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**[Climate Change and the Role of Education]**

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**ABSTRACT:**

A review of the global policy environment for climate change and sustainable development education is contextualised with a case study from the Pacific region. The case study details how Pacific island nations have opted for a regional education response to improve their prospects of adapting to climate change - their most pressing contemporary issue. The case study then details what this means in practice using a bottom-up examples of successful disaster risk reduction in Tuvalu and Fasi village, Tonga led by Anglican youth.

**KEYWORDS:**

(Please supply up to 6 keywords for your Chapter)

1. Pacific
2. Disaster risk reduction
3. Climate change education
4. Policy
5. Community GIS
6. Integrated Vulnerability Assessment IVA

## Main Body:

### Introduction

We are living in the Anthropocene and climate change is the major contemporary societal challenge. In order to help people comprehend the various messages around climate change, and indeed, in order to help society at large adapt and survive, it is important to foster climate change education. Education's key role in addressing climate change and other environmental issues was initially recognised in international policy at the United Nations Conference on Environment and Development (UNCED), also known as the Rio de Janeiro Earth Summit in 1992. The United Nations Framework Convention on Climate Change (UNFCCC) was also opened at the Earth Summit.

Pacific Small Island Developing States (PSIDS) are on the "frontline" of climate and environmental change impacts and are also at the forefront of developments in climate change education. Current Pacific regional and national policy strongly supports climate change education (Leal Filho and Hemstock, 2019). This chapter explores the international policy context which has led to ground-breaking Pacific educational initiatives before considering a PSIDS case study.

### Agenda 21

Agenda 21 (1992) set the overall UN framework for environment and development questions in terms of sustainable development at the Rio summit. The document had a chapter dedicated to education and mentioned the term 250 times. This includes mention of spiritual development (para. 36.3), and a recognition of urgency, with timescales of 'three years' (para. 36.5). Of particular relevance is the call to reinforce 'values that support sustainable consumption ... organizations should promote more positive attitudes towards sustainable consumption through education' (para. 4.26).

### UNFCCC

The UNFCCC placed less emphasis on education as Agenda 21 was seen as the context in which the UNFCCC would operate. However, UNFCCC Article 4 addresses education directly: 'Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process'. Article 6 covers 'Education, Training and Public Awareness' more broadly with 'public awareness programmes', 'access to information', 'public participation in addressing climate change' and, with relevance to the recent Pacific vocational sector developments, 'training of scientific, technical and managerial personnel'. The success of 'public participation in addressing climate change' appears limited with policymakers appearing to prefer to emphasise experts delivering economic analysis and technological developments rather than engaging citizen questions of sustainable consumption or involving them directly in policy processes. The lack of engagement in education more widely by the UNFCCC is also confirmed by the establishment of the Paris Committee on Capacity Building. Their first meeting in May 2017 was 25 years in the making, and disappointingly directed UNFCCC educational efforts towards "training" countries to produce better evaluations of "nationally determined contributions", rather than recognising climate change as an employment sector and providing a means of professionalising that sector, as was lobbied for by PSIDS such as Vanuatu and the Solomon Islands (PCCB, 2017).

### Sustainable Development Goals

In the 2015 Sustainable Development Goals discussion of climate change does not mention education specifically and discussion of education does not include climate change but this is a brief

document where it is reasonable to suggest the Agenda 21 and UNFCCC framings are implicit. Additionally, SDG4 is focused on “quality education”.

### Sendai Framework

In contrast to the international frameworks and policies outlined above, the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) has a clear and practical guide to achieving its goals and capacity development via education is key. Its approach to education is laid out in the United Nations Office for Disaster Risk Reduction (UNDRR) “Strategic Approach to Capacity Development for Implementation of the Sendai Framework for Disaster Risk Reduction” (2019). Since the PSIDS are the most vulnerable countries to natural hazards, and they are leading in the development of vocational sector DRR qualifications, they were widely consulted during the development of this strategy. Increasingly practitioners, development funders and policy makers are following the Pacific countries lead by linking disaster risk management (DRM) and climate change adaptation (CCA) (Hemstock et al, 2018). The Pacific understanding of climate change as a slow-acting disaster was adopted by the European Union Pacific Technical Vocational Education and Training on Sustainable Energy and Climate Change Adaptation Project (EU PacTVET - a €6.1 million project currently being implemented in 15 PSIDS by the Pacific Community) in introducing innovative initiatives to address wide ranging capacity needs (EU PacTVET, 2017; 2016).

### Pacific Case Study

For many PSIDS, the key barrier to improving national resilience to disaster risk and climate change impacts was identified as a lack of capacity, resulting from the absence of sustainable accredited and quality assured formal training programmes in DRM and CCA (Buliruarua et al, 2015). Buliruarua et al., (2015) revealed that formal qualifications were required for “genuine” capacity building with eleven PSIDS identifying some component of quality assessment (qualification and delivery accreditation and institutional validation) as key areas for assistance. For example, a country such as Tuvalu with a population of just 11,000 people would struggle to develop and accredit national qualifications, and it would be unlikely that a Tuvalu national qualification would be recognised in other countries. Therefore, a regional (as opposed to national) accreditation and quality assurance mechanism for formal qualifications and institutional validation makes sense and was developed under the EU PacTVET project. This strategy, a global first for vocational education, allows national delivery of regionally developed and quality assured qualifications in “Resilience (CCA and DRM)” (EU PacTVET, 2016) and “Sustainable Energy” (Pacific Community, 2017).

High level national stakeholders from fifteen PSIDS were keen to ensure opportunities for formal qualifications were open to all people affected by climate change, so qualifications were designed in blocks so that they could be made available for everyone, from grassroots community members, through to technicians and government and private sector managers. The qualifications were constructed around a “competency” and “skillset” approach. This means that people can pick what competencies they need to “up-skill” in order to improve their own capacity, achieve a community project, improve food security, ensure clean drinking water, etc. (EU PacTVET, 2016). For example, at levels 1 and 2 “strands” include “Climate Change and Disaster Risk Reduction” and tackle generic skills such as communication and cultural protocols; workplace health and safety; team work; and work-based practices. Levels 3 and 4 look at the application of knowledge, planning, and management in the specialist areas of agriculture; forestry; coastal management; tourism; water resources; energy and infrastructure; fisheries and health. Countries can deliver different aspects of the qualifications (i.e. competencies, which build into skill sets, which build into a qualification) according to their own workforce needs. Additionally, as qualifications are regional, skill sets are mutually recognised and can be built upon by completing competencies/skill sets at more than one

educational provider. This is another advantage of this approach since some providers are schools with few facilities and where staff are only able to teach limited strands of the qualifications.

This formal educational approach is a response to the millions of dollars spent in the region on ad hoc, informal, one-off and uncredited trainings in sustainable energy and climate change adaptation. Offering formal qualifications supports the advancement of the trainees in their work places and careers. It also supports labour mobility within and outside of the region – this is important since climate change induced migration is already a reality for some PSIDS communities. Donor support for non-formal training delivered by external providers is not the best use of scarce resources, it is unsustainable as it only last for the lifetime of the project and should be discouraged. Genuine capacity building via formal accredited qualifications in “Resilience” delivered by in-country providers is both sustainable and owned by the communities they serve. Donors need to be encouraged to support community scholarships for the various formal qualification skillsets for any project that has a training element, rather than continuing with their current approach. The sustainability of the formal education approach is assured by the recognition of “Resilience” as an employment sector for PSIDS and the establishment of an industry association – The Pacific Regional Federation of Resilience Professionals, which was launched at the UNDRR Pacific DRR Platform in 2016 (Hemstock et al., 2018; EU PacTVET, 2017).

#### So how does this work on the ground?

Various toolkits have been developed to assess community vulnerability and possibilities for adaptation (Hemstock et al, 2013). Several of these are available as learning resources for the “Resilience” qualifications.

Integrated (multisector) Vulnerability Assessments (IVAs) are important as they help PSIDS develop their National Adaptation Plans which are required to access UNFCCC funding. The IVA Framework (developed in 2016) systematically examines how environmental and developmental changes affect local communities with regard to meeting basic needs (Dumaru et al, 2017). It provides standardised baseline data about community vulnerability that can be periodically replicated to inform the implementation and effectiveness of the National Adaptation Plan (Dumaru, 2019).

In 2015, the ‘Community Mapping & QGIS Disaster Risk Mapping Toolkit’ was developed to provide communities with a tool for easy data collection, analysis and representation of areas at risk in order to support decision making through participatory risk mapping (Pouvalu, 2015). Its design promotes community led initiatives to produce, own and use geographical data for decision making based on their experiences, priorities and values (Pouvalu, 2015; Sieber, 2006). The toolkit consists of the QGIS software (v.2.6.0 at the time of publication), a step by step manual, spatial data and video tutorials to guide users on data collection, management, analysis and representation using the QGIS software.

The GIS toolkit was designed to operate on its own, however its participatory nature gave it flexibility to be used to complement and/or justify the findings of other participatory approaches such as the IVA. Between 2016 and 2018, six regional training workshops in Tuvalu, Nauru, Tonga, Fiji and Vanuatu, were conducted to train participants on the use of the IVA and GIS toolkit. Participants consisted of community members, practitioners and representatives from government and NGOs. The workshops were conducted in two phases. The first focused on contextualising the IVA to issues faced by each country prior to assessing the vulnerabilities of the local communities. The second phase focused on using the GIS toolkit to visualise the areas at risk based on the results of the IVA. A common observation throughout the workshops, was the change in perception of the participants pre and post assessment. What participants initially perceived to be the areas to

prioritise differed from the actual findings. For instance, in Tuvalu, participants thought that water security needed to be prioritised by providing more water storage tanks. However, the IVA results indicated that water security was influenced by governance at the household level. The assessments suggested that water supply was sufficient, but the challenge was living in extended families and not being able to share the water resources wisely. Complementing the IVA results, the GIS resource mapping showed that 80% of the households in the community owned one or two water tanks, but more than 50% of the households housed 10-15 people sharing a 2,500-litre water tank. These results indicated that governance at the household level needed strengthening, but the problems of overcrowding also affected household water security and sanitation. Such findings provide communities with a realistic geographical picture of existing vulnerabilities and areas that need strengthening.

In 2017, a two-week workshop was held in Tonga in response to a request from the Anglican Diocese of Polynesia, to provide training to support a youth led initiative to build resilience within their communities. Participants included youth members from Tonga, Fiji, Samoa and New Zealand and men, women and members of the clergy from Fasi village in Tonga. Participants were trained on carrying out assessments using the IVA and the GIS toolkit (Diocese of Polynesia, 2017). Men, women and members of the clergy provided historical information of the village, traditional practices, natural resources and experiences. The youth focused on conducting the assessments, data collection and technical aspects of the training. As a result of the training, a member of the clergy stated that he was a priest in Fasi for 10 years and was unaware that a few of the houses surrounding the church had no water supply. He added, that the workshop provided specific skills and information around the needs and vulnerabilities of the Fasi community that the church will use to lead and support the community (Jione, 2017).

In 2018, the Anglican youth from Tonga used the skills gained from the training and carried out vulnerability assessments before Tropical Cyclone Gita hit Tonga. Households were categorised according to their level of risk and their locations mapped accordingly. Based on their assessments, 22 households were categorised as 'high risk' and the youth assisted in household reinforcements, strengthening of windows and roofs, provision of supplies and first aid kits and removal of debris. In the aftermath, the group conducted post disaster assessments and developed a damage assessment report which was sent to their main office in New Zealand. As a result, two containers of supplies were sent to Tonga based on the information provided in the vulnerability and damage assessments. Supplies were distributed to the affected households based on the assessments and severity of damage (Anglican Tonga, 2018; Jione, 2018). Their experiences were presented by the youth at the Moana - Water of Life: Navigating Climate Change for Planetary Health conference in Lincoln, UK, 2019.

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