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Managing Shared Natural Heritages: Towards More Participatory Models of Protected Area Management in Western China

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1. BACKGROUND

The value of protected areas for wildlife conservation has long been recognized, in every part of the world and over many centuries. However, although most protected areas were originally based on informal arrangements,[1] as nation-states developed and especially as human population densities increased, a new form of protected area (PA) emerged—one where protection depended more on lines drawn on maps by distant planners and on legislation and regulations enforced by the state rather than on the longstanding customary practices of local communities. This "fortress conservation" approach to PAs[2] has led to considerable social harm over the past century[3] and has not

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[1] Inasmuch as community-based conservation areas were integrated into local people's worldviews or tied with resource use practices that developed over generations, many such areas may not have been formally and explicitly recognized by the state as protected areas, but their functions were clearly aimed at conservation and sustainability.

[2] Dan Brockington, Fortress Conservation: The Preservation of the Mkomazi Game Reserve, Tanzania (2002).

[3] This results from the fact that most PAs are actually *human landscapes*, not so-called wildernesses untouched by people. In most situations, the natural environment and resources, including wild and domestic animals, are integrated with human culture and food production as a way of life. They cannot be separated—if they are, it usually is to the detriment of local (often traditional or indigenous) communities.

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delivered many of its promised conservation benefits.[4] As is now the case in most of the world, so, too, in China the current PA system is a network of parks and reserves that, while they may be clearly delineated on maps, do not always or even generally incorporate or build on the needs, interests, and opportunities of local residents and communities. Nor are the conservation needs of the PA system well integrated for the most part into the plans and policies of government sectors and agencies that work outside the realm of nature conservation.

Over the past two decades, however, a new movement in PA design and management has been revisiting customary practices and reassessing the value and roles of "community conserved areas"—under the aegis of more participatory, collaborative forms of resource use and local governance.[5] Such twenty-first century integration of traditional and so-called modern, or scientific, approaches to environmental management is now increasingly accepted as providing a more resilient basis for biodiversity conservation and for local livelihoods and sustainable food production.[6]

China officially recognizes at least 2,531 national nature reserves, which cover 15.2 percent of the national territory (excluding Hong Kong and Taiwan).[7] Most of the nation's nature reserves are managed by the State Forestry Administration (SFA), and the 20 largest reserves encompass nearly 60 percent of the combined land area of reserves in the country.[8] Additionally, in recognition of the enormous value of ecosystems and ecological services provided in western China, the central government has committed significant financial resources there to mitigate the loss of biodiversity and has established 1,100 western regional nature reserves that together account for 85 percent of the total area of national nature reserves. This regional network of PAs is further complemented by a strategic national functional zoning plan that includes large, clearly designated areas in which only restricted development is allowed, with the main aim of informing—and, if necessary, constraining—all

[4] MARK DOWIE, CONSERVATION REFUGEES: THE HUNDRED-YEAR CONFLICT BETWEEN GLOBAL CONSERVATION & NATIVE PEOPLES (2011).

[5] Richard Conniff, "People or Parks: The Human Factor in Protecting Wildlife," Environment360 (an online publication of the Yale School of Forestry & Environmental Studies), http://e360.yale.edu/feature/people_or_parks_the_human_factor_in_protecting_wildlife/2707/ (accessed 1 July 2014); Ashish Kothari, *Communities, Conservation and Development*, 14 BIODIVERSITY 223–226 (2013).

[6] John Hodges et al., *Globalisation and the Sustainability of Farmers, Livestock-Keepers, Pastoralists and Fragile Habitats,* 15 BIODIVERSITY (2014), online at http://www.tandfonline.com/doi/full/10.1080/14888386.2014.931247 (accessed 23 July 2014).

[7] International Union for the Conservation of Nature (IUCN), World Commission on Protected Areas, Protected Areas in East Asia: Evaluating and Strengthening Implementation of the CBD Programme of Work on Protected Areas and the East Asian Regional Action Plan (IUCN, Gland, Switzerland, 2011).

[8] John MacKinnon & Xie Yan, Regional Action Plan for the Protected Areas of East Asia (IUCN, Gland, Switzerland & Bangkok, Thailand, 2008), online at http://cmsdata.iucn.org/downloads/east_asia_action_plan_english_final.pdf (accessed 1 July 2014).

major development decisions in the region.[9] Until now, however, most PAs in China have been managed in an insular fashion with insufficient connection to other branches and levels of government and often with little concern for or interaction with resident communities. Only a few exceptions stand out, such as the collaborative management approach that has been developed in the Caohai wetlands in Guizhou Province.[10]

There are, nonetheless, intriguing prospects for a better integration of PA management with broader ambitions for sustainable development in western China. More effective models of PA management can better support conservation purposes, for example, in their respective ecologically important areas. Improved PA management can create more inclusive cross-sectoral dialogue and, thus, mainstream biodiversity conservation. And strengthened capacities for conservation, through staff training, institutional development, and stakeholder partnerships can also advance a green development agenda in western China, as envisaged by CCICED.[11] Indeed, the availability of and access to such a suite of tools for environmental management—working across sectors and together with resident communities—can be said to be preconditions for achieving the green development goals articulated at the national level for western China.

In what follows, conservation experiences and models developed through long-term work in the Sanjiangyuan National Nature Reserve (SNNR) in southern Qinghai Province are highlighted, together with some current or recent development policies.[12] The analysis provides a theoretical framework for PA management that moves beyond what generally frames current thought in sustainable development. It highlights lessons learned from the author's work in the Tibetan Plateau area. It identifies a variety of issues for conservation and PA management that are raised by this work. It summarizes the

[9] China Council for International Cooperation on Environment and Development (CCICED), Strategy and Policies on Environment and Development in Western China, Task Force Summary Report (Beijing, China, December 2012), online at http://www.cciced.net/encciced/event/AGM_1/2012agm/meetdoc/201211/P020121206426599738719.pdf (accessed 1 July 2014).

[10] Ren Xiaodong et al., *Building Capacity within Communities: Participatory Natural Resource Management in Southwest China*, in COMMUNITY PARTICIPATION IN CHINA: ISSUES & PROCESSES FOR CAPACITY BUILDING (Janelle Plummer & John Taylor, eds. 2004), 139–176.

[11] CCICED (2012), *supra* note 9.

[12] J. Marc Foggin, *Highland Encounters: Building New Partnerships for Conservation and Sustainable Development in the Yangtze River Headwaters, the Heart of the Tibetan Plateau, China*, in INNOVATIVE COMMUNITIES: PEOPLE-CENTERED APPROACHES TO ENVIRONMENTAL MANAGEMENT IN THE ASIA-PACIFIC REGION 131–157 (Jerry Velasquez et al., eds. 2005); J. Marc Foggin, *Depopulating the Tibetan Grasslands: National Policies and Perspectives for the Future of Tibetan Herders in Qinghai Province, China*, 28 MOUNTAIN RES. & DEV. 26–31 (2008); J. Marc Foggin, *Pastoralists and Wildlife Conservation in Western China: Collaborative Management within Protected Areas on the Tibetan Plateau*, 2 PASTORALISM: RES. POL. & PRAC. 2:17 (2012); J. Marc Foggin and Marion Torrance-Foggin, *How Can Social and Environmental Services Be Provided for Mobile Tibetan Herders? Collaborative Examples from Qinghai Province, China*, 1 PASTORALISM: RES. POL. & PRAC. 1:21 (2011).

view of these issues emanating from the United Nations Development Programme and Global Environmental Facility, demonstrated in the design of the Qinghai Biodiversity Conservation Project, implemented by the Qinghai Forestry Department. And, finally, it addresses several key elements that need to be included in a revised model of PA management and regional sustainable development, namely people, policy, capacity, climate, and finances.

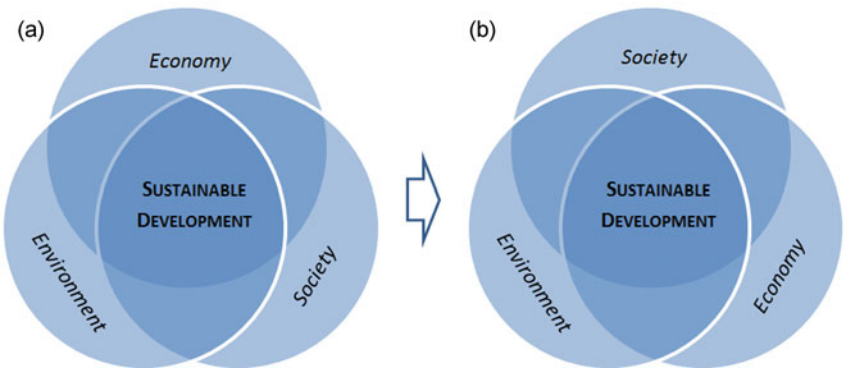
2. THEORETICAL FRAMEWORKS

The deep linkage between healthy ecosystems and biodiversity, on the one hand, and the well-being of people, communities, and nations, on the other hand, is now well established. It was brought to public attention at the UN Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992, and more recently at the UN Conference on Sustainable Development (or Rio+20) in 2012. It has since been broadly accepted that poverty and the environment mutually impact each other—and that both these elements need to be addressed at the scales of our personal, societal, and global situations. Conversely, any programme of action undertaken in one arena that does not take into account its ramifications in the other arena will find its positive impact diminished, at best, and perhaps nonexistent in the long term. In fact, the basic premise of sustainable development is that it is an integrated (or holistic) concept and goal, requiring that three synergistic arenas of life be addressed simultaneously: the environment, the economy, and society. These are often described as the three pillars of sustainable development.

Despite an alleged equality among the three pillars, the current neoliberal models of growth and development followed by most countries, including China (for example, through its participation in the World Trade Organization), assume that sustainable outcomes rest principally on economic factors (Figure 1a), chiefly the removal of barriers to trade and a free flow of capital.

In pastoralist and herder societies, however, a preoccupation with economic factors and values underestimates and undervalues the role of livestock, which are very much tied to people's sense of identity, well-being, and contentment. Income alone is, thus, a poor measure of livelihoods, including relationships and cultural continuity. Their economic situation is also affected by environmental variables, including the extent to which biodiversity has been protected and used sustainably over many generations because it is valued by those who use it. Unless decisions relating to "development" reflect these societal and environmental considerations, as well as economic factors narrowly considered, they are unlikely to be accepted or implemented. Given that herding communities have for centuries been the users and guardians of vast semi-arid and arid environments worldwide, including grasslands accounting for 40 percent of the world's total land area, it is hard to see how the

FIGURE 1. (a) Three Pillars of Sustainable Development, (b) reoriented, to highlight non-economic pillars.



advent of a green economy—the main goal of Rio+20 and of China's current development plans for its western regions—can occur absent the participation of pastoralists.[13]

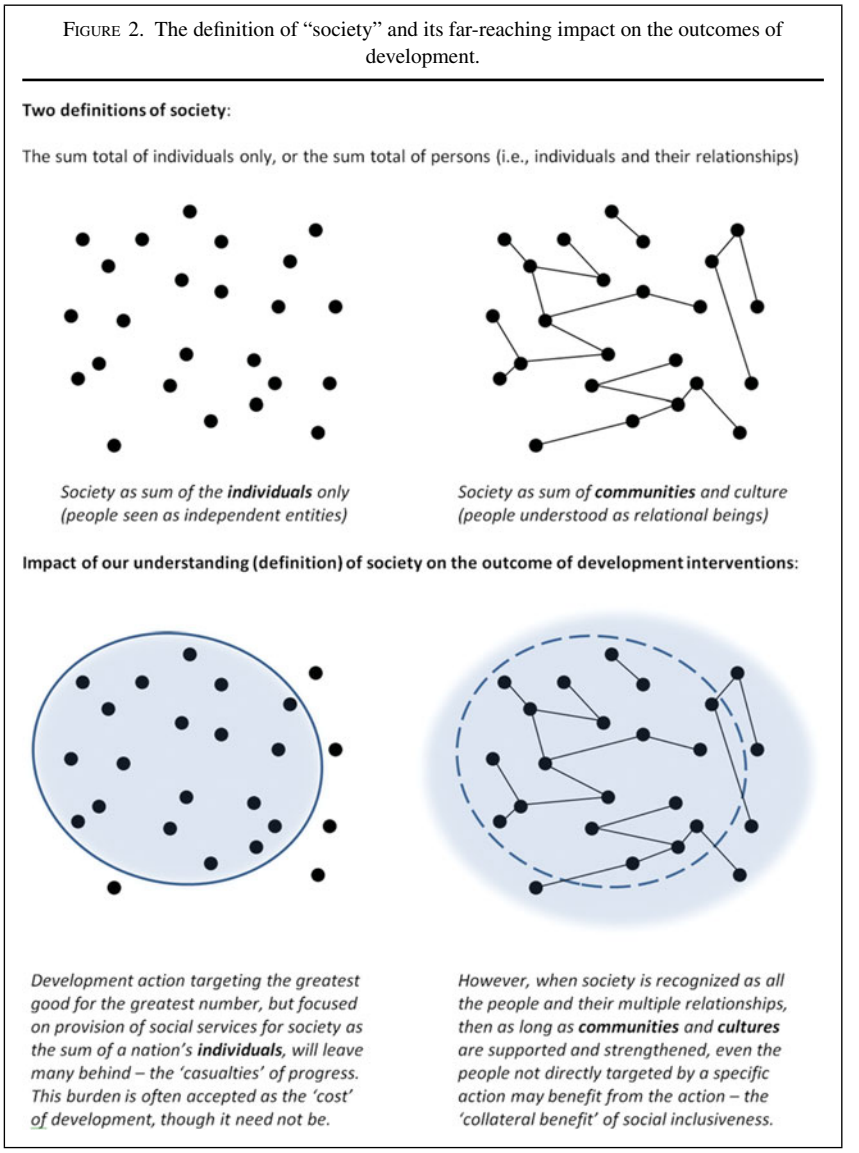
There is a strong case to be made, then, that the common orientation of the pillars of development model should be changed so that societal variables have priority (Figure 1b).

Going further, society needs to be seen as more than just an aggregation of individuals (see Figure 2). It encompasses communities and culture, expressions of individuals as relational beings and a reflection of the interest they have in the practical delivery of social services, such as health and education, through government policies and the professional capacity to deliver those services.

A more complex view of what society is and how it needs to be sustained is captured in Figure 3, showing the outlines of a framework for advancing sustainable development goals that is theoretically more comprehensive yet still practically achievable. It emphasizes not only that all stakeholders must collaborate to achieve desired outcomes but also that sound government policies and well-developed local capacities for decision-making and administration are essential. The basic set of underlying and interacting variables is depicted in Figure 4.

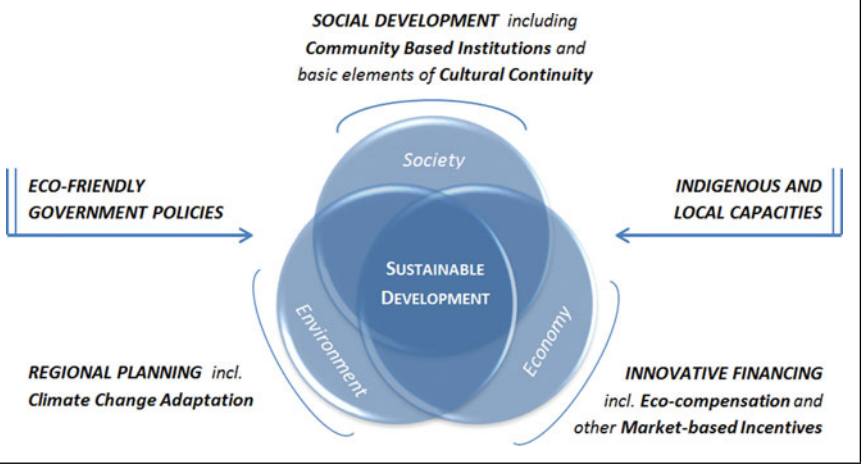
[13] The thinking sketched here is broadly consistent with the green development plan envisaged and described by CCICED (*supra* note 9). Notably, there is recognition that the cultivation of social capital is an essential component of development, because effective cooperation among stakeholders requires that there be trust, mutual understanding, shared values, and socially held knowledge. Western China, the document acknowledges, has a more complex social structure than the rest of China. Any green development strategy that failed to respect the region's cultural and ethnic diversity would run the risk of being seen as exclusive, rather than inclusive, and would exacerbate poverty and social instability, to the detriment of China as a whole.

FIGURE 2. The definition of "society" and its far-reaching impact on the outcomes of development.



While the several factors just sketched may redirect some plans for conservation and sustainable development inside and outside PAs in western China, they by no means foreclose opportunities and may even open new avenues for the future. By developing and testing enhanced concepts and approaches in sustainable development, if successful, these western experiments can be applied more broadly and have more widespread benefits. With this in mind, a discussion in the next section of case experiences in the Tibetan grasslands is followed by a broader discussion of the key lessons these experiences yield.

FIGURE 3. Major stakeholder inputs required for successful conservation and sustainable development, inside and outside of the protected area (PA) system. Selected PAs may serve as a "sandbox" in which to trial new models of sustainable development, especially community-oriented approaches within a framework of green development in Western China.



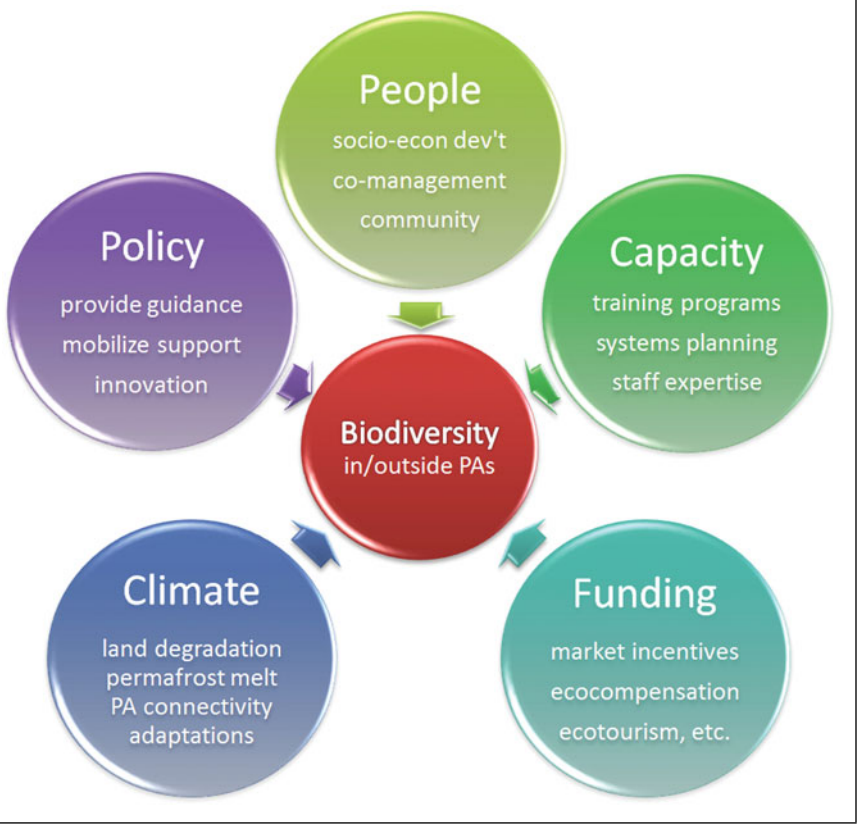
3. CASE EXPERIENCES FROM THE TIBETAN PLATEAU

Previous work has documented the value for environmental management, including protected area management, of substantive engagement and collaboration with local communities, with an emphasis on the headwaters region of the Yangtze River in southwest Qinghai Province.[14] The local involvement ranges across planning for the future provision of education and health services, the carrying out of wildlife and environmental monitoring projects, and the zoning of land use, among other things. The engagement not only brings more stakeholders to the table but also enhances communication and multidirectional learning, as well as the discovery and recognition of new opportunities and ways to solve problems.

From a local community perspective and in the context of involvement by an external NGO[15] the most notable benefit of efforts to reach out to and engage with the local population was their perception (recognition) that they were being asked to partner in planning and decision making *on their terms*. It was important and appreciated that the external agency generally chose not to drive project activities for its own purposes but rather sought a partnership based on an integrated view of conservation and development. It took time to merge traditional worldviews with more modern practices, and this often necessitated recognition that different groups value different

[14] Foggin & Torrance-Foggin (2011) and Foggin (2012), *supra* note 12.
[15] Foggin & Torrance-Foggin (2011), *supra* note 12.

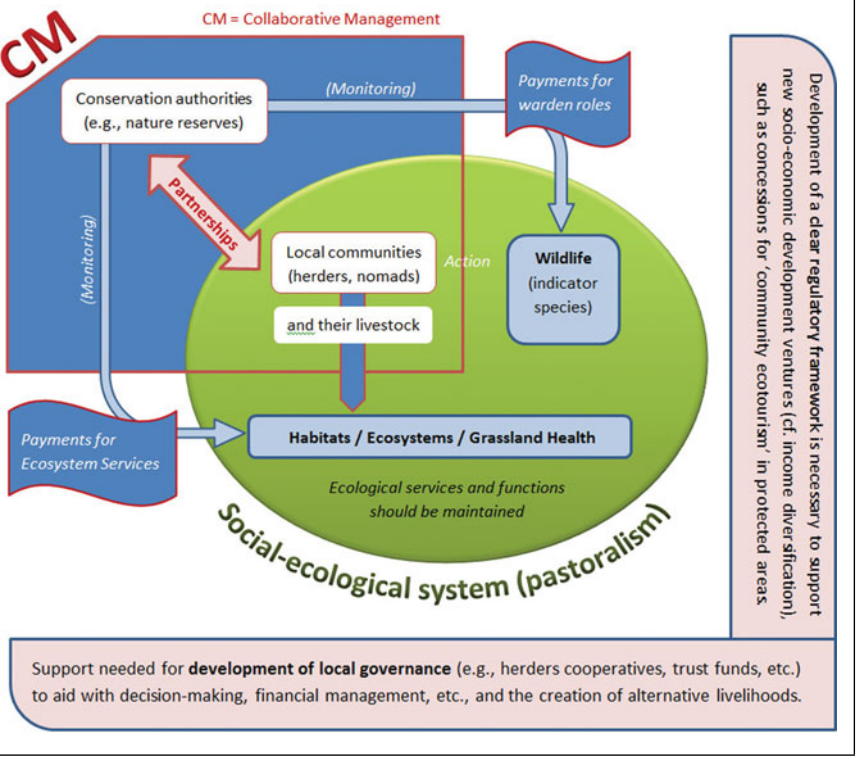
FIGURE 4. Five major categories of variables that impact Biodiversity, both inside and outside of PAs, derived from the model of sustainable development presented in Figure 3.



products or experiences differently. In the case of the yak, for example, or pastoralism more broadly, it became clear that in times of rapid change driven largely by forces that local stakeholders could not control, the social and cultural value of the animals extended far beyond economic metrics.

It was equally clear that local community involvement in discussion, dialogue, and decision making fostered a sense of hope about the future, often noted as a positive force for change. Experience also showed that in these particular pastoralist or livestock herding societies, enhancing community cohesiveness and mobilization contributed to local engagement and self-regulation of the unique challenges and opportunities at the outset of the 21st century. Local community-based protection of wildlife through anti-poaching initiatives, for example, as well as wildlife monitoring and educational outreach projects, prospered when there were clear local decisions and commitments to achieve such purposes. And actual achievements were broader and more

FIGURE 5. Diagrammatic model of community co-management in PAs. Reproduced with permission (Foggin 2012).



consistent than would have been expected if the agents of change had been considered only as individuals, rather than as relational members of a community. To put it differently, if local communities or society become disjointed, through programs of relocation and settlement, for example, there will likely be significant concomitant lost opportunities for conservation. Community co-management seeks to avoid these pitfalls.

The essence of community co-management of resources and the environment is that it builds resilience in the face of environmental change by mutually reinforcing the goals and purposes of the local community along with those of other stakeholders. The essential elements of a well-developed trial of the community co-management model in the Sanjiangyuan area of Qinghai Province are depicted in Figure 5.

The crucial point to recognize in this model is that there are multiple and complementary ways in which local herding communities can support regional and national conservation agendas, as well as their own indigenous conservation purposes. And, by the same token, government and other

external stakeholders can provide support for community objectives. Such reciprocity can come not only in the form of payments for labor or for the maintenance of ecological services but also from benefit sharing mechanisms, the strengthening of local governance institutions such as herders' cooperatives, the encouragement of indigenous rural development through access to credit and information, and the provision of concessions or startup support for environmentally sound enterprises that benefit the community.

This way of thinking about sustainable development and PA management through community co-management in western China fits very well with the way the Chinese national government is thinking about moving the region towards a green economy.[16] The region is treated, appropriately, as much more than a wilderness to be preserved. The starting premise is rather that western China has long been a human-influenced landscape, although there remain within the region unique and fragile environments and abundant globally important flora and fauna. There is a clear intent to consider in tandem all of the region's capital assets: natural, economic, social, and human capital. Each asset type presents unique opportunities for and constraints on future development, and there is a need, therefore, for cross-cutting or horizontal policy analysis.[17] Experience with such participatory and collaborative processes in the high-elevation grasslands and mountain environments of western China, such as the Tibetan plateau ecoregion, is both substantial and positive.

4. ISSUES ARISING FOR BIODIVERSITY CONSERVATION AND PA MANAGEMENT

Given that the successful pursuit of sustainable development requires inputs from multiple stakeholders (see Figure 3) in order to cope with the key sets of variables involved (see Figure 4), what are the priority issues government policy makers and PA managers need to consider (see Table 1) to take advantage of recent experience in western China?

4.1 People and Society: Seeking Improved Development Outcomes and Well-Being

Although conservation and development decisions are made for the long term and in the name of an abstract public good, they are also made in a social context in which the primary concerns people have revolve around more immediate and tangible matters of everyday living, health, and prosperity. If the

[16] CCICED (2012), *supra* note 9.

[17] J. Marc Foggin & Jared Phillips, *Horizontal Policy Analysis: A Tool to Promote Sustainable Livelihoods Development, with Implications for Ecological Resettlement and Other Major Development Programs in the Tibetan Plateau Region, in* PASTORALISM IN CONTEMPORARY CHINA: POLICY AND PRACTICE 3–30 (Åshild Kolås & Zha Luo, eds. 2013).

Table 1. Five Core Components of PA Network Development and Management Planning.

Core components	Anticipated outcome	Key issues to consider	References and guidelines
People & Society	Development improved	1. Socio-economic development	Borrini-Feyerabend & Pimbert,[18] CCICED,[19] UNEP.[20]
		2. Co-management, participation	Blumenthal and Jannink,[21] Borrini-Feyerabend et al.,[22] Borrini-Feyerabend et al.,[23] Lynam et al.,[24] Reed,[25] Smith et al.[26]
		3. Community and culture	Beltrán,[27] Foggin,[28] Foggin & Phillips,[29] McIntyre et al.[30]

[18]Grazia Borrini-Feyerabend et al., Sharing Power: Learning by Doing in Co-Management of Natural Resources Throughout the World (IIED and IUCN, Cenesta, Tehran, 2004), online at www.iucn.org/about/union/commissions/ ceesp/ceesp_publications/sharing_power.cfm (accessed 1 July 2014).

[19]CCICED (2012), *supra* note 9.

[20]United Nations Environment Program, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication (UNEP, Nairobi, 2011), online at http://www.unep.org/greeneconomy (accessed 1 July 2014).

[21]Dana Blumenthal & Jean-Luc Jannink, *A Classification of Collaborative Management Methods*, 4(2) Conservation Ecology 13 (2000), online at http://www.consecol.org/vol4/iss2/art13.

[22]Grazia Borrini-Feyerabend et al., Indigenous and Local Communities and Protected Areas: Towards Equity and Enhanced Conservation, Guidance on Policy and Practice for Co-Managed Protected Areas and Community Conserved Areas (World Commission on Protected Areas, IUCN, Best Practice Protected Area Guidelines Series No. 11, Gland, Switzerland, 2004), online at http://areasprotegidas.info/upload/document/ guidelinesindigenouspeople.pdf (accessed 1 July 2014).

[23]Grazia Borrini-Feyerabend et al., Governance of Protected Areas: From Understanding to Action (IUCN, Best Practice Protected Area Guideline Series No. 20, Gland, Switzerland, 2013), online at http://cmsdata.iucn.org/ downloads/governance_web_1.pdf (accessed 1 July 2014).

[24]Timothy Lynam et al., *A Review of Tools for Incorporating Community Knowledge, Preferences, and Values into Decision Making in Natural Resources Management*, 12 Ecology & Soc. 5 (2007), online at http://www.ecologyandsociety.org/vol12.iss1/art5.

[25]Mark Reed, *Stakeholder Participation for Environmental Management: A Literature Review*, 141 Biological Conservation 2417–2431 (2008).

[26]Robert J. Smith et al., *Let the Locals Lead*, 462 Nature 280–281 (2009).

[27]Javier Beltrán, Indigenous and Traditional Peoples and Protected Areas: Principles, Guidelines and Case Studies (World Commission on Protected Areas, IUCN, Best Practice Protected Area Guidelines Series No. 4, Gland, Switzerland, 2000), online at http://cmsdata.iucn.org/downloads/pag_004.pdf (accessed 1 July 2014).

[28]J. Marc Foggin, *Rethinking 'Ecological Migration' and the Value of Cultural Continuity: A Response to Wang, Song and Hu,* 40 Ambio 100–101 (2011).

[29]Foggin & Phillips (2013), *supra* note 17.

[30]Agriculture at a Crossroads: International Assessment of Agricultural Knowledge, Science and Technology for Development, Global Report (Beverly McIntyre et al., eds., 2009).

Table 1. Five Core Components of PA Network Development and Management Planning. *(Continued)*

Core components	Anticipated outcome	Key issues to consider	References and guidelines
Environment & Climate	Impact of climate change mitigated	4. Land degradation incl desiccation	Brierley & Huang,[31] Harris,[32] Morton.[33]
		5. Adaptation: technical, socio-cultural	Barthel, Crumley & Svedin,[34] Hesse & Cotula,[35] Morton.[36]
		6. PA connectivity	Dudley,[37] Lausche et al.,[38] Mazaris et al.,[39] Olds et al.[40]
		7. Permafrost melt	Morton,[41] Yang et al.,[42] UNEP.[43]

[31]Gary Brierley & Huang Heqing, *Landscape Relations to Eco-Environmental Dynamics of the Sanjiangyuan*, 23 J. Geogr. Sci. 771–774 (2013).
[32]R. B. Harris, *Rangeland Degradation on the Qinghai-Tibetan Plateau: A Review of the Evidence of its Magnitude and Causes*, 74 J. Arid Env't. 1–12 (2010).
[33]Katherine Morton, *China & The Global Environment: Learning from the Past, Anticipating the Future* (Lowy Institute Paper No. 29, Sydney, Australia, 2009), online at http://www.lowyinstitute.org/files/pubfiles/ Morton%2C_China_and_the_global_environment_WEB.pdf (accessed 1 July 2014).
[34]Stephan Barthel, Carole Crumley, & Uno Svedin, *Bio-Cultural Refugia: Safeguarding Diversity of Practices for Food Security and Biodiversity*, 23 Global Envtl. Change 1142–1152 (2013).
[35]Ced Hesse & Lorenzo Cotula, Climate Change and Pastoralists: Investing in People to Respond to Adversity (Sustainable Development Opinion, International Institute for Environment and Development, London, 2006), online at http://pubs.iied.org/pdfs/11059IIED.pdf (accessed 1 July 2014).
[36]Morton (2009), *supra* note 33.
[37]Guidelines for Applying Protected Area Management Categories (Nigel Dudley ed., IUCN, Gland, Switzerland, 2008).
[38]The Legal Aspects of Connectivity Conservation: A Concept Paper (Barbara Lausche et al., IUCN, Gland, Switzerland, 2013).
[39]Antonio Mazaris et al., *Evaluating the Connectivity of a Protected Areas' Network under the Prism of Global Change: The Efficiency of the European Natura 2000 Network for Four Birds of Prey*, PLOS One, DOI: 10.1371/journal.pone.0059640 (2013).
[40]Andrew D. Olds et al., *Synergistic Effects of Reserves and Connectivity on Ecological Resilience*, 49 J. Applied Ecology 1195–1203 (2012).
[41]Morton (2009), *supra* note 33.
[42]Zhao-ping Yang et al., *Linking Thaw Depth with Soil Moisture and Plant Community Composition: Effects of Permafrost Degradation on Alpine Ecosystems on the Qinghai-Tibet Plateau*, 367 Plant & Soil 687–700 (2012).
[43]United Nations Environment Program, Policy Implications of Warming Permafrost (UNEP, Nairobi, Kenya, 2012), online at http://www.unep.org/pdf/permafrost.pdf 9 (accessed 1 July 2014).

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TABLE 1. Five Core Components of PA Network Development and Management Planning. *(Continued)*

Core components	Anticipated outcome	Key issues to consider	References and guidelines
Economy & Financing	Income increased	8. Market incentives	Wang et al.,[44] IUCN,[45] IUCN,[46] Pretty.[47]
		9. Ecotourism, community tourism	Eagles et al. (2001),[48] Eagles et al. (2002),[49] Li & Han,[50] Plateau Perspectives.[51]
		10. Eco-compensation, PES	Bennett,[52] Emerton et al.,[53] James et al.,[54] Xu et al.[55]

[44]Zongming Wang et al., *China's Wetlands: Conservation Plans and Policy Impacts*, 41 AMBIO 782–786 (2012).

[45]IUCN, Economic Values of Protected Areas (World Commission on Protected Areas, IUCN, Best Practice Protected Area Guidelines Series No.2, Gland, Switzerland, 1998), online at http://cmsdata.iucn.org/downloads/ pag_002.pdf (accessed 1 July 2014).

[46]IUCN, Financing Protected Areas (World Commission on Protected Areas, IUCN, Best Practice Protected Area Guidelines Series No. 5, Gland, Switzerland, 2000), online at http://cmsdata.iucn.org/downloads/pag_005.pdf (accessed 1 July 2014).

[47]Jules Pretty, *The Sustainable Intensification of Agriculture*, 21 NATURAL RESOURCES FORUM 247–256 (1997).

[48]PAUL EAGLES ET AL., GUIDELINES FOR TOURISM IN PARKS AND PROTECTED AREAS OF EAST ASIA (IUCN, Gland, Switzerland, 2001).

[49]Paul Eagles et al., Sustainable Tourism in Protected Areas: Guidelines for Planning and Management (World Commission on Protected Areas, IUCN, Best Practice Protected Area Guidelines Series No. 8, Gland, Switzerland, 2002), online at http://cmsdata.iucn.org/downloads/pag_008.pdf (accessed 1 July 2014).

[50]Li Wenjun & Han Nianyong, *Ecotourism Management in China's Nature Reserves*, 30 AMBIO 62–63 (2001).

[51]Plateau Perspectives, Destination Yushu: Development framework and recommendations for the promotion of tourism in rural Qinghai Province, with a focus on Ecotourism and Community Tourism in the Yushu Tibetan Autonomous Prefecture (Plateau Perspectives, Xining, China 2013), online at http://www.plateauperspectives.org/ wp-content/uploads/2013/10/DestinationYushu.pdf (accessed 1 July 2014).

[52]MICHAEL BENNETT, MARKETS FOR ECOSYSTEM SERVICES IN CHINA: AN EXPLORATION OF CHINA'S "ECO-COMPENSATION" AND OTHER MARKET-BASED ENVIRONMENTAL POLICIES (Forest Trends, Washington, DC, June 2009), online at http://www.forest-trends.org/documents/files/doc_2317.pdf (accessed 1 July 2014).

[53]Lucy Emerton, Joshua Bishop, & Lee Thomas, Sustainable Financing of Protected Areas: A Global Review of Challenges and Options (World Commission on Protected Areas, IUCN, Best Practice Protected Area Guidelines Series No. 13, Gland, Switzerland, 2006), online at http://cmsdata.iucn.org/downloads/emerton_et_al2006.pdf (accessed 1 July 2014).

[54]Alexander James, Michael Green, & James Paine, A Global Review of Protected Area Budgets and Staff (WCMC Biodiversity Series No. 10, World Conservation Monitoring Center, World Conservation Press, Cambridge, UK, 1999), online at https://www.cbd.int/financial/expenditure/g-spendingglobal-wcmc.pdf (accessed 1 July 2014).

[55]Jiliang Xu et al., *A Review and Assessment of Nature Reserve Policy in China: Advances, Challenges and Opportunities*, 46 ORYX 554–562 (2012).

TABLE 1. Five Core Components of PA Network Development and Management Planning. *(Continued)*

Core components	Anticipated outcome	Key issues to consider	References and guidelines
Technical Capacity	Expertise enhanced	11. Appropriate training programmes	Eira et al.,[56] Kopylova & Danilina,[57] Krätli,[58] Robinson.[59]
		12. Systems level development planning	Foggin & Phillips,[60] Fellowes,[61] MacKinnon et al.[62]
		13. PA staff and community expertise	Appleton et al.,[63] Borrini-Feyerabend et al.[64]

[56]Inger Marie Eira et al., The Challenges of Arctic Reindeer Herding: The Interface Between Reindeer Herders Knowledge and Modern Understanding of the Ecology, Economy, Sociology and Management of Sami Reindeer Herding (Sami University College, Norway, 2008), online at http://library.arcticportal.org/550/1/Eira_127801.pdf (accessed 1 July 2014).

[57]Svetlana Kopylova & Natalia Danilina (eds.), Protected Area Staff Training (World Commission on Protected Areas, IUCN, Best Practice Protected Area Guidelines Series No. 17, Gland, Switzerland, 2011), online at http://cmsdata.iucn.org/downloads/pag17.pdf (accessed 1 July 2014).

[58]Saverio Krätli, Education Provision to Nomadic Pastoralists (IDS Working Paper 126, Institute for Development Studies, London, 2001).

[59]Bernadette Robinson, *Open and Distance Learning in the Gobi Desert: Non-formal Education for Nomadic Women*, 20 DISTANCE EDUC. 181–204 (1999).

[60]Foggin & Phillips (2013), *supra* note 17.

[61]John Fellowes et al., Sustaining the Pulse: Managing for Biodiversity Conservation in South China's Forest Reserves (Kadoorie Farm and Botanic Garden, Hong Kong, China, September 2008), online at http://www.kfbg.org/images/upload/cp_pdf/Resource_book_Eng_Sept-08.pdf (accessed 1 July 2014).

[62]Kathy MacKinnon, Nigel Dudley, & Trevor Sandwith (eds.), Putting Natural Solutions to Work: Mainstreaming Protected Areas in Climate Change Responses (Bundesamt für Naturschutz, Bonn, Germany 2012), online at http://www.bfn.de/fileadmin/MDB/documents/service/BfN-Skript-321.pdf (accessed 1 July 2014).

[63]Michael Appleton, Gregorio Texon & Monina Uriarte, Competence Standards for Protected Area Jobs in South East Asia (ASEAN Regional Center for Biodiversity Conservation, Los Baños, The Philippines, 2003), online at http://www.arcbc.org.ph/arcbcweb/pdf/competence_standards.pdf (accessed 1 July 2014).

[64]Borrini-Feyerabend et al. (2004), *supra* note 22.

(Continued on next page)

TABLE 1. Five Core Components of PA Network Development and Management Planning. *(Continued)*

Core components	Anticipated outcome	Key issues to consider	References and guidelines
Government Policy	Guidance provided	14. Government leadership (guidance)	CCICED,[65] Foggin & Phillips,[66] Kreutzmann,[67] Wang et al.,[68] Xu et al.[69]
		15. Mobilizing a broad support	Foggin,[70] Guo & Marinova,[71] Rambaldi & Callosa-Tarr.[72]
		16. Encouraging innovation	Bodouroglou & Alarcón,[73] Cao,[74] OECD,[75] Liu & Cheng,[76] UNDESA.[77]

[65]CCICED (2012), *supra* note 9.

[66]Foggin & Phillips (2013), *supra* note 17.

[67]Hermann Kreutzmann, *The Tragedy of Responsibility in High Asia: Modernizing Traditional Pastoral Practices and Preserving Modernist Worldviews*, 3 PASTORALISM: RES. POL. & PRAC. 2013, 3:17 (2013).

[68]Guangyu Wang et al., *National Park Development in China: Conservation or Commercialization*? 41 AMBIO 247–261 (2012).

[69]Xu et al. (2012), *supra* note 55.

[70]Foggin (2005), *supra* note 12.

[71]Xiumei Guo & Dora Marinova, Environmental Awareness in China: Facilitating the Greening of the Economy, Proc. 19th International Congress on Modelling and Simulation (MODSIM2011) 1673–1679 (Perth, Australia, Dec. 2011).

[72]GIACOMO RAMBALDI & JASMIN CALLOSA-TARR, PARTICIPATORY 3-DIMENSIONAL MODELLING: GUIDING PRINCIPLES AND APPLICATIONS (ASEAN Regional Center for Biodiversity Conservation, Los Baños, The Philippines, 2002).

[73]Christina Bodouroglou & Diana Alarcón, Sustainable Agricultural Innovation Systems (SAIS) for Food Security and Environmental Protection (United Nations Research Institute for Social Development, Geneva, Switzerland, June 2012), online at http://www.unrisd.org/unrisd/website/newsview.nsf/%28httpNews%29/DF32A5AEAA434942C1257A130034C221?OpenDocument (accessed 1 July 2014).

[74]Cong Cao, The Science and Innovation Challenge for China's New Leaders, *The Guardian*, 8 October 2013, online at http://www.theguardian.com/science/political-science/2013/oct/08/science-innovation-china-leaders (accessed 1 July 2014).

[75]Organization for Economic Cooperation & Development, OECD Reviews of Innovation Policy: China (OECD, Paris, 2008), online at http://www.keepeek.com/Digital-Asset-Management/oecd/science-and-technology/oecd-reviews-of-innovation-policy-china-2008_9789264039827-en#page1 (accessed 1 July 2014).

[76]Xielin Liu & Peng Cheng, Is China's Indigenous Innovation Strategy Compatible with Globalization? (Policy Studies No. 61, East-West Center, Honolulu, Hawaii, 2011), online at http://www.eastwestcenter.org/sites/ default/files/private/ps061.pdf (accessed 1 July 2014).

[77]United Nations, Department of Economic and Social Affairs, World Economic Survey 2013: Sustainable Development Challenges (E/2013/50/Rev.1, ST/ESA/344, United Nations, New York, 2013), online at http://www.un.org/en/development/desa/policy/wess/wess_current/wess2013/WESS2013.pdf (accessed 1 July 2014).

designation and management of PAs requires local people and communities to reduce their impact on land resources and biodiversity, for example, and to contribute both time and effort to conservation programs, it seems both fair and reasonable that their immediate needs and aspirations in relation to health, income, and leisure equally be taken into account. One imperative, then, is for policy makers and managers to consider local development needs in tandem with regional development and conservation concerns. Collaborative management or co-management is one way to do this. Its success in melding different perspectives or agendas into a common plan stems in part from a commitment in the first instance to listen, rather than just to prescribe, and then to engage others in a search for genuine partnership.[78] The maintenance of cultural continuity is another important factor, because it has demonstrable benefits for people's health and sense of well-being[79] and can be given economic as well as sociocultural weight through incorporation into cost–benefit analyses of development and PA proposals.

4.2 Environment and Climate: Responding to Climate Change

Climate change poses the greatest long-term threat to the conservation and management of biodiversity. In the particular context of the arid rangelands present across much of western China, the ability of the land to sustain domestic livestock is affected by existing patterns of human land use, natural cycles, changing climatic conditions, and feedback mechanisms. When the interaction of these variables yields a degrading environment, especially desiccation or desertification, lowered plant productivity translates into fewer livestock and other grazing animals. Ideally, the response would be to mitigate the impact of climate change, but the timeframe for this is so extended that adaptation strategies also need to be considered. One such strategy involves the reduction but not the full removal of livestock, perhaps in combination with changes in the seasonality and spatial distribution of grazing, and preferably in tandem with development initiatives that provide alternative opportunities for income generation. Reduced dependency on yak husbandry, for example, might be offset by finding new ways to add value to current livestock products, the creation of new products or markets, and entry into new areas of work in the service sector or tourism.

At a larger scale, and because climate change potentially involves distribution range shifts for wildlife species, PA policy and plans need to anticipate increased connectivity among and corridors between PAs that would otherwise be reduced to being islands of conservation in a sea of heavily impacted human environments. In addition, across western China and especially in the higher reaches of the Tibetan plateau, warming is occurring at an accelerated

[78] Foggin & Torrance-Foggin (2011) and Foggin (2012), *supra* note 12.
[79] Foggin (2011), *supra* note 28.

rate and bringing with it permafrost melt, which is the major contributing factor to the widespread land desiccation observable in the region. Water previously held in the upper soil is infiltrating deeper, because it is no longer obstructed by the ice layer, and this is affecting overall plant productivity. It is also allowing previously inaccessible mineral content in the soil to enter the water column and, thus, become available, with harmful effects in some cases for livestock and for human consumption.

4.3 Economy and Financing: Balancing the Needs of People and Parks

The pursuit of a sustainable development agenda for western China, including the planning, implementation, and monitoring of conservation activities in PAs, will need to be financed by looking more closely at the way the region's natural resources are valued, at how the realization of new values can be incentivized, perhaps through market mechanisms, and at how competing demands for scarce valuable resources are to be balanced among stakeholders. One alternative use of the region's biodiversity, for example, would be through ecotourism, which shows some promise for bringing local communities and PA managers together, to support each other in the mutually beneficial pursuit of both conservation and development objectives. Another alternative looks beyond the derivation of direct financial benefits from nature as tourism resource and anticipates payments for ecological services (PES) such that opportunities lost by retiring livestock from the land (for environmental conservation purposes) can be compensated by sharing the benefits that such retirement creates elsewhere. Conceptually, this is the sort of "access and benefit sharing" mechanism anticipated in the Nagoya Protocol to the Convention on Biological Diversity,[80] but its practical application, whether for the financing of PA management or for benefit sharing more generally, needs much more attention.

4.4 Technical Capacity: Enhancing Professional Expertise at Multiple Levels

The technical demands of realizing a greener economy in western China are considerable, particularly to ensure that at the local and provincial levels the indigenous population is fairly represented in the ranks of people professionally qualified to staff and be wardens of PAs, to carry out basic but essential environmental and ecological scientific work, to monitor environmental conditions and wildlife populations in the field, to use and maintain relevant and up to date IT systems and field equipment, and to practice the communication, legal, technical, and interpersonal skills needed to make co-management successful. Capacity building in these areas is a well-known and long-recognized

[80] ELISA MORGERA, MATTHIAS BUCK, & ELSA TSIOUMANI, THE 2010 NAGOYA PROTOCOL ON ACCESS & BENEFIT SHARING IN PERSPECTIVE: IMPLICATIONS FOR INTERNATIONAL LAW & IMPLEMENTATION CHALLENGES (2012).

feature of plans for sustainable development and PA management, and there are many options available for delivering better outcomes, such as *in situ* course-based training as well as distance learning. It remains to be seen, however, how all these possibilities might play out in western China.

4.5 Government Policy: Long-Term Vision, Strategic Guidance, and Resource Mobilization

It would be a fair summary at this point to say that the Chinese central government in Beijing is feeling its way, slowly and cautiously, towards a new future for western China. But it is not a future that the government in Beijing can unilaterally direct. Neither is it a future that the indigenous populations of the western region, along with their fellow stakeholders among other interested Chinese and external actors, can determine. The central government needs to provide, and has in large part outlined through the 2012 CCICED plan, a long-term vision for the future of the region. Beijing can also set the strategic parameters within which resources can be mobilized, within and outside China, to move the western region towards a greener economy. Significant steps have been taken in this direction as well by supporting greater involvement in sustainable development and PA planning for the west from a broad spectrum of Chinese civil society.

What remains unclear is the extent to which governments at all levels in China are willing to support the sorts of innovative thinking and on-the-ground practice that would substantially advance a green economy agenda for the western region. Supportive pressure to move in this direction has been building in Qinghai Province, with help from the United Nations Development Program (UNDP) and the Global Environmental Facility (GEF).

5. THE QINGHAI BIODIVERSITY CONSERVATION PROJECT

Qinghai Province, extending over 720,000 km^2, is the fourth largest province by area in China and home to a significant store of the nation's most significant biodiversity assets. It encompasses the headwaters of three major Asian rivers—the Yellow, the Yangtze, and the Mekong—and its topography and ecosystems are significant controllers of the Asian monsoon system, which affects the fortunes, every year, of more than three billion people. The province is now the focus of the Qinghai Biodiversity Conservation Project,[81] an initiative that goes far beyond previous attempts by individuals and organizations to experiment with co-management for conservation and development in the

[81] United Nations Development Program & Global Environment Facility, Strengthening the effectiveness of the protected area system in Qinghai Province, China to conserve globally important biodiversity (UNDP China, Beijing, 2012). Online at http://www.cn.undp.org/content/dam/china/docs/ProDocs/UNDP-CH-EE-Prodocs-QinghaiProvince.pdf (accessed 1 July 2014).

region and that is unprecedented in the scope of its conservation and development goals. It involves the national and provincial governments, the UNDP, the GEF, the Qinghai Forestry Department, and a variety of local communities and groups.

Qinghai has a network of PAs comprising five National Nature Reserves (NNRs) and six Provincial Nature Reserves (PNRs). The two types of reserves jointly account for about 35 percent of the provincial area (251,665 km^2). These numbers are impressive. However, there are gaps and challenges. Two of the PNRs, for example, appear on the official list of nature reserves but have no designated boundaries or management structure. PAs are established under China's Regulations on Nature Reserves (1994) and in this region are administered by the Qinghai Forest Department, which reports to the Qinghai Provincial Government and the State Forestry Administration in Beijing. Once approved by central government, NNRs are, in principle, allocated higher levels of funding and staffing than provincial reserves, and NNR status allows a PA to access funding resources from the central government, as well as provincial and local governments, for its management. An NNR designation also means that any park infrastructure development must have central government approval.

In practice, however, central government funding is limited and usually available only for specific development projects. The real burden of paying for day-to-day operations and related work falls primarily on local sources. The NNR designation is based on the global and national importance of reserves and the resources they contain. Provincial governments can also legislate for PAs and make their own special management arrangements for provincial reserves, but there are no discernible differences between NNRs and PNRs in terms of the land and resource uses permitted inside such areas. Indeed, in Qinghai there are no provincial laws pertaining to PA management at all.[82]

Against this background, the official UNDP-GEF project document lays out several key objectives[83]:

> The focus of [this] project is to redesign the PA system in Qinghai to better protect a representative sample of its unique biodiversity and more effectively manage this PA network as a whole. With GEF support, interventions at the level of Qinghai's PA system will (i) strengthen the enabling legal framework, incentives and participative mechanisms, and mobilize necessary investments to support the expansion and effective management of the PA network; and (ii) strengthen the institutional and human resource capacity to establish and maintain an effectively managed PA system over the long-term and support the cost-effective and sustainable management of PAs by building up their operational capacities, and generating investments, to manage threats to biodiversity at a PA site level. To reach such goals, the project will

[82] This discussion follows *id.* at 14.
[83] *Id*., at 34–35.

> seek to help direct provincial strategic planning, policy-making, legislation, funding, tools and incentive structures towards more active biodiversity management through the provincial PA system, and link PA development priorities with the priorities of other sectors by recognizing, promoting and optimizing the true value of PAs within the socio-economic development of the province and with beneficiary downstream provinces. The project will also (iii) promote and upscale models of community co-management within PAs in selected demonstration areas in the Sanjiangyuan NNR.

The project began in May 2012 and is set to run until 2017. In the first two years, a mechanism has been created to discuss and prioritize across governmental sectors the biodiversity conservation objectives that need to be integrated into long-term planning and development strategies for the region. Work has begun on a multipurpose biodiversity knowledge management system and the elucidation of the economic benefits derivable from PA functions, which ultimately are ecosystem service functions. Work has also started on a training program for PA managers and staff, including community wardens, and co-management agreements with herding communities have been developed. All of this will help to strengthen what is presently the provincial government's limited ability to affect in practice what occurs inside PAs.

6. CONCLUSION: FUTURE DIRECTIONS FOR BIODIVERSITY CONSERVATION AND PA MANAGEMENT IN CHINA

Across the vast stretches of grasslands, mountains, and deserts that are home to a rich diversity of life and livelihoods in western China, the natural environment is a heritage shared by many peoples and cultures. To protect this heritage, while at the same time sustaining livelihoods, local and regional people are starting to participate in more collaborative approaches to resource management. There is, in effect, a substantial mobilization of a large conservation work force, drawn from a broad spectrum of society and engaged more directly than ever before in activities that bring to bear the local knowledge about specific areas that has accumulated over many generations. The government of China is to be credited with sanctioning this significant development and UNDP-GEP with supporting its initial implementation in Qinghai.

More recently, and perhaps more significantly, the decadal Third Plenum in November 2013 in China also began to focus attention on other basic issues that will shape the future of PAs—issues such as the land tenure and property rights enjoyed by rural farmers and herders and the extent to which market mechanisms for resource use allocation can be made consistent with socialist governing principles. The assumption is that more innovative ways need to be found to accelerate the transition to a green economy by 2020 and that PAs need to be part of this vision.

If PAs in China are, then, to be part of the solution rather than be seen as a limitation or part of the problem, what needs to be done?

6.1 Inter-sectoral Cooperation

The simple political economy truth that lies behind recent recommendations for horizontal policy analysis[84] and the adoption of more integrated views of development policy is that interventions governments make in any one sector have the potential to affect outcomes in other sectors, even though they may not have been anticipated or measured. Better tools are needed to identify and to capture these external or spillover effects and in circumstances where it is appropriate to transfer or, at the very least, account for benefits across sectors. The biodiversity value of healthy grasslands to upland herders and their livestock can spill over downstream in the form of water resource and health benefits. The government development planner pressing ahead with an ecotourism project in one place can bring poverty alleviation to others. More cross-sectoral work is needed to ensure that green economies rest on well-understood roots or foundations that are both sustainable and stable.

6.2 Partnerships for Conservation

It is well established that partnerships can be effective mechanisms both for setting conservation agendas and for implementing them. Partnerships occur among government agencies, between public sector organizations and private corporations, and between all of these and nongovernmental organizations, both national and international. What is less well appreciated, however, is the potential conservation agents have for tapping into and mobilizing a large conservation workforce when they engage with the people most affected by their plans and learn from the knowledge and experience local participation provides. Partnerships can and should also be bidirectional, with an appreciation locally and regionally that the agents of conservation may equally help address locally felt needs. So, although there is nothing new about the idea of local involvement in resource management and conservation, the realization that reciprocity within partnerships can be reinforced through community co-management is innovative[85] and warrants more emphasis.

6.3 Community Conserved Areas

Some of the oldest protected areas in the world were set up by communities and managed through community rules, and they include vast landscapes where wildlife receives special protection, whether from management decisions or religion (sacred sites). Modern conservationists have been slow to recognize the contributions to biodiversity conservation made by such local initiatives

[84] Foggin & Phillips (2013), *supra* note 17.
[85] Foggin (2012), *supra* note 12.

and even slower to appreciate the special role community conserved areas can play in adapting to climate change.

The high degree of variability in community conservation initiatives can be reduced to three core characteristics they share.[86] One is that the local community is the predominant decision maker, with or without participation by other actors. Second, the local people or communities have a crucial relationship to the area in question, which might stem from cultural, spiritual, ecological, economic, or political grounds. And, third, regardless of the objectives of management, which may not stress conservation values *per se*, conservation is actually being achieved.

Community conserved areas like this are now embraced by the notion of indigenous peoples and local communities' conserved territories and areas (ICCAs).[87] These sometimes overlap with other sorts of PAs, such as national parks and nature reserves. But regardless of the terminology used and the degree of overlap with state-sanctioned PAs, the essential observation is that ICCAs represent an interest in the conservation of resources that provide for human sustenance. And the realization of that interest, across home territories that are almost always larger than formally designated PAs, can be of material benefit in providing *de facto* conservation through the recognition, for example, of adaptive corridors and the protection of species migration routes, which may shift in response to climate change.

Very generally, the bio-cultural diversity inherent in community-oriented solutions to environmental management and conservation problems in places like the Tibetan Plateau, and western China more broadly, point to a source of resilience in the face of environmental change that communities everywhere can emulate.

These observations are consistent with the view that "community managed areas, or areas managed by communities in collaboration with parks, can sometimes do better than traditional parks alone at protecting habitats and species."[88] To be effective, however, community co-management schemes require detailed land use plans and prescriptions for habitats and species, as well as a governance system that insists that the economic benefits of conservation endeavours be shared equitably amongst primary stakeholders. Western China is still a long way from realizing these ideals.

There is, nonetheless, a unique opportunity in western China to develop promising new models for the sustainable use of shared natural resources that are more than just resources, because they also represent a shared cultural heritage.

[86] Kothari (2013), *supra* note 5.

[87] For a series of documents on ICCAs, including national, regional, and global studies, see http://www.iccaforum.org.

[88] Conniff (2013), *supra* note 5.