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Integrating disaster risk reduction and climate change adaptation in the Pacific

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Integrating community-based disaster risk reduction (DRR) and climate change adaptation (CCA) is identified at the policy and practical level as critical to aid effectiveness. Successful integration reduces both duplication of efforts and confusion at the community level, thus contributing to sustainable development. The challenges of integrating DRR and CCA are widely discussed from the global to the local level among policymakers, practitioners and academics alike. However, to date, little progress has been made in achieving practical solutions. By focusing on the governance aspects of DRR and CCA integration in the Pacific (with a particular focus on Fiji and Samoa), this study highlights potential pathways to overcome the separation of these two dynamic and overlapping fields. In applying the Earth System Governance framework as a novel analytical tool, we reveal that the issues of *agency* and *architecture* are especially significant as challenges to effectively integrating DRR and CCA.

Keywords: climate adaptation; disaster risk; Earth System Governance; Pacific

1. Introduction and aims

Natural disasters and climate change pose considerable current and future risks to the livelihoods of Pacific Islanders. Historical environmental, social and cultural resilience mechanisms are slowly being eroded by external influences such as globalization and global environmental change. Coupled with the intrinsic vulnerability of islands in the region as a result of characteristics such as their small size, geographic isolation, ecological fragility, limited disaster mitigation capacity, rapid population growth and small economies (Pelling and Uitto, 2001; Kaly et al., 2002; Meheux et al., 2007), disasters and climate change present complex challenges that threaten to undermine development advances and investment in the region.¹ For example, tropical storms (which may become more frequent and intense with climate change) can reduce food production, increase the incidence of diseases and degrade the

quality of ecosystems upon which many Pacific Islanders depend (see Hay and Mimura (2010) for further examples of how extreme weather and climate change can impact on development).

There is therefore a compelling case to ensure measures to address disaster risk and climate change are as effective and efficient as possible. The strong similarities in the methods used to reduce vulnerability to natural disasters and climate change lead to arguments that, for development aid to be effective, it is necessary to successfully integrate climate change adaptation (CCA) and disaster risk reduction (DRR) efforts (Schipper and Pelling, 2006; Venton and La Trobe, 2008). There is much discussion surrounding the integration of DRR and CCA from the global institutional and policy level through to regional and national discussions (Sperling and Szekely, 2005; Pacific Regional Environment Programme, 2006; International Strategy for Disaster Reduction, 2008). Challenges associated with integration have been

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documented and initial efforts to bring the two fields together have been made (see e.g. Volume 30, Issue 1 of *Disasters*, 2006 – a special issue focusing on integrating DRR and CCA). However, very little research or experience exists on how genuine integration can be achieved, particularly at the community level.

The aim of this study is therefore to investigate why the integration of DRR and CCA is not occurring in the Pacific by applying a new and innovative framework which focuses on governance issues. Our approach aims to deconstruct and isolate challenges associated with integrating DRR and CCA in the Pacific, in new and novel ways. Through the analysis of community-based DRR and CCA projects in Fiji and Samoa and using the Earth System Governance (ESG) framework, we identify the specific barriers to integration faced by development practitioners, governments and community members. By adopting the ESG framework, we also aim to identify opportunities for academics, policy and decision makers to achieve an integrated and cooperative approach to DRR and CCA at the community level.

In order to achieve these aims, we first outline the reasons for integrating DRR and CCA. We then introduce the ESG framework and describe our methods, then apply the ESG framework to isolate the specific challenges associated with integrating DRR and CCA in the Pacific context.

2. Integrated DRR and CCA

In recent years the discourse relating to the integration of DRR and CCA has been growing. The volume of literature has been steadily increasing and the subject is now a common feature of many global and regional stakeholder meetings. For example, the integration of DRR into CCA and development policies was a key discussion point at the 2009 Global Platform for Disaster Risk Reduction meeting (International Institute for Sustainable Development, 2009). Similarly, as a result of the United Nations Framework Convention on Climate Change's

(UNFCCC) Conference of the Parties 13th meeting in 2007, DRR strategies were included in the Bali Action Plan, which sets out future climate change negotiation processes (UNDP, 2008). A 2009 Policy Forum supported by the Global Facility for Disaster Reduction and Recovery (GFDRR) focused on Climate Smart Disaster Risk Management (Global Fund for Disaster Reduction and Recovery, 2009b). At Pacific Regional DRR and CCA meetings, a similar situation occurs, with attempts to integrate DRR and CCA clearly on the agenda (see Pacific Regional Environment Programme (2006) and SOPAC (2009) for details).

Across the literature, a number of convincing arguments for the integration of DRR and CCA have been made (Glantz, 2003; O'Brien et al., 2006; Lewis, 2007). Key benefits of integration are identified as: (a) reduced climate-related losses through widespread DRR measures; (b) increased efficiency of resource allocation (financial, human and natural, which is crucial when considering aid efficiency) and (c) enhanced effectiveness and sustainability of CCA and DRR approaches (Venton and La Trobe, 2008). Furthermore, integrating DRR and CCA contributes to the overall goals of sustainable development by reducing vulnerability and boosting adaptive capacity. Indeed, many of the practical outputs of DRR and CCA are the same. For example, the construction of shoreline protection (e.g. a sea wall) is traditionally used to reinforce the coastline and reduce the risk of erosion and inundation as a result of a storm or tropical cyclone, but it can equally protect against climate change-induced sea-level rise.² Similarly, food security initiatives may be implemented not only to guard against food shortages after a disaster, but also to ensure that crop varieties are suited to changing climate scenarios (Food and Agriculture Organization, 2008).

The conceptual and practical similarities and differences of DRR and CCA have been the subject of several recent studies (e.g. Thomalla et al., 2006; Mitchell and van Aalst, 2008; Venton and La Trobe, 2008; Mercer, 2010), which have found that while there are political

and physical distinctions between the scope of each field, there is a key area of similarity – a focus on vulnerability reduction and the enhancement of resilience (Figure 1). Thomalla et al. (2006) argue that CCA and DRR projects need to focus on this characteristic and adopt a common approach to reducing vulnerability, as the current disconnected ways of working have thus far failed to make significant progress towards vulnerability reduction. Yet, even with a consistent focus on vulnerability reduction, integrating DRR and CCA programming is acknowledged to be a challenging task (Mercer, 2010). A commonly identified problem is the difference in the technical language and terminology used in DRR and CCA, compounded by different approaches to project implementation (Schipper and Pelling, 2006). Furthermore, institutional, financial and political barriers exist (Helmer and Hilhorst, 2006), which act to inhibit agents, actors and stakeholders from truly collaborating and creating cross-disciplinary and holistic programmes.

Arguments for integrating DRR and CCA in the Pacific region are readily apparent. It is an area of high vulnerability where climate change threatens progress made on each of the Millennium Development Goals (Hay and Mimura, 2010). Moreover, development aid contributes

significantly to national economies in the Pacific, thus donor and development partners are keen to support a coordinated effort to reducing vulnerability, something that is outlined in the region's plan for cooperation and integration (see the Pacific Plan: Pacific Islands Forum Secretariat, 2007).

3. Focus on governance

3.1. What governance means today

This research approaches the subject of integrating DRR and CCA by explicitly addressing issues of governance, for example, power and authority in decision making, global to local institutions, policy and legislative frameworks. Governance is an issue that is touched upon in the literature (e.g. Sperling and Szekely, 2005; Thomalla et al., 2006) as a confounding problem with respect to the integration of DRR and CCA at the community level. Today, when policymakers, academics and the development community think about governance, themes emerge around decision making, power and control, democracy and legitimacy, accountability and the legal framework (Lamour, 1998). In this context, governance refers to the changing locus of political authority and the fragmentation of policymaking (Krahmann, 2003), where regulation differs from traditional hierarchical state activity (van Kersbergen and van Waarden, 2004; Biermann and Pattberg, 2008). This fragmentation, and the trend from government to governance, has arisen due to changes in the international environment (Duit et al., 2010). Since the 1970s, there have been not only significant detrimental changes to the natural environment but also intensified international trade regimes, rapid technological change (Lamour, 1998) and a shift of power away from the nation state (O'Neill et al., 2004). Furthermore, governance issues have arisen through broad social changes such as increased education and greater participation by women in paid employment (Lamour, 1998). These changes have led to the proliferation of

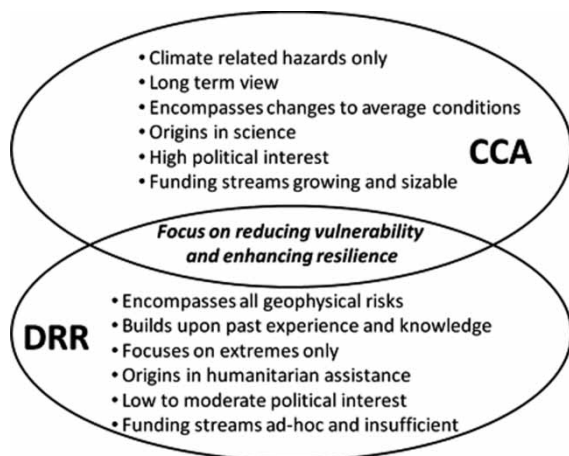


FIGURE 1 Similarities and differences of DRR and CCA (modified from Venton and La Trobe, 2008)

non-state organizations with growing political authority (O'Neill et al., 2004). From the local to the global, issues are being addressed by a range of actors and stakeholders in response to the changing nature of the state and policymaking.

Governance is high on the agenda of development agencies. In fact, 'governance is the linchpin in current international development strategy' (Goldsmith, 2007, p.165) and 'good' governance is considered fundamental to economic development (Kaufman et al., 2005). The Worldwide Governance Indicators were developed to measure the quality of governance and are updated annually for over 200 countries (see Kaufman et al. (2005) and World Bank (2009) for details). The 1996–2006 Indicators for Samoa suggest that while an improvement in governance has been achieved, government effectiveness and regulatory quality still lag behind (AusAID, 2010). Governance in Fiji remains contested as democratic elections are yet to be held to legitimize the current military government. Better governance is thought to lead to better development outcomes (Kaufman et al., 2005) and it is acknowledged that the quality of governance in Fiji and Samoa has considerable impact on DRR and CCA outcomes. As such, current governance theory is utilized to analyse the issues of DRR and CCA in the Pacific, since these issues are intrinsically related to development.

Governance literature states that the fragmented and poorly coordinated nature of human systems and institutions create barriers to dealing with the speed of global change (Young et al., 2006; Duit et al., 2010). In fact, Nicholls (2001) notes that weak institutional governance creates bottlenecks to effective management. Integrating DRR and CCA provides an example of a challenge associated with environmental management and global change. We therefore test the hypothesis that the specific challenges associated with integrating DRR and CCA in Fiji and Samoa are inherently related to governance issues. We do so by adopting a governance lens, and in particular, apply the ESG framework.

3.2. Earth System Governance

The Earth System Governance Project is a research programme seeking to develop strategies to manage the increasingly complex relationship between people and nature (Biermann et al., 2009). ESG recognizes the complexity of environmental governance, particularly in the context of sustainable development. ESG is future oriented, relying on 'new forms of evidence and new forms of validity and reliability of empirical knowledge' (Biermann, 2007, p.334). New elements are required to assist in coping with the speed and nature of global change, which is particularly pertinent in relation to climate change, and indeed the implications for Pacific Island countries. As a result, ESG has been developed as a research tool for global environmental change which links the analysis of the earth system to governance theory (Biermann, 2007).

ESG identifies five fundamental research and governance challenges, which Biermann (2007) notes as cross-cutting themes in global change research. These problem structures, or the five A's, are: agency, architecture, adaptiveness, accountability and allocation, which are described in more detail in Table 1. These problem structures together provide a framework that allows for challenges and opportunities associated with global change to be assessed and deconstructed in such a way that innovative solutions can be developed. As such, the ESG framework offers a novel approach to identifying obstacles to effective integration of DRR and CCA, which are essentially problems of global change.

4. Methods

This research drew upon a range of data collection techniques. A thorough literature review was conducted, along with reviewing web-based networks relating to DRR and CCA globally. Our study focused on the Pacific, and in particular Fiji and Samoa. These two countries were selected as examples of the situation in the Pacific since they present diverse environmental, political,

TABLE 1 The five A's of ESG

Agency, and who has power and authority beyond the state, and what are their roles and responsibilities? The challenge of agency looks into how authority is granted and exercised (Biermann et al., 2009) and also the distinction between actors and agents. Here, civil society and NGOs are playing an increasing role

Architecture relates to the emergence of governance systems, such as new institutions and networks, and how effective they are. Analysing architecture also involves assessing the overall integration of governance across scales from local to global (Biermann et al., 2009) and the frameworks and structures that underpin decision making

Adaptiveness of governance mechanisms (decision making, exercising authority, rule making, policy development) to cope with the rapid global change currently being faced. The challenge of adaptiveness in ESG requires long-term sustainability, coupled with flexibility to cope with the speed of change (Biermann et al., 2009; Kelman and West, 2009)

Accountability and legitimacy, which relate to democracy and decision making. 'What institutional designs can produce accountability and legitimacy that guarantees balance of interests and perspectives?' (Biermann et al., 2009, p.5)

Modes of *Allocation* in ESG. This challenge incorporates allocation and access to information, which in turn relate to justice, fairness and equality (Biermann et al., 2009).

Furthermore, inclusion and exclusion, participation and human rights also fall under this challenge

social and cultural backgrounds and, correspondingly, different challenges relating to how DRR and CCA are being integrated. Two extended periods of field work in Fiji and Samoa allowed time to meet with numerous agents and stakeholders to conduct extensive semi-structured interviews.³ A total of 47 individuals were interviewed from 29 organizations, which included local non-government organizations (NGOs), academic institutions, UN agencies, multilateral and bilateral donors, and other key regional organizations. Interview participants provided valuable insight into the challenges faced by practitioners who are working to find practical ways to integrate DRR and CCA at the community level. Recruiting participants for interviews was

undertaken with the assistance of information uncovered during an earlier phase of the research, which involved mapping the organizations and projects associated with Pacific community-based DRR and CCA. While in-country, researchers drew upon the snowball sampling technique, which allows for the identification of further participants using a system of referrals, and establishes networks and connections quickly (Atkinson and Flint, 2001). Semi-structured interviews were undertaken, allowing for interviewers to casually guide the general theme of the interview, with participants' answers being descriptive (Jennings, 2005). Recorded interviews were later transcribed and analysed using the software NVivo, a quantitative data analysis tool (see Bazeley, 2007).

Unstructured observational methods were also used, as is common in qualitative research (Punch, 2005), as well as participant and non-participant (passive) observational techniques, with researchers participating in disaster drills and regional workshops, which were extremely useful in gathering information and talking informally with people from different backgrounds who are involved in DRR and CCA in some way.

Eight community-based projects which focused on DRR and/or CCA (either implicitly or explicitly) were selected for study. These projects, located in Fiji and Samoa, were selected as they provided examples of the diverse ways in which DRR and CCA are addressed. Multiple agents, actors and stakeholders involved in these case studies were interviewed to develop a full picture of each project, including the aims and objectives, implementing and partner organizations, donor agency, location and associated activities. Details of the case studies are provided in Table 2. See Gero et al. (2011) for more descriptive case study information, including specific activities and approaches.

Researchers adopted the use of the ESG framework to analyse and identify the challenges associated with the integration of DRR and CCA. The ESG framework (Biermann, 2007) was used as it lends itself to the issues and challenges

TABLE 2 DRR and CCA case study information

Project/initiative	Donor	Location	Implementing agency/ organizations	Activities	Aims and objectives
Pacific Community-Focused Integrated Disaster Risk Reduction (PCIDRR)	National Council of Churches (NCCA), AusAID	Fiji, Solomon Islands, Tonga, Vanuatu	PCIDRR Team, NCCA, NDMO, ADRA	Disaster management training, development of Community Disaster Plan and disaster response practice via simulation exercise	To create better awareness and understanding of disaster risks at the community level and to identify means to enhance resilience to these risks. Creation of Community Disaster Plan, training of people in village in disaster response (National Council of Churches Australia (NCCA), 2007)
GEF-SGP Community Based Adaption (CBA)	GEF/ AusAID	Global: 10 pilot countries including Samoa	Small Grants Programme (SGP) and United Nations Development Programme (UNDP)	Enhancing community resilience to climate change via community education and awareness, coupled with 'hard solutions' such as shoreline protection	Enhancing community resilience and the ecosystems upon which they depend via a 'results based approach' including community adaptation priorities (United Nations Development Programme (UNDP), 2008)
Navua Local Level Risk Management	UNDP Pacific Centre	Navua, Fiji	UNDP, SOPAC, Red Cross, NDMO	Education and community awareness for pre-existing early-warning flood system in addition to multi-stakeholder involvement in long-term community awareness activities	Using the Local Level Risk Management (LLRM) approach, capacity building with the community, NGOs and local authorities in terms of risk sensitization and disaster risk sensitive development projects
Building Disaster Response and Preparedness in the Pacific	AusAID	Fiji, Samoa, Kiribati, Vanuatu	Caritas Samoa and Australia, Caritas Oceania and Pacific	Education and community awareness with the aim being to change behaviour to incorporate better preparedness for disasters in everyday living	To raise awareness and educate key Catholic people in disaster risk reduction in order to pass this information on to the wider community (Caritas Australia, 2008)
WWF Coastal Resilience	GEF	Fiji, India, East and West Africa	WWF, USP, SOPAC, Fiji Met Service	Community consultation coupled with scientific evidence to devise strategy to manage coastal mangrove ecosystems	To develop a 'generalizable' approach to addressing coastal resilience across similar habitats (i.e. mangroves), and maintaining intact mangrove systems that support the connectivity between mangroves and coral reefs

Continued

TABLE 2 Continued

Project/initiative	Donor	Location	Implementing agency/ organizations	Activities	Aims and objectives
Samoa Disaster Risk Reduction and Awareness Workshops	UNESCO, SOPAC, World Bank	Samoa	NDMO, multitude of other government agencies, NGOs, Red Cross	Education and community awareness relating to disasters. Follow-up activities with the assistance of government ministries, including potential 'hard solutions' depending on the needs of the community	To strengthen village understanding of current vulnerability and capacity, risk reduction measures and consequently formulating a village Response Plan Booklet for all households. Also to have a village simulation to test the response of the village to a disaster
Samoa Red Cross Community Based Health and First Aid (CBHFA) Program	IFRC and National Red Cross society	Samoa	Samoa National Red Cross Society and government partner ministries	Education and community awareness relating to the specific needs of the community, using Red Cross's Vulnerability and Capacity Assessment (VCA) tool. Specific attention paid to disaster- and climate change-related issues and needs. Inclusion of government ministries to allow for follow-up of additional activities	To assess the specific vulnerabilities of the village and develop a targeted response to educate people in ways to overcome and become more aware of the risks in their daily lives
Climate Change and Food Security	FAO	Samoa	Women in Business for Development Inc (WIBDI)	Education and community awareness relating to food security, nutrition and sustainable livelihoods. Provision of seeds and piggeries as start-up resources for identified family in need of assistance	To target the most vulnerable people in communities and assist them in developing their own sustainable livelihoods. The approach includes assisting families reduce their dependence on remittances from family members overseas by becoming self-sufficient and growing their own food, and possibly growing enough to provide an additional source of income

emerging from the literature and case studies, which were found to have recurring links to governance. While alternative approaches may have been used, the ESG framework, as a new and innovative means to addressing challenges relating to governance, provides useful insight which has not previously been explored.

5. Results

The five problem structures of ESG provide theoretical insight into the challenges of integration, in addition to practical tools to overcome them (Biermann, 2007). With the use of extensive interviews and case studies, the key challenges in integrating DRR and CCA in the Pacific are identified in line with ESG's problem structures as illustrated in Table 3. While each of the five problem structures highlight individual challenges, *agency* and *architecture* emerge as the fundamental themes and provide the most insight into the challenges associated with integrating DRR and CCA. This is in part due to the culture of the Pacific, which values

traditional hierarchies and relationships, and also because of the speed and nature of the changes associated with climate change decision making. In addition, the formal and informal networks, policies and legislative frameworks that underpin DRR, CCA and development work in the Pacific can act to hinder the cooperative and collaborative efforts between agents. *Agency* and *architecture* are therefore discussed in detail below, in the context of the challenges associated with integrating DRR and CCA in the Pacific. For a further exploration of adaptiveness, accountability and allocation see Gero et al. (2010).

5.1. Agency

Mapping current DRR and CCA projects in the Pacific identified an increasing number of agents from a diverse range of backgrounds, with only a relatively small fraction of agents coming from Pacific Island governments (Gero et al., 2010). Agents in Pacific DRR and CCA cross all spatial scales from local to global, and come from a

TABLE 3 Challenges relating to integrating DRR and CCA

Agency	Architecture	Adaptiveness	Accountability	Allocation
Multiplicity of <i>agents</i> and lack of integration	Policy and funding <i>architecture</i> as barriers	Inclusion of local knowledge and village specificity	<i>Accountability</i> and the participatory approach	Resources and funding
Awareness of <i>agents'</i> roles, responsibilities and capacity	Pacific <i>architecture</i> and SPREP ^a versus SOPAC ^b	Cultural considerations	Roles and responsibilities – local to global	Inclusion and exclusion
Importance of relationships and personalities	Changing/rearranging the <i>architecture</i> ?	<i>Adaptiveness of agents</i>	Capacity building and commitment to sustainability	Commitment to sustainability
<i>Agency</i> of the church in the Pacific	Recognition of existing <i>architecture</i>	Learning by doing	Application of lessons learned	<i>Allocation</i> and access to information
Communities as <i>agents</i>		Holistic approach to vulnerability reduction		

^aPacific Regional Environment Programme: A Pacific regional organization responsible for coordinating climate change in the region.

^bPacific Islands Applied Geoscience Commission: A Pacific regional organization responsible for coordinating disaster management in the region.

range of sectors of society, for example, local village communities, small NGOs, government agencies or departments, multilateral institutions, academia, the donor community and faith-based organizations as seen in Table 4.

The proliferation of non-state actors and agents relating to DRR and CCA is in line with the global trend suggesting the erosion of the authority of the nation state (O'Neill et al.,

2004) and is also illustrative of the international community's recognition that climate change is an urgent issue in need of attention, particularly in small island developing countries (Barnett, 2001). In the Pacific, it may also be in response to national governments lacking capacity to deal with the breadth and scale of challenges associated with climate change, thus additional actors step in to assist in coping with real or

TABLE 4 Agencies and organizations involved in DRR and CCA activities in the Pacific^a

<p>Non-Government Organizations:</p> <ul style="list-style-type: none"> • Foundation for the Peoples of the South Pacific (FSPI) • Worldwide Fund for Nature (WWF) • International Union for the Conservation of Nature (IUCN) • Conservation International (CI) • Oxfam • LajeRotuma • Women in Business Development Inc (WIBDI) • Live and Learn • Community/village groups <p>Red Cross:</p> <ul style="list-style-type: none"> • International Federation of the Red Cross/Red Crescent Movement (IFRC) • Red Cross/Red Crescent Climate Centre • National Red Cross Societies Academia • Fiji School of Medicine • University of the South Pacific (USP) • Pacific Centre for Environmental and Sustainable Development (PACE-SD) • East-West Centre (Hawaii) • University of New South Wales (UNSW) 	<p>Faith-Based Organizations:</p> <ul style="list-style-type: none"> • National Council of Churches Australia (NCCA) • Caritas • CARE • Adventist Development Relief Agency (ADRA) • Fiji Council of Churches <p>Government:</p> <ul style="list-style-type: none"> • National Disaster Management Office (Fiji and Samoa) • Ministry of Natural Resources and Environment (MNRE, Samoa) • Department of Environment (Fiji) • Fiji Meteorological Service • Ministries of Finance and Planning (Fiji and Samoa) • Ministry of Agriculture and Fisheries (Samoa) • Ministry of Health (Samoa) 	<p>Council of Regional Organizations of the Pacific (CROP):</p> <ul style="list-style-type: none"> • Secretariat of the Pacific Community (SPC) • Pacific Islands Applied Geoscience Commission (SOPAC) • Pacific Regional Environment Programme (SPREP) • Pacific Islands Forum Secretariat (PIFS) • Forum Fisheries • Pacific Islands Development Programme <p>United Nations (UN):</p> <ul style="list-style-type: none"> • FAO • UNESCO • UNDP (Pacific Centre and Multi-Country Offices) • UNISDR • UNOCHA • UNICEF • UNIFEM • UNESCAP • WHO • SGP • GEF 	<p>Donors:</p> <ul style="list-style-type: none"> • Australian Agency for International Development (AusAID) • New Zealand's International Aid and Development Agency (NZAID) • World Bank • Asian Development Bank (ADB) • China • Japan • European Union (EU) • German Agency for Technical Cooperation (GTZ) • Taiwan • Finland • The Asia Foundation/Office for Foreign Disaster Assistance (TAF/OFDA) • France • Asia Pacific Network (APN) • Force of Nature • Canadian International Development Agency
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^aFor explanations of United Nations Agencies and their acronyms, see www.unsystem.org.

potential impacts. This, however, presents a challenge to governments attempting to coordinate initiatives, as one stakeholder observed, 'NGOs – they do their own thing, getting [climate change] funds and not reporting back to government', while another commented 'because climate change programs are quite new and because everything is happening so quickly, [it is difficult] for more established sectors of government to know what's going on. Governments can't keep up because everything is happening so quickly'. The proliferation and emergence of new agents working in the field of DRR, and most notably, CCA, is therefore one of the key challenges in bringing the two fields of practice together.

The range of sectors from which agents originate is also diversifying, moving from the traditional environmentally based organizations to those perhaps not traditionally associated with DRR and/or CCA. This again is not unique, and is reflective of a global trend occurring across the realm of global governance (Biermann and Pattberg, 2008). One stakeholder from Samoa recognized the potential benefits of working through the churches – a key element of Pacific society, stating 'the Church has some weight in Samoa... We would like to use this weight to assist us [in the DRR project] and utilise the clergy'. Faith-based groups such as Caritas and the Pacific Conference of Churches (see Pacific Conference of Churches, 2007) understand that power; authority and reach of the churches can be harnessed for DRR purposes and are significant agents in the Pacific DRR and CCA. It is also worth noting that some churches have an ambiguous stance on climate change, given the often altruistic culture present in the Pacific.

A challenge associated with this increase in non-traditional agents is that new and emerging actors and stakeholders are often unaware of pre-existing agency, and the experience, roles and responsibilities of established agents in the region. Acknowledging the agency of recognized Pacific DRR and CCA organizations was identified

as being important in establishing and maintaining relationships, as noted by a DRR partner who stated: 'some organisations you immediately looked at as a partner to work with – they understand the mandate you carry and track record, they value that. Then again, same organisation, different people don't necessarily feel that way. It always comes back to people!'

As alluded to in the quote above, agency is granted in the Pacific by abiding by protocols and respecting established agents and the mandates they carry. Adherence to, and understanding of, the agency and authority of culture also provides a good basis to developing lasting relationships in the Pacific. The Pacific, including Samoa and Fiji, maintains strong traditional local governance structures including formal Women's Committees and Council of Chiefs. Along with church groups, these local agents are profoundly significant in how a village functions, including in response to disasters and climate change (Huffer and So'o, 2003). In Samoa, for example, their agency is formalized by the links to the national government (see Figure 2). Here the hierarchical traditional governance structure with the *pulenu'u* (village mayor) as the 'go-between' to national government can be seen (Huffer and So'o, 2005). By understanding and adhering to these hierarchies and the protocols they demand, agents will be more readily accepted into the DRR and CCA Pacific communities. See Gero et al. (2011) for more detailed descriptions of how the examples provided in

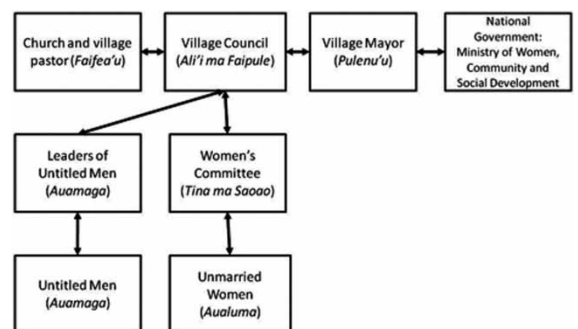


FIGURE 2 Traditional Samoan village structure (Tuiloma-Sua, personal communication)

Table 2 combine traditional and modern governance structures.

5.2. Architecture

Within ESG, architecture refers to ‘the overarching system of public and private institutions, principles, norms, regulations, decision making procedures and organisations that are valid or active in a given issue of world politics’ (Biermann et al., 2007, p.1). Architecture in part refers to the policy and legislative frameworks that underpin DRR and CCA from the global to the local level. The Hyogo Framework for Action 2005–2015 (HFA, see International Strategy for Disaster Reduction, 2005), for example, is the guiding global policy for DRR while the UNFCCC guides global climate change policy. A stakeholder identified the fragmented policies as one of the key challenges to successful integration, noting

‘We [DRR and CCA agents] don’t have the institutional arrangements to make these things [integration] work’. The division between DRR and CCA policy and legislation from global to local levels relevant to Pacific Island countries is illustrated in Figure 3.

A further element associated with the architecture of DRR and CCA is the discrete funding streams maintained by each field mirroring the policy separation illustrated in Figure 3. Even within organizations, the funding of DRR and CCA projects can be quite separate as one stakeholder commented, ‘even the World Bank has disparate funding mechanisms – there is the GFDRR and a different fund for climate change’. On a global scale, the Global Environment Facility (GEF, see Global Environment Facility, 2009) is a funding mechanism, formed under the auspices of the UNFCCC, available to fund projects identified as CCA. The GFDRR (see Global Fund for Disaster Reduction and Recovery,

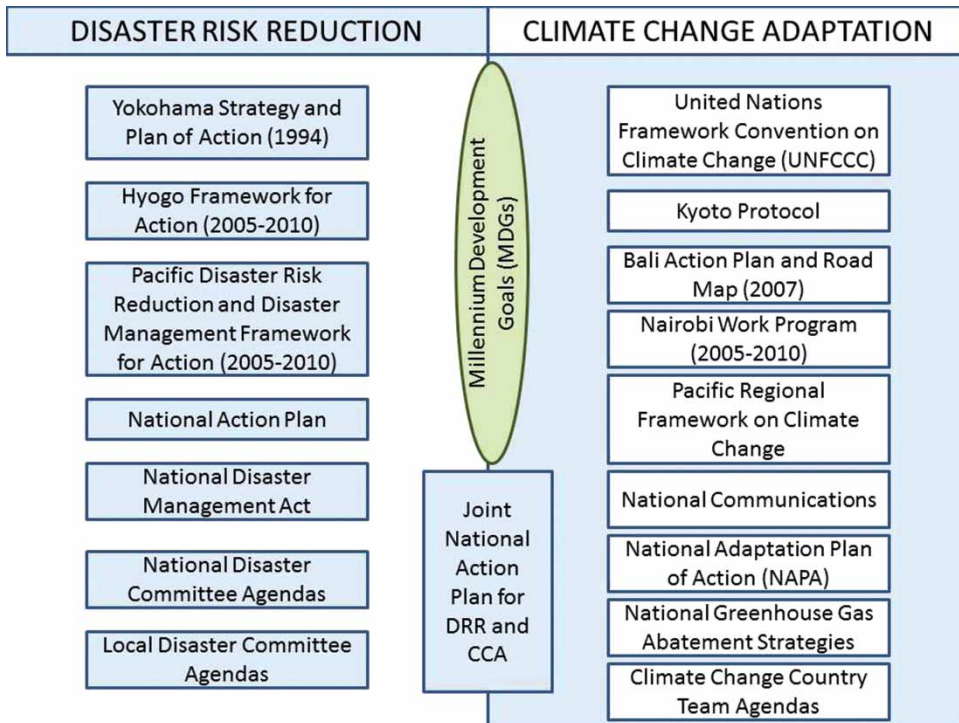


Figure 3 Global to local policy frameworks for DRR and CCA (note this is not an exhaustive list, only a selection to highlight the issue of disparate policy frameworks relating to DRR and CCA)

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2009a) is a global partnership between the United Nations International Strategy for Disaster Reduction (UNISDR), World Bank and donor countries and although it is increasingly incorporating climate change elements, it traditionally has had a DRR focus. How an initiative is 'framed', or conceived (e.g. as either DRR or CCA) therefore has a significant bearing on where funds may be sourced from, as one stakeholder from the NGO community notes, 'we have to go look for funding. And if we have to tag something as [climate change] adaptation, sure we'll tag!' Figure 4 provides a comparison of funding sources, and shows how separate funding mechanisms can serve to reinforce the factors that divide DRR and CCA.

The institutional architecture surrounding DRR and CCA in the Pacific was often cited by stakeholders in Pacific DRR and/or CCA projects as one of the main hurdles to integration. A significant barrier to integration is seen in the overlapping roles and separate agendas of two key regional agencies: SPREP (the regional organization responsible for coordinating climate change issues) and SOPAC (the regional organization responsible for disaster risk management). As of 1 January 2011, SOPAC became a division of the Secretariat of the Pacific Community (SPC), with the formal name being 'Applied Geoscience and Technology Division'. Both SPREP and SOPAC work with Pacific government ministries to develop and support both national and regional

climate change and disaster risk management programming. In this work SPREP liaises closely with Ministries of Environment (or similar), while SOPAC historically has worked closely with National Disaster Management Offices (NDMOs), with a more recent shift to working relationships with a wider cross-sectoral audience including finance and planning agencies. While this has worked in the past, it is increasingly evident that duplication is a problem with time, money and efforts being wasted, as noted by a stakeholder from the development community,

there is still a long way to go to solve this [integration] puzzle because organisationally it is so disparate – you've got SOPAC and SPREP. Even the country focal points are different: at DRR meetings, all NDMOs [are present] ... And you've got the [Pacific Islands] Climate Change Roundtable and its all Ministry of Environment. So how on earth do we align better?

The divide at the government level was a common theme identified by stakeholders. It has been suggested that radical measures such as a restructure at the national level may be needed to achieve integration between DRR and CCA, as one stakeholder commented:

Nobody has thought to reconstitute the national arrangements to try to formalise that coming together, to take conscious steps to bring these two [DRR and CCA] together. So we are involved in redesigning the institutional arrangements with countries. Trying to ensure that disaster mainstreaming is picked up within [the] development forum. This will move it out of the disaster management area.

In addition, some stakeholders noted the need to build core competencies in leadership, strategic thinking and analytical skills in both the DRR and CCA communities so as to better understand and implement an integrated approach to risk reduction and resilience building.

The geographical separation of agents poses further challenges to collaboration in DRR and CCA. A Samoa based CCA stakeholder notes:



FIGURE 4 An example of funding sources for DRR and CCA

'The geographical separation poses problems and difficulties. For them [SOPAC and the DRR community] it's easier to get together, for us it's more of an ordeal'. The fact that the headquarters for SPREP and SOPAC are located in Samoa and Fiji, respectively, compound the challenge of integration. The lack of regular face-to-face meetings and networking inhibits the establishment of strong working relationships between the personnel of each agency – relationships that are particularly important in the Pacific.

6. Discussion

Using the ESG framework, the preceding sections have identified some of the key barriers to effective integration of DRR and CCA in community-based projects in the Pacific. The ways in which the issues of agency and architecture impact upon community-based projects is profound, with few escaping the DRR/CCA dichotomy. Community-based projects must overcome this challenging policy environment and some do find solutions. Yet, many community-based projects are led by national or regional organizations, requiring alignment to specific DRR/CCA policy and legislation, and these projects are arguably more susceptible to being caught up in the dichotomy, which fragments issues that are, in practice, considered the same.

So far in the literature, there has not been a thorough analysis of the influence, capacity, roles and responsibilities of agents in the analysis of integrating of DRR and CCA. Past assessments of the challenges associated with integrating DRR and CCA have flagged the issue of agency in fleeting and indirect ways (e.g. Allen, 2006; Few et al., 2006; Christopolus, 2008; Institute of Development Studies, 2008). As Biermann et al. (2009) note, assessment of agency can uncover novel ideas on the inclusion of civil society actors and the pros and cons of public–private partnerships. Use of the ESG framework, and in particular the challenge of agency, does indeed provide insight into potential ways to overcome some of these challenges. For example, the ESG

approach highlighted the issue of new and emerging agents in the Pacific, and the need for new players to develop an understanding of the existing agency and authority among established DRR and CCA practitioners and stakeholders. It is evident that an understanding of agents' roles, responsibilities and mandates; their capacity and ability to comprehend how cultural practices in the Pacific dictate village governance is crucial for integration to occur in the Pacific context.

Analysis of agency highlights not only the multitude of actors, but also the ability of non-state actors to influence and exert authority in the field of DRR and CCA in the Pacific. The influence of regional organizations such as SOPAC/SPC and SPREP is strong for Pacific DRR and CCA. Given the culture of the Pacific, faith-based groups are also influential, for example, the Pacific Conference of Churches who are vocal on climate change issues (Pacific Conference of Churches, 2007), as are local communities and the governance structures and hierarchies that dictate village life in many Pacific countries. Although less tangible than other non-state actors, culture can be described as an 'invisible agent' owing to the power and authority associated with it. Understanding Pacific culture, including local governance structures, the role of religion and other specific country complexities can overcome some of the challenges associated with integrating DRR and CCA in the Pacific (see Daly et al., 2010).

Focusing on agency isolates the important human dimensions associated with the change that is occurring to both the DRR and CCA communities. It is therefore recommended that a good understanding of the agents involved in DRR and CCA is developed and maintained, to build relationships, respect cultural protocols and to fill gaps in understanding by building upon past initiatives. All this, done in the context of the Pacific's culture, will serve to enhance the resilience of Pacific Islanders and maximize aid effectiveness by providing an integrated approach to addressing vulnerability.

Close inspection of Pacific architecture similarly provides reasons as to why integration of

DRR and CCA is lacking. Research on integrated disaster risk management has identified the problem of inadequate institutional arrangements, and how 'institutional innovation' is necessary to overcome problems (Gopalakrishnan and Okada, 2007, p.354). The institutional framework, or architecture, may be a significant reason for lack of communication and therefore integration between the DRR and CCA communities. As noted by interview participants, addressing the overarching institutions that govern DRR and CCA may be required. Fragmentation of governance architecture has been highlighted as an area of concern for policy makers (Biermann et al., 2007). This can be seen in the disparate policies and funding mechanisms, the separation of responsibility of DRR and CCA via SOPAC and SPREP, and the overall fragmented and at times conflicting institutional architecture which creates barriers for a streamlined approach and meaningful integration of DRR and CCA. The divergent policy approaches across the sometimes identical initiatives associated with DRR and CCA is an important issue (Biermann and Pattberg, 2008). Inconsistent decision making may result (Biermann and Pattberg, 2008), with DRR agents fulfilling their requirements which may differ from their CCA counterparts, with potential economic implications.

Analysis of architecture reveals that for DRR and CCA in the Pacific, the process of integration is moving from a situation of conflicting fragmentation to one of cooperative fragmentation (Biermann et al., 2007). This means that while separation between the two communities remains, steps are being taken to ensure that conflicts between core institutions (such as SPREP and SOPAC/SPC) and policies (such as the HFA and the UNFCCC) are minimized and cooperation between agents is encouraged. It is recognized that while there are some advantages to fragmented governance architectures, in the case of DRR and CCA which often function in parallel, a more cooperative approach is recommended. Positive steps in the Pacific are currently being made on this front, with 'Joint

National Action Plans' for DRR and CCA being developed and implemented for several Pacific Island countries (e.g. Tonga, Republic of the Marshall Islands and Tuvalu), with cooperative input from both SPREP and SOPAC and other regional organizations. Furthermore, at the 2011 Pacific Platform for Disaster Risk Management, SOPAC and SPREP will present a draft plan for an integrated regional policy framework for DRR and CCA by 2015 (M. Sikivou, personal communication, 2011).

Thus, for the benefit of community-based projects, there is much work to be done at the regional and national levels. There are positive signs of agents' willingness to change, for example, inclusion of input of DRR partners in a CCA project, and vice versa. Since intervention is required at the regional level, this research included the development of a series of activities that were trialled at regional workshops with participation from global, regional, national and local agents. Activities highlighted the key barriers to integration identified by this research, including the proliferation of agents and the lack of integration, particularly among new and emerging players in the Pacific. Workshop participants were asked to consider the roles and responsibilities of established and emerging agents, and their alignment to either DRR or CCA. This raised issues of whether agents were equally concerned with DRR and CCA, or associated with one only, and why this may be. Another activity required workshop participants to consider the architecture associated with both DRR and CCA from the local to global level. Inclusion of DRR/CCA policy and legislation, funding, culture and working arrangements were visually illustrated in creative ways, allowing for consideration of how these aspects of DRR and CCA serve to perpetuate and reinforce the fragmented nature of agents work. These activities identified the fact that that changing global policy may not be possible, but greater understanding of the challenges associated with the fragmented nature of DRR and CCA allows agents to adjust their approach and integrate as best they can.

7. Summary and conclusion

Integrating DRR and CCA in the Pacific is essentially a problem of earth system management and has emerged as a result of global change. The problem is multifaceted, and requires input from natural sciences and social sciences alike. To date, although much discussion has occurred and continues to occur on the topic, little ground has been made regarding actual progress on integration. This research has investigated the current status of integrating DRR and CCA in community-based projects in the Pacific, and specifically aimed to address why integration is not occurring. By drawing upon the ESG framework, two inherent governance issues have been isolated, and consequently governance discourse has been interwoven into the overall approach on how to better integrate DRR and CCA in the Pacific.

The ESG framework identified a common barrier to integrating DRR and CCA to be that of agency, particularly the multitude of organizations engaged in related initiatives. Being aware of who is involved and how (including their authority, capacity, roles and responsibilities) can assist in bringing together and encouraging open dialogue and collaborative efforts of DRR and CCA stakeholders. Furthermore, understanding the context in which DRR and CCA stakeholders operate, both via the cultural and institutional architecture, can further enhance integration, as can recognition of the fragmented nature of policy and legislative frameworks in which projects are situated. Assessing the problem structures of *agency* and *architecture* has highlighted that these two aspects of DRR and CCA can not only present challenges, but also solutions when isolated from what can seem an overwhelming problem. By tackling these issues in isolation and with manageable interventions, progress towards an integrated approach to DRR and CCA can be achieved.

Our research has therefore shown that the ESG approach can assist in framing solutions

and opportunities for integration by deconstructing the challenges in a governance sense. While this method provides scope for overcoming some of the challenges and highlighting potential opportunities for integration, it is not the panacea to all integration issues. It does, however, further enhance the understanding of the challenges and add to the growing body of knowledge and experience that aims to reduce duplication of efforts and contribute to aid effectiveness in the Pacific.

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Notes

1. Australia and New Zealand are two of the biggest donors supporting development in the Pacific. Australia's estimated Official Development Assistance for 2009–2010 is AUD\$32.4 million to Samoa and AUD\$35.4 million to Fiji (AusAID, 2009). For the same period, New Zealand will contribute NZ\$14 million in Samoa and NZ\$6.5 million in Fiji (NZAID, 2009).
2. It is also acknowledged that sea walls can be maladaptive to climate change by displacing erosion and altering natural wave patterns.
3. Prior to conducting interviews, researchers obtained ethics clearance from the university's Human Research Ethics Advisory Panel.

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