

Institution: Bath Spa University		
Unit of Assessment: 14 - Geography and Environmental Studies		
Title of case study: Increasing Resilience in Remote Societies facing Interconnected Sustainable Development, Climate Change and Disaster Risk Challenges (India and Kiribati)		
Period when the underpinning research was undertaken: 2013 - 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Dr Richard Johnson Dr Esther Edwards Sara Penrhyn Jones	Reader in Physical Geography Senior Lecturer in GIS Senior Lecturer in Media	3/5/2011 - present 1/4/1998 - 31/7/2019 1/9/2015 - present
Period when the claimed impact occurred: 2015 - 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Since 2015, research by Bath Spa University's Hazard, Risk and Disaster Group (HRD) in countries on the Development Assistance Committee's (DAC) list has increased resilience to climate change and disaster risk challenges; conditions which otherwise disproportionately afflict exposed and vulnerable communities. Focusing on Kiribati (Micronesia) and the Kullu District, Himachal Pradesh (Indian Himalayan Region), research contributed to: the improvement of local community understanding, voice, and action with regard to environmental and disaster risk reduction management challenges; the reframing of climate change as a cultural challenge, achieving empathetic reach internationally through film screenings and public dialogue; the development of disaster risk policy at local and regional levels; and the generation of enterprise and client gain by seeding a film production house in India and a children's literature authorial career in the UK.</p>		
2. Underpinning research		
<p>Climate change, sustainable development and disaster risk are interrelated global challenges which are particularly acute and less well understood in sensitive/remote high-mountain and low-elevation island settings. Here the most vulnerable communities are often doubly disadvantaged, possessing the least agency in decision-making processes. The underpinning research led by Johnson and Penrhyn Jones with international collaborators, over a period of more than 5 years in such locations has generated and responded to this. The India and Kiribati portfolios share thematic foci and methodological approaches, with film serving as a method of research, engagement and impact. Combined, this approach promoted understanding and agency within and between local communities and government, in relation to global debates.</p>		
India		
<p>Since 2013, Johnson and Edwards' research focused on the Kullu District, which is experiencing a high frequency of hazard events and increasing disaster risk. This stems from multiple stressors associated with climate change/variability, population change, expanding resource utilisation and rapid infrastructure development. The research has developed and connected understanding of flood disaster impacts and community responses; historical flood chronologies in the Kullu District, 1846 onwards, via UGC-UKIERI funded project HiFlo-DAT (2018-2020); and disaster risk reduction strategies to enhance community resilience.</p> <p>Early empirical research (2013-2018), including with the University of Manitoba [REDACTED] and the University of Winnipeg [REDACTED], focused on field-based reconstruction of flash floods, exploration of existing post-disaster community vulnerability and resilience through concepts of heritage and capital (R1), and also piloted film production (2013-2014, section 4). These enabled a more detailed understanding of the causation, impact cascade and responses to an August 1994 Kullu District flood disaster, than had previously been reported. It also highlighted that the availability and use of both formal and local knowledge is pivotal to mountain community disaster risk reduction and resilience in the region, which is heavily affected by prevailing government policy.</p>		

Building on and consolidating these foundations, in partnership with the GB Pant National Institute of Himalayan Environment (GBPNIHE) and Kraft Films, the 2018-2020 'Pathways to Resilience' research used film in conjunction with public engagement activities. It has deepened analysis of local knowledge of hazard events and approaches to disaster risk governance (R2). This has culminated in research-led policy-practice change recommendations to Indian government and NGO stakeholders (R3). The portfolio of underpinning research has revealed a pressing need to question the significant under-utilisation of informal local knowledge of hazard events and adaptation by current disaster risk governance models in India. It also demonstrated the need to both address poor understanding amongst indigenous and refugee communities of existing disaster management policy, and capture their substantial desire to become involved in new Disaster Risk Reduction (DRR) efforts. These findings reveal the value and opportunity afforded by film to enhance DRR knowledge exchange.

Kiribati

Penrhyn Jones also uses film to shape interdisciplinary research agendas (R4-6). As Co-investigator on the UK research project 'Towards Hydrocitizenship' (AHRC, 2014-2017), Penrhyn Jones found that environmental communication should develop a community's own capacity for storytelling and action (R6). There was also value in exploring climate change in exploratory, authentic ways, through local attachments; findings later embodied in her film *TIMELINE* (R5, 2017). The emergence of this insight both underpinned and was reinforced by Penrhyn Jones' work in Kiribati (supported by initial UK coastal case studies), developed through two AHRC-funded research projects which she led from 2015 to 2018. Exploring climate change and heritage through documentary film (*Troubled Waters*, R4, 2015), three key findings emerged (2015-2016). Firstly, understanding climate change and displacement in Kiribati requires engagement with a very specific indigenous relationship to land and water. Secondly, there was local researcher fatigue and frustration with global media representation. Thirdly, although climate change poses an existential threat, other environmental issues are also important to communities. In response to these findings, Penrhyn Jones' further research in Kiribati (2016-2018) adapted, taking a participatory turn. The project involved collaboration with a local artist and heritage expert to celebrate indigenous knowledge in a film and worked with a local environmental organisation (KiriCAN) to address local environmental priorities.

3. References to the research

- R1** Johnson, R.M, Edwards, E, Gardner, J.S and Diduck, A.P (2018) '[Community vulnerability and resilience in disaster risk reduction: an example from Phojal Nalla, Himachal Pradesh, India.](#)' *Regional Environmental Change*, 18 (7). pp. 2073-2087.
- R2** Johnson, R.M and Edwards, E (2020) '[Pathways to Resilience \[webpage\]](#).' (for film outputs).
- R3** Johnson, R. M, Kuniyal, J. C, Chand, K, Diduck, A. P, Edwards, E, Gardner, J, Pandey, B. W, Sharma, D. D, and Singh, P (2020) '[Accelerating Change: Engaging Local Communities in Disaster Risk Reduction in the Indian Himalayan Region.](#)' *Science Policy Brief*, Bath (UK) and Almora (India), June 2020
- R4** Penrhyn Jones, S (2021) '[Troubled Waters \(2015\) \[Film and research portfolio\]](#)' (Shortlisted for AHRC 10-year Anniversary awards for research in film)
- R5** Penrhyn Jones, S (2017) '[TIMELINE](#).' Screenworks Film won BAFTSS Best Practice Research Award, 2017; shortlisted for AHRC 10-year Anniversary awards for research in film)
- R6** Penrhyn Jones, S (2019) '[A crisis discipline: broadening understanding of environmental communication through theory and practice.](#)' *The International Journal of Creative Media Research*, 2

Funding

- Penrhyn Jones (Co-I), *Towards Hydrocitizenship* (2014-2017), AHRC, GBP1,183,346.
- Penrhyn Jones (Co-I), *Troubled Waters, Stormy Futures: heritage in times of accelerated climate change* (2015-2016), AHRC, GBP44,679.
- Penrhyn Jones (PI), *Enduring Connections* (2016-2018), AHRC, GBP79,960.
- Penrhyn Jones (PI), *Troubled Waters – Reaching Out* (2017-2018), AHRC Follow-on Funding for Impact, GBP67,887
- Penrhyn Jones (PI), *Forging Enduring Connections in Kiribati* (2018-2019), AHRC/ ESRC GCRF report on 'Mobilising Indigenous Knowledge', GBP5,000.

- Johnson (PI), *HiFlo-DAT*, (2018-2020), UKIERI, GBP21,281

4. Details of the impact

Climate change and hazard processes are key stressors in driving the exposure, vulnerability, and disaster losses of remote communities, especially those located in sensitive high mountains and coastal lowlands. Evidence for the positive difference made to these communities in India and Kiribati encompass 4 areas: firstly, engaging local community understanding, voice and action; secondly, enhanced understanding of the cultural impacts of climate change via international advocacy; thirdly, DRR policy development pathways; and finally, enterprise generation/ client gain. The first, second and third areas of impact are fundamentally interconnected; understanding drives policy (and vice versa), and international advocacy highlights issues focussing policy evolution and resourcing to address global challenges.

Local Community Understanding, Voice and Action

In India, Johnson and Edwards, in partnership with GBPNIHE and Kraft Films, produced participatory bilingual documentary films (R2, underpinned by R1). These provided a platform for the voices of indigenous villagers and Tibetan refugees to articulate community knowledge of past disaster impacts and adaptation. Film screenings developed understanding across the wider community, Kullu District government and NGOs. For example, in June 2018, following film screenings, 10 local community members and officials expressed their changed understanding, motivating them to enhance DRR efforts (E2, p5; E3, p2). This impact is demonstrated in the following comments: a local villager – “You have told us about natural disaster, a calamity, flood, which came. I want to tell that when we’re young we don’t remember anything and today when you told us we felt that we should increase... information so that we can save ourselves from disaster and increase awareness amongst people on how to save themselves” (E3, p2); and an official from the Central Tibetan Authority – “We learnt a lot about disaster risk and their respective managements. It triggered a sense of responsibility towards climate change; it gave us [knowledge of] how to approach the [District government] management committee” (E2, p5; E3, p2). More broadly, the leading Himachal Pradesh State and Kullu District disaster management authorities report that the research has benefited them, providing access to new community knowledge and influencing their DRR management (E2, p5 and E3, p2). These forms of impact contrast with the longitudinal survey evidence (E2, p2-3) collected in April 2018, prior to the film screenings. Based on 50 respondents in 10 key villages in the study area, this evidence revealed a low level of hazard/ disaster education (18%) and awareness (44%). Encouragingly, 75% who interacted with Johnson and Edwards (2012-2018) then spoke about their experience with family/ friends, demonstrating a successful mechanism to extend understanding, realised by the films (R2).

There was extensive local reach with films engaging 630 people, including 210 local community members, at 5 mountain village events in the Phojal Nalla study area (E2, p4), with an average attendance of 12.5% of each village population, based on 2011 census data. In total, there were 19 film screenings and allied discussion workshops (E1, p2), including at the famous Kullu International Dussehra festival. Further public reach of the films was achieved using print and broadcast media (E1, p3). In October 2018 this included 4 leading Hindi newspaper articles (*Aapka Faisla*, *Amar Ujala*, *Danik Jagram* and *Punjab Kesari*, comprising a daily issue readership of 800,000-17,500,000) and TV broadcasts (Zee News, across the states of Haryana, Himachal Pradesh and Punjab, with a population of approximately 60,000,000). Social media and the Kullu District government [webpage](#) hosting also resulted in 1,446 Vimeo and 2,095 YouTube plays (to 31 December 2020, E1, p4).

Despite the global focus on Kiribati as a ‘drowning nation’, KiriCAN, a local environmental organisation, argues that they will drown in rubbish before they drown in water (E7, p5). Resourced by projects led by Penrhyn Jones, KiriCAN consulted with 3 communities in South Tarawa, identifying waste as the most urgent issue. Endemic communicable diseases are connected to poor waste management and Kiribati’s high infant mortality rate. KiriCAN decided to buy 2 trucks that could collect rubbish, and to train volunteers to use them. They reported: “[this] will impact people on a community level... it will have a lot of positive impact on children, you know, clean water... because the rubbish will end up in our drinking source, the spread of mosquitoes, and with the recent outbreak of dengue fever, diarrhoea, so it will all connect to health. It won’t solve the issue altogether but help minimise it”(E7, p5). Local cooperation

successes can also lead to greater community engagement on a range of challenges, seeding longer term impact: “When we talk about waste [the villagers] really want to... solve it, but they are losing hope, because their rubbish doesn't get picked up. So what is the point of picking up our rubbish if at the end there is no collection? ... the trucks will give them hope... we can clean up our village” (E7, p5-6). Similarly, amplifying local voices and valuing local knowledge, an indigenous artist appreciated being facilitated to drive the artistic filmmaking process: “As far as I know you are the first filmmakers or researchers that are working... almost full time with a person like me. This is very new and it's unusual. I think it's very effective and you're... following the eye of the informant...to the places where the information is located... it's like the information that I have, and my eyes, is in the frame of your camera” (E7, p7).

Enhanced Understanding of Cultural Impacts of Climate Change via International Advocacy

The *Troubled Waters* film (R4) and associated resources have achieved significant international reach. The International National Trust Organisation (INTO), a project partner, reported that the film is an incredibly useful advocacy tool, with enormous impact internationally for getting the message across about the dire effects of climate change on cultural heritage (E8, p2-3). Before it was shown at their conference (Bali, 2017), “some... members from industrialised nations... had not, until then, appreciated the effects that their country was having on small island states.” INTO screened the film at United Nations Climate Change conferences in Marrakech, Bonn and Katowice (2016, 2017, 2018), reaching approximately 300 people in their booth and 2,000 through side events (E8, p2-3). Further screenings by the project team included events in the UK, Montreal, Gothenburg, Munich and Rhode Island, 2016-2017 (E9, p2-7).

The National Trust (NT), also project partners, used the film to communicate connections “between climate change, heritage, and people's lives... equipping the next generation of... cultural heritage professionals to better understand the issues.” Research findings (2015-2016, including UK and Kiribati case studies) informed their coastal work. Penrhyn Jones' piece on the research for the NT's internal magazine, *Views* (October 2017), reached thousands of Trust staff and volunteers, making “an important contribution [to] the conversation around the impacts of climate change at our coastal places.” Research collaboration led to further impacts, contributing in part to the NT's confidence to engage in a partnership project with Gwynedd County Council looking at enhancing community resilience in 2020 (E8, p4-5).

After attending the event 'Drowning in Art' (Bala, 2015), a prominent Welsh author wrote in her column, “Sara Penrhyn Jones [made the theme] painfully contemporary... the anguish [in Kiribati] was conveyed... everyone became sombre” (*Herald, Daily Post*, 2015). She notes that this experience has motivated her since 2016; her local cooperative group has been increasingly active, instigating a sustainable food project, and a climate action facilitator in 2020 (E8, p6-7). *Planet* magazine note that perspectives from Kiribati enriched the heritage loss debate and Penrhyn Jones' photography generated pathos and empathy (E8, p8).

Disaster Risk Reduction Policy Development Pathways

A June 2020 policy briefing (R3), substantially led by Johnson, delivered recommendations for new disaster risk reduction interventions to government disaster management authorities across the Indian Himalayan Region. Significantly, this has influenced their thinking about community-based disaster risk reduction approaches, resulting in a public commitment to future policy revision. For example, in reference to the key policy document (i.e. the State Disaster Management Plan, 2017 version) in August 2020, ██████████ the Himachal Pradesh State Disaster Management Authority (HPSDMA, the key responsible agency) (E4, p1), stated: “Next year [2021] onwards we will be undertaking [a] comprehensive revision of the [2017] plans. It is [a] very good suggestion on [Johnson's] part that there has to be a specific chapter and focus on community-based disaster management, on village disaster management committees – their roles/ structure/ guiding principles... we will implement it, that's one commitment I can give from my side.” The government agencies' implementation of this policy has been delayed by Covid-19, as detailed in the affected case study statement.

Multiple platforms were used to promote and discuss this policy brief, bringing wide reach. Web-hosting included [BSU data repository](#), [GBPNIHE](#), the [All India Disaster Mitigation Institute](#), [United Nations Office for Disaster Risk Reduction](#) and [Zurich Flood Resilience Portal](#),

supplemented by articles in leading Indian newspapers including *The Tribune* (1,487 e-version views), *Times of India* and *Punjab Kesari*. A webinar (August 2020, 59 attendees) brought direct engagement with 14 NGOs, 4 (of 12) State governments across the Indian Himalayan Region, and 7 (of 12) District governments in Himachal Pradesh. As a consequence of these engagements, in the period June to December 2020, the science policy brief received 640 views and 92 downloads from 19 nations, via the BSU data repository (E4, p2).

Enterprise Generation and Client Gain

The first interdisciplinary film pilot (2013-2014) included 2 creative writing appointees, whose research roles catalysed their entrepreneurial careers, delivering economic impacts and wider client gains. In April 2014 appointee 1, now a children's author, expressed a renewed desire to write a children's book set in the Himalayas (E5, p1). More recently (2020) they stated, "I participated in Bath Spa University's India research project... which had a direct impact on the emergence and growth of my publishing career [and] on my self-confidence and ability to carry out this [novel] research, by improving my knowledge and skills." Their first 2 novels set in the Indian Himalayas achieved notable reach and significance (E5, p2-8). *Running on the Roof of the World* (2017) was chosen as a "future classic" by Booktrust, sending [redacted] copies to UK schools, and selling a total of [redacted] copies by June 2019. In August 2020, Amazon's children's book bestsellers top 100 list ranked this book 8th in the emigration/ immigration category. *When the Mountains Roared* (2018) was chosen by Booktrust's Bookbuzz reading programme reaching approximately [redacted] UK students, selling [redacted] in the first year. The author's first 3 novels generated approximately [redacted] in UK revenue and the reviews attest to their societal value: "A cracking adventure and survival novel set in the Himalayas which really makes you think about the plight of the Tibetan people" (*Irish Independent*); "[it] taught me... the importance of friendship and family, love, kindness, protecting animals and the planet" (*National Geographic Kids*).

In 2015, appointee 2, now a film director reflected on the connection between Johnson's Kullu research and their career aspirations: "At some point in the near future, I will start developing this idea... I like cameras and I like writing, why not combine both to tell meaningful and impactful stories" (E6, p2-15). Shortly afterwards, in August 2016, they founded their film company. Successes up to 2020 include the production of [redacted] films for [redacted] Indian and globally recognised clients (eg Cisco, Expedia Group and Indian Railways). This created a total revenue of [redacted] (approximately [redacted]), with annual revenue growth from approximately [redacted] (in 2016) to approximately [redacted] (in 2020), and employment for [redacted] freelance staff. The appointee reflected in 2020 that "What began in 2013 [with Kullu research]... has yielded fantastic results... [It] has been a success." Reviews convey the added value for clients: "Their style of storytelling is... unique and different. A lot of people can shoot, but they tell stories" (Juniper Networks).

5. Sources to corroborate the impact

E1 Film screening/ media metrics, comprising: 19 screenings (local to national); 6 newspaper articles/ TV broadcasts; Vimeo/YouTube viewing data (June 2018-December 2020).

E2 Survey database of respondent (n=57; government, NGO, community) views on the research/ public engagement impact (April-June 2018).

E3 Testimonial database of Kullu/ Shimla respondent (n=18; government, community) views on the research/ public engagement impacts (April-October 2018).

E4 Science policy brief: HPSDMA webinar testimonial on the benefits to disaster management planning (August 2020) and BathSpaData open-access metrics (June-December 2020).

E5 Children's Author, UK: testimonial video on career aspirations (April 2014) and letter detailing enterprise achievements (August 2020).

E6 Film production house, Director, India: magazine article 'SPARTAN' on career aspirations (2015), and letter and client feedback detailing enterprise achievements (June 2020).

E7 AHRC/ ESRC GCRF [report](#): 'Mobilising indigenous knowledge: Forging Enduring Connections in Kiribati', featuring testimonials from KiriCAN and an indigenous artist.

E8 Testimonials on the value of film and associated resources: International National Trust Organisation, National Trust, Welsh author and *Planet* magazine.

E9 Film screening information: TIMELINE, *Troubled Waters* (27 events and online, 2015-20).