Institution: Royal Holloway, University of London

Unit of Assessment: Geography, Environmental Studies and Archaeology

Title of case study: Sustainability, Biodiversity Conservation and Indigenous Peoples: Community-Owned Solutions to Future Challenges in the Guiana Shield, South America

1. Summary of the impact

This case study concerns the development, adoption and dissemination of innovative 'community-owned' approaches to the sustainable management of social-ecological systems (SES) within the Guiana Shield region of South America. Spanning the countries of Guyana, Suriname, French Guiana and areas of Brazil, Venezuela and Colombia, this region is of recognized global significance for carbon storage, fresh water resources and biodiversity. Its indigenous, Amerindian communities have a potentially crucial role to play in sustainable conservation policy and practice. However, local economic and cultural changes, extractive industries, and global dynamics such as climate change are bringing profound challenges to these local communities and their SES. Research at Royal Holloway has responded to these challenges by involving indigenous peoples in both biodiversity science and sustainability policy. The work allows indigenous communities to identify, through participatory research methods, the most effective practices they have for surviving and thriving sustainably.

The impacts of the research are of four main types:

- The use of research data and approaches in shaping local, national and transnational policy initiatives;
- The production of 'community-owned' solutions to the socio-ecological challenges faced by indigenous communities;
- Intensive 'capacity building' via training of local researchers, the promotion of local 'champions' of successful best practices, and the support of autonomous action research by communities;
- Enhancing public understanding of conservation in the region, especially via primary education.

2. Underpinning research

The underpinning research has been led by Dr Jay Mistry at Royal Holloway (Lecturer in Geography 1999-2006, Senior Lecturer 2007-present), working in collaboration with other academics, civil society organisations and indigenous communities. The central concept running through the work is that natural resource management should not be a top-down implementation of external expertise, but must involve active local participation building upon indigenous knowledges and practices. In turn, the research resists casting those indigenous knowledges and practices as part of pristine socio-ecological systems that need protecting from external forces of modernisation. Rather, it understands them as living, future oriented forms of 'social memory' that can identify effective practices for sustainable development different from those delivered by top-down approaches. As such the work has developed through an innovative convergence of environmental monitoring and social science methods, particularly associated with participatory action research (PAR) techniques.

The first phase of research (see Section 3, References 1 & 2, Research Grants 1 & 2) involved collaboration with indigenous people in the North Rupununi region of Guyana to provide in-depth spatial and temporal data sets on a complex SES. Unique baseline data was collected on key indicator species (fish, birds and crocodilians), their wetland / forest / savanna environments (habitat characteristics and flooding regime), and critically, the links with local livelihoods and cultures (e.g. fishing practices). This collaborative work combined direct environmental monitoring with survey of local knowledge, and provided detailed empirical evidence for key ecological processes determining the health of SES across the Guiana Shield.

The second stage of research, supported primarily by the DEFRA Darwin Initiative (Research Grants 2 & 4), focused on the sustainable management of the Rupununi region of Guyana. The project involved formal collaborations with key stakeholders, including: the North Rupununi District Development Board (NRDDB), an umbrella organisation for indigenous communities and their legally elected community leaders; the Iwokrama International Centre for Rainforest Conservation and Development (IIC), a not-for-profit organisation focused on managing the 371,000ha Iwokrama Forest; and international NGOs including WWF-Guianas and Conservation International (CI). The project developed the North Rupununi Adaptive Management Process (NRAMP). Conceptually,

NRAMP involved a systems based approach to sustainability management (Reference 3). Practically, rather than a plan devised and imposed by experts, NRAMP operates as a problem-based decision-making tool through which individuals, communities and institutions can manage day to day livelihood activities and natural resource management scenarios (Reference 4).

The third phase of research developed new approaches in participatory research, establishing new ways of working with and for indigenous communities. An ESRC-funded project (Research Grant 3) examined the potential of digital technologies in general, and video in particular, for participatory research (see also Reference 5). A British Academy funded project then deployed participatory visual methods (PV) to research the 'social memories' of the Makushi people of Guyana (Research Grant 5, Reference 6). 'Social memory' refers to representations of the past that are commonly shared and that shape a community's understanding of present and future challenges. The research concluded that PV was an effective tool for surfacing, recording and communicating indigenous peoples' social memories, and engaging them in natural resource management.

The final phase of the research has brought these approaches together in 'Project COBRA': 'Community Owned Best practice for sustainable Resource Adaptive management in the Guiana Shield, South America' (Research Grant 6). Organisationally, led by Mistry the project involves a consortium of 10 partners and 30 project staff across Europe and S. America. Within the Guiana Shield, collaborators include not only the NRDDB, IIC, WWF and CI, but also Brazilian based organisations, including: APITIKATXI, which represents the communities of the Tumucumaque Indigenous Reserve; and Equipe de Conservacao da Amazonia (ECA), through which indigenous leaders and Brazilian professionals represent indigenous peoples in the Amazon Basin. Substantively, the project deploys a participatory research process that combines 'system viability analysis' (SVA) of the SES and PV work on social memory, to identify 'best practices' that are owned by the community and can be championed by local community members or organisations.

3. References to the research

1) Mistry, J., Simpson, M., Berardi, A. and Sandy, Y. (2004). Exploring the links between natural resource use and biophysical status in the waterways of the North Rupununi, Guyana. *Journal of Environmental Management*, 72: 117-131.
2) Mistry, J., Berardi, A. and Simpson, M. (2008). Birds as indicators of wetland status and change in the North Rupununi, Guyana. *Biodiversity and Conservation*, 17: 2383-2409.
3) Mistry, J., Berardi, A., Simpson, M., Davis, O. and Haynes, L. (2010). Evaluating integrated conservation and development projects as viable social-ecological systems: assessing the impact of the North Rupununi Adaptive Management Process, Guyana. *Geographical Journal,* 176: 241-252.
4) Mistry, J., Berardi, A., Roopsind, I., Davis, O., Haynes, L., Davis, O. and Simpson, M. (2011). Capacity building for adaptive management: a problem-based learning approach. *Development in Practice*, 21: 190-204.
5) Mistry, J. and Berardi, A. (2012). The challenges and opportunities of using participatory video in geographical research: a case study exploring collaboration with indigenous communities of the North Rupununi, Guyana. *Area*, 44: 110-116.
6) Mistry, J., Berardi, A., Haynes, L., Davis, D., Xavier, R. and Andries, J. (2013). The role of social memory in natural resource management: insights from participatory video. *Transactions of the Institute of British Geographers*, early view online, doi: 10.1111/tran.12010.

These outputs were supported by the following peer-reviewed research grants:

1) 2000, £1,750: Royal Geographical Society (Expedition Grant) (Mistry PI). 'Hydro-ecological assessment of changing land use on river ecosystems in SW Guyana'.
2) 2003-2006, £132,000: DEFRA (Darwin Initiative) (Mistry Co-PI). 'Sustainable management of the Rupununi: linking biodiversity, environment and people'.
3) 2005-2006, £45,000: ESRC (E-Social Science Small Grant) (Mistry Co-PI). 'ECOSENSUS: Electronic / Ecological Collaborative Sensemaking Support System'.
4) 2006-2008, £106,000: DEFRA (Darwin Initiative, Post-Project) (Mistry Co-PI). 'The North Rupununi Adaptive Management Plan: assessing the impacts and building capacity'.
5) 2007-2008, £7,500: British Academy (Small Grant) (Mistry Co-PI). 'Exploring the adaptive capacity of the Makushi "social memory", Guyana'.
6) 2011-present, €1.9 million: EU (Seventh Framework Programme) (Mistry PI). 'Community

owned best practice for sustainable resource adaptive management in the Guiana Shield, South America (COBRA)'.

4. Details of the impact

A. Use of research data and approach in policy initiatives.

The unique baseline data on the Rupununi SES established in phase 1 of the underpinning research has been widely drawn upon. Examples include: i) Guyana Environmental Protection Agency's (EPA) National Water Quality Monitoring Plan; ii) WWF-Guianas's application for the North Rupununi Wetlands to be recognised as a RAMSAR (Wetland of International Importance) (see Section 5, Source 1, p.i); iii) Conservation International's (with Guyana's Protected Areas Commission) gap analysis identifying critical conservation areas for the country (see Section 5, Contact 1); and iv) significant Environmental Impact Assessments and management plans (e.g. Ground Structures Engineering Consultants Inc [2008] Ground Star Petroleum Exploration Program in the North Rupununi, Environmental and Social Management Plan). More generally, the collaborative nature of the research has embedded its findings with key organisations, within Guyana in particular, informing their ongoing activities. Notably, the EPA's Fourth National Report to the Convention on Biological Diversity (2010) not only recognises the underpinning research as 'major projects and studies' (p.46) but, in setting out key areas of progress made on Guyana's National Biodiversity Strategy and Action Plan, presents six case studies, five of which concern the NRDDB and / or IIC. Other organisations have taken up aspects of approach and methods too. Indicative is the Guiana Shield Facility (GSF), a US$2 million transnational initiative which has drawn on Project COBRA to shape its community engagement practice (Contact 2). The project team has published a number of briefings for environmental organisations on best practice for participatory work with indigenous peoples (Source 2).

B. The facilitation of 'community-owned' solutions to the socio-ecological challenges faced by indigenous communities.

This has been achieved by the provision of decision-making tools, participatory processes and 'best practices'. The North Rupununi Adaptive Management Process (NRAMP) is indicative here. Its direct importance to local indigenous communities within the North Rupununi region can be confirmed by the NRDDB (Contact 3). Indirectly, it also became a model used in other community centred projects, including the International Union for Conservation of Nature's (IUCN) community based natural resource management initiatives in Guyana (Contact 4) and the United Nations Development Programme (UNDP) GSI project on ecosystem services education (Source 3). With reference to Project COBRA, indicative community feedback (from February 2013) on the impacts of the participatory research process can be accessed at http://projectcobra.org/community-feedback-on-project-cobra/ (Source 2). It is notable that the respondents consistently frame the process in terms of personal interest, cultural affirmation, involvement and material / practical value. This combination speaks to the community ownership of the research process. By the end of the assessment period, findings from Project COBRA have delivered specific, community owned 'best practices' for wider championing. Those developed in Brazil fall outside the REF2014 assessment period, but by the end of July 2013 the 6 key best practices and their champions in the North Rupununi, Guyana had been identified and communicated within the region (external communication took place in August 2013) (Source 2; Contact 3 can speak further to their significance). These range from fishing practices to community radio. They are now being communicated by their champions across the Guiana Shield region.

C. Intensive 'capacity building' via training of local people.

The promotion of local 'champions' for successful best practices within Project COBRA builds on a longer track record of capacity building. Capacity building courses developed by the Darwin Initiative projects were launched in 2008. To date over 120 community leaders and others have undertaken the eleven day intensive North Rupununi Adaptive Management Process Community Course. Those trained in turn disseminate good practice to a population of around 8000 people in one of the most diverse and significant ecosystems in South America. The NRAMP Community Course has five elements that address: animal / human conflict for resources; overharvesting; food and water security; land rights; and livelihood enterprise development. These included training on collaborative natural resource management, participatory processes and techniques, biophysical monitoring, data analysis, GIS and project management (Source 4). This has significantly contributed to the development of a 'community of natural resource managers' with clear career

and skills trajectories, that can be mapped as people progressed to work in local initiatives, as private consultants, in the university sector, in international research projects and in civil society organisations (Contact 4). In addition, the capacity building has helped local community groups to develop their own research projects and get further funding, through, for example, WWF-Guianas for further caiman monitoring and Cleveland Zoo, USA for river turtle management. The innovative resources and approaches used in the training have also been embedded in the local community governance structures, as part of natural resource management planning under the coordination of the Ministry of Amerindian Affairs. They are also being used within the Ranger and Environmental Officer training courses run by the IIC and the University of Guyana.

D. Enhancing public understanding of conservation in the region, particularly through primary education initiatives.

Teacher lesson plans and student materials developed in research grants 2 & 4 were incorporated into the Guyana national curriculum for primary schools, grades 5 and 6 (Source 5). Since their introduction in 2008-9 these lessons have been taught to around 40,000 primary school children. Funding by the British High Commission in Guyana allowed these school packs to be printed and distributed through the Ministry of Education to over 100 primary schools in the interior of Guyana (Contact 5). Public understanding has also been enhanced by the production of community focused ecotourism resources launched in 2008 at the end of the DEFRA project. An ecotourism guide book, together with tourist maps, provides key information on social-ecological interactions and is a small revenue earning resource for the local communities / NRDDB. Via Project COBRA, local communities trained in participatory video have initiated the production of films to disseminate their stories and raise awareness. This includes short films on human-crocodilian conflicts, turtle conservation, local folklore myths and the importance of forests. The films have been used to increase awareness at local, national and international level. In March 2013, the forest film was presented to the United Nations by the people of the North Rupununi on the occasion of the 2013 International Day of Forests (Source 2).

5. Sources to corroborate the impact

Sources:

1) For the use of baseline data by WWF, see WWF Guianas (2012) 'Wetlands of Guyana: an insight into the ecology of selected wetlands with recommendations from WWF Guianas' (WWF Guianas, Suriname) (acknowledgement on p.i).

2) On Project COBRA see http://projectcobra.org. Specifically, for the best practice guidelines on participatory research with indigenous peoples see those posted at http://projectcobra.org/material/; for community feedback see http://projectcobra.org/community-feedback-on-project-cobra/; for details of the six best practices being championed in North Rupununi see http://projectcobra.org/best-practices/; for the forest film presented to the UN see http://projectcobra.org/rainforest-people-of-guyana/.

3) For a wider use of NRAMP see Roopsind I et al (2010) 'Ecosystem services education modules', GSI Project, UNDP, Guyana. 42pp.

4) Further details on the NRAMP Community Course: http://digirep.rhul.ac.uk/file/03c9a083-d1f4-4293-dc56-f3b477449e3a/4/Community_course_2008_NRAMP.pdf

5) Further details on the primary school lesson plans: http://digirep.rhul.ac.uk/file/41ca1959-53b5-2d5a-cecf-8e292b6c04cc/4/Wetland_School_Guide_NRAMP.pdf

Contacts:

1) On the use of Rupununi baseline data: Biodiversity Analyst, Conservation International-Guyana

2) On the use of Project COBRA best practice guidelines on indigenous community engagement: Chief Technical Advisor, GSF, UNDP.

3) On the impacts of both NRAMP and Project COBRA on indigenous communities: Chair of NRDDB

4) On the contribution to the training of local researchers: Anon., Independent Environmental Consultant, Guyana.

5) On the lesson plans distributed to primary schools in Guyana: Senior Environmental Officer, Natural Resources Management Division, Environmental Protection Agency, Guyana.