regional financing system is the most optimal performing (of the four systems) at sustaining adaptation activities, even after project completion.

Unlike Samoa, Tuvalu has no environmental laws and does not have policies to address adaptation-related issues. In addition, several Tuvaluan adaptation-related measures require sophisticated techniques and expert knowledge, which are expensive to implement (Morita, 2008<sup>37</sup>). Because of financial constraints, it is difficult for the national government to continue required adaptation measures after a project's completion. There is a critical lack of funds to meet the continuing needs of adaptation and to supplement the resources of the national government.

#### 4.3 Overall Results

In Samoa, the GEF small grant financing system appears to be the most optimal performing financing system for the implementation of adaptation. The GEF small grant financing system is suitable for Samoa in terms of its adaptation needs, the relative ease of accessing funds and adaptation implementation, traditional village governance, and Samoa's strong relationship with GEF.

Meanwhile, current data for Tuvalu shows that the GEF regional financing system is the best performing financing system for the

implementation of adaptation, because of Tuvalu's specific adaptation needs, low capacity to access funds and implement adaptation, and weak relationships with donors.

The results of the case analysis of Samoa and Tuvalu show that although these two nations have employed two different donor-recipient combinations in the promotion of adaptation, they are the most effective systems for their particular needs. This distinction stems from national differences in terms of adaptation needs, ability to access funds and to implement adaptation measures, and the relationships between donors and recipient countries.

Although Samoa and Tuvalu are both SIDS and LDCs, they differ in several ways. Due to its geographic conditions, Tuvalu has already experienced a greater impact from climate variability than Samoa. Tuvalu's adaptation measures require advanced knowledge and technology, which can be expensive. In contrast, Samoa's adaptation measures are usually less expensive, and local actors can implement the majority of projects. Furthermore, there are differences in the capabilities of the national governments of Tuvalu and Samoa. Samoa has a relatively high capability to access funds and implement adaptation measures, because it has more human resources in government and most major donor agencies have local offices. Furthermore, the Samoan government has a closer relationship with donors than the Tuvaluan government.

Thus, each developing country's conditions, such as varied adaptation needs (e.g., degree of vulnerability to climate change and the required adaptation measures), ability to access funds and implement adaptation, and the relationships between donors and recipient countries, are viewed as key determinants in selecting effective and better performing financing systems for adaptation.

## 5. Conclusions and implications

This research explored effective and well performing financing systems for adaptation activities in South Pacific Island States, using two approaches: 1) a new analytical framework and criteria to evaluate the effectiveness and performance of financing systems for adaptation, based on studies of international politics and

development financing; and 2) an analysis of the case studies of Samoa and Tuvalu.

### 5.1 Conclusions

#### 5.1.1 Creation of a new analytical framework and criteria

To evaluate the effectiveness and performance of financing systems for adaptation in South Pacific Island States, this research presented a new analytical framework and criteria, based on research regarding the factors that promote the effectiveness and performance of environmental institutions and development aids in the field of international politics and development financing. The new analytical framework and criteria consist of evaluating: (1) institutional effectiveness, and (2) performance: flexibility, adequacy, cost-effectiveness, the chain of accountability, and sustainability. The framework and criteria are important for evaluating financing systems in terms of their fund-raising capacities, their effective and efficient use, and their actual effectiveness in each developing country.

The criteria highlighted the characteristics of GEF and bilateral ODA financing systems for adaptation and the effective and better performing financing systems in each developing country. In addition, the analytical framework and criteria indicated the key determinants for selecting financing systems, such as the varied adaptation needs and capabilities of accessing funds and implementing adaptation measures.

#### 5.1.2 Effective and optimal performing financing systems for adaptation in South Pacific Island States

By using the new analytical framework and criteria, this research explored effective and well performing financing systems to promote adaptation activities in Samoa and Tuvalu. The optimal performing financing system for Samoa is the GEF small grant financing system. For Tuvalu, the optimal financing system is the GEF regional financing system. The analyses of the financing systems for adaptation in Samoa and Tuvalu have produced different results for the two countries, because they have differing adaptation needs, different capabilities to access funds and implement adaptation, and unique relationships between donors and recipient countries. The results show that to finance effective and well performing



adaptation it is important to fully consider the domestic situation of each developing country in financing adaptation.

## 5.2 Implications

### 5.2.1 Implications for research in international politics and development financing

This research has shown not only the applicability of the two research fields (studies of environmental institutional effectiveness and performance in the field of international politics, and aid effectiveness and performance in development financing) in evaluating environmental financing systems (financing systems for adaptation), but also the limitations. The two research fields compensate for the other's limitations, the developmental and environmental elements, and help to develop the study of environmental financing systems.

With regard to the study of the effectiveness of environmental institutions and their performance in international politics, this research showed the applicability of such research findings, which focused on behavioral changes (outcomes) (e.g., Young et al., 1999<sup>24</sup>; Miles et al., 2002<sup>25</sup>) and the factors affect their performance, such as cost-effectiveness, to evaluate environmental financing systems. This research also showed the applicability of the theories of environmental institutions in international politics to the new field of financing systems for adaptation (which comprise various combinations of donors at the national to international level, and recipients at the local to the regional level) as well as its traditional use regarding international environmental regimes and institutions.

However, there are limitations in the field of environmental institutional effectiveness and performance when used to evaluate environmental financing systems. These limitations lie in the factors that analyze the characteristics and relationship between donors and recipients, which greatly influence the effectiveness and performance of financing systems. Some of the analytical criteria used in this study, such as adequacy and flexibility, are rarely mentioned in the field of environmental institutional effectiveness and performance. To expand the evaluation of environmental institutions to include the evaluation of environmental

financing systems, it will be necessary to discuss the development-related factors.

In contrast, with regard to the study of the effectiveness of aid and its performance in development financing, this research showed the applicability of several factors (such as adequacy and flexibility) that could show the effectiveness and performance of aid in evaluating environmental financing systems.

The limitations are the framework and factors that evaluate the environment-related elements of financing systems, and the evaluation of one particular type of financing system. Regarding the effectiveness of financing systems, the research on the effectiveness of aid has evaluated developmental effectiveness by examining mainly economic impacts and poverty reduction or the sustainable development produced by aid (e.g., Burnside and Dollar, 2004<sup>28</sup>; Addison et al., 2005<sup>31</sup>). However, it is difficult to evaluate how one particular type of financing system affects outcomes such as increasing economic growth. This research focused on outcomes, such as the behavioral changes in the recipient countries, to evaluate the effectiveness of each environmental financing system. In addition, there have been few attempts to use cross-institutional perspectives to explain the relative advantages and disadvantages of each type of agency within a single explanatory model (Martens, 2005, p. 645<sup>43</sup>). The new analytical framework and criteria used in this study enables the analysis of the relative effectiveness and performance of each type of financing system for adaptation.

### 5.2.2 Implications of the development of financing systems for adaptation

There has been much discussion on how to mobilize adequate funds to promote adaptation activities in developing countries under the UNFCCC and currently there are talks to raise US\$100 billion per year by 2020 to support mitigation and adaptation activities in developing countries (Decision 1/CP.16). However, there has been little discussion as to how these funds should be provided. By analyzing the effectiveness and performance of different types of financing systems, this research has highlighted the importance of discussing not only the methods to obtain funds, but also how funds should be allocated. Because

financial resources for adaptation are still limited and their allocation is surrounded by uncertainty, the participation of donors could be jeopardized. Therefore, it is essential to discuss how to mobilize the financial resources and how to best allocate funds under the UNFCCC.

To ensure the effectiveness and performance of financing systems for adaptation in developing countries, further studies are needed to apply the analytical framework and criteria to countries other than Samoa and Tuvalu. In addition, financing sources not addressed in this study (such as private sector finance) need further consideration. Finally, the results of this research imply that to achieve optimal performance, financing systems for adaptation need to be based on the best match between the adaptation needs and national situations (e.g., ability to access funds and implement adaptation) of developing countries and the characteristics (strengths and weakness) of the financing systems according to fund sources and targets.

To lead donors such as GEF and bilateral ODA to finance adaptation in accordance with the optimum match of donors and recipients, it is necessary to have shared rules and criteria for screening adaptation projects and allocating funds among donors, and a system that enhances the exchange of information on the adaptation needs, the national situations of developing countries, and the characteristics of financing systems. The new analytical framework and criteria used in this research could contribute to the development of shared rules and criteria for screening adaptation projects and allocating funds. Although unifying adaptation funding rules and criteria will require a fundamental change in donors' administrative rules and processes, adaptation funding in developing countries will be more effective and efficient.

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### Notes

- 1 Climate change refers to "any change in climate over time, whether due to natural variability or as a result of human activity" (IPCC, 2007, p. 871<sup>1)</sup>).
- 2 In 2009, the average percentage relation of bilateral ODA to total ODA was 69.67% (OECD DAC database).
- 3 At average 2008 exchange rates. <http://www.x-rates.com/d/USD/EUR/hist2008.html>
- 4 Adaptability (i.e., whether institutional arrangements are able to respond to ever-changing environments, as defined by Ostrom et al. [1993]<sup>27)</sup>) is similar to flexibility. The reason why this paper uses the word flexibility is to avoid confusion between the "adaptation" to climate change and adaptability.
- 5 The study shows that Samoa is "highly vulnerable" and Tuvalu is "extremely vulnerable" to environmental change including climate change (i.e., Tuvalu is more vulnerable than Samoa). SOPAC and UNEP <http://www.vulnerabilityindex.net/index.htm> (Accessed March 1, 2011)
- 6 Climate variability refers to "variations in the mean state and other statistics of the climate on all temporal and spatial scales beyond that of individual weather events" (IPCC, 2007, p. 872<sup>1)</sup>).
- 7 Based on interviews with several officers from MNREM in Samoa (May, 2008).
- 8 Based on the Australian Agency for International Development (AusAID) and the New Zealand Agency for International Development (NZAID) project reports.
- 9 Interview with Leilani Duffy, the National Coordinator at UNDP-GEF Samoa (March 14, 2007).
- 10 Based on a interview with an official at Department of Environment in Tuvalu (January 13, 2006)
- 11 Based on interviews with Espen Ronneberg, climate change adviser at SPREP, and Andre Volentras, regional technical adviser at UNDP-GEF (March, 2008).
- 12 Based on GEF 2008, and project reports and GEF databases.
- 13 Assuming equal distribution among the countries participating in regional projects, the average contribution to Samoa by each adaptation-related project funded by the GEF regional financing system is approximately US\$0.58 million. With regard to projects funded by the bilateral ODA

financing system, CIDA's Capacity Building to Enable the Development of Adaptation Measures in Pacific Island Countries project financed approximately US\$0.35 million, and AusAID's South Pacific Sea-level and Climate Monitoring Project approximately US\$0.56 million.

- 14 In terms of the GEF regional financing system, eight approved projects are adaptation-related projects in the three sectors in Samoa. In contrast, the number of projects funded by the bilateral ODA regional financing system is unclear because there is no such information in OECD databases. However, three major adaptation-related projects have been financed by the bilateral ODA regional financing system (July, 2009).
- 15 There is a range of approximately 5 to 10 years for projects funded by the GEF regional financing system (GEF, 2008<sup>35</sup>). According to CIDA and AusAID project documents, there is a range of 3 to 7 years for projects funded by the bilateral ODA regional financing system.
- 16 For example, between 2006 and 2007, the former (AusAID, JICA and NZAID) provided approximately US\$0.94 million and the latter approximately US \$0.69 million.
- 17 For example, the average total amount of each major bilateral aid agency's national financing system in Samoa between 2006 and 2007 was as follows: AusAID disbursed US\$12.81 million, JICA US\$11.98 million, and NZAID US\$6.37 million.
- 18 Proposal for funding for the Preparation of a NAPA, Project Document for CEO Approval <http://www.gefonline.org/projectDetailsSQL.cfm?projID=1868> (Accessed February 2, 2012)
- 19 Based on an interview with Espen Ronneberg, climate change adviser at SPREP (March, 2008).
- 20 Until 2009, eight adaptation-related projects were funded by the GEF regional financing system in Samoa, six were funded by the GEF national financing system, and fifty-nine were funded by the GEF small grant financing system.
- 21 Transparency International, Corruption Perceptions Index 2009 results. [http://www.transparency.org/policy\\_research/surveys\\_indices/cpi/2009/cpi\\_2009\\_table](http://www.transparency.org/policy_research/surveys_indices/cpi/2009/cpi_2009_table) (Accessed September 19, 2010).
- 22 Interview with an expert on village governance at the National University of Samoa (March 10, 2008)
- 23 The marine biodiversity conservation project in Savaia is a good example. The educational and monitoring aspects of the project have been replicated in the next village, Tafagamanu, by

village locals (interview with Leilani Duffy on March 7, 2008).

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## 適応策のための資金供与制度 —南太平洋島嶼国の比較—

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### 摘 要

開発途上国における気候変動の悪影響は今後深刻化することが予測されている。しかし、途上国には気候変動への適応策を実施するための十分な資金や技術がない。途上国への適応策支援の問題は、適応策に関する制度設計の議論の中で主要な争点の一つとなっている。本研究は、気候変動に対して脆弱な途上国の適応策を推進する、効果的でパフォーマンスの高い資金供与制度を探究する。(1) 国際政治学と開発金融学の理論を基に構築した、適応策支援を目的とした既存の資金供与制度の効果やパフォーマンスを評価する新しい分析枠組及び分析軸、(2) 気候変動に対する脆弱性の度合いが異なるサモアとツバルの事例研究、の二つの研究アプローチを用いた。研究の結果、適応のニーズ、国内事情、ドナーとレシピエントの関係の違いにより、適応策推進に効果的なドナーとレシピエントの組み合わせは、サモア及びツバルで異なることが明らかになった。本研究は、適応策の資金供与制度の構築において、途上国の適応のニーズや国内事情、資金供与制度の特徴を考慮する必要性を示した。

キーワード：適応、気候変動、効果・パフォーマンス、資金供与制度、南太平洋島嶼国