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- COLLABORATIVE MANAGEMENT OF NATURAL RESOURCES

- RESOURCE USE BY TIBETAN HERDERS IN YUSHU PREFECTURE

- ESTABLISHING NEW NATIONAL PARKS IN NORTHERN CANADA

- ENVIRONMENTAL ETHICS AND ECO-CIVILIZATION IN CHINA

- CLIMATE VARIABILITY AND HERDERS' VULNERABILITY

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Public Participation, Leadership and Sustainable Development: Canadian Context and Issues for China

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Introduction

Human needs drive every advance of our global civilization. Our needs for food, water, shelter and other basic life support are the ones that come immediately to mind, but there are other needs that can be even more important if they go unsatisfied. Our needs for personal safety, caring relationships, creative self-expression, and for a voice in our lives and the lives of our communities are also critical elements of a more sustainable society.

The influential Brundtland Report (Our Common Future: the United Nations' World Commission on Environment and Development, 1987) identified several strategies governments and other actors can pursue towards achieving long-term sustainability:

1) a political system that secures citizen participation in decision making;
2) an economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis;
3) a social system that provides for solutions for the tensions arising from disharmonious development;
4) a production system that respects the obligation to preserve the ecological base for development;
5) a technological system that can search continuously for new solutions;
6) an international system that fosters sustainable patterns of trade and finance, and
7) an administrative system that is flexible and has the capacity for self correction. 1.

While all of these strategies are important, 1), 3), 4) and 7) are the most applicable when focusing on the improving the dynamic between social equity and environmental protection, which is the focus here. Keeping these strategies in mind, I aim in this paper to address the following questions:

1. How can (and do) governments undertaking environmental protection decisions and initiatives properly take citizens' needs and interests into account? In particular, how can governments take into account the needs and interests of those who will be most affected by decisions and who have the least amount of cultural, social, economic or political capital?

2. How can (and do) governments change or create institutions to ensure social equity in the context of environmental protection? What institutional arrangements have proven effective in this regard?

3. How can (and do) governments help citizens adapt to new situations, circumstances, lifestyles, and locations that have resulted from government decisions and actions?

The paper is organized as follows. First I discuss emerging trends in governance and public administration in North America over the last two decades, in particular on how governments have increasingly sought to inform, consult or engage in the policy process those who will be affected by government decisions and action. Next, I focus on how senior public officials in the West use different forms of public participation and citizen engagement to achieve policy outcomes on complex issues related to social equity and the environment. I then discuss some of the ways senior public officials can effectively work with citizens and other stakeholders, addressing the skills officials need in order to do this work effectively. Finally, I provide insights from the point of view of a senior Canadian public official who has used public consultation and engagement methods in addressing social equity and environmental issues. The latter discussion includes two case examples.

In light of China's environmental crisis and growing inequalities, which are unwelcome by-products of the (otherwise) successful economic reforms initiated by Deng Xiaoping, the Government of China has firmly recognized the need to place more emphasis on environmental policies and reducing inequality, including taking a scientific approach to development, fostering a harmonious society, and becoming an environmentally friendly, resource conserving society. However, it is abundantly clear from experiences around the world that environmental progress depends on participation, effective implementation and incentives at the local level. High-level pronouncements will not affect outcomes on the ground without deliberate involvement of people at the local level. This requires a change in mind-set and new skills for public officials to properly engage local people.

I am keenly aware that considerations of economic development that meets the needs of the people must also be kept in view. A healthy economy is a central component of the sustainable development paradigm, along with equity and environment. My purpose here is to highlight social equity considerations, since so much traditional policy thinking tends to privilege economic factors. Although it is beyond the scope of the paper and symposium, there are now conceptual tools and practical examples that demonstrate it is possible to achieve economic well-being through development activities that enhance environmental health and improve the level of social equity in a society. Incorporating these win-win strategies is a good way to make progress on several objectives at the same time. It is not the case that a country or region must endure a "high pollution phase" of its development, which also tends to worsen social tensions and inequalities, before it can "afford" to consider more sustainable models of economic development.

This is an important concept to grasp, particularly in the context of the very sensitive ecology of the Tibetan Plateau, where the wrong economic development model could quickly destroy the ecological integrity of this region.

I note that it is also not morally reasonable to call for poorer areas to make economic "sacrifices" to meet environmental goals when the vast majority of the environmental damage is generated by wealthy and prosperous areas. This is true whether one is considering developing versus developed countries, or regions within a country such as Qinghai and Tibet versus coastal China.

A quick word about the author and contributors. I have spent much of my career living in and dealing with China from my positions at the Canadian International Development Agency and the Canadian Embassy in Beijing, beginning in 1984. I have also had the privilege of leading the Canadian government's team in an environmental management project with the Central Party School and four provincial Party Schools including Qinghai's, from 2005 to 2009. Peter Milley is a Senior Advisor, Curriculum and Leadership, at the Canada School of Public Service. He contributed to part one of the paper. Gwendolyn Hallsmith of Montpelier, Vermont is the Executive Director of Global Community Initiatives. She contributed to part two. Derek Thompson is an associate faculty member of Royal Roads University and former Deputy Minister of the Ministry of Environment in the Province of British Columbia. He contributed to part three.

Part One: Key Concerns and Trends in Governance and Public Administration in Western Nations

In order to situate our discussion and facilitate cross cultural understanding, I thought it appropriate to describe some of the current trends in governance and public administration in the West, drawing in particular on the North American experience. In doing so I highlight where "human dimensions" and public participation considerations are represented.

In the last twenty years, the range of concerns in governance and public administration has expanded. Each of these concerns has been the focus of reforms in the public sector. And each remains central to current thinking, action, experimentation and reform.

Compliance: The primary concern of our governments has always been, and continues to be, securing the *voluntary* consent of citizens to be governed and ensuring their compliance with the law. There are six fundamental mechanisms that governments have worked to strengthen and improve during this time. They include democratic governance, the rule of law, due process, good government, accountability for the exercise of power, and institutional capacity. All of these are central to our governments' ability to secure trust from citizens and thus retain their legitimacy to govern. A significant aspect of the dynamic between citizens and their governments is the expectation among citizens that they will be treated fairly and equitably. The cornerstones of equity are built in through the focus, in particular, on ensuring that all citizens are treated equally under the rule of law and that public administrators use the benchmarks of fairness and impartiality in their dealings with citizens. In Canada, the principles of equity are constitutionally enshrined in the *Charter of Rights and Freedoms*. And there are a range of laws, such as federal and provincial human rights acts, and related institutions, such as human rights commissions, that support the principles of equity across the country. There are also specific acts and related government programs and services that aim to provide a socialized "safety net", in part to support disadvantaged individuals and groups, including universal healthcare, maternity benefits, unemployment insurance schemes, disability benefits, etc. In addition, some governments, such as the Canadian federal government, use equity-oriented tools, such as gender-based analysis, and supporting institutions, such as an agency and parliamentary committee devoted to advancing the status of women, to ensure equity considerations are central to the policy development, implementation and evaluation cycle.

Performance: In the late 1980s our governments became very focused on improving their performance, and this concern remains central today. Initially, they placed emphasis on ensuring that individual public servants performed their work with a high degree of competence, that government programs and services were being delivered effectively and efficiently, and that government ministries and agencies were well run. In more recent times, governments have become increasingly focused on improving performance on policy issues, programs and services that cut *across* government ministries and that involve other actors, including different levels of government, private enterprises and civil society organizations. In striving to improve results and get greater "value for money", governments experimented with new ways of working and began seeing their role in new ways. Among other

innovations, they discovered the importance of involving citizens, stakeholders and delivery agents in the policy development process in order to increase the likelihood of success in achieving policy outcomes. With this increase in public participation, equity has become a central consideration, particularly in terms of who gets to gain access to participation venues and whose "voices" get to be heard. It is currently believed that more equitable participation processes generally lead to better policy outcomes.

Governance: In its broadest sense, governance consists of the processes by which collective decisions are made and implemented in societies. During the last two decades, as governments in the West have deliberately engaged with a wide range of actors (both across and outside of government) in order to create more effective policies and services, to tackle complex, cross-jurisdictional issues, and to enhance governmental and societal performance, they have become more explicitly concerned with issues of governance. They have concentrated in particular on how government, markets, the private sector, and actors in civil society can productively work together to set direction, allocate resources, and steer society towards goals. Through study, debate and experimentation, governments have created a broad range of options in terms of how they approach their concern for compliance while confronting complex policy issues. For example, governments now have a range of policy instruments from which to choose that exist on a continuum from highly coercive measures (e.g., prescriptive laws, strong enforcement, severe penalties) aimed at restricting behaviours to less coercive measures (e.g., corrective taxes, social marketing) aimed at encouraging or discouraging behaviours. They also have a range of choices to make about how direct or indirect the role of government should be. These new methods for approaching compliance have been one of the main drivers of governments' concern for governance. Importantly, some policy instruments and approaches offer greater support to equity considerations than do others. In particular, addressing equity concerns generally requires governments to play a relatively direct role.

Innovation: During the 1990s, governments became increasingly interested in innovation. Their focus here was twofold. They were concerned about improving the performance of government, in part, by finding new and better ways to govern, develop policy, deliver programs and services, and run internal operations. Governments also became centrally concerned with creating innovative or "learning" societies in order to ensure economic competitiveness and confront difficult social and environmental problems.

Resilience: The concept of resilience refers to the ability of a system to recover from or adjust easily to misfortune. Governments in the West have become increasingly interested in the question of how to build capabilities and institutions that will help them and their societies adapt to unforeseen developments and withstand inevitable shocks and crises, including those related to the environment (e.g., climate change). Although government interest in resilience is still in nascent form, a body of literature is developing on what governments and the field of public administration can learn from ecology that might assist them in being more adaptive and resilient. Some of the key ideas that are being advocated include: learning to live with change and uncertainty; nurturing diversity; building social capital; and creating opportunity for self-organization. The significance of diversity (and social capital that "bridges" across diverse groups and communities) in fostering resilience has been seen to support arguments for pursuing greater social equity.

Different governments have had and will continue to have different combinations of concerns. The foregoing list is not meant to be comprehensive in terms of capturing these. What I wish to note, however, is that the fundamental starting point for governments who wish to promote social equity is to have in place the basic institutions to promulgate and uphold laws, and these institutions must have the integrity that is necessary to ensure their legitimacy in the eyes of citizens. Equity is a fundamental consideration here. A belief exists in the West that if even a small number of citizens can be subject to arbitrary government actions or injustices, then all are at risk (although it is equally important to note that this is a cultural principle that plays out imperfectly in practice).

There are some developments in governance and public administration that deserve mention here, not the least of which is public participation, which is the main focus of this paper. Speaking very generally, the trend these developments portray in terms of governance approaches is towards greater inclusiveness (an equity consideration), more interaction between governments and citizens, greater empowerment of front-line officials and citizens, and less coercive mechanisms for achieving policy outcomes. These developments are discussed very briefly below.

Shared forms of governance: Governments have been experimenting with ways of partnering, and in some instances even sharing powers, with other levels of government, private industry, non-governmental organizations and community groups in overseeing specific issues in particular jurisdictions and in delivering public goods and services. Shared governance has proven effective, for example, on managing watersheds, as these areas involve numerous political-administrative jurisdictions (e.g., local or provincial governments, different government agencies) and many interest groups have a stake in how they are managed (e.g., forestry companies, First Nations communities, environmentalists). As they have moved in the direction of shared governance, governments have become more sensitive to equity considerations because concerns arise as to who gets to be involved, with what powers and accountabilities.

Networks: While governments have not been abandoning bureaucracy and vertical structures as their primary organizational forms, they have been working to complement these with the use of horizontal organizational mechanisms, including formal and informal networks inside and outside government in order to engage, gather intelligence, share information, and even deliver certain public goods and services.

Controls and performance measurement: Governments have been very focused on ensuring they have proper controls and indicator systems in place to manage individual and agency performance. More recently, they have become focused on developing measurement and management systems to help ensure the overall system of government is performing well. This interest stems from the fact that many policy issues and programs extend across government, involving different agencies, so governments are looking for ways to encourage horizontal collaboration and overall results. Governments have also become increasingly interested in indicator systems that will measure overall performance of their jurisdictions and society. This interest stems from their need to inform citizens about the overall status of their society and to engage them in making the changes that are required to improve their society in its areas of weakness or vulnerability.

Accountability: Governments have been working to expand their perspectives and practices related to accountability. While accountability mechanisms for the exercise of power and authority remain central, governments have been trying to find ways to strengthen accountability for results, to devise methods for dealing with shared accountabilities, and to strengthen the professional ethics and accountabilities of public officials.

Learning and capacity building: Governments have been concerned with ensuring that they have competent and professional public administrations that are able to learn and adapt to changing circumstances. They have also been very focused on making sure the basic institutions of government are solid and trustworthy, even as they have continually reformed and adapted them. Governments have also been focused on helping citizens and communities become more self-reliant by promoting a robust civil society, which includes institutions and venues that support public debate, encouraging the growth of the non-governmental sector, ensuring markets are efficient and ethical, and supporting private enterprises in becoming more innovative.

Public participation and citizen engagement: Of most importance for this paper, governments have been using a range of approaches to elicit different degrees of participation from citizens and stakeholders in policy development and decision-making processes. They have viewed this as a necessary step in achieving successful policy outcomes, particularly when the actions that are required to achieve those outcomes extend beyond the direct control of governments. Because long-term solutions for many environmental problems require significant changes in the attitudes and behaviours of a wide range of actors, public participation approaches have tended to be a key feature of environmental governance in the West. There has been an increasing focus on how to enhance "environmental justice" by ensuring equity considerations feature in the participation process. These considerations include access to information, access to consultation and decision-making processes, access to opportunities to increase their capabilities for participation, and access to recourse mechanisms, particularly for those who are most affected by decisions and who have the most socially marginal positions.

These developments are viewed as increasing the legitimacy and efficacy of governments. When governments place equity considerations into these building blocks, they become powerful mechanisms for promoting equity for marginalized individuals and groups and those who may be disproportionately affected by government actions. Public participation processes are particularly amenable to equity considerations. The next two parts of this paper elaborate on this particular building block and its significance for senior public officials who are concerned with addressing social equity in the context of their work.

Part Two: Models and Practices of Public Participation and Citizen Engagement

Matching Participation Models with Governance Goals

Government officials are increasingly responsible for mediating issues and challenges that transcend the boundaries of their jurisdiction. These new challenges demand new approaches to governance, since the goals and objectives officials will have for a particular geographic area must now take the needs and issues of larger and larger communities into account. In a river basin, people upstream have to adapt their behavior for people downstream. In a country, urban dwellers have to address the needs of their rural counterparts. On the planet as a whole, the wealthier countries need to change their behavior so that people in impoverished areas have a chance at a better life.

It is important to find models of citizen engagement that match the circumstances and goals of the particular government action, policy, or program. Participation does not accommodate a "one size fits all" approach. There is a continuum of participation that is appropriate for different circumstances which can be illustrated in four broad categories:

Participation Types	Level	Governance Goals
Unilateral	None	Crisis Management and Protective Action
Managerial	Low	Technical Policy Implementation
Consultative	Moderate	Soliciting Input from Affected Parties
Collaborative	High	Creating Shared Goals and Strategies

The spectrum of participation ranges from little to no participation in crisis situations, where swift and/or unilateral action is needed to protect people from harm, to high participation in the development of policies, goals, and strategies that will influence action in the future. Effective senior officials understand both how and when to use these models, and how they interact with each other. For example, in cases where a collaborative approach has been used to create the policy goals and strategies at the beginning, then using a managerial approach or even a unilateral approach to implement policies that carry the legitimacy of broad participation is much more successful. Senior officials also need to continuously master the skills required to use new models of participatory governance and to understand how complex systems interact to address the new challenges.

Consultative Inquiry to Involve Affected Parties

When most North American government officials think of public participation in government decisions, this is the model that immediately comes to mind. The senior officials and their staff develop a new policy or program and then they hold a series of public hearings to inform the public about it and to solicit feedback from the people who will be affected. The public hearings are often held in government offices, usually during the evening hours. The government officials sit up in front of the room, and the people in the audience are given the stage to make a statement about the policy the government is considering. The rules for these hearings vary widely between governments, but in North America they are typically required by law prior to certain governmental actions. They have become so commonplace, in fact, that many hearings are attended by no one except the lone officials who are carrying out the action. This does not always mean that there is an apathetic citizenry, it rather can be indicative of a governmental agency that has done a good job engaging people *in advance* of the formal hearing stage so that any opposition to the program is addressed.

Some of the issues that arise with this type of participation model are that the government officials still control the outcome, and so the communication is predominantly one way communication. The goal is more to inform the public than it is to really ask for ways in which a policy or program might be more effective. Another predictable effect of the traditional consultative model is that the majority of the people who attend the hearings are opposed to whatever is being proposed. This is at least partly due to the structure of the consultation – not many people who are satisfied with a policy or program will interrupt their normal lives to make a special trip to City Hall to say how happy they are with the government. But if you're upset about something, you are much more likely to show up.

Collaborative Engagement for Policy and Program Development

The participatory model that offers the highest level of public and stakeholder engagement is one where the government shares its power for policy and program development with the people involved. Rather than developing a plan for government action in the offices of government, skilled public facilitators engage groups of people to work together to make recommendations for action. The working groups can take many forms and can meet for varying lengths of time. But one thing they all share in common is that at least for a little while, they have the opportunity to help shape government decision-making.

There are many reasons for engagement, and most of them reflect the fact that people who are empowered have a stronger sense of responsibility. Empowerment and responsibility are two sides of the same coin. Government leaders who complain about the fact that people are apathetic, irresponsible, and uniformed, but who have not shared the power to set the overall government direction with the people being governed have missed an opportunity to unleash the force of a responsible citizenry to help tackle serious problems.

The nature of 21st Century environmental challenges present another important reason for engaging the public in policy-making. The early government action was more technocratic, addressing sources of pollution that had particular points of origin that could be addressed with specific technical solutions applied to individual industries. The climate change crisis, and many of the water quality issues are now from more diffuse sources, require changes in behavior of the people themselves rather than specific industries.

This is a challenge, because people need to own the strategies being implemented if they are going to be shaped by them. Even strategies that work against individual self-interest can be more successful if the people themselves have helped decide what needs to be done. For example, in the national parks in Bulgaria there was a huge problem with people cutting trees and hunting animals illegally when the country was going through the economic crisis in the 1990s. But when the same people were engaged in a biodiversity conservation plan for the parks, the former poachers turned into some of the park's most stalwart protectors.

Sustainable Development Goals and Participation Models

The actions and institutional change required to achieve sustainable development goals involve a wide variety of people working together to bring about a fundamental change in local, national, and international practices, policies, and behaviors. When widespread action is needed, its appropriate place on the spectrum of participation and engagement shifts over to the highly engaged, collaborative model. While short-term action in crisis situations is possible, the depth of change and cultural adaptation that is needed over the long term demands that the people be involved in shaping the plans at the outset and the implementation strategies along the way.

Skills for Successful Public Participation and Engagement

The qualifications of many senior government officials in environmental agencies who have climbed through the ranks in North America reflect the needs of the command and control era of environmental protection. Resumés are full of degrees in engineering, law, and science; the disciplines that might be of more assistance with public engagement are not well represented. This means that training is needed in new skills for the officials to successfully carry out consultative and collaborative activities aimed at higher levels of participation.

The complexity of the interrelationship between environmental issues and social issues also demands new kinds of understanding that account for interdisciplinary literacy and moves away from the highly specialized and compartmentalized technical expertise that served so well in the technocratic era. A new field of complex systems theory has emerged, promoted by the academic and intellectual leaders in

sustainable development around the world. Government officials also need training in applying complex systems theory to current challenges.

There are three categories of new skills that officials need to successfully manage public participation and engagement for sustainable development: listening skills, conflict management skills, and systems thinking skills.

Systems Theory and Strategy Development

An important new skill for government officials to master is an understanding of system dynamics and complex systems theory. This skills is critical for sustainable development work because it is precisely the interaction between different disciplines and media that cause some of the outcomes we are experiencing. Systems theory realigns our understanding of cause and effect, and points to new ways to intervene in systems to correct what might seem to be intractable problems.

The situation of the Tibetan Plateau grasslands being overgrazed and degraded is amenable to a systems thinking point of view. It is a situation has been repeated many times in history throughout the world, a phenomenon known as the "Tragedy of the Commons." In a comparable example, off the coasts of North America limits have been imposed on the fishing industries there because the over-fishing of a common resource has led to a serious depletion of the fishing stock.

The process of degradation of a common resource can be described through a systems thinking approach that illustrates the vicious cycle at work. It shows how the collective actions of many people, while beneficial on an individual level, can be harmful on a collective level. It also illustrates how a delay in the system makes it hard for people in the system to perceive and understand the net impacts of the problem they are creating. And by the time they realize the problem, it may be too late to solve it.

Institutional Change for Participation and Engagement

New government initiatives are often possible when a few officials agree to make some changes. Making the changes last, however, requires more than a few enthusiastic leaders. Institutionalizing change means establishing new structures, new laws, and new models of cooperation between agencies. This section describes some of the institutional changes that have been made to enable more participation, facilitate a higher level of social equity, and mobilize citizens to take more responsibility for environmental issues.

An important part of the coordination effort will be to insure that senior officials across the government are in alignment with the policies. Within the Chinese party system, this may not be as big a problem as it is in North America, but anytime that agencies are working at cross purposes there is a possibility of overall policy failure. The implementation of policy needs to be consistent across agencies to succeed.

All of these factors, when they are working harmoniously and in the same direction, are key variables for successful policy implementation. This is not to say that other methods won't succeed – there have certainly been many government policies in every corner of the world over time that have used force, coercion, and other heavy handed means of achieving compliance. But policies that require broad public action cannot succeed for long using these techniques. The resistance people will put up will ultimately outweigh any positive progress. History has demonstrated this simple fact time after time.

Accountability

The first area where government can take action to start to create this reinforcing cycle is to take steps to increase accountability. Increasing accountability means that progress is measured and decision-makers have feedback on performance. This can involve institutional arrangements that track indicators, provide for safe processes for complaints, enable public oversight of government activities, and regularly report on the achievement of objectives.

Legitimacy

There is a link between public ownership of government decisions, successful policy, accountability, and legitimacy – the foundation for acceptance of government authority. Government can intervene to increase the legitimacy of its actions that come from public ownership of the policy by creating opportunities for participatory decision-making and deliberative dialogue.

Participatory Decision-Making

One of the most difficult things about participatory decision-making is that to be authentic, it involves sharing power. Government officials who normally have the authority to make decisions give up some of their power to a public process. Unfortunately, the difficulty involved often means that senior officials pay "lip service" to participatory decision-making by convening focus groups, or initiating a stakeholder process, or conducting surveys, and then they promptly ignore the results and make the decisions they would have made without the input.

Obviously there are legal processes that mandate participatory decision-making. Elections, referenda, and Town Meetings, are three that most people know. But in the absence of legal voting on issues, there are many opportunities to increase the level of participation in decision-making.

One of the more common ways to do this is by initiating a **stakeholder process**. The word stakeholder comes from the idea that people who have a *stake* in the project or policy you are considering will have a legitimate voice in its development. So if you are drafting a law that will change the way rivers are managed, the people you would invite to be part of a stakeholder process would include the cities and towns along the river, industries that use the river, citizens who enjoy the recreational possibilities the river offers, fishermen, and environmental groups. The stakeholders are charged with working together to develop the plan or policy, and they present the outcome to the appropriate governing body for adoption.

Focus groups are another common, and less involved way, to engage participation in decisions. This is done by convening a small group of people – people who also might be considered stakeholders – in a discussion about government action. It can be used to evaluate actions that have been taken in the past or discuss future actions. Usually focus groups are convened for a very limited amount of time – an afternoon, an evening. A skilled facilitator is involved, and clear goals and objectives for the session are identified in advance.

Deliberative dialogue is growing in popularity as a way to engage citizens in decision-making. The emphasis with the deliberative dialogue process is to look closely at communication skills and the different ways in which a wide variety of people communicate and to try to be as inclusive as possible. Encouraging people to share their personal experience with an issue, using brainstorming skills, telling stories, using creative outlets like art and music, all work to relate to people on their level and in their lives instead of expecting them to suddenly be conversant with the complex and fairly technical language of governance[1]. Here are some quotes from the people who have pioneered this method of engagement:

Transparency

Unlike accountability and legitimacy, where the government is not completely in control of the practices and results, increasing the transparency of government action is a relatively easy way for senior officials to intervene to improve public engagement. Of all the possible intervention points, transparency is unilateral – the government can take this first step on its own. Increasing transparency means making the sometimes convoluted and cumbersome process of government clear and obvious to anyone who wants to know how it works. It can be as simple as a flow chart describing a permit process or as complex as a system that allows people access to public records at all different levels of security classification.

Transparency involves institutional change that provides legal and open access to government by the citizens, by the media, by the public at large. In North America, these laws are sometimes known as

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. ***Our Common Future: Report of the Bruntland Commission***. (Oxford University Press, 1987)

"sunshine laws," which prohibit public elected bodies from closing meetings to the media and the public for all but a very short list of reasons. The U.S. and Canadian Freedom of Information Acts provide a process whereby every citizen can petition any level of government for any public record. Other countries go even further by guaranteeing access to information in their constitution.

When tax dollars are being spent, transparency is required for the procurement of goods and services by the government. Public bids, requests for proposals, or tenders, need to be issued with clear evaluation criteria and publicly announced time lines and decision-making meetings.

Beyond this, governments that value transparency as a way of keeping people involved and informed go beyond what is required by law and have a regular public communication program. This involves techniques like regular press releases on important issues, developing and disseminating brochures on different topics, conducting surveys and polls to get feedback on important initiatives, and making senior officials available as a matter of policy to the citizens. Their job performance can even be evaluated by the interactions they have with the public.

The Results: Effectiveness and Resilience

There are many reasons for engaging stakeholders and the public in the governance process, but senior officials in North America use these techniques for one fundamentally practical reason: **it *works***. Widespread knowledge, acceptance and ***ownership*** of policy goals results in shared responsibility for successful implementation. When people take responsibility for policy and programs, all of the energy that used to be spent on resistance can now be channeled to success.

To maximize people's ability to participate in implementation, the institutions involved need to plan for and enable citizen-based implementation activities, watchdog functions, and public legal intervention for enforcement.

All of these possibilities rely on three fundamental foundation blocks for effective citizen participation: 1) ***citizen access*** to decision-making processes, whether it is actual physical access to places where government leaders meet or the rights of the media to report on the proceedings; 2) the ***rule of law***, where people can count on impartial, non-political courts as a last resort, and citizens have standing to bring lawsuits forward, and 3) a robust and independent ***civil society***. Civil society takes many forms, and accommodates a wide variety of perspectives, encompassing every kind of interest group .

Besides being practical and effective, encouraging citizen participation in governance increases the capacity for learning, adaptation, and self-organized collective action, which in turn supports a resilient, healthy and sustainable community life, especially in the face of rapid change. ***Resilient communities*** are those that can address problems at the grassroots level because they are capable of working as a team on complex and controversial problems. Conflict doesn't tear them apart, but is seen as a source of personal and interpersonal growth. Mistakes are celebrated as a learning tool, not punished and

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hidden. This enables people to work within the policy framework to create shared goals and objectives, and use their positive group process skills and understanding of the deep, systemic roots of problems to design and implement successful strategies to cope with an onslaught of change.

A description of some of the listening, facilitation and conflict management skills that can support public officials in the public participation process is included in Appendix A.

Summary points

Governments who want to take effective action to meet the challenges of the 21st Century are increasingly aware of the need to engage the public in their policies and programs. The old government model of command and control, with a primary focus on infrastructure development simply is not adequate to address the complex and widespread issues we are facing today, in particular ecological issues.

Recognizing this, leaders are choosing a wide variety of participatory models to suit the particular situations that arise – one model does not fit all the possible scenarios. The most effective leaders understand the linkages between the different models, and can use them to their best purpose as a result. They also understand the linkages between issues – they have learned to see the systemic relationships more clearly, and can see patterns of behavior and leverage points for change.

Yet it is not just academic knowledge that helps 21st Century leaders mobilize the public and move forward with successful and innovative policies. They have also learned and practiced skills that enable them to work effectively with people, to de-escalate the inevitable conflict that results, and to keep large groups of people moving forward toward shared goals. These skills are perhaps the most important ones for leaders to obtain – all of them are critical for our survival as a species and human civilization.

Part Three: The Experience of Senior Leaders

In this section of the paper, the term "Senior Leaders" refers to elected politicians who serve the Premier as Ministers and to unelected civil servants appointed as Deputy Ministers to manage government ministries. Historically there have been distinct differences in perspectives and concerns between elected leaders and appointed civil servants. These derived from the differing accountabilities and responsibilities of the elected as contrasted with the appointed Leaders. However, these differences, though still relevant, have become less distinct over the past half century as the governance system has adjusted and evolved in response to the external forces which were outlined earlier in the introduction.

This section of the paper focuses primarily on lessons learned in a wide range of initiatives designed to resolve conflict in the quest for more responsive and sustainable governance of natural resources and land use in the Canadian context. The goal has been to ensure continued progress on economic development and social equity while reducing environmental impact and achieving broad societal support. The comments here reflect the 30 years' experience of Derek Thompson, a former Deputy Minister of the Ministry of Environment in the Province of British Columbia.

The discussion here is organized into four parts:

- Principal components of an effective governance system for sustainability, including experiences with institutional structure, policies and practice;
- The concerns and interests of Senior Leaders, including insights on the imperatives and perspectives which drive persons in these Positions;
- Critical considerations for the future, including a consolidation of the lessons learned and their future application;
- A summary of the required shifts in behaviour and structure.

It should be understood at the outset of this discussion that, while most Senior Leaders in a Canadian setting would likely agree with the above fundamental organizational components, the nature, degree and success of many of the initiatives described remains a work in progress. They are the subject of continuous debate in Canadian society.

Principal Components of Effective Governance System for Equity and Sustainability

The challenge for government leaders is to ensure economic progress which is socially equitable and environmentally sustainable. This requires a governance system focused on people, policy and practice, and organizations and institutions

People

All organizations depend upon people who are well prepared and able to do their jobs. Leaders recognize that training now requires focus on a new and expanded set of knowledge and skills related to the issues discussed in previous sections of this paper. Much emphasis now has to be placed on providing new fundamental understandings of the world and on influencing assumptions about the relative value, impact and importance of concerns such as social equity and environmental considerations. **The capacity for systems thinking and integration of information from diverse sources into effective analysis and action plans, is a vital capacity for Senior Leaders as well as a service to the**

Senior Leaders. These considerations in turn require development of the sort of listening, problem solving and dispute resolution skills that were discussed earlier in this paper.

Given the complexity of government today, staff at all levels also have to be trained, enabled and encouraged to work in a new culture of multi-disciplinary teams which are able to take responsibility for independent thought and creative practice. This must always be balanced with having the discipline and insight to stay well within the mandate given to them by government leaders. It requires opening minds to new or different ways to do business AND development of a culture which coaches and rewards people for taking actions that are creative and results-orientated rather than focusing too much on punishment and disincentives.

Finally the Governance System needs to develop supportive structures based on accountability systems which are professional, transparent and fair. These systems need to be used effectively in making decisions, reporting progress and rewarding progress at all levels.

Policy and Practice

Effective government is informed and controlled by an accountable legal system and a set of recognized policies and practices that can be predictably, consistently and equitably applied throughout the domain of that government. Social equity and sustainability introduce a new set of considerations on which Leaders must provide direction BUT they do not alter the fundamental requirements of good government.

Progress in the processes and practice of dealing effectively with these issues closely mirrors the evolving role and approach of governments that was presented in the introduction to this paper. Thus, earlier centrally-directed "command and control" systems--that is, enforcement-based and government-focused models such as those developed to deal with specific point sources of pollution--are now evolving into more diverse regulatory tools which also include incentives, market mechanisms and compliance and coaching approaches. The success of these new policies and practices is also based on a set of rules which are legally enforceable. It is important to note that "enforcement" now includes a considerable role for the general public, non-governmental organizations and other entities which have rights to challenge the government and other actors, such as businesses, in the courts.

Ultimately, however, Senior Leaders are concerned to ensure that the results are predictable and accountable to the Government and society as a whole. This means that all significant decisions of government have to be seen through an accountability lens which takes equity and sustainability into account. Thus, by law and policy in Canada, at both the national level and in many provinces, the decisions of Government **must** now be made with these considerations explicitly in mind. This often involves, for example, some form of Strategic Environmental Assessment process. In addition, many governments report regularly to the public on a set of indicators that have been independently developed or verified. For example, the Premier of British Columbia recently established a Progress Board composed of a diverse group drawn from societal leaders in business, academia and public

service, to provide independent, public assessment and advice on the social, economic and environmental state of the province. Accountability also involves publicly-stated goals and performance plans which include equity measures. These goals are openly and independently assessed by an Auditor General's Office in each jurisdiction in Canada.

Organizations and Institutions

Equity and sustainability are just some of the considerations which are resulting in change to the organization and institutional composition of government, but they are some of the most potent agents for change since their explicit inclusion as considerations for delivery of benefit will change the form of any organization. For example, introducing a Ministry of Environment into the mix of agencies fundamentally changes the makeup of government and giving that Ministry equal or even senior level power over others will fundamentally change how Government does its work.

 Among the most difficult struggles for government is to shift from the traditional form of governance which is Government-focused and is usually characterized by a centrally mandated and controlled hierarchy of organizational units to new organizational models such as networks and other horizontal working arrangements. These new forms of organization, which can be small or large, are less government-focused. They are flexible, rely on coordination rather than command, and provide decentralized delivery mechanisms. These new structures are more creative, responsive and resilient but ultimately exhibit less centrally controllable or predictable implementation, as contrasted with traditional models of large, integrated, centrally controlled but ultimately less responsive, manageable or adaptable organizations. Successful governments include both models in their makeup. For example, small units are often created by the Premier's Office to conceive, develop (including through consultation with the public), model and test policy and practice shifts or changes, and they may later be replaced by the larger traditional ministries which undertake long term implementation according to the newly developed set of policies and practices.

Governments are also using models involving external or arms-length agencies. These are often useful where innovation and market focus is a priority or where public accountability and a degree of independent action or verification is needed and valued. Removing regulatory decisions from the political or policy arm of government is also a consideration BUT is only successful where responsibility for policy direction remains in the Senior Leader's hands. The critical concern here is to define the necessary structural and policy components of the system that will ensure the overall direction setting and accountability for governance is retained by Senior Leaders.

Organizational barriers to fully integrating the principles of equity and sustainability include the traditional hierarchical structures and the independent non-integrative nature of most ministry mandates. These structures hamper information flows and dampen responsible accountable independent creativity and problem solving at the lowest levels in an organization. However, the most serious limitations of the traditional structures and approaches are associated with mandate. If public accountability for a range of (social, environmental and economic) factors is not explicitly part of the

responsibility or accountability of an institution those factors simply will not be considered. This is one reason why Canadian governments use and publicly report on mechanisms such as Strategic Environmental Assessment or, Offices of the Auditor General and its Commissioner for Environment and Sustainable Development.

In summary, these Governance considerations may involve a wide array of initiatives:

- Establishing new "Offices" which have broad responsibility and are accountable not to a particular interest or single government Ministry. Examples in Canada include: the Office of the Commissioner for Environment and Sustainable Development, the Ombudsman; the Integrated Land Management Bureau in BC; and the BC Progress Board.
- Mandating "new" practice such as Strategic Environmental Assessment and Gender Based Analysis as a requirement for ANY new initiative.
- Enabling and fostering a set of partners in universities and citizen-based organizations which ensure that balance and social equity are achieved.
- Defining new policy that is based on outcomes, is driven by achieving economic benefit and providing attractive incentives for good performance, uses market and independent certification mechanisms, and focuses on both coaching and compliance mechanisms.

The Concerns and Interests of Senior Leaders

For ease of presentation the Concerns have been grouped below. It is important to understand that there are many overlaps between these apparently distinct groupings.

Retaining Authority and Control

Ultimately Senior Leaders are concerned with retaining (and possibly expanding) their individual and institutional authority to govern. This is a societal requirement which has legal, administrative and personal considerations. In Canada, it is founded on the pre-eminent imperative for "Peace, Order and Good Government" in the Canadian Constitution. But it is likely also a reflection of a primary motivation for all Leaders in any jurisdiction. In turn it is one of the key factors to be considered when addressing any imperatives and forces for change to achieve equity and environmental sustainability.

Achieving greater equity in decision-making and implementation in Canada now is viewed as a necessity for any long-lasting, government-led change initiative to succeed. In making decisions, governments are expected, and in some instances required by law, to engage with a broad range of agencies and levels of government and, more particularly, with non-government organizations, institutions and businesses as well as the public at large. Governments are expected to lower access barriers to these decision-making processes, particularly for individuals and groups who may be most affected but who have marginal capacity (e.g., literacy, access to information, etc.) to participate. Ultimately this entails a degree of dispersal or sharing of SOME aspects of the full package of accountability and responsibility on the part

of Senior Leaders. Without such actions the decisions made will not effectively deal with the issues. More particularly, the implementation of those decisions will not be stable and predictable over time. As the previous section of this paper has documented, this is because those who can most impact the success of any actions have not been adequately engaged in making the decisions or in organizing their implementation. For example, they may have essential information and insights about the issues involved; and they are also less likely to actively support decisions which affect them and in which they have played no part. More importantly for Senior Leaders, extensive experience has demonstrated that, unless these other players are involved in decision making, they have the ability to fundamentally alter the working environment and ultimately undermine the legitimacy and the "social licence" of those Senior Leaders who do not fully anticipate, understand and effectively deal with their legitimate concerns

In this context, the challenge for Senior Leaders is how to put in place a system which is both responsive to those other interests AND which delivers timely action.

Senior Leaders have to identify an effective consultation spectrum and organize new arrangements of responsibilities without fundamentally undermining their individual and collective accountabilities. This is a highly challenging task which is made even more difficult because the attitudes and beliefs of many of those Leaders is quite opposed to any concept of shared accountability or decision making.

Historically everything in the personal beliefs, education, life and work experience of such Leaders has reinforced their individual motivation and belief in the need to be in control. The new operating paradigm challenges that authority and control. As we have seen in the Introduction, this challenge flows from changes in the nature of the issues and forces with which they must deal. Many Senior Leaders find it difficult to understand what their role becomes. Some of this concern is legitimate and relates to the absolute requirement for the State to retain effective control of essential systems (such as financial and accountability mechanisms) but some of the concern is due to personal need for control.

Increasingly, established Senior Leaders have experimented with varying degrees of power sharing and changes in accountability sets. The case studies at the end of this article illustrate a very few of these changes. For new staff and junior officials this has required significant shifts in their on-the-job education and early work experiences in order to better equip them to understand the changes and to function effectively. In very simple terms, they are trained to work in teams and to experiment with differing accountability models but they also have to exhibit a strong analytical ability and focus on the most appropriate accountability arrangements.

Ensuring Effective and Timely Decisions and Actions

Ultimately good government depends on making decisions which produce the anticipated results and are accountable and effectively implemented. The best leaders are constantly aware of the need to make decisions with long term relevance and which are guided by strategic long term thinking. However, they are also increasingly beset by immediate political and economic considerations which drive them to

short term linear thinking and applications reflecting immediate tactical and media communication, or messaging, concerns.

Obviously complexity increases when considerations of long term social equity and environmental sustainability are added to the traditional policy-making context which in the past was dominated by economics and short-term politics. It admittedly makes an already difficult decision-making and communications process even more time-consuming and complicated. These concerns make it difficult to pursue the traditionally preferred route of many leaders which has been to simply "Build Infrastructure" to solve problems. However, the consequences are decisions which produce greater long term benefits, which are less costly and more readily accepted by Canadian society today since they result in better long term social, economic and environmental results.

In this new decision-making environment, knowledge and analysis is key. There will never be a good substitute for sound judgment based on the experience and intellectual capacity of Senior Leaders, but the rapidly changing and increasingly uncertain and complex working environment of those Leaders also requires more sophisticated tools to support the process of decision making. It places a premium on the accuracy and quality of information and, more important still, on the analytical assumptions and approaches (or models) employed to gain insights about issues and options in order to better inform decisions. The definition and expectation of what constitutes critical information must also change. For example, not only must environmental values be considered but they need to be understood as being about such things as essential ecosystem services which provide for life and society, and about human health implications and consequences.

Increasingly, to be useful to decision-makers the information has to be defensible in public. This means that all people, businesses and organizations impacted by any decisions need to be confident that the information being used to arrive at those decisions is applicable, current, accurate, systematic, comprehensive and free of bias.

In turn there needs to be a sophistication in analysis. This means that analytic assumptions and underlying bias and beliefs have to be clear. It also requires new approaches to analysis. For example, formalized risk analysis becomes vital with regard to potential for negative economic, social and environmental consequences. This in turn requires an integrated systems view and understanding of the inter-relationships within and between a wide range of factors. Model and scenario building which moves beyond the classic, two dimensional and static cost-benefit evaluation and case study of limited (often simple economic) factors and alternatives, can greatly assist decision making. Classically, the best Senior Leaders have exhibited very sophisticated but highly internalized analytic capabilities. This means for example that they have been able to hold and analyse in their minds a set of quite opposite perspectives. Now those models and their assumptions have to be expanded and made explicit; they need to be laid out and worked on in a more formal manner. The assumptions, beliefs and analytic models of the decision makers have to be clearly and publicly stated.

Leaders have always developed a wide network of personal contacts in their community of interest. This network can be formal or informal. Most successful leaders intuitively understand this need and constantly practice ensuring that their decisions are appropriate and valid. Considerations of environmental and social consequences for decisions mean that this validation process has become formalized and is often quite sophisticated due to the diverse and complex nature of issues, peoples and organizational considerations.

The highest functioning leaders understand the complexity entailed by considerations of social equity and environmental sustainability. They see long term and "whole-systems" implications while, at the same time, responding to pressure for decisions which provide short term simple "fixes" to very complex issues. In fact any decision, whether short or long term in nature, requires a clear understanding of how it will be implemented in practice. While the leaders are expected to develop decisions which will stand for all time, this is rarely possible today. In fact they must learn to practice Adaptive Management which defines a vision and a preferred path for society but allows for adjustments to be made along that route forward. To do all this, the leaders need good information and analysis from their staff that is free of bias and is "clear eyed" and presented without fear of reprisal.

In reality if the equity and sustainability concerns of local people are not well dealt with by decision makers there will be societal instability and conflict. The previous section of this paper has introduced many of the concepts and practices for involving others as well as the necessary skills which will assure success. For senior leaders finding the right approach to engagement is one of the most challenging concerns. They must balance the need for consultation with the societal imperative to make decisions and keep society moving ahead. In practice they will adopt a range of practices which are attuned to fit the specifics and context of the individual problem. They will actively consider both long term vision and short term implementation concerns.

All of this requires that decision making has a degree of complexity, formality, sophistication and transparency with which many Senior Leaders have previously been uncomfortable and with which ALL Leaders constantly struggle. It is particularly important that both their early work experience and their training exposes them to the underlying concepts and practices which will help them to perform in the new age. The tools of Issue Analysis especially Risk Analysis, Scenario Building, Adaptive Management, Team Building and Public Engagement processes are some key examples.

Achieving Positive Social and Economic Performance

Senior Leaders have always been motivated to ensure positive economic growth and the best leaders have understood the importance of social considerations in achieving that result. The most effective leaders now understand that achieving a harmonious society requires a balanced progression on all fronts including environmental sustainability. The challenge lies in recognizing and finding that balance. Many leaders have seen the equation from a strictly market based economic perspective. They now increasingly understand that good decisions which will assure continued strong economic performance, also require consideration of a range of social concerns and appreciation of the "services" which the

environment provides to society as a whole. They understand that the costs of ignoring the interests of people most impacted by these factors will threaten the long term resilience and sustainability of strong economic performance.

For example, if particular groups in society are disenfranchised and always "lose" to other more powerful forces, they will use a wide range of "tools" (such as the legal process, peaceful or violent demonstrations, appeal to the international marketplace, etc.) to destabilize the decision making and implementation process. In a global economy which is enfranchised through trade agreements and linked internally and externally through the internet, all governments have to pay some attention to these concerns.

Economic issues are a key driver for leaders' decisions. If sustainability and social equity concerns are to gain any traction they have to be understood as being necessary for continued strong economic performance. In Canada, as in China, leaders in government increasingly understand this connection. Visionary business leaders also understand that corporate social responsibility is a vital consideration for the future of their business, and there are more and more examples to illustrate how enlightened corporate decisions can also help a business's bottom line and provide win-win solutions. Business can benefit from consideration of these values and of effective innovation and partnerships which demonstrate to all interests how following the principles of sustainability and equity will result in achieving economic and social goals. In Canada this is often referred to as "Harvesting the low hanging fruit"

Leaders in government (and business) have to demonstrate to both internal and external audiences, that their decisions are balanced and equitable. They must both produce positive results and demonstrate them effectively. The best leaders know that this is necessary in order to maintain control of society and retain power. Once again information which shows true costs is critical and an approach to gathering and using it that is publicly accepted is a crucial step.

Because the public in Canada and other countries is increasingly sceptical of the motives behind information communicated directly by governments, the information needs to be affirmed by people who are independent and considered credible and non-partisan, and not politically motivated. Government needs to develop credible internal information mechanisms and partnerships such as with universities, experts and Non-Government Organizations, which are separate from government itself. The information has to be applicable, accurate, consistent and balanced. Another challenge is that it also has to be affirmed as such by the very people who are impacted. This means that the information has to be generally accessible or, at least, validated by these "independent" parties and mechanisms. Finally it needs to be easily accessed, used and understood using collaborative media like the internet.

Assuming that the information concerns have been addressed there is a requirement for consistent and equitable approaches to identify and deal with the known and unknown, immediate and long term impacts of decisions. This necessitates being able to demonstrate directly to those who will be impacted, credible and acceptable (to them) approaches to offsetting or mitigating the impacts of the decisions. Those offsets also have to be accepted by other people as not in turn being detrimental to their

concerns. For all people those concerns are first and foremost social and economic but they also increasingly involve long term environmental considerations.

Finally, leaders require that the actual process of decision making be finely balanced between this issue of equity and the considerations examined in the previous discussion (above) of Retaining Power and, Taking Effective and Timely Actions.

Once again this all points to ensuring that leaders' early experience introduces them to the underlying concepts of equity and to the various mechanisms which will provide and verify an inclusive approach to decision-making in their career.

Establishing Effective and Responsive Organisations

Ultimately government leaders recognize they are responsible to establish, organize and lead a governance system (inside and outside Government) which can effectively identify and analyse issues and then propose and implement the necessary actions which the leadership deems necessary.

Leaders require organizations which are disciplined, accountable and responsive. The greatest challenges posed by consideration of equity and sustainability relate to the needs outlined above for;

- partnership development
- systems and integrative thinking,
- sophisticated analysis and,
- actions based on accountable informed decision making.

Some basic requirements for an effective Governance System are outlined in the following section of this paper. Suffice to say here that experience has shown that the organization of traditional governance systems has to be considerably overhauled as a result of fully integrating these concerns.

Critical Considerations for the Future

Preparing New Leaders and Changing the Habits of Established Leaders

- Focus on expanding awareness and understanding of systems and of long term implications of actions.
- Increase understanding of the role of individual values, beliefs and culture.
- Enable organizational capacity for cooperation in creative problem solving/decision making

Improved Diagnostics for Analysis and Problem Solving-

- Improving and rewarding the capacity & capability for problem analysis and solution finding.
- Familiarity with analytical tools such as Strategic Environmental Assessment and Gender Based Analysis.

Changing Practice/Approaches/engagements

- Improving conflict prevention & management

Institutional Change

- Removing barriers to cooperation and to finding effective solutions
- Put in place internal and external institutional structures which "force" change and enable accountability.

Process to Learn from and Engage with all People.

- Encourage and reward partnerships
- Create flexible structures and approaches within and beyond government without losing authority and accountability

Providing Real Compensation and Economic Alternatives for major change

- Create & fund processes which engage the impacted people & provides real improvements which they have some control over
- Ensure that these are market based mechanisms which will eventually not require subsidy

Improving Information

- Information that is accessible, accountable, understandable and reliable is critical.

Rule of Law

- Establish mechanisms which will ensure broad accountability

Summary of Shifts and Changes Required

Leadership — Changing Practice to Achieve Social Equity

From	To
Control by Autocratic Command & control	Control by engaged partnerships with clear accountability and rewards for innovation
Governance centralized & focused on Government	Governance network within & beyond Government
Tactical short term & isolated single issue decision making	Strategic systems based thinking based on long term
Information limited & closed	Information extensive, shared & trusted
Governments doing it all	Enabling others
Autonomous stand alone controlling government ministries	Ministries responsible but highly coordinated & working with others
Single focus & accountability	Integrated & accountable
Adversarial & internally focused	Partnership & externally focused
Negative, punishment focused regulation	Positive, coaching & rewards focused
Environment and equity concerns seen as negative to economic interests	Sustainability understood to be the foundation of strong economy
Management and institutions inflexible and autocratic	Management focused on setting leadership directions, assessing results and making adjustments

Case Study Examples

The two case studies presented here are abridged versions of two complex examples drawn from the Canadian experience. They are included to provide practical insights regarding the aspects of Senior Leaders' perspectives and interests with regard to

Authority & Control,

Effective Decision Making,

Achieving Positive Social and Economic Progress,

and Governance.

Case 1: Land Use Planning & Dispute Resolution

In British Columbia at the end of the twentieth century land use conflict became a serious issue. These were due to rising public concerns about environmental sustainability, loss of wilderness and the health and the societal impacts of industrial practices. There were many unresolved disputes over publicly owned land (95% of the province's land is owned by the "Crown", i.e. the Provincial Government) which often resulted in legal challenges, demonstrations and clashes between the authorities and the various groups with interest in the use of the resources. Resource industries such as forestry and mining, a core of the provincial economy, were being destabilised by public concern and market boycotts. In many communities employment was threatened. The Government had to provide direction.

Many lessons were learned on how to arrive at equitable and sustainable land use plans.

The province now has land use plans covering almost ninety percent of all the land and which are broadly supported by the public.

Authority & Control: Some of the most difficult lessons for senior leader have been associated with how to retain authority while finding effective ways to work with a wide range of people. Many approaches were tried with varying degrees of success in what has been an evolving learning process.

First, Government established an independent "Commission" with legal authority to propose resolution to the land use battles. This Commission was given three key regions to resolve. It took a bold step of "sharing" responsibility with teams from community groups, NGOs and business as well as government. It used a consensus approach but full consensus was not achieved and Government Leaders were very uncomfortable with loss of control, if not authority. However the Commission did break a number of impasses and enabled much learning and testing on the early regions.

Government adjusted. It took back control and now has a small central coordinating agency which reports to the Leaders. It manages and directs the process. Extensive citizen participation and the

cooperation of all ministries in land use planning is still key. The development of a comprehensive, fully integrated and completely publicly accessible set of resource information has been essential. As a result the provincial cabinet receives one fully integrated set of options, analyses and recommendations from a Committee of senior Deputy Ministers when it is considering its decisions on these topics.

Decision Making: The first processes taught Government the importance of retaining ultimate decision making control and giving clear direction. Initially it gave authority to regional teams without also giving sufficient policy guidance or setting clear expectations about the plans. Without these guidelines Government could not ensure the outcomes balanced consideration of the provincial economy and environment.

A range of integrated and comprehensive analytic and options building approaches have been adopted. Modeling of environmental values has advanced slowly as has the ability to fully integrate social and economic considerations. Continuous improvement in this aspect continues today.

Open communications about the work to produce the plans is critical to success.

Early plans also paid too little attention to implementation processes and costs.

In practice the land use planning program is an example of an adaptive learning model.

Achieving Social & Economic Progress: Resolution of land use problems is not possible without also resolving social and economic concerns. Compensation was given to those persons and companies that suffered loss. Initiatives that involve the impacted people in resolving these concerns and in finding good alternatives ensure that all affected groups support and are committed to the results. But problems remain in coordinating initiatives and in ensuring business and communities which have resilient, un-subsidised economies.

Governance: Much has been learned about organization and governance. These processes require training people inside and outside government to engage in complex negotiations and conflict resolution with a wide array of partners. Ministry teams work in cooperation in a decentralized structure but still under centrally mandated direction. Government structures have been continuously adjusting to balance inter-jurisdictional cooperation and direction of plans while retaining discrete ministry authorities for implementation. The provincial cabinet has a Committee focused on this work. Significant policy and legislation has been developed to give clear direction to all participants, ensure a balanced approach and legally established results.

Outside the provincial government there have been significant changes too. Companies now accept that their work will be subject to considerable public scrutiny. For example, international certification by independent authority is an established part of all major forest company activity. Many break-though steps in conflict resolution have been made by companies sitting down with their critics and coming to agreement separate to the government negotiations and planning processes.

Case 2: First Nation Resource Issues

In British Columbia there is a significant minority of aboriginal peoples who were present before the province was established and settled, largely by European immigrants, one hundred and fifty years ago. There are more than forty distinct "First Nations" which are, for the most part residents of remote undeveloped rural areas in the resource lands of the province. Many live on Reserves which were established by the colonial government a century ago. They largely live apart from and have not benefited greatly from the economic and social development of the rest of the province. Paradoxically, while they are considered "wards of the state" and receive many social security benefits, their education is poorer than average and their living conditions are often a blight on the reputation of Canadians as a caring society. Levels of family violence, drug abuse and petty crime are high and on a per capita basis there are more aboriginal persons in jail than other parts of society.

The Canadian experience demonstrates that if these problems are not resolved there will be significant increased costs to the entire economy. In addition the condition of aboriginal peoples will not improve and they will remain a burden on society. The history and current efforts to resolve these problems, provide valuable lessons for other countries in their treatment of minority or aboriginal peoples.

Most Canadians accept that these "peoples" are due special provision and improved social and economic conditions are a priority. Today we understand far better than in the past that these peoples had a sophisticated society and heritage as well as largely balanced relationship to their environment. The challenge is, how to ensure success and self fulfillment in modern society while respecting their traditions and cultures and their legal Constitutional rights, and also protecting the interests of the majority. Lack of progress has been the cause a significant conflict and confrontations.

Most First Nations did not make a "treaty" with either the Canadian or provincial Governments in the past. They retain traditional forms and structures of government as well as those imposed at the time of federation less than one hundred and fifty years ago. A modern process is underway to reconcile the rights, entitlements and governance structures but it will take many years to complete. In the meantime solutions need to be found to pressing problems today.

In this context the role and participation of First Nations in natural resource management provides an informative case study example. Access to use of and economic benefit from the natural resources of the province is a cornerstone of the entire provincial economy and a critical component of any effective solution to a very complex and emotional set of issues for First Nations. This is a work in progress but many lessons are being learned by what is another example of Adaptive Management in practice.

Authority and Control: The province has constitutional responsibility for management of resources and lands outside treaty settlement lands. Government struggled initially even to understand the necessity to recognise a legitimate First Nations interest in these extensive areas. What became clear was that unless the province legitimized self-government for natives and negotiated partnership with them, an even more protracted, hostile and uncertain set of legal, economic and social problems would damage the larger society.

Government leaders have begun to partner with native leaders to "discover" a new set of governance policies and practices which recognise, honour and respect traditional values and structures while also retaining the authority of the Provincial Government.

In practice government has mandated a wide array of (power sharing) arrangements and formal consultative approaches and negotiation processes at all levels between First nations groups and the agencies responsible for resource management. These approaches have become standard practice. They vary from simple formal involvement in day to day decisions, right up to highly formal negotiations at senior Leaders level when a Land Use Plan is being undertaken and for provincial resource lands.

Final authority for decisions and direction remains with Provincial leaders but they will not proceed without this extensive sharing of decision-making with the First Nations.

Decision Making: The Provincial government is entitled to make decisions in the larger provincial interest rather than in the narrower First Nations' interest. However, if it does so it must consult and will usually seek to negotiate with First Nation leadership other satisfactory arrangements which provide offsetting benefit to the First Nation.

The challenge has been to find ways to make decisions that will be appropriate and accepted by all parts of society. One basis to deal with this challenge has been to improve mutual insight and understanding. This remains challenging but is being pursued through a diversity of information and outreach initiatives aimed at key government and non-government people and institutions.

An important aspect of the new approaches has been the recognition that First Nations have a set of indigenous knowledge about the environment, lands and resources. That knowledge is different to the information available to Government. It was not systematically gathered, recorded or used by government until very recently. Recognizing the values and importance of that knowledge and enabling its gathering and formal use by and at the sole discretion of the First Nation, has been a key part of making better decisions.

Achieving Social and Economic Progress: For First nations this remains the single biggest issue. Breaking the welfare state mentality and the dependency on central government tax dollars which flow into these communities largely to deal with the consequences of past errors by government, is a crucial need. However many of these funds are administered entirely by federal Government of Canada agencies. First Nations argue that without their own revenues and a large degree of self determination this funding is poorly used. In fact there are a number of emerging examples of First Nations which are very wealthy because their Reserve lands (near urban centres or situated in rich oil and natural gas areas) are very valuable and have generated significant revenue in their development. Here however, the unresolved problems associated with an externally imposed governance structure, often result in wide disparities of social well being in the communities.

The province has experimented with giving some First Nation companies, often working in partnership with outside business, legal access to develop and benefit directly from resource industry opportunity.

But the province does not yet have any agreements where the government revenue flows directly to the First Nation. This remains controversial with many First Nation leaders.

Outside the resources field the province has also put in place separately funded educational institutions and social services which provide education and service in the language of the First Nation. These are helping the First Nation to acquire a degree of capacity and capability to achieve self sufficiency.

Governance: These new approaches have required considerable investment by the province over a number of years in training its own ministry staff, particularly focused on understanding the culture and approaches of First Nations It also requires investment in building the capacity and capability of the First Nations. Focus has been placed on their ability to acquire and use their own information and on their governance structures, which remain weak.

Government has also had to completely change its approach and required all ministries to undertake initiatives to deal with First Nations issues. These have been centrally coordinated by Committees of senior Leaders. However, these have not been completely successful and government is now restructuring its ministry organizations and experimenting with a single "clearing house" to coordinates all First Nations lands and resources issues both within and between the two levels of government. It is experiencing increased success with a number of coordinating mechanisms for resource management and tenure decision making and with formal Government-to-Government bodies at the more senior levels. It has recognized that dealing exclusively with lands and resources issues in the absence of cooperation with health, education and other related issues, causes problems. However, it has not yet succeeded in effectively integrating those considerations into a more coordinated set of arrangements.

Concluding Thoughts

In this paper I asked how governments can take citizens' needs and interests into account in ways that promote social equity and environmental values, how they can create institutions to support these goals, and how they can help citizens adapt to new circumstances in equitable ways.

I have not presumed to define what Chinese institutional changes should or could be. Instead, I have attempted to capture some insights from the North American setting that may resonate in the Chinese context, in the hope that you may find inspiration in some of these ideas,.China is different in many ways from Canada and every other country, but I have found through my career dealing with China and internationally, that there are experiences and approaches that we can learn from each other, to adapt and apply to our own context.

In striving for social equity and ecological sustainability, governments must first have in place trustworthy public institutions that support and are based on 1) rule of law and the principle of equality before the law, 2) due process based on the principle of fairness, 3) a set of recognized policies and practices that can be consistently and equitably applied, and 3) accountability for the exercise of power.

Institutionalized in this manner, equity becomes one of the cornerstones of good government. But it remains important that the mandate to pursue social equity and environmental values must be clearly signaled to public officials. Public officials can improve their performance on equity and environmental goals through a variety of means, including taking advantage of the wide range of instruments available to them. One of the most promising approaches is public participation in policy and decision-making processes. This is particularly relevant for environmental policies which by their nature cross jurisdictions (local, regional etc), are complex, and involve many stakeholders, who need to be engaged to contribute to lasting solutions. When practiced with social equity in mind, public participation allows the voices to be heard of those who are most affected and least able to speak up, and for their interests to be taken into account. This is seen to result in better decisions and more successful and equitable policy outcomes. It is also seen to build the capacity of citizens to become more knowledgeable, confident, self-reliant and resilient.

In opening up to greater participation, there are changes governments may need to make, particularly with respect to how they view and practice governance. In addition, public officials who wish to work in this manner need some non-traditional skills and abilities, including listening and communication, conflict management and systems thinking.

As government officials, practitioners, scholars and members of the global community who are interested in finding the right balance of social equity, economic development and environmental integrity, we have learned a great deal over the last twenty years. But it is clear we all have a lot more to learn.

Appendix A:

Skills for Public Officials Involved in Public Participation Processes

Listening Skills

We take listening for granted because we confuse simply hearing someone with really listening to them. The difference between hearing and listening, for these purposes, is that hearing is passive and listening is active. If you have actively listened to someone, they know that you have heard them, and that you understand what they're saying. If you combine active listening with the techniques of empathetic communication and appreciative inquiry, then a lot more real communication can occur, even in highly charged conflicts.

All of these skills – active listening, empathetic communication, and appreciative inquiry, have had entire books written about each of them. It is not possible within the confines of this paper to cover them in any detail. The important key points of each are as follows:

Active listening: This is also known as reflective listening, because as the listener you are trying to reflect what the other person has said by repeating it back to them in your own words, in summary form. In highly charged situations, this simple practice can de-escalate tensions and can help avoid misunderstandings.

Empathetic Communication: An empathetic listener hears the underlying emotions and needs of the other person. They refrain from making judgments about the person, preferring instead to try and see the world from the other person's perspective. The goal of an empathetic listener is not to prevail in an argument, but rather to maintain the good relationship with the other person.

Appreciative Inquiry[2]: This is the art of asking positive questions and approaching situations with an eye toward strengthening a system's capacity to anticipate and enhance positive potential and success. Instead of negative questions about problems, full of criticism and diagnosis, appreciative inquiry asks questions that elicit discovery, vision, and design.

If you listen to people arguing, you might notice that the people in the argument are saying the same thing to each other – over and over and over. That's largely because neither of them have made the effort to let the other person know they have heard what was said. To avoid these escalating arguments, there are three stages of good listening that incorporate all these skills:

1) Real listening. This stage involves actually hearing what the other person is saying, asking clarifying questions, repeating back to them what they've said in summary form, and identifying any emotional content they might have expressed, without making judgments. When government officials are

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1 Appreciative Inquiry is a term and technique that was first articulated by David Cooperrider and Suresh Srivastva in 1987. Since that time, many people have contributed to the ideas and practices that they pioneered.

challenged by people in the public who object to their policies, this skill is critically important to prevent the conflict from escalating.

Citizen: The policy you are proposing to protect the watershed will ruin my livelihood! I rely on my grazing rights to the grassland – now you're saying I can't bring my animals near the river? It's not fair!

Official: It sounds like you are very concerned that if we implement this policy, your family business will not survive. Can you tell me more about the reasons why?

Citizen: Every day for forty years I've brought my cattle to the riverbank to drink water. If we can't use the grassland for this, we're ruined!

Official: So the main reason you bring the cattle to the river is for water, not for food?

*2) **Understanding.*** This involves probing a little deeper into what was said. Asking questions about the underlying meaning, identifying the criteria or values they seem to be expressing, and affirming an element of truth in what you heard.

Citizen: That's right – we use the river for water. The grass there is not as good as it is up on the higher land, but it is the only place we can get water for the cattle. We have been doing things this way since the time of my great-grandfather. How dare you take away our way of life??!!

Official: Yes, I think I understand. You value the traditional ways, and this practice has been important to your family for many generations. If I were you, I'd feel the same way. Now you say that it is the only way for you to get water for the cattle, has anything else ever been tried?

Citizen: There were people who came up from the city several years ago who wanted us to dig wells up on property. But we don't know where to dig, or how to get the water up from the ground.

Official: So the people who came up from the city didn't help you dig the wells? Or give you any help with pumps?

Citizen: No, they didn't. We might have been willing to try it if they did.

*3) **Communicating.*** It is only possible to start to communicate the information that you want the person to understand after they feel that their concerns have been heard. In this phase, you should be careful to avoid using judgments about them. The goal will be to trigger an empathetic reaction on their part to your needs or the needs of other people who need the policy.

Official: It sounds like you really understand the needs of rural farmers, I can hear that you value traditional farming practices. We do, too. In fact, we are trying to develop this policy to help the farmers who are downstream. All the erosion up here means that by the time the water travels to them, they can't use it for irrigation.

Citizen: Oh, I hadn't thought of that.

Official: Yes, if we could find you another way to water your cattle, it would make a big difference for them. If we provided more technical assistance for drilling wells and installing pumps, would you be willing to give it a try?

Citizen: Yes, I think I would.

There are many ways that this dialogue could have progressed. Often, because they don't use active listening skills, government officials miss important information that can lead them to a solution. In this case, by asking questions the official learned that the main reason the riparian areas were being used were for water, not for grazing. This means that other types of solutions to the problem were possible. By affirming the man's underlying values of traditional farming and his family's experience with it, and assuring him that he understood his point of view, the official also prevented the conflict from escalating.

Understanding Group Dynamics and Managing Conflict

When working groups get together to develop policies, especially when the groups are comprised of people who wouldn't normally work together, like multi-stakeholder processes, it is important to understand the patterns of group behavior that can either contribute to or detract from the success of the work. Studies of different multi-disciplinary and horizontally structured (meaning that they are not hierarchically organized) groups have revealed a common four-stage pattern of group behavior: Forming-Storming-Norming-and-Performing.

In the **Forming** stage, the people don't know each other very well. They tend to avoid conflict, preferring instead to defer to others — maybe to a natural leader— and to keep their opinions to themselves. This only lasts for so long, and if there is a lot of underlying conflict the next phase, **Storming**, might be quite disruptive. In this phase, people make their suppressed opinions known, engaging in conflict, and not shying away from confrontation. This can become so severe and unpleasant that groups break up and stop their work.

To make group work successful, you want to prepare people to work together through this phase. It is helpful to arrange for training on a continuing basis to educate the team how to communicate respectfully. The storming phase is also an opportunity for the testing of ideas, of listening carefully and respectfully without reacting or judging — all skills people need to master.

In a typical group process, open conflict prompts people to realize they need to agree and develop rules for interaction. This is known as the **Norming** phase – when the group sets standards and rules, so they can manage the conflicts that have arisen.

After the norms have been established, the **Performing** phase begins, where people work together effectively to reach their goals. With this in view, and with the proper preparation at the start of any group effort, it is possible to manage conflict as you steer the group toward its shared objectives.

Conflict Management

What is conflict? At its most elemental level, conflict is a function of power and of competition. Conflict emerges when there is competition for something – ideas, money, control, space, affection, time, or resources, to name a few. Conflict is inevitable in any group process, and the course it takes can either reinforce a healthy group dynamic or serve to undermine it.

Conflict arises out of disagreement, and is an inevitable part of organizational growth and development. Working through conflict — instead of avoiding it —can lead to progress on even the most sensitive of topics, including ethnicity and race, social and economic inequity, and other divisive issues.

The key to making conflict a positive force in group dynamics is to recognize that it is inevitable, not an unexpected and unpleasant phenomenon to be avoided, and to plan for it in advance, *before* the conflict emerges. This means adopting some conflict resolution rules at the outset of a group process, so that there will be a safe and productive procedure to follow when it happens.

It is also helpful to have decision-making structures articulated in advance, so conflict won't emerge simply because the decision-making process is unclear or ineffective. The exact form the conflict resolution and decision making procedures will take will vary depending on the group involved, and the constraints it is under. Part of any procedure should be a clear articulation of the vision statement, mission, and conflict resolution criteria. Achieving agreement on these matters in advance is an important way to guide decisions through later conflict.

Public Meetings and Facilitation Skills

What distinguishes an effective meeting? Effective meetings improve productivity; people were able to confront difficult issues, participation increased, time was used efficiently, issues were discussed and decisions were made. Meetings work well when there are ground rules and guidelines on which people can agree. Consider how group discussion will develop, and have an adept facilitator to guide the process. Displaying, discussing, and agreeing to the rules or guidelines before you begin your work will encourage participation, and the process will be much more successful.

Three general guidelines to consider:

1. **Speaking:** Speak so everyone can hear you; one person speaks at a time. Don't interrupt other people, and avoid statements that involve personal blame or judgment.
2. **Listening**: Give the speaker your full attention. Stay open to new ideas. Please do not have side conversations while one person is speaking.
3. **Using Time:** Make an agreement with each other to begin and end the meeting on time. Show up on time prepared, and circulate an agenda before or at the beginning of the meeting.

Facilitation Skills & Meeting Plans

Good facilitation begins with the plan for the meeting agenda. There is a dynamic tension between giving the participants some input into the agenda, and planning it enough in advance so that you can include activities and topics that will keep the meetings engaging and meaningful.

Meeting Elements

When you're planning a meeting of any sort, there are certain elements you don't want to neglect, and others that you can pick and choose from as appropriate. Below are several suggestions for meeting elements that will give you some ideas for how to make your meetings as productive and stimulating as possible.

Opening: The opening of the meeting sets the tone for the gathering. To create a respectful and safe meeting environment, it's important to consider this element carefully. One mandatory feature of every meeting opening is to ask those assembled to introduce themselves to the group. If people are still learning each other's names and positions, then this information should be included in the introduction. If they all know each other, then a brief check-in introduction is helpful. Ask each participant to state something about him or herself. This process keeps people from feeling anonymous – when they are identified to the group, their participation will increase.

Closing: As with the Opening, the Closing of the meeting is another opportunity to reinforce a sense of teamwork, and to make sure the group is feeling positive about the progress made during the meeting. This is a good time to go around the room and get people to reflect (briefly) on the results of the meeting. Did they accomplish their objectives? Was the meeting productive? Were there any things that needed follow-up?

Reports: It is a good idea to set aside time at the beginning of the meeting for people to make reports on any progress made since the last meeting. Ideally, a lot of the information in these reports will have been circulated in writing beforehand. If so, this would be the time for group members to address questions and concerns they may have about what they read.

Brainstorming Sessions: When it's time to generate new ideas for projects, programs, and other activities, brainstorming sessions can be helpful. To brainstorm on an idea, the facilitator would go around the group and ask each member to offer ideas. The rules for brainstorming are that no idea is too crazy or farfetched, and no one is allowed to say anything negative about the suggestions offered. This round robin can continue several times, until people have exhausted all the possibilities.

 Prioritization Exercises: There are several ways to help a group prioritize. Items in a work plan, strategies to pursue, mission statements, goals for the organization, it can be important to rank them as a group to discern which is the most important. One way is to set some agreed-upon criteria, and apply them to the suggested list of priorities. Another way is to have the group members rank their priorities by number, and add up all the numbers submitted to determine the priorities of the group as a whole.

Still another way is to give group members several votes that they can distribute as they will to the different priorities on the list. Whatever technique is used, being clear on how it will work, and the reason for the prioritization in the first place, is the facilitator's job.

Dialogue: A very productive way to structure part of every meeting is to have a group dialogue about a topic that is relevant to the work the group is doing. With dialogue, it is important for people to suspend judgment and use their listening skills to really explore the deeper meanings of the issues presented. The facilitator must mind this process with careful attention to whether some people aren't participating, or are participating in a way that is critical or negative for the rest of the group.

Facilitation Skills and Responsibilities

Group facilitators wear many hats. They need to be able to simultaneously be an enthusiastic leader, a negotiator, a mediator, an interpreter, and a guide. The work of a group facilitator takes a lot of energy to do right. Don't go into meetings halfheartedly, but prepare yourself in advance— study the materials you'll be discussing, and try to envision challenges ahead of time, so you can be prepared for anything that happens. There are three key roles that facilitators fill – the moderating role, listening role, and empathetic role.

The Moderating Role

Facilitators are responsible for keeping the meeting on topic and on time. To do this, they need to:

1. Clarify the group's task by setting an agenda in advance.
2. Encourage active participation by using techniques to help people speak.
3. Recognize people's contributions and help the group think together
4. Mediate conflicting positions.
5. Provide visual support materials like flip charts and slide shows.
6. Help the group make decisions
7. Define conclusions and/or action plans.

The Listening Role

Facilitators must be skilled listeners on behalf of the group, summarizing what's been said, clarifying people's points, etc. To do this effectively, they need to:

1. Ask questions to clarify what people are saying.
2. Ask open ended questions: How? Why? Tell me more about that? What are the results?
3. Use questions to foster analytical thinking: Strong points? Weak points? The conclusion?
4. Ask the speaker to go deeper with the point they are trying to make … probe, dig, query.
5. Listen actively: summarize the point that has just been made, identify the underlying criteria the speaker seems to be using, affirm their position before asking for reaction.

6. Use active listening skills (see above).
7. Give feedback, and invite feedback from the participants.

The Empathetic Role

Facilitators also need to be very sensitive to the feelings and dynamics of the group— both the individuals in it and the group as a whole. A good facilitator can make the difference between a positive or negative meeting experience for each individual member of the group. To be empathetic, the facilitator needs to:

1. Express enthusiasm and commitment to the work. This makes it enjoyable.
2. Listen for people's experiences and needs.
3. Give positive feedback: Thank you for making that point, good suggestion, etc.
4. Be respectful of the participants' experiences – don't judge or interpret.
5. Build mutual understanding and trust in the group.

The development and mastery of new skills obviously involves more than reading this paper. Officials need to participate in training exercises where they have the opportunity to learn and practice new skills. The purpose of the brief treatment of the skills in this paper was to illustrate the human side of an effort to more participation and engagement. The next section tells a few stories about how different people in several very different situations managed to introduce successful policies through some type of public engagement.

Balancing grassland ecosystem services to ensure long-term sustainability of Tibetan nomadic communities in the Sanjiangyuan Region of Western China

Douglas MacMillan (DICE / University of Kent)

Introduction

The Tibetan plateau is one of the world's most fragile ecosystems and home to nomadic communities which are the poorest and most disadvantaged in China. The plateau also provides a range of ecosystem services important to local livelihoods (food, fibre, soil erosion and culture), millions of people living in downstream communities (flood regulation, silting) and the global community (climate & biodiversity services). However, the ecosystem and the nomadic communities that live there are under increasing stress. Environmental perturbation associated with climate change and large-scale habitat degradation due to more intensive livestock grazing over last 50 years, have led to serious environmental and economic problems characterised by declining per capita agricultural income, grassland degradation, soil erosion which causes downstream silting of rivers and carbon leakage, and increasing human-wildlife conflicts.

Although the environmental, social and economic situation in the region is deteriorating quickly the fundamental drivers are essentially socio-economic in origin where poverty and economic aspirations of local people are difficult to sustain from a shrinking environmental base. Solutions are quickly required or it is possible that the entire grassland ecosystem may be irreversibly altered threatening the future of Tibetan nomads and their distinctive, and the livelihoods of millions of people who depend on the plateau grassland's for ecosystem services.

The aim of this paper is to consider the opportunities and constraints for green business development on the plateau that will help promote and sustain the delicate balance between livelihoods and the environment that is required.

Background

The grassland ecosystem on Qinghai-Tibetan Plateau has supported Tibetan nomads for thousands of years, and nurtured a unique culture of which a fundamental element is Tibetan Buddhism. Dependent largely on sheep and yaks, Tibetan society and culture have developed strong self-disciplinary norms for individual behavior that encourage people to live in harmony with, and respect, the land, water and all living beings. The culture has made significant contributions to conservation and is, perhaps, the primary reason why large herds of wildlife still roam freely on the Plateau.

Being arid and high, Sanjiangyuan is not particularly rich in species, but the flora and fauna form unique assemblages and contain a high proportion of endemics of high economic value including 1500 species of higher plants and 54 species of mammals. The dominant vegetation types in Sanjiangyuan are the alpine meadows (Liu Jiyuan, et al, 2008) dominated by *Kobresia spp* and alpine steppes dominated by *Stipa purpurea* and other graminoids and this ecosystem supports significant populations of globally threatened species such as the wild rak *Bos grunniens*, Tibetan wild Ass *Equus kiang*, Tibetan antelope, *Pantholops hodgsonii*, white-lipped deer, *Cervus albirostris*, brown bear *Ursus arctos*, and the snow leopard *Panthera uncia*. In mountain areas are found wild sheep such as Argali *Ovis ammon* and Blue sheep *Pseudois nayaur.* At least three WWF Global 200 Ecoregions fall inside Sanjiangyuan and it also forms part of the Biodiversity Hotspot "Mountains of Southwest China".

Key Issues

Traditional modes of living are increasingly untenable, due, in part to degradation of the grasslands upon which they are based, and in part to unprecedented social, economic, and cultural transformations that have occurred in past decades (Harris, 2010). Food production per capita has fallen drastically in last 15 years and a 'cultural' and 'environmental' tipping point may be approaching Current use of many grasslands is unsustainable: 90% of the grassland is reported degraded and biomass was only 50-70% of that in 1950's (Liu Jiyuan 2008). Fragmentation and desertification have been observed since 1970s and is continuing (Liu Jiyuan, 2008). Key issues are:

1. Rapid increase in the human and livestock populations over the last 30 years due to dramatic policy changes affecting land use which has encouraged intensification and a switch from nomadic to increasingly sedentary lifestyles Jing Hui (2005, 2006).

2. Climate change is another driver behind grassland degradation. In the past 50 years, the climate is warmer by 1.48°C and wetter by 29mm/10yr increase in precipitation and melting of glaciers and permafrost are clearly visible. How these changes exactly influence the grassland and livelihood is unknown, but add further uncertainty to an already complex situation.

3. Grassland degradation has also caused an increase in wildlife-human conflict in the Sanjiangyuan region. For example, the pikas, the marmots and other small mammals are often considered as pests that "destroy" grasslands and was poisoned extensively (Fan et al, 1999), whereas most researchers believe (Foggin 2000,) that high densities of pikas are more likely a consequence than a cause of degradation.

4. Other conflicts come from carnivores such as the wolf, the brown bear and the snow leopard that kill livestock. Wild ungulates such as the kiang (the Tibetan wild ass), the blue sheep and the white-lipped deer also compete for grass with domestic livestock and because they are protected by both the national law and Buddhism belief, conflicts occur with pastoralists in specific localities.

Concerned by the degradation of Sanjiangyuan, the government initiated significant conservation programs, with an intention to protect and restore the ecosystem (NDRC, 2005) and in 2001, the Sanjiangyuan National Nature Reserve was established, designating a vast area of 152,300 km^2 under protection. In 2005, the State Council approved the Sanjiangyuan Ecological Program with an investment of 7.5 billion RMB (> 1 billion USD) between 2005 and 2010. The program includes compensation for resettlement, grass planting, desertification control, cloud-seeding, pika poisoning (the animal is officially still viewed as the cause of degradation), livestock reduction, and fencing. In China's 11th Five-Year-Plan (2005-2010), part of Sanjiangyuan was designated as a 'No Development Zone' (inside the nature reserve) or a 'Restricted Development Zone' according to the new national land zoning category. Although the monitoring system set up by the conservation program was found to be incapable of reflecting recent trends with precision, both government officials and the local people, believe that degradation has only slowed down in relatively small areas and is "worsening" in much of the area.

This is not surprising because the solutions included in these conservation programs, despite the best of intentions, were designed and implemented in a top-down manner, with neither local participation nor underpinned by reliable science. They also lacked clear objectives in both conservation and development terms and some of the approaches, such as poisoning pika and cloud-seeding may have negative long-term impacts on the ecosystem. Compensation for livestock reduction is also too low to have any beneficial effects. A recent study by Du. F (2010) concluded that the resettlement program, referred to as "ecological-emigration", which removed 55,774 nomads to nearby townships since 2005, has actually aggravated poverty due to limited compensation and insufficient alternative livelihood support, and damaged the integrity of Tibetan ethnic culture.

Thus we are entering a crucial period on the plateau in environmental, social and cultural terms. The national government considers Sanjiangyuan as an important ecological zone for its national and even global ecosystem service value, but polices to protect these services are in conflict with the 600,000 Tibetan people (at least 300,000 pastoralists) who rely on the same ecosystem for their livelihood. Moreover, the livelihood and traditions of the Tibetans cannot be sustained if the ecosystem continues to degrade and there are few livelihood alternatives in such a remote area.

Although people's perspectives and expectations toward life and the future, like elsewhere in the world, are changing and globalization and urbanization have an inevitable influence over people, especially the young, traditional culture persists and is still more or less followed by a significant amount of Tibetan people. 'Green Business' is one strategy approach that might provide an alternative way forward balancing economic aspiration with environmental protection and management, and respects and encourages the perpetuation of traditional culture and practices.

Leveraging business knowledge for biodiversity conservation

As globalization proceeds apace it is inevitable that market forces will increasingly influence the future of the communities who live on the Plateau. Can scientists, policy makers and local communities learn from free-market business efficiency in order to achieve ecologically-sustainable economic development that benefits people and wildlife?

Unfortunately there is no strong track record of achievement to draw upon. New initiatives such as the World Bank's IDBPs and ICDPs had low success rates - in Africa, only around 50% of development

projects were successful (Kremen et al., 1999). Many such projects look good on paper but often fail in the 'implementation' stage The success of IDBPs, like purely commercial ventures, depends on continual development and investment in 'new products and services' in line with changing consumer demand and this requires (among other things) strong local business (especially marketing) skills and financial investment. This is often overlooked/ underestimated/ unavailable in community-based ICDPs.

What type of ecologically sustainable business ventures might be possible on the plateau?

1. Consumptive use such as hunting is inconsistent with traditional Tibetan culture but other activities such as farming for trade in animals or animal parts may be possible.
2. Non-Consumptive: observation and adventure holidays (eg, rock climbing, trekking, scuba diving); touring (eg destination mountain biking tourism in countries without large predators) have considerable promise, but must overcome difficulties around accessibility and altitude and will only ever be a specialist niche. Benefit sharing remains a difficult issue as often only a minority of households are directly involved in and contribute to the business.

Classic business issues that would need to be addressed:

(i)   What sustainable competitive advantage does the location possess? ie what resources (eg unique scenery, ecosystems, flora, fauna) and competences (eg, skills, knowledge, training) do they have that other countries/locations cannot match? Developing nations especially tend to lack the latter.

(ii)   Who are the potential consumers of tourism products and services (eg market segmentation, targeting, profiling).

(iii)   What do they want to buy, ie what do consumers perceive as 'value' (eg in the product offer and supply chain).

(iv)   Why do they want to buy it (e.g. consumer behaviour, motivation)?

(v)   Where are they located (e.g. source country[ies])?

(vi)   How many are they? (e.g. market sizing)?

(vii)   How and where do they want to buy it? (Home vs destination consumption)?

(viii) When and how often do they want to buy? (e.g. customer retention/repurchase/recommendation)?

(ix)   What is the most profitable, ecologically sustainable use of a natural resource

(x)   What level and type of investment ($, time, knowledge, skills) is required to realise identified potential?

There are some wider issues. Improved education is widely recognised to lead to increased prosperity in communities. In business, 'technology transfer' especially of knowledge and expertise via training, is highly valuable but also requires cultural awareness and understanding of what constitutes 'value' on both sides of the knowledge exchange. Technology transfer projects also require political awareness. Who are the various human stakeholders in achieving sustainable livelihoods and incentive-driven biodiversity conservation that benefits people? E.g local people, local/regional/national governments, local entrepreneurs, international entrepreneurs. What are the needs, motivations and relative power of each? What influences their (non)alignment in promotion of conservation initiatives? Answering such questions requires multidisciplinary skills overlapping the natural and social sciences (eg strategic management, business development, marketing, ecology, biology). For example, is there a need/potential for some sort of 'micro-marketing' assistance for local communities/eco-entrepreneurs, similar to the 'micro-finance' projects used in many developing countries? If so, how best could such programmes be packaged and delivered?

DICE has undertaken several projects regarding capacity building in local communities for conservation and business management (e.g., human-wildlife conflict resolution in Masai Mara; axolotl monitoring-conflict resolution in Mexico; human-elephant conflict resolution in Masai Mara; monitoring of black rhino populations/tourism in Namibia). It has also, as part of the above initiatives and others, brought local people (e.g., safari guides) to the UK for education to MSc level in conservation. We await our first MSc student from Tibet.

I also recognize a need to develop a more multidisciplinary approach towards biodiversity conservation assessment and/or training in developing countries, that involves educating local agencies/communities/individuals in business skills in addition to conservation skills. This would include identifying, assessing, planning and implementing new local/national initiatives in environmental and economic sustainability, i.e., activities that benefit both local people and wildlife. Although such an approach could include services (e.g. ecotourism) it would not be limited to this and could include (possibly) the farming and/or manufacture of animals/animal parts for human consumption in export markets. This may require legalising trade in such products which would be controversial! Such training

could be delivered either on the ground in target countries or by bringing candidates to the UK for business training.

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Local Communities and Conservation on the Tibetan Plateau: Two case studies of *collaborative management* in the Sanjiangyuan region

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ABSTRACT

Collaborative management is a relatively new approach to resource management and conservation in the Tibetan grasslands of China. Such community co-management has been trialed in at least two Tibetan herder communities, with two different emphases, over the past decade in Yushu Tibetan Autonomous Prefecture, Qinghai Province. In essence, co-management implies a partnership between local communities and other agencies including government bureaus, protected areas, and local/external NGOs. Of particular importance is a common understanding of partnership, and participation, in such collaborative management schemes. Community conservation efforts in the 'Six Western Townships' (西部六乡) in Zaduo (杂多), Zhiduo (治多) and Qumalai (曲麻莱) counties – the geographic focus of Plateau Perspectives' community conservation and development work over the past decade – precede (or pre-date) the establishment of the Sanjiangyuan National Nature Reserve (三江源国家自然保护区). At present, new efforts are now underway to mainstream such indigenous efforts into the broader conservation agenda in Qinghai Province, in fact to 'scale-up' lessons learned to date.

Background

Conservation of biodiversity arises from a combination of protection and sustainable utilization of biological/natural resources. Such protection and sustainable utilization can occur either within, or outside of, officially recognized Protected Areas (or PAs).

Long-term conservation achievements have been attained by indigenous peoples and local communities for millennia – long before formal PAs were conceived in the late 19th century (initially in North America, and later exported to the rest of the world).

As community conservation initiatives begin to receive more formal recognition in different parts of the world, a relatively new term is introduced here: *Indigenous and Community Conserved Areas* (ICCAs). Use of this generic term is not meant to label any group or community, but rather to help promote dialogue and communication.

ICCAs are as old and widespread as human civilization itself. Several international policies and programs – most notably under the Convention of Biological Diversity (CBD), of which China is a signatory nation – encourage all countries to recognize and support ICCAs.

In the Tibetan Plateau region of western China, several ICCAs are now encompassed within formal, government-established PAs; various forms of shared governance, including Collaborative Management, are presently being discussed, trialed, and/or evaluated.

Collaborative Management within the broader IUCN Protected Area Matrix

IUCN – The World Conservation Union has developed a matrix to categorize and describe PAs within countries and around the world. The IUCN set of categories includes the following:

Ia. Strict Nature Reserve

Ib. Wilderness Area

II. National Park

III. Natural Monument

IV. Habitat/Species Management

V. Protected Landscape/Seascape

VI. Protected Area with Sustainable Use of Natural Resources

In Qinghai Province, the main PA under consideration is the Sanjiangyuan National Nature Reserve (SNNR) — covering an area around 153,000 km^2, the size of England and Wales combined, and including within its boundaries a human population of more than 200,000 people. Under the IUCN matrix above, the SNNR – with its stated goals and 3 different management zones – *de facto* falls under several different categories, simultaneously:

Ia - Strict Nature Reserve: *Strictly protected areas set aside to protect biodiversity and also possibly geological/ geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.*

II - National Park: *Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.*

V - Protected Landscape/Seascape: *An area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.*

VI - Protected Area with Sustainable Use of Natural Resources: *Protected areas which are generally large, with much of the area in a more-or-less natural condition and where a proportion is under sustainable natural resource management and where low-level use of natural resources compatible with nature conservation is seen as one of the main aims of the area.*

In addition, the IUCN PA Matrix also includes a description/categorization of types of governance, as follows:

A. Governance by government

National ministry/agency in charge of management

Sub-national ministry/agency in charge of management

Government-delegated management (e.g., to an NGO)

B. Shared governance

Transboundary management

Collaborative management (various forms of pluralist influence)

Joint management (pluralist governance bodies)

C. Private governance

Declared and run by individual land-owner

Declared and run by non-profit organizations

Declared and run by for-profit organizations

D. Governance by indigenous people and/or local communities

Indigenous territories and indigenous conserved areas

Community conserved areas – declared and run by local communities

In the SNNR, in those instances where local communities are involved in biodiversity conservation and sustainable utilization of natural resources – such as the case studies presented herein – the SNNR is formally managed by a national/sub-national ministry (Forest Bureau), yet since its establishment the SNNR also has come to recognize the role played by local Tibetan herder communities, both in the present and indeed prior to the establishment of the nature reserve. Hence, there is movement toward a form of Shared Governance, namely Collaborative Management, which recognizes and works in the context of multiple influences on natural resource utilization and conservation.

As will be discussed in more detail below, three forms of Collaborative Management have been noted in Yushu Tibetan Autonomous Prefecture, in SW Qinghai Province:

- Community Co-Management (currently being trialed in Zhiduo County)

- Contract Conservation (currently being trialed in Qumalai County)

- Other community conservation efforts, not formally recognized

Additionally, it should be noted that, even if/when local community conserved areas fall within the boundaries of a formal PA, such as the SNNR, they should/could still be recognized as ICCAs (Indigenous and Community Conserved Areas); as agreed by China through its participation in the UN Convention on Biological Diversity (CBD), with its encouragement for all signatory countries to recognize and support ICCAs.

Collaborative Management implies, indeed requires, genuine partnerships

The global dialogue on justice and equity (and, more recently, the dialogue on the fair and equitable sharing of benefits arising from the conservation and sustainable use of natural resources; cf. CBD) has given rise to the incorporation of 'local participation' in development/conservation initiatives. This is reflected in part even in the adoption, within PA management, of new Collaborative Management approaches. Yet there are many ways in which the concept of 'participation' may be interpreted and applied, as can be seen in Pretty's (1995) excellent Typology of Participation (also see Table 1):

1. Passive Participation
2. Participation in Information Giving
3. Participation by Consultation
4. Participation for Material Incentives
5. Functional Participation
6. Interactive Participation
7. Self-Mobilisation

According to Mowforth and Munt (1998), these types of participation "range from manipulative participation, in which virtually all the power and control over the development or proposal lie with people or groups outside the local community, to self-mobilisation, in which the power and control over all aspects of the development rest squarely with the local community. The latter type does not rule out the involvement of external bodies or assistants or consultants, but they are present only as enablers rather than as directors and controllers of the development."

Therefore, because of the various (sometimes opposing) ways in which the concept of 'participation' can be used, one may move closer to the 'heart of the matter' by using instead the term/concept of 'partnership' – which, in essence, was the original intent of promoting local participation. Partnership is "a cooperative relationship between people or groups who agree to share responsibility for achieving some specific goal."

In the context of our attempts to reach conservation goals, it should be noted that many of the key challenges to effective conservation are not biological or scientific, but rather social and economic – incorporating the needs, interests, desires, hopes and aspirations of the communities living in the geographic areas of conservation interest.

Drawing on experiences of IUCN–The World Conservation Union, the International Institute for Environment and Development (IIED), and the World Resources Institute (WRI), Carew-Reid (1993) has summarized some key lessons learned for successful conservation:

- Strategies are not one-off events. They should rather be action-based, building on priority areas where government and people are already committed…

- Strategies should be seen as a continuous, cyclical process and integrated into conventional development cycles. They are not just something to be 'added on'…

- Successful strategies are not possible unless the capacity to carry them through is built up at the earliest stage…

- Centralized planning and decentralized implementation don't mix…

- Participation needs to increase as a strategy develops…

- In poor local communities strategies may first need to identify and meet immediate needs, so that benefits can be felt. Strategies need to be processes of action and reflection…

- The appraisal of strategies needs to stress the way things are done as well as the outcome…

In sum, choosing to work within a conservation model of Collaborative Management implies cooperation amongst key partners, cf. genuine partnership, working together toward common agreed goals. At a minimum, a circumscribed or limited conservation goal is agreed; but, in its richest form, adoption of a Collaborative Management model or approach to environmental conservation will also lead to greater exchange between the partners and a learning cycle will develop, expanding the scope of each partner in the process. And where one or another partner's broader needs or interests cannot be met from the cumulative experience, expertise, knowledge or assets of the original partners, others may also be sought and invited to join – thus widening the circle of stakeholders, often involving non-government organizations (NGOs) at this stage of the formal conservation process due to their ability to focus more tightly on specific needs or geographic areas (as compared to government partner agencies, who must maintain a wider, regional overview of conservation and sustainable development).

Plateau Perspectives: International organization focused on community-based conservation and sustainable development in the Tibetan Plateau region

Plateau Perspectives is an international non-profit organization that aims to promote community development and environmental protection in the Tibetan Plateau region of China. It is officially recognized in Canada, Scotland, and China. The organization has worked in Yushu Tibetan Autonomous Prefecture since its establishment in 1998, most notably through its collaborative project with the Biodiversity Working Group of the China Council for International Cooperation on Environment and Development (CCICED); the research project *Health Status and Risk Factors for Tibetan Herders*, undertaken with University of Montreal, funded by the Social Sciences & Humanities Research Council of Canada (SSHRCC); the *Yangtze River Headwaters Sustainable Development Project*, funded by a variety of private donors and foundations; and its key project, entitled *Community Development and Biodiversity Conservation in the Sanjiangyuan Region of the Tibetan Plateau*, funded by the Government of Norway (NORAD) and other donors.

With numerous changes affecting (or potentially affecting) the lives of local herders in the target area – not least, some government policies and programs that encourage people to move away from a grassland-based livelihood, into newly created towns – an additional, new theme for Plateau Perspectives, indeed a new goal or purpose, has also begun to emerge. Not only are the provision of social services and conservation goals intrinsically valuable, but now also the demonstration that (a) herders can live sustainably on the land, not harming the natural environment (and, indeed, they can assist and promote biodiversity conservation practices), and (b) government services including health care and education can be provided in cost-effective ways to herder communities, without need to relocate people away from their traditional homes and communities in grassland areas.

The main geographic focus of Plateau Perspectives' work in Qinghai Province has been the so-called "Six Western Townships" (西部六乡, or *xibu liuxiang*) of Yushu Tibetan Autonomous Prefecture; specifically, in Zaduo (杂多), Zhiduo (治多) and Qumalai (曲麻莱) counties. This target area was originally suggested by the Yushu Prefecture Health Bureau due to the difficult living conditions encountered by local herders with respect to transportation, provision of social services, a harsh and often unpredictable environment, and high altitude, as well as the region's environmental value. Several local community leaders also supported this choice of geography and Plateau Perspectives' thematic focus on community-felt and -expressed needs.

In the course of Plateau Perspectives' conservation and community development work in the headwaters of the Yellow, Yangtze and Mekong rivers, from 1998 to present, it has also learned much about local communities, including their genuine concern for sustainable resource use and wildlife protection—sometimes an explicit concern, and other times a practice more deeply enmeshed within traditional cultural practices (but not necessarily recognized explicitly).

Prior to the establishment of any formal PA, at least two different communities had already established community PAs – i.e., genuine ICCAs, with the recognition and support from local government – and they also had agreed and instituted regulations to control illegal poaching in their respective territories. Several community NGOs have emerged as well. In other instances, some individual herders have expressed a desire to contribute to wildlife conservation through regular monitoring of wildlife populations; but didn't know how best to feed into broader monitoring programs. All of these examples demonstrate how local communities can in fact be excellent allies (partners) to attain local and regional conservation goals. Such partnership, however, is most readily developed and maintained in the context of external agencies, such as Plateau Perspectives, also placing themselves alongside local communities with their other key interests or concerns such as promoting community health, basic education, income generation, mitigation of human-wildlife conflict, etc.

Case studies of Collaborative Management in the Tibetan plateau region

Two community conservation efforts will be introduced in more detail here. The first community, Muqu village (in Suojia Township, Zhiduo County; 治多县索加乡莫曲村), has developed its approach over more than a decade. The second community, Cuochi village (in Qumahe Township, Qumalai county; 曲麻莱县曲马河乡错池村), has equally invested many years into reaching the present situation.

In both situations, a form of Collaborative Management has been adopted as the local communities work in concert with the SNNR to achieve regional conservation goals.

Muqu Village, a model for Community Co-Management

Plateau Perspectives has collaborated with the people of Muqu village since 1998, with approval from township and county government and for many years in close collaboration with the grassroots Upper Yangtze Organization (a local community-based organization). In 2005, the above partners also began to collaborate with the SNNR and thus began a journey that ultimately led to the present 'Community Co-Management' arrangement for collaborative management of natural resources and biodiversity conservation.

Under the agreed co-management model, local people participate in the monitoring of wildlife populations, report poaching incidents, and promote environmental awareness. In so doing, they also may gain increased respect (from government leaders, planners, academics, etc.) as they learn the 'language' of science and thus, hopefully, may also be given greater voice in the future about local or regional development planning and decision-making. Under this model, however, local people are not given independence in decision-making; instead, more often the community is regarded as implementer of conservation projects or strategies that are decided, in large part, outside of the project area. Nonetheless, the level of local participation – and the degree of partnership – is still much greater in this model than in most other PA management models in China, particularly because of the local specific

circumstances whereby an ICCA that pre-dated the reserve has now been incorporated into the SNNR management plan. Thus people who before the nature reserve was established chose to participate in natural resource management and wildlife conservation activities, can still continue to do so under the present arrangement.

A specific example of Community Co-Management efforts in Muqu Village is the on-going Snow Leopard Conservation Project, which is being carried out as a genuine partnership comprised of the local community, SNNR and Plateau Perspectives. Local monitors have for several years been monitoring key snow leopard habitats and have documented their findings. Simultaneously, automatic camera traps have been trialed for comparative purposes, to determine the degree of overlap and/or complementarity of the two methods – with the goal of better understanding the distribution and hence the conservation needs of snow leopard, as well as supporting community efforts for wildlife conservation and raising environmental awareness in the region.

Cuochi Village, a model for Contract Conservation

Under the 'Contract Conservation' model, currently being trialed in Cuochi village, local people are given nearly full autonomy in how to conserve wildlife and protect the environment; and as long as agreed conservation targets are achieved, they will receive a small financial contribution, which the community can disburse at its own discretion. Generally, such funding is used for community purposes in health and/or education, and sometimes also for social assistance (e.g., for community members in desperate need). It must be noted, however, that even here conservation goals must be agreed beforehand with the SNNR or other government authority. Thus there is not an independence in decision-making, as was the case of some pre-nature reserve ICCAs, but rather (as with community co-management) a collaborative form of management.

As outlined by Ma Hongbo (2010), most "land management and conservation rights [in China] belong to the government, including nature reserve authorities. Local communities often have willingness, but no rights, to conduct effective conservation." But in the case of Cuochi village, a special exemption has been made, to trial a new form of PA management and conservation, namely Contract Conservation. The main addition to previous models is that the local community is given "appropriate [legal] rights" to manage natural resources for conservation. Through the process of carrying out a Conservation Stewardship Program (CSP; the term used within the partnership of Conservation International, CI, with the SNNR and the local community), this new model of Contract Conservation has several key stages including a feasibility study, signing of conservation contracts, transfer of legal rights to local herder communities, implementation of contracts, and finally project evaluation, followed by consideration of how to extend or scale-up the PA management model (i.e., this is the current stage).

Major dates in the timeline of developing the new Contract Conservation model in Cuochi village:

> 1999   Community mobilization, with significant local financial contribution (as well as livestock) to establish the village school and village clinic

2000	Translation and dissemination of wildlife conservation regulations; anti-poaching group established; request for assistance/input from Plateau Perspectives and grassroots Upper Yangtze Organization
2001	Site visit by Plateau Perspectives with community workshop, training about conservation and wildlife monitoring, support to village school and clinic; establishment during this trip of Wildlife Monitoring Unit; Plateau Perspectives donation of 13 binoculars for wildlife monitors
2002	Beginning of formal, regular monitoring of selected wildlife species
2004	Establishment of the grassroots organization, Friends of Wild Yak
2006	Initiation of Conservation Steward Program (CSP) with SNNR and CI
2009	Initial evaluations of CSP, with consideration of scaling-up the model

As can be seen, both of the above models of PA management, based on collaborative principles, have been developed over approximately a decade. Both models are quite endogenous, at least in their original form. And both of the models continue to exist, at a basic level, based on trust and partnership, which continuously needs to be built and reinforced; and on a sense of local ownership not only of the resources / wildlife but also of the processes of conservation and decision-making.

The evident initial success of the contract model, and also the co-management model, also may present some potential pitfalls, particularly as some conservation authorities seek to extend at rapid pace the observed successes to a larger geographic region and population. What may be most difficult to replicate is the many years and effort that have been invested by local community leaders or other individuals, to developing and refining each of these models in their specific socio-cultural and environmental contexts. Therefore a more moderate rate of growth and extension of the two afore-mentioned models may be most appropriate, along with targeted in-depth studies, time for internal mobilization of communities, and time for full adoption by communities and government of the models' most important ICCA elements and key concepts.

Yet, as environmental concerns in Qinghai Province are so important, community-based conservation must be pursued now, not delayed indefinitely. Further study of different forms of Collaborative Management is therefore amongst the most important activities that can be undertaken at the present time. In the end, it is only be engaging with all of society, partnering with all segments of society, that we can achieve greater sustainability, biodiversity conservation, and long-term socio-economic development.

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Table 1. Typology of participation (Pretty et al., 1995)

Passive Participation	People participate by being told what is going to happen or has already happened. It is a unilateral announcement by an administration or project management without listening to people's responses. The information being shared belongs only to external professionals
Participation in Information Giving	People participate by answering questions posed by extractive researchers using questionnaire surveys or similar approaches. People do not have the opportunity to influence proceedings, as the findings of the research are neither shared nor checked for accuracy.
Participation by Consultation	People participate by being consulted, and external people listen to views. These external professionals define both problems and solutions, and may modify these in the light of people's responses. Such a consultative process does not concede any share in decision-making, and professionals are under no obligation to take on board people's views.
Participation for Material Incentives	People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much on-farm research falls into this category, as farmers provide the fields but are not involved in the experimentation of the process of learning. It is very common to see this called participation, people have no stake in prolonging activities when the incentives end.
Functional Participation	People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organisation. Such involvement does not tend to be at early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent.
Interactive Participation	People participate in joint analysis, which leads to action plans and formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. These groups take control over local decisions, and so people have a stake in maintaining structures or practices.
Self-Mobilisation	People participate by taking initiatives independently of external institutions to change systems. They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used. Such self-initiated mobilisation and collective action may or may not challenge existing inequitable distribution of wealth and power.

Yushu Nomads on the Move: How can the use of pastoralist resources be sustainable?

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Abstract

Alpine regions, high plateaus, and arid lands are highly fragile ecological systems. Historically they were mainly put in use by pastoralists. In order to maintain an existence there they needed to adapt well to those fragile systems, and this made them develop strategies involving high mobility. They were as mobile as their herds needed to be in order to sufficiently feed the animals and to conserve the pastures for future use. More than any other human systems of exploiting natural resources pastoralists were thus compelled to adapt to and reasonably use what nature offered them. Reasonably in this context clearly means: in a sustainable way. To identify the major transformational processes and understand their agents as well as consequences, we need to have a deep insight into tangible systems. Exemplified by pastoralists of Qinghai's Yushu region, this paper suggests taking different perspectives of human existence in the area. Starting off from the description of the status quo of mobile pastoralism, a preliminary survey of agents of change perceived by rural people in the region can help to understanding of how ongoing transformational processes may support or obstruct efforts for the stabilization or rehabilitation of the natural environment and thus for a sustainable use of pastoral resources.

Introductory remarks

Contemporary states and development bureaucrats and even scientists have, until the late 20th century, tended to blame pastoralists for the degradation of ecosystems in arid and semiarid areas. Then, China was no exception, and the nomads and their purportedly "non-scientific" use of the environment were mainly held responsible for the deteriorating situation of grasslands on the Tibetan Plateau. Although severe changes in the ecology of a region may apparently be related to an alleged major agent – like overuse by herders, for instance – we know that such systems change under the conditions of intricate multilayered causal chains. In complex systems many effects may combine to a series of small consequences, others may end in but one major

implication. Measures to fight degradation and to mitigate consequences of ecological change thus also need to be multifaceted.

There is always a human dimension of ecological conservation: sustainable use, environmental protection and rehabilitation. Populations who have long lived in environmentally challenging areas, in our case the nomads of Yushu in Qinghai, have met with changes before, have coped with those, mitigated the consequences on their daily lives and finally adapted – which is expressed by their individual and group strategies that form a complex indigenous knowledge. Nowadays, "socio-environmental systems" that once were spatially more distinct from each other, the ever faster processes of globalization have intertwined them more heavily, with people feeling consequences of actions in either sphere of their daily life. This is the major reason why adaptation to the present changes in the ecological systems necessarily also entail outside interventions; on the other side, however, those shaping such interventions need to understand the internal processes of such regions that are strongly different from the centres where policies are formulated.

Since centuries, notably during the last decades, pastoralists have adapted and still adapt to altering situations, involving individual and group initiatives as well as state actions. The examination of human actions and measures of adaptation to the changing ecological and socio-economic situation is beneficial to detect which kinds of action have been successful for whom, what kind of interventions may prove useful, under what kind of circumstances, and initiate a discussion of how the networking of respective stakeholders could be improved to procure better results for maintaining or restoring sustainability: both with regard to the use of resources pastoralist economies are based on and, at the same time, an adequate protection of the environment of a given region.

Methodology and Research Region

The thoughts and findings of this paper are based on research done in Tibetan pasture areas in the eastern half of the Tibetan plateau.[3] Quantitative data were collected during three, qualitative data on altogether ten field trips in 2004–2010 with an overall duration of one and a half years. Major social research methods include participative observation, non-formal, semi-structured, biographical and 296 standardized household interviews as well as some focus group discussions. The interviews cover a big spectrum of household types and single protagonists in their various roles and positions in pastoral and non-pastoral society, economy, and administration. The main focus of

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[3] The research project "Nomads without Pastures?" was carried out within the framework of the Collaborative Research Centre "Difference and Integration" conducted by the Universities of Halle-Wittenberg and Leipzig (Germany), promoted and financed by the German Research Foundation.

research is on the Yushu Tibetan autonomous prefecture (TAP), a region extending in the east-central part of the Tibetan plateau and the south of Qinghai Province. The administrative seat of the prefecture is the town of Gyêgu (Tib. Jyekundo), widely known as Yushu, that was destroyed by an earthquake in April 2010. Although recent processes of urbanization are effective (GERTEL et al. 2009), the pastoralist population of this region still outnumbers farmers and agro-pastoralists: 68.3% of the population were classified pastoralist, 16.5% agricultural and 15.2% non-rural in 2005 (YSB 2006). Different processes of modern re-configuration are now following the recent re-nomadization.

The household survey was mainly carried out in five villages in different natural and socioeconomic settings:

1. Gyiza in Zadoi County, 60 km distance to the county seat, 4200 m above sea level, entirely pastoralist;

2. Yarcer in Nangqên County, 21 km, 3690 m, agro-pastoralist;

3. Zhêca, Nangqên, 30 km, 4080 m, pastoralist, agro-pastoralist and salt mining;

4. Shang Baitang in Yushu county, 25 km from Gyêgu town, 3830-3920 m, pastoralist, and

5. Jiaji Lu Resettlement Village No. 1 in Gyêgu, Yushu, 3 km from downtown, 3800 m; former pastoralists of Shang Laxiu resettled to Gyêgu town.[4]

Non-formal and biographical interview sites included 41 of 46 townships in all the six counties of Yushu TAP and are complemented by interviews and field observations in towns and other Tibetan areas.

The status quo of mobile pastoralism in Yushu

When China started the economic liberalization in the 1980s, it witnessed a revitalization of mobile pastoralism. The alpine steppes on the Tibetan plateau being managed by herders' households again, this kind of 're-nomadization' was taken, in western perception, as a testimony for the traditional lifestyle of Tibetan nomads being, *qua cultura*, the best way to adapt to a difficult ecological environment. A study of the basic fundamentals of that very nomadic economy – the natural resources and the conditions for their sustainability – has so far hardly been a research issue – be it due to the extensive nature of and difficult accessibility to field research and microeconomic data there, be it that a sound basic of pastoral resources for the entire nomadic society was presupposed.

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[4] Zhêca was subject to a 50 percent sample, while in the other four villages all resident households were interviewed. Furthermore, Yarcer village households who actually had taken residence in Nangqên County could also be interviewed.

In Yushu, however, population growth in conjunction with the ecological conditions of the grassland areas have definitely resulted in a limited availability of basic natural resources, namely pastures. Sample surveys in pastoralist and semi-pastoralist villages of Yushu TAP suggest the livelihood based on animal husbandry of considerable numbers of pastoralist households there have decreased. This is reflected by the stratification of the pastoralist society into poor and wealthy households with and without livestock, by increased state intervention and state-induced resettlement activities. During the last fifty years, Yushu has seen considerable fluctuations in both population and livestock numbers (*Table 1*). The human population in rural areas has more than doubled.

Table 1: Development of population and livestock in Yushu

Year	Total Population (TP)	Non-rural population	**Livestock** (in millions)		
			Yaks	Sheep	Total
1950	123,110	14.44 %	0.832	0.974	1.844
1959	168,005	7.74 %	0.379	0.645	1.032
1969	123,071	6.99 %	1.171	2.781	3.977
1979	178,935	10.5 %	1.656	3.848	5.574
1989	224,071	12.4 %	1.578	2.301	3.963
1999	252,696	13.89 %	0.895	1.742	2.689
2004	283,144	15.56 %	0.868	1.949	2.853
2005	297,004	15.2 %	0.908	1.950	2.859

Sources: YSB (2000:66-109), YSB (2006:64-88), QPSB (2005:68, 223) [5]

Fig. 1: Rise of the mean annual temperature on the Tibetan plateau since the 1950s
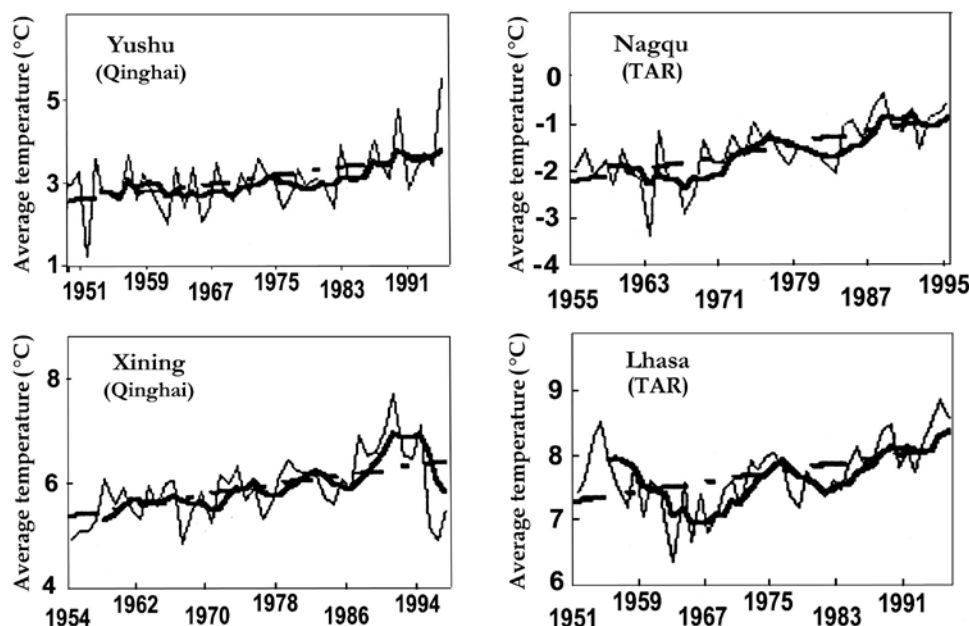
Source: Lɪɴ Zhenyao et al. (2000:97)

[5] Total livestock numbers include horses and goats.

Furthermore, there is a consensus that problems of environmental degradation are increasing.[6] As exact scientific measurements suggest, the Tibetan Plateau undergoes, and has for some time past undergone, a process of warming and drying (NOGUÉS-BRAVO et al. 2007; *Fig. 1*), and the increase of wind speed and pressure greatly affects the rate of evaporation. Like in neighbouring Golog,[7] nomads in some areas of Yushu blame drought and increases in the size of rodent population, namely plateau pikas,[8] for increasing the extent and severity of degraded rangeland. With high stocking rates and other stress factors, the grassland resource is less able to recover from drought and utilization pressure.

Even though issues of natural disasters, grassland carrying capacity, and the impact of climatic and ecological changes cannot be discussed here, the development of the population-to-livestock ratio in Yushu TAP elucidates the diminishing livelihood basis of the pastoralists. In order to consider the livelihood situation, we compute the so-called sheep unit[9] (SU) per person, a measure that helps both to calculate the livestock density in a given pasture and to understand the subsistence level of pastoralists. According to MILLER, a person would need at least 25 sheep or 5 yaks to meet her basic needs:

> In terms of animal numbers, about twenty-five Sheep Units per person is the generally accepted break-off point for poverty in Tibetan nomad areas. Families with less than twenty-five Sheep Units would not be able to meet their basic needs. (Op. cit. Miller 2001)

Although we have to admit that calculating a poverty line, especially in non-monetary terms, is a very problematic undertaking, the situation in the field made it quite obvious that the stocking units many households have at their disposal already reached a low level decisive for their (in-)ability to maintain a pastoralist livelihood. FISCHER (2008) introduces the concept of "subsistence capacity" which appears adequate to express "the ability of a household to produce a surplus above the subsistence needs required reproducing itself economically." The argument at this point is that, as far as a "purely" pastoralist economy (i.e., solely relying on livestock) is concerned, the change of the households stocking situation in Yushu clearly shows trends towards their subsistence capacity being at risk. For this purpose, the definition of an "absolute poverty line" may not be crucial, but it definitely helps to demonstrate the development of Yushu pastoralists' subsistence capacity.

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[6] Although HARRIS (2010) doubts the alleged extent and notably the customary hypotheses on the causes for rangeland degradation, he does not sincerely draw its evidence into question. For a complementary synopsis of literature on the topic of degradation cp. GRUSCHKE (2008:9f and 2009:91)

[7] COSTELLO 2008; SHEEHY (2001:5).

[8] Not all sources agree on the negative influence of the pika; cp., for instance, FOGGIN 2000.

[9] The *sheep unit* (SU), or sheep equivalent, is a reference unit to make different livestock on the pastureland and of the people's livelihoods comparable. The basis for the SU is one adult female sheep. Calculated on the assumption that one SU requires 4 kg of hay per day, other animals are usually converted as follows: 1 yak = 5 SU; 1 horse = 6 SU (MILLER 2001; YAN et al. 2005:37) or 7 SU (GOLDSTEIN 1996). The area of rangeland used for 1 SU depends on the natural conditions of the region and therefore varies greatly.

In 1950, the average rural household in the Yushu TAP owned 17 animals equivalent to 48.75 SU per individual.[10] Even if Yushu's total population (including non-rural) is considered, the rate still amounts to 41.7 SU per person (*Table 2*).

Table 2: Development of livestock distribution in Yushu 1950-2005

Year	Rural Population	Yaks per person		Sheep per person		SU per person	
		TP	RP	TP	RP	TP	RP
1950	105,333	6.76	7.90	7.91	9.25	41.71	48.75
1989	196,286	7.04	8.04	10.27	11.72	45.47	51.92
1999	217,596	3.54	4.11	6.89	8.01	24.59	28.56
2005	257,859	3.01	3.52	6.57	7.57	21.62	25.17

Calculated from data in YZT (2000, 2006)   TP = on the basis of the total population
                                                  RP = on the basis of the rural population

Following the disbandment of the people's communes and the redistribution of the animals to the households in the early 1980s, large livestock numbers continued to exist for a while, but there were and still are considerable fluctuations due to natural conditions (e.g., snow disasters, drought). The year 1989 appears to be a good average year in this period.[11] It represents a situation in which an average rural individual in Yushu owned almost 52 SU and thus a livestock number that was twice as high as the minimum level for subsistence capacity. It was slightly higher than in the 1950s, even though there were two serious snow disasters in Yushu during the 1980s. Ten years later, the numerical value of SU/person had already decreased to 28.56 and meanwhile plummeted to an extent that today all the rural inhabitants of Yushu TAP (25.17 SU/person) live just slightly above the above mentioned "break-off point for poverty in Tibetan nomad areas". That is to say, pastoralists of Yushu are, in the average, about to lose their subsistence capacity.

Nevertheless, the grassland of Yushu is more under stress than it was before. In 1950, there were on the whole 5.135 million SU, in 2005 already 6.49 million SU for the entire prefecture. The grassland should thus, theoretically, produce 25% more biomass, although the basis of the pastoralists' sustenance was reduced by almost 50 per cent. It can be assumed that the higher demand for fodder can not always be met by the rangelands, thus resulting in a lower productivity of the animals.[12] It needs to be emphasized that not the herd size of every, or most,

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[10] Since in Yushu goats hardly play a role for alpine pastoralists and horses do not contribute to their food production, they are neglected in this calculation.

[11] It is likely that the statistics of the collective era exaggerated the numbers for political reasons. The livestock statistics were probably most accurate at the time when the animals were distributed among the families in the early 1980s.

[12] In certain areas, carcass weight and milk production of yaks have decreased by 25-50% (communication by Prof. HAN Jianlin, ILRI Nairobi). Cp. respective papers in WIENER et al. 2003/06.

households was growing, but the livestock number of the entire district; the average size dropped due to the increase of households. Such conditions make the herders, of course, attempting to increase their herd to a level with subsistence capacity, with sustainability in pastures resources at their disposition becoming a secondary aim only: "You can't eat a protected environment if your provisions are finished."

Most herders in Yushu with medium-sized or larger herds are complaining about the shortage of grassland, especially in the more densely populated southeast. More and more pastoral people are left without enough pastures, therefore will gradually fail to subsist from the rapidly decreasing number of their animals. Under such circumstances it is intelligible why a growing number of pastoral people already left their native land to look for new fields of economic activities and for other viable livelihoods. In Yarcer and Zhêca of Nangqên County, two sample villages of our research project, between one third and half of the registered households had already taken residence in the county town during the past 15 years (GRUSCHKE 2011). This helped to relieve the strained resources situation in their home village where fewer households than actually registered were commonly using all the available pastures.

Furthermore, the "opening and reform" policy of China has resulted in the integration of pastoralist areas into a wider politico-economic context of the national and the world economy which led 'traditional' pastoral commodities for sale or for exchange of livestock products to compete with world market prices. The private marketing of specific products encounters different kinds of problems. Households who have enough pastures and thus the herd size is big enough to have a surplus for sale are mostly too far from towns where they can market fresh milk or yoghurt, while butter and cheese finds consumers among neighbouring herders whose herds are too small. For meat as well, the demand is growing within the region, since meat consumption in many families is higher than their own production. A major commodity has long been sheep wool, but the influence of the Australian wool on the world market has made prices fall to level that many Tibetan nomads give up.[13]

All these transformations have weakened the subsistence capacity of most pastoral households. There is a certain evidence for the majority of the population in Yushu no longer being able to subsist from mobile pastoralism alone; the majority of nomadic households are not even self sufficient in animal products (GRUSCHKE 2009), not to speak of having the possibility to market them (*Fig. 2*). Together with the exposure to the frequent snow hazards the risk of vulnerability to food crises is thus seriously getting bigger and entailing more state interventions of various kinds.

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[13] Cp. GRUSCHKE 2009:263 and 266 n.361)

The declining importance of livestock was so far, however, balanced by cash income generated by a unique resource: the caterpillar fungus (*Cordyceps sinensis*), yartsagunbu in Tibetan (Chin. *dongchong xiacao*). This is a fungus parasitizing the larvae of a moth of the genus Thitarodes (Hepialus), which lives in alpine grasslands of the Tibetan Plateau. (WINKLER 2005:69)

Fig. 2: Decreasing importance of livestock for income generation in Yushu
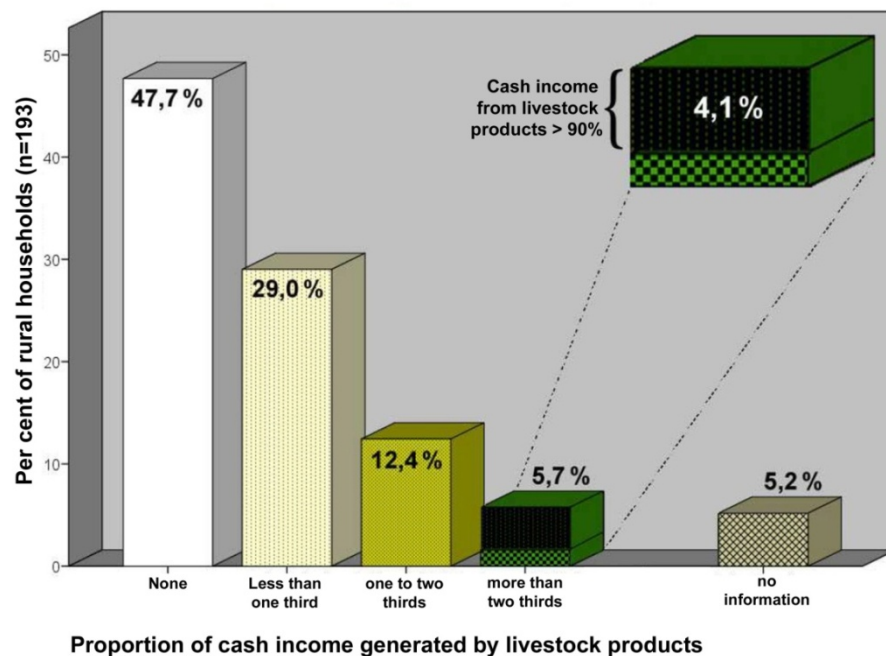
Source: own survey (2006/2007)

Fig. 3: Development of the caterpillar fungus price in pastoral areas of Yushu
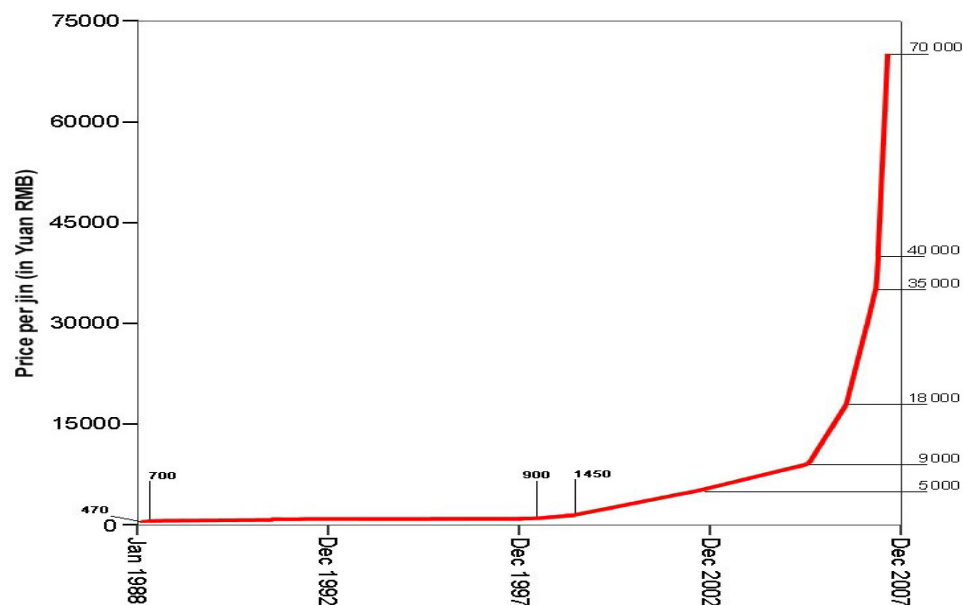
Source: own field research in Yushu

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Collecting these fungus-infected larvae has met with an increasing demand as a tonic on the Chinese medical market during the last two decades and thus became more important for income generation than products of the pastoralists' animal husbandry. When the economic liberalization began in the 1980s, the price of caterpillar fungus began to rise. Only gradually at first, but due to the growing demand in inner China, Southeast Asia and Japan, the prices of this commodity rose significantly over the last two decades (*Fig. 3*). This development has led to the situation that today digging, collecting and trading yartsagunbu is the most important resource and source of cash income for the majority of pastoral Tibetan households in Yushu.[14]

According to an official website,[15] Qinghai province yields 20 to 50 tons of yartsagunbu per year. In 2007, this produced an annual turnover of up to 2.5 billion Yuan (approx. 400 million US$) as income for pastoral households who have access to caterpillar fungus. Most of those regions are situated in the Tibetan prefectures of Golog and Yushu..[16] The sum of local cash income from yartsagunbu in the two major yartsagunbu producing prefectures, Golog and Yushu, was almost five times higher than the official annual budget of the entire Yushu TAP in the same year.

The effect of the caterpillar fungus having become the major resource for pastoralist households' income generation is resulting in a unique and widespread dependence on this resource. The implications of this situation go far beyond the possibility of providing sufficient income for pastoral livelihoods. At present, it proves to be an essential contribution to the systemic resilience of the nomadic way of lifestyle: Only due to the cash income thus generated, many nomads can continue to live in the customary way in the pasture areas, even if the herd size is far below subsistence capacity (GRUSCHKE 2011). For this reason, the image of present-day mobile pastoralism depicted in Yushu is that of a yartsagunbu collector economy rather than a market-oriented animal husbandry.

In Yushu, the majority of the registered rural population (over 80 %) has access to the resource caterpillar fungus and uses this opportunity to gain cash income (*Fig. 3*). However, inequalities are large. On one hand this is due to different quality and wealth of *chongcao* resources in different sites and areas. This has also led to conflicts eventually being resolved by access restrictions – a development that spreads more and more across the eastern part of the Tibetan plateau.[17] Nevertheless, even if high incomes can be generated, people are highly vulnerable since they mainly depend on a single resource.

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[14] These findings correspond to research results of WINKLER (2008) in northern and eastern TAR.

[15] www.qhei.gov.cn/qhly/gytc/mgyc/t20060420_203261.shtml [Accessed in August 2007]. Official assessment of yartsagunbu yields in the TAR and estimates of its turnover in neighbouring regions correspond to this figure (cp. WINKLER 2008).

[16] In official provincial and prefectural statistical yearbooks of Qinghai yartsagunbu was not even enlisted. We have to assume that the province's actual output of yartsagunbu is much higher.

[17] A strong feeling for safeguarding of the yartsagunbu resource has developed in many areas. Not surprisingly numerous conflicts have unsettled the area during the last years as more and more outsiders – Tibetans from Qamdo,

Fig. 3: Strategies for income generation among Yushu pastoralists

Use of different income opportunities in Yushu
(Household survey in sample villages, 2006/2007)
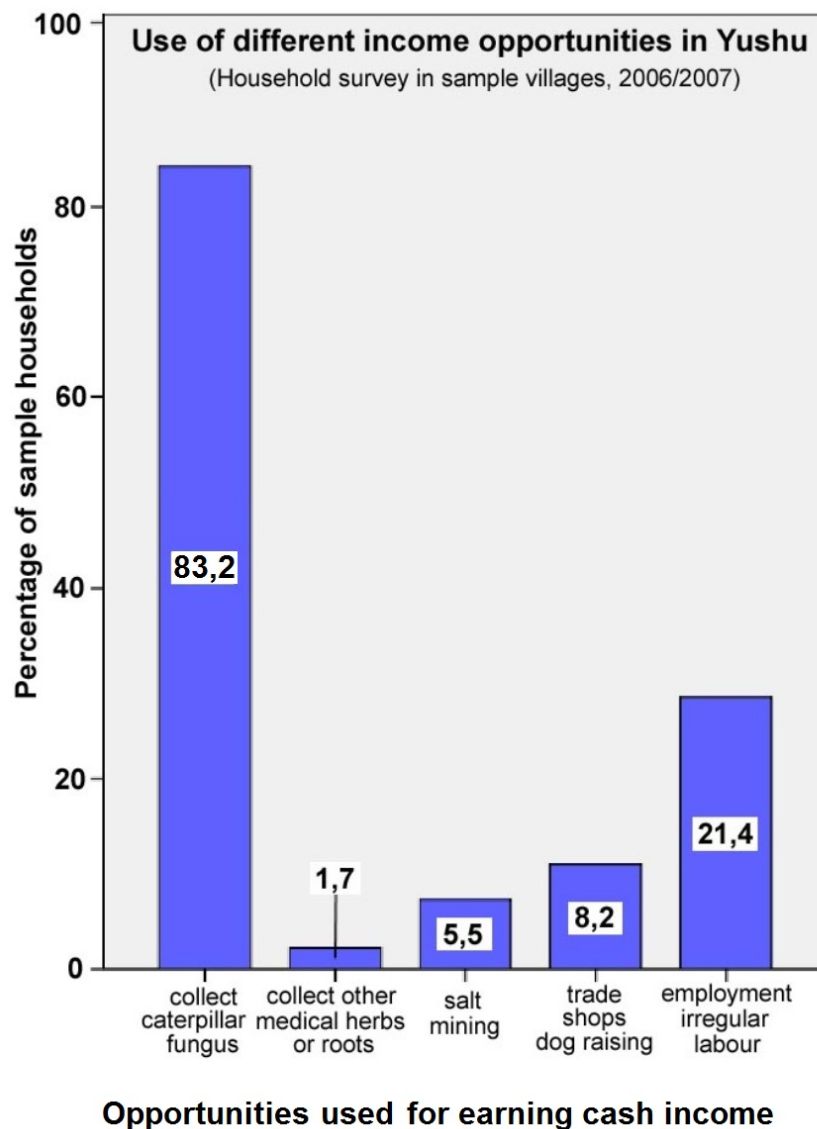
Source: own survey

The use of other resources, notably of labour force and education, is difficult as there is a severe lack of non-nomadic employment opportunities in the pastoral areas. Presently, the disposition of

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Dêgê, Ngawa and other parts of Kham and Amdo, Hui Muslims from Qinghai and Gansu – started pouring in. A major conflict about yartsagunbu digging, which lasted for almost a decade, was settled only in 2006 in southern Zadoi's Sulu xiang. The outcome of this settlement was that outsiders are no longer permitted access to pastureland during the yartsagunbu season. The local population succeeded in protecting her grassland resource against people from outside their counties (COSTELLO 2008 reports similar procedures in Golog). While most Yushu pastoralists have thus succeeded in managing their resource, some like the majority of the nomads in yartsagunbu-poor Qumarlêb County have in turn lost access to this presently most important income-generating resource.

labour force does not prove decisive for the level, diversity or stability of income. The same is true, so far, for education and even health. Whatever is the disposition of resources in the households, caterpillar fungus plays the major role in most cases. For those in Yushu who have access to this resource a good opportunity to accumulate capital for urgently needed investment is thus opened:

> Since moving wealth out of pastoral production and into other sectors seems key to greater development in this region, (…) local Tibetans must invest wealth in other sectors in order to develop the local economy significantly to their benefit. Sectors with potential for development include transportation, the processing of both livestock products and raw materials used in traditional Tibetan medicine, tourism, and small scale service enterprises including retail shops, barbershops, and restaurants. Whether local Tibetans can develop these sectors, or whether other Tibetans or Chinese will succeed first, depends initially on the availability of capital to invest. (Op cit. COSTELLO 2008).

In addition, it is the trade with yartsagunbu and other high risky, but profitable commodities (like Tibetan mastiff) which bring pastoralists in contact with Chinese and international markets. The improving infrastructure, the growth of monetary exchange and therefore of trade, as well as new employment and work relations entail a stronger mutual pervasion of 'nomadic' and 'sedentary' spheres than before, both on a regional and transregional level. As access to, and participation in markets has become easier, and the variety of purchased goods has enlarged, consumption levels have increased enormously during the last decade. This growth leads to booming trade particularly in the prefectural capital, Gyêgu,[18] and the county seats. The higher demand and expenditure for consumer goods, jewellery etc. leads to further enhanced trade activities connecting the rural areas and towns to cities outside the prefecture.

The changing significance of livestock keeping in Tibetan areas is not only perceived by outsiders, but by the pastoralists in Yushu TAP themselves. More (former) nomads are nowadays occupied or employed outside pastoralist activities than the statistics lead us to believe. This is not only because it seems impossible for most nomad households to exist on animal husbandry only, but also due to their willingness to follow other occupations instead of marketing their animals. They have realized that they should be involved in structuring the conditions under which 'nomadic' activities are increasingly abandoned or continue to exist, and should not leave this to others.

The development of the towns of Yushu TAP offers new job opportunities with newly opened businesses (both Chinese and Tibetan shops). The state of affairs of the pastoralist economy in Yushu would actually make such jobs needed, if there would not be caterpillar fungus compensating for the low livelihood level of many nomadic households. However, due to the low wages offered, such opportunities are rarely taken by individuals from pastoralist households

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[18] In Gyêgu, this boom was interrupted by the devastating earthquake in 2010.

(who revert to yartsagunbu whenever possible). Their unwillingness to engage in wage labour leads to the consequence that less people than expected are available on the local labour market. This phenomenon entails some (temporally limited) in-migration. Thus, not only professionals are called in from outside to Yushu, but also workers for unskilled labour – mostly Muslims from Amdo, some Tibetans from agricultural areas and Han Chinese. Meanwhile, wage labour jobs that formerly were only taken by Chinese or Tibetans from agricultural areas, such as jobs in restaurants or shops, are now occasionally accepted by local pastoralists, particularly young Tibetan women, and recently their number seems to grow slightly.

Agents of change and ongoing transformational processes

At first glance, people in Yushu towns and communities give the impression of leading a modern kind of life in a traditionally shaped society. Who is a nomad and who is not is less obvious than it used to be. This widespread ambiguity is also reflected by the circumstance that in academic discussions on pastoralism, the term 'mobile pastoralism' is nowadays preferred to the terms 'nomadism' or 'nomadic pastoralism'. Rather than following conventional definitions of nomads or introducing the scientific discussion on the definition of 'nomads' led in the west, we just restrict our considerations to those people who designate themselves as *drokpa* (*'brog pa*) – the term Tibetans use for 'alpine pasture ones', or "users of alpine pastures".

The *drokpa*'s self-image, as GOLDSTEIN and BEALL have noted earlier,[19] is primarily built on being pastoralists using alpine pastures in marked contrast to people practising farming in valleys. Their self-conception does not correspond to our western notion in which moving herds and living in mobile housing (like tents) belonged to the concept of nomads – the term that is generally used as translation of *drokpa*. Yet, animal husbandry has to be the main determinant of their production activities and mobility, and thus remains in the centre of what they understand as a way of life. This way of life is actually practised, and it does not merely function as a value orientation. In addition to raising livestock, many other activities, such as trading, hunting, gathering and farming may also be practised without definitely changing the pastoralists' self-image as *drokpa*. Thus, our target group in Yushu can still be considered as quite a substantial one even if, due to changes that happened during the past decades, their society does not seem overwhelmingly occupied with pastoralist daily routines any more or is sustained much less by livestock products than before. What were the agents of those changes as perceived by the pastoralists?

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[19] GOLDSTEIN & BEALL 1990:64.

At first it is, of course, mobile pastoralism that is put in the focus of such a consideration. During the past half century, pastoral management was reorganized several times: collectivization, then redistribution of animals, of rangelands as commons, and eventually the privatization of usufruct rights of pastures. The agent was and is the state that tries to shape according to its ideological parameters. The changes enacted have a legal basis which is meant to strengthen the herders' rights, but at the same time allegedly destroy habitual ways of managing pastures. Fences and housing apparently obstruct mobility and therefore mobile pastoralism, if no adaptations are allowed. Nevertheless, we experience *drokpas* as highly mobile. Most of them seemingly continue to wander with their herds between seasonal pastures, while others move for trade or other businesses and purposes. As far as mobility is concerned, the opportunities offered by the changing society and seized by the various actors may be seen as important agents of change. State interventions for social and socioeconomic transformations do submit such opportunities even though they also produce new duties and constraints. On the other hand, they do not have the same meaning for everybody, but outline an organizational framework with new prospects for different actors – actors who leave the habitual pastoral ways of life and adapt to urban schemes.

When asked about rangeland degradation, pastoralists often refer to weather and climate as well as to the plateau pika or other rodents, obviously considering them as major agents of environmental change. Demography seems to be an abstract issue, even though the restrictive character of the limited availability of pastures and the need for pastures for coming generations of nomads is a fact people are well aware of. The herd size as an important influential factor for overgrazing is seen in relation to the accessibility of rangelands rather than to their condition. For those who have livestock below subsistence capacity this is a cumbersome issue anyway that has little to do with their difficult livelihood situation. In some interviews, however, people with small herds admit that their practice of not using seasonal pastures any more is not good for the rangelands and may actually lead to overgrazing. Thus, their specific way of managing the grassland could be seen as an agent of change leading to environmental degradation. Yet, the large majority of active herders want to use, and are still using seasonal pastures. Even though they have leasehold contracts with usufruct rights, many cooperate and make common use of the rangeland in order to avoid overgrazing. This kind of common management and use is thoroughly legal even under the leasehold system and not in contradiction to the official policy. Where conflicts with local administrators come up, it is often an erroneous or overly strict interpretation of what the policy aims at, allows and wants to prevent.

How changing prices are perceived by nomads is hard to assess, but having lived in a state-directed economy for most of, if not all, their life it is unlikely that they associate them with abstract market laws instead of with the government. While people who take up trade and other businesses develop a feeling for how markets work and how they can profit from them, the more

vulnerable households who have little more than a subsistence economy more willingly blame state policies for any new hardships. This is a major issue when projects like resettlement schemes are implemented, since often neither administrators who design and implement such projects nor re-settlers concerned have a clear idea of how market mechanisms could affect their new life in town. Financial support is granted to them is generally calculated on the basis of their – very low – rural incomes, disregarding the important values of subsistence products people enjoy while living in the countryside: like, for instance, milk, meat and dung delivered by the yaks they are keeping. People are often hit by extremely high cost once they sold their animals, and have no chance to make up for this unprecedented loss, or claim a compensation after projects started already. It is obvious that dissatisfaction will occur as a reaction towards the state, and only if there is more direct exchange between policy-makers and local stakeholders during the planning and implementation, there is a chance to avoid social unrest and unnecessary excessive cost.

Globalization is an agent of change that reaches pastoralists in the form of new images via media and new possibilities of communications. Yushu nomads are not only on the move as herders, but also as traders, pilgrims and, some, even as tourists as well as, of course, as temporary and long-term migrants. They get in touch with different life plans and make their own choices for a new way of living, for consumption patterns or even new forms of settlements. The field work in Yushu's Zadoi County and some other regions revealed that most nomad families use surplus income mainly for consumption. Their consumerism is seemingly more determined by male aspiration patterns than by female ones, as can be seen from the purchase of goods like TV sets, motorbikes, cars, and fancy modern clothing worn by men rather than by women.[20] The use of media is easily adopted and the acquisition of technical equipment for media consumption has become a self-evident part of daily routine. As such they also represent a constant agent of change since people are exposed, or expose themselves to new ideas, influences and stimuli from outside.

Consequently, more and more pastoral households move to townships and urban areas – wanting to develop new life plans and in search for a higher standard of living of which they often do not know much more than what they have learnt from images and media reports. Some migrate for business reasons, others because they feel they may find a more comfortable life while poorer ones just look for possibilities to make a basic living. In comparison to one or two decades earlier, the significance of education has become a major issue among nomads, and the longing for better education, namely the younger generation, has definitely become a major agent for changing life perspectives. This links pastoral livelihoods to urban and sedentary concepts of occupation and therefore offers a unidirectional way out of overpopulated pastoralist regions.

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[20] Cp. WINKLER 2008.

The various policy interventions during the past two decades ensued serious changes to the general framework of basic conditions for pastoralist livelihoods. The observed changes seem to confirm this diagnosis: as more and more people live in the towns and cities and urbanization is proceeding even in distant pasture areas. Increasingly, nomads are settling down in houses and thus give evidence of being sedentarized. Sedentarization and urbanization are, however, not just symbols of state interference, of influence from outside the (former) nomadic society, but may, as an important link between nomads and sedentary population, procure livelihood options needed the pastoralist system itself can not produce.

Adaptation strategies

While traditional nomadic livelihood strategies centred around the role of the herd and the pastures, and the environment therefore plays an elementary part in their respective household economies, adaptations to the changes described for Yushu are based on new paradigms. For all pastoralist areas on the Tibetan plateau, we may ask the question whether the re-nomadization of the 1980s was merely a short-lived, temporary revitalization process before the ultimate demise of mobile pastoralism. From the perspective of nomadic actors, this would mean the end of their pasture-based economies and bring them – as in many places in the South (or so-called "Third World") – a future as a marginalized nomadic population living, at best, with prospects of low-paid informal activities on the outskirts of cities. Findings of the present study have shown there is little argument for such scenarios in the case of Tibetan pastoralists *in general*. The resource base may prove narrow, the problem of poverty and vulnerability considerable – and yet, individual pastoral households, communities, nomadic societies and the pastoralist areas' economic systems as a whole show evidence of a certain resilience.

Pastoralists do not only adapt to the changing ecological situation, to market developments or "modern life" in towns, but also to state policies and interventions. Reports on the enclosure movement in Tibetan areas, for instance, gave the impression that fencing pastures contracted to households would split up the entire rangeland into pieces of privately used land thus restricting mobility and interrupting the system of mobile pastoralism. Besides withdrawing protected areas from herding practice, the major issue of that movement is to have reserve pastures for harvesting fodder during the difficult spring period. There are certainly many areas where fences have been used to delimitate private pastures, but there are many more cases where villagers successfully disapproved of such measures. The adaptation to such policies must not be understood as a general one, as one that every nomad would follow, but as a choice that may be different from village to village.

The same is true for pasture management. The system has definitely led to every pastoral household in Qinghai having signed a leasehold contract that secures him the exclusive use rights over his rangeland. Still, examples of continuing traditional ways of common use of those "private" rangelands are widespread, and new forms of co-management developed. Even the most controversial state interventions – resettling herders who have to abandon their livestock into distant towns – may truly offer distressing representations of allegedly failed projects. When making detailed interviews, however, there is no uniform picture of failure: While many people are disappointed that the scheme does not work in the way they expect, there are others using the opportunity given by the state to set foot in an urban environment, to use it as a spring-board. The example of those who show their dissatisfaction by leaving the resettlement villages may even lead policy-makers to reconsider the whole scheme. Such households may have to stand unduly hardships, yet the different pastoral actors perform an adaptation to the system that goes beyond a mere acceptance of what they were asked. In the long run, of course, failure could be omitted and successes certainly be increased if the local stakeholders would be better considered and included in the processes of designing and implementing such projects.

Future perspectives

All in all, the strategies of nomadic actors in Yushu tend more likely to preserve "nomadism", or being a *drokpa* as a way of life rather than an explicit form of economic activity. Therefore, to secure their existence, many pastoralists are seemingly ready to give up animal husbandry and "move out of the system of mobile pastoralism", resulting in that system gaining a higher resilience.

Pastoral households with herds too small to subsist live side by side with others who appear to market their animals very successfully, and both follow, in a rather conventional way, the patterns of mobile pastoralism. At the same time, rural migrants to towns establish themselves in the newly developing urban milieu of townships or in the city under difficult conditions, with their livelihood so far secured by income from caterpillar fungus – both ends are an expression of the resilience of the (ex-) nomadic society:

- Mobile pastoralism in Yushu could survive so far because many nomads moved out of the pasture areas and live in town.
- But mobile pastoralism also continues because even pastoralists below subsistence capacity can secure their livelihood by complementing their income with cash generated from caterpillar fungus collection.
- Furthermore, pastoralists without education or vocational training can currently still make a living in towns. Some do trade (yartsagunbu), but most of them, as they are still registered in their rural home village, still have access to caterpillar fungus and base their livelihood on this.

The interesting paradox created by the caterpillar fungus income is that it supports both the remaining of non-subsistent nomads in rural areas and the migration of nomads to towns and cities. This may not, however, last for long as the dependency on a single resource makes them vulnerable and the sustainability of the system must be questioned. Especially due to the yartsagunbu price drop in 2008 more people might have become aware of such risks, and some nomads may turn towards other forms of resources, namely education and cultural knowledge.

A phenological classification of the "nomadic societies" in Yushu displays a diversity that unveils any generalization of types of vulnerability as unacceptable simplification. The abundance of transformations, problems, opportunities, images, attitudes, lifestyles, influences and individual behavioural patterns unfold a pluralistic, albeit fragmented society – a society in which poor and vulnerable people may be identified, but under the given special circumstances of a "caterpillar fungus economy" coherent vulnerable groups are yet hardly discernible. They are less defined geographically or socially, but rather individually *within all existing groups*. Future interventions to strengthen the sustainability of household economies therefore need, more than until now, to focus on the strengthening and developing of incorporated resources – for instance by improved education, vocational training, management training, and alike. This is the stage where we have to do more research to see how the development in pastoralist areas can be more directed towards the need and the wishes of the people concerned.

The pastoral society in part has reacted by active migration, further supplemented by state interventions. The latter needs a better planning of what can be done for the migrants in town. Here it is extremely important to reflect on how state agencies work, what they are expected to perform, and how their structure influences this performance. Since the 1980s changes in administration enabled a certain degree of decentralization, allowing for implementation measures to be adapted to local condition. As not only such conditions are extremely varied, but also the commitment and the expertise of cadres as well as their willingness and ability to consider requests of the herders, those policies are, on the local level, more often than not diverse at best, or conflicting, confusing or even counterproductive at worst.

While state interventions in China definitely aim at solving problems reported by both pastoralists and academics, successes tend to be limited and new problems arise. In the long run, there will only be a chance to improve results if herders are not just meant to accept policies decided, but rather if they are included in the process of decision-making. Participation in implementation still sounds like a long way to go, although there are cases in which local administrators and pastoralists, often under involvement of NGOs, have managed to do so – like in cases of co-management as advocated by ICIMOD (BANKS et al. 2003). Local adaptations demonstrate that herders have expertise enabling them to play a part in the process, if they are allowed to.

Project of state interventions are accepted by nomads more than is believed. Major complaints are about measures not consistently implemented, conditions changed and local administrators not sticking to what was promised. One of the major issues of all projects in China is met with here: monitoring and evaluation. The same people who implement projects do also give their feedback to higher level authorities: This leaves little space for critical analysis. Official statements on projects in public media make think that projects are a success if huge amounts of allocated funds were fully spent. This is providing for good opportunities to misappropriation. Corruption among local Tibetan administrators is as big a problem as in the rest of China, and this creates issues even if projects are acceptable to local people. This becomes more serious for pastoralist households since due to the remoteness of their places of living they have less possibilities to access enough information about how policies are and can be interpreted, what kind of rights they have or should have, and by which means they could organize themselves to insist on them.

Policies and interventions in Tibetan pastoralist areas can not be understood without regard to the ideology-guided decision framework of China's general economic policy, while successes and failures need to include an analysis of the structural problems and shortcomings in its implementation, monitoring and evaluation. So far, it has to be feared, that changes in policies will not help much as long as no amendments in the monitoring and evaluation system can be made.

At this stage, the preliminary answer to the question *How can the use of pastoralist resources be sustainable?* may include the following facets:

- The resources situation of pastoral regions needs to be adequately assessed.
- Scant resources need to be shared by fewer people.
- If many people share scant resources, they need to complement their income portfolios by developing new resources. Only this can allow resources be preserved for sustainable use.
- The successful continuation of mobile pastoralism is complemented by rural-urban migration. If better job opportunities for migrants to towns can be developed, they will be more successful than state resettlement schemes.
- Measures for carefully increasing livestock productivity may allow for using pastoral resources with consideration.
- There is ample evidence that such objectives are more easily successfully implemented if local stakeholders' voices are heard at an earlier stage.
- Policies and interventions will prove more successful if new, more adequate systems of monitoring and evaluation can be introduced. Changes in policy have a low efficiency as long as those implementing it are the same who do the evaluation.

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Parks Canada: Working with Aboriginal Peoples, Establishing New National Parks

David Murray (Parks Canada)

1) Introduction

Parks Canada

The Parks Canada Agency is an organization of the Government of Canada that manages national parks, national historic sites and national marine conservation areas. Canada's first national park, the third national park in the world, was created in 1885 at Banff, Alberta. In 1911, with several national parks created, the Government of Canada established the world's first national parks service, the forerunner of today's Parks Canada Agency. This year Parks Canada is celebrating its 100th anniversary.
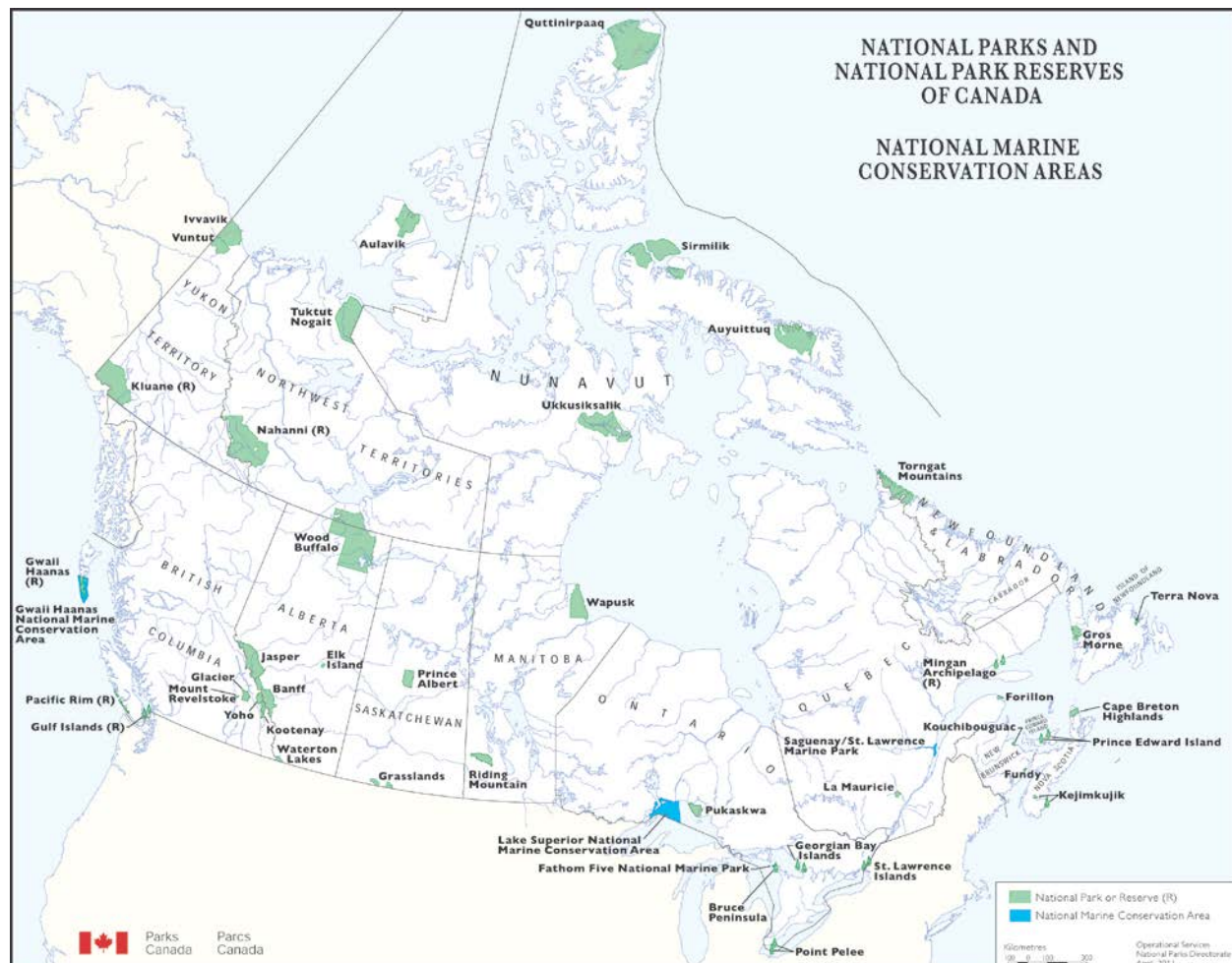
The *Canada National Parks Act* dedicates the national parks to the people of Canada for their benefit, education and enjoyment and makes provision to keep them unimpaired for the enjoyment of future generations.   Another provision of the Act is that the first priority in the management of parks shall be the maintenance or restoration of ecological integrity through the protection of natural resources and natural processes. The primary management direction is to protect the ecological integrity of the park while allowing for visitors to have meaningful experiences. National parks of Canada are classified as International Union for the Conservation of Nature (IUCN) category 2 protected areas.

Canada's system of national parks is growing. The total area of national parks has more than doubled since 1983, at which time 28 national parks covered 130,000 square kilometres. Parks Canada now manages forty two national parks, with a total area of more than 300,000 square kilometres. Canada continues to create more national parks as well as other types of protected areas.

Aboriginal Peoples of Canada

The indigenous or Aboriginal people in Canada, the descendents of those people who were in North America before the Europeans arrived, have a special status. The Canadian Constitution recognizes three major groups of Aboriginal people, the First Nations (Indians), the Inuit (Eskimos), and the Metis (a group that developed through contact and intermarriage between Europeans and First Nations people.) In many cases, the relationship between an Aboriginal people and the Government of Canada has been negotiated through a treaty or a land claims agreement. The government of Canada is engaged in an ongoing process to negotiate modern land claim agreements and treaties with Aboriginal groups in areas where such agreements have not previously been reached.

In areas without an agreement, instead of a national park a national park reserve could be established. The distinction recognizes that the national park reserve area is subject to a claim by Aboriginal people that the federal government has accepted for negotiation. National park reserves are protected under the *Canada National Parks Act*, and local Aboriginal people may continue their traditional hunting, fishing, trapping, gathering, and spiritual activities.

Parks Canada works closely with Aboriginal people in the establishment and management of national parks. While it was not the case in the past, today the creation of new national parks is done with the support and involvement of Aboriginal people and organizations.

Northern Canada

Canada is a federation of ten provinces and three territories. The territories, Yukon, Northwest Territories (NWT) and Nunavut, make up the northern part of the country and cover about four million square kilometres, approximately 40% of the area of Canada. With just 100,000 people and few roads, much of northern Canada could be called wilderness. It is not a wilderness without people, though. It is a wilderness familiar to the Aboriginal people that live there, as it has been their homeland for millennia.

Northern Canada has one of the greatest extents of remote wilderness on the globe, with vast caribou herds that migrate hundreds of kilometres on their annual rounds and millions of birds that come to nest during the brief, intense summer. The northern winter is long and severe, and the ecosystems are those of the Arctic and Subarctic.

2) Establishing New National Parks

The national park systems plan defines 39 natural regions in Canada, and Parks Canada's goal is to have at least one national park to represent each natural region. Several natural regions are not represented in northern Canada and work is underway to establish parks to fill those gaps.

The process to establish a new national park begins with looking at the unrepresented natural regions. Within such a region, Parks Canada looks for areas that are large enough to allow for the maintenance of ecological integrity and that are representative of the natural region.

Then Parks Canada undertakes various studies to determine whether the area is suitable as a national park and whether it will be feasible to establish one there. These studies examine the conservation values, such as wildlife and ecosystems, cultural resources and opportunities for meaningful visitor experiences, as well as possible socio-economic effects. For national park proposals in northern Canada, a major study of the mineral potential of the area is required. This ensures that mineral values are known and considered when deciding on a park boundary. Each park proposal is different, and each will require a unique research plan, in some cases this could include studies of archaeology, oral history and mapping of cultural areas and sacred sites.

Consultations with the public are an important part of the process. The general public is invited to participate through newsletters, web pages, and public meetings. Information is presented through the media, newspapers, radio and television, and on the Parks Canada web site. In addition, Parks Canada meets with stakeholders and Aboriginal organizations. The major stakeholders in the north include the mining industry, tourism companies and environmental non-governmental organizations.

Once the consultations and studies are complete, and a national park proposal is deemed to be feasible, Parks Canada negotiates a park establishment agreement. In southern Canada an agreement is negotiated between the federal and provincial governments, and in northern Canada, such an agreement is usually with Aboriginal organizations. In some cases more than one park establishment agreement is necessary.

Canada's National Parks System Plan

Western Mountains
1. Pacific Coast Mountains
2. Strait of Georgia Lowlands
3. Interior Dry Plateau
4. Columbia Mountains
5. Rocky Mountains
6. Northern Coast Mountains
7. Northern Interior Plateaux and Mountains
8. Mackenzie Mountains
9. Northern Yukon

Interior Plains
10. Mackenzie Delta
11. Northern Boreal Plains
12. Southern Boreal Plains and Plateaux
13. Prairie Grasslands
14. Manitoba Lowlands

Canadian Shield
15. Tundra Hills
16. Central Tundra
17. Northwestern Boreal Uplands
18. Central Boreal Uplands
19a. West Great Lakes – St. Lawrence Precambrian Region
19b. Central Great Lakes – St. Lawrence Precambrian Region
19c. East Great Lakes – St. Lawrence Precambrian Region
20. Laurentian Boreal Highlands
21. East Coast Boreal Region
22. Boreal Lake Plateau
23. Whale River
24. Northern Labrador Mountains
25. Ungava Tundra Plateau
26. Northern Davis Region

Hudson Bay Lowlands
27. Hudson-James Lowlands
28. Southampton Plain

St. Lawrence Lowlands
29a. West St. Lawrence Lowland
29b. Central St. Lawrence Lowland
29c. East St. Lawrence Lowland

Appalachian Region
30. Notre Dame – Megantic Mountains
31. Maritime Acadian Highlands
32. Maritime Plain
33. Atlantic Coast Uplands
34. Western Newfoundland Highlands
35. Eastern Newfoundland Atlantic Region

Arctic Lowlands
36. Western Arctic Lowlands
37. Eastern Arctic Lowlands

High Arctic Islands
38. Western High Arctic
39. Eastern High Arctic

Legend:
- National park or reserve (R)
- Region represented
- Region not represented
- National park study area - with interim land withdrawal
- National park study area
- National park completion - land assembly underway

Parks Canada / Parcs Canada

Operational Services
National Parks Directorate
August, 2010

Park establishment agreements are often required by Aboriginal land claim agreements. A park establishment agreement with an Aboriginal group could set out the rights to exercise traditional harvesting activities; economic opportunities, such as scholarships, employment provisions and contracting opportunities; a cooperative management regime, usually with some type of management board with representation from the Aboriginal community and Government; and the park boundary.

The final step in park establishment is to legally create the park through an amendment to the *Canada National Parks Act*, adding the park to the schedule of the Act.

Parks Established in Northern Canada

There are eleven national parks in the three northern territories, three in Yukon, four in Northwest Territories and four in Nunavut. These northern parks are the largest in the country and make up more than two thirds of the parks system by area.

In the Yukon, Ivvavik National Park of Canada was established under the *Inuvialuit Final Agreement* and Vuntut National Park of Canada was established under the *Vuntut Gwich'in First Nation Final Agreement*. Kluane National Park and Reserve is within the traditional areas of more than one First Nation: the Champagne and Aishihik First Nations Final Agreement covers the eastern portion of the park, while the Kluane First Nation Final Agreement includes the western part of the park.

In the Northwest Territories, Aulavik and Tuktut Nogait National Parks were established through agreements with the Inuvialuit, pursuant to the *Inuvialuit Final Agreement*. There is an interim park management agreement for Nahanni National Park Reserve that sets out the cooperative management committee. A final agreement is under negotiation between Canada and the Dehcho First Nations. Wood Buffalo National Park lies partly within the Northwest Territories and partly within Alberta, in the area covered by Treaty 8.

In Nunavut, the *Nunavut Land Claims Agreement* requires Inuit Impact and Benefit Agreements (IIBAs) to establish national parks and other protected areas. The government of Canada and Inuit have completed IIBAs for the four parks: Auyuittuq, Quttinirpaaq, Sirmilik and Ukkusiksalik National Parks.

Parks Canada is working on several parks proposals in the north. In the Northwest Territories, the proposed Nááts'ihch'oh National Park Reserve will protect the headwaters of the South Nahanni River. Also in the NWT, a feasibility study is underway for a park that would protect the area extending from the East Arm of Great Slave Lake to the tundra east of Artillery Lake. This proposed park will be called Thaidene Nene National Park Reserve. There are two national park proposals in Nunavut, one on Bathurst Island and the other that would be at the western border of Nunavut, adjacent to Tuktut Nogait National Park. Parks Canada is negotiating an IIBA for the national park on northern Bathurst Island.

Parks Canada has launched a feasibility study for a national marine conservation area (NMCA) in Lancaster Sound, Nunavut. If the proposal is successful, this NMCA at the mouth of the Northwest Passage would be the first in northern Canada.

3) **Cooperative Management and Agreements with Aboriginal Peoples**

As discussed above, park establishment agreements usually provide for a cooperative management arrangement. This is most often through a board or committee with membership appointed by the two parties, government and Aboriginal. The committee oversees the management of the park and provides advice to the minister responsible for Parks Canada on park planning and operations. These cooperative management regimes have strong mandates and a vital role in the northern national parks.

For example, in Nunavut each national park has a Joint Inuit-Government Park Planning and Management Committee with equal numbers appointed by each party. For each park, the committee examines the external research proposals, reviews the annual park budget, approves the programs in such areas as ecological monitoring, visitor experience, cultural resource management and facility maintenance, and every five years approves a management plan for the park. In many ways, these committees provide an executive function similar to that of a board of directors.

Parks Canada has now had over 25 years of experience in working with cooperative management boards to manage national parks. About a dozen national parks are now managed this way, with more cooperative arrangements in development. The experience has been positive and has strengthened the management of these national parks. While points of disagreement may arise from time to time, the various management committees have proven to be effective in addressing the issues and coming to an agreement.

The Expansion of Nahanni National Park Reserve

In June 2009, the government of Canada passed legislation that expanded Nahanni National Park Reserve six-fold, from under 5,000 square kilometres to 30,000 square kilometres.

Established in the 1970s, this national park reserve is recognized as a World Heritage Site, but from the time of its creation it was clear that the park was too small to protect the wildlife or the watershed of the South Nahanni River. While it was realized early on that the boundaries of Nahanni National Park Reserve were too small, the project to expand the park began in earnest in 2003. The first step was when Parks Canada and the Dehcho First Nations signed a Memorandum of Understanding to work together to expand Nahanni National Park Reserve.

A committee was established, the Nahanni Expansion Working Group (NEWG), with Parks Canada and Dehcho First Nations members. The NEWG determined a research agenda and managed the public consultation program. Under the direction of the NEWG a suite of studies were begun, mapping conservation values, third party interests and other factors.

The foundation was set through mapping the area's hydrology, vegetation, forest fire history, glaciers and geomorphology. The wildlife studies focussed on woodland caribou, grizzly bears, bull trout and trumpeter swans. The grizzly bear research included the collection and DNA analysis of bear hair, allowing for the identification of individual bears without capturing or handling them. For the woodland caribou survey, several caribou were fitted with collars that sent reports of the animal's position to the Argos satellite system. This allowed us to map the annual migration routes and determine the areas that are the most important to the herd.

Other studies included research on special geological features, landslides, and hot springs. One report looked at the past economic impact of Nahanni National Park Reserve, and projected the potential increase in economic benefit from the expansion.

A major mineral assessment was launched, managed by the Geological Survey of Canada. This examined the geology of the area and modelled the mineral potential of several types of mineralization. The report was published in 2007 and it noted that the Nahanni area has some important mineral potential, including areas of tungsten, gold, lead and zinc, as well as natural gas potential.

The Nahanni Expansion Working Group managed a public consultation program, including many stakeholder meetings and two rounds of public meetings. Public meetings were held in the northern communities, Yellowknife, the territorial capital, and Ottawa, the national capital.

Following the consultation and using the results of the studies, the NEWG developed a boundary proposal. Officials in several departments of the federal and territorial governments then discussed the proposed boundary. A modified version of the boundary was agreed to and the Dehcho First Nations consulted on that modified boundary.

The final boundary takes into account the mineral potential and the conservation values. It allows for the protection of the most important wildlife habitat, protects the major river basins while leaving the highest mineral potential areas out of the park.

With the agreement of all parties on a boundary that protected 91% of the watershed, the government of Canada passed an Act of parliament that legally expanded Nahanni National Park Reserve to 30,000 square kilometres, in June 2009.

The Dehcho First Nations and Canada have not finished negotiating a final agreement, but an interim park management arrangement has been agreed to, one that sets out the requirement for a cooperative management board, the Naha Dehe Consensus Team. Three members of the Consensus Team are appointed by Parks Canada and four by the Dehcho First Nations. As implied by its name, decisions are made by consensus, requiring all members to agree to a proposal for it to go forward. Since it was formed in 2002, the Naha Dehe Consensus Team has developed the park's Ecological Integrity Statement, managed the production of two Park Management Plans, reviewed annual park budgets and advised on a great number of operational issues. The Naha Dehe Consensus Team is now managing the much larger park.

4) Conclusion

Parks Canada continues to protect areas by establishing new national parks, and working with Aboriginal people is central to that work. Through these partnerships, Aboriginal peoples have the opportunity to express themselves, to ensure their priorities are considered and to be fully involved in the park establishment process.

Parks Canada recognizes that in addition to protecting biodiversity, a national park will often protect a spiritual place that has been cared for by Aboriginal peoples for millennia, a very special place that contributes to the survival of their culture. The management of these national parks is strengthened when Parks Canada and the Aboriginal people work together.

Through collaborations between Parks Canada, Aboriginal peoples and the Canadian public, the large and remote northern parks, which are challenging to visit and homeland to Aboriginal peoples, will be protected and presented in ways that ensure their ecological integrity for present and future generations.

As pressures mount on wild areas due to factors such as climate change and increasing development and roads, Canada's northern national parks will continue to safeguard extensive, undisturbed ecosystems so that future generations of Canadians and visitors will experience the Arctic wilderness, and future generations of the local people will continue their relationship with the land.

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Change Four Dimensions of Civilization to Construct Eco-civilization

Lu Feng

Abstract

Modern civilization has the following fatal defects:

1. Mistakes of ideas

The guidance of modern civilization is modernity or modernism. It contains some rational ideas, but it also has fatal mistakes. It claims that nature is just the aggregate of physical entities. It is said that with the progress of science human knowledge will get closer and closer to exhaust all the secrets in Nature. And with development of technology human beings will become more and more powerful to conquer everything in nature. And it means that human being will become freer and freer or more and more autonomous in nature. Wanting to get more and more material wealth is just the natural preference of human being. Social norms are radically different from natural laws. And studies of society and morality are irrelative to natural sciences. But I think these ideas are completely wrong.

2. Wrong direction of development of science-technology

Many modern thinkers think that the internal logic of the whole science determines the sole direction of the progress of science to get closer and closer to know all the secrets of nature. Modern science supports modern technology to become more and more powerful to conquer nature. Generally speaking, to become more and more powerful to control things in nature is the direction of development of modern science-technology. The global ecological or climate crises are caused by the abuse of modern science-technology.

3. Mistake of construction of social institutions

Since the end of "Cold War", western pattern of modernization dominates the whole world, and the western way of industrialization is developing globally. The basic "logic" for institutional construction is "logic of capital", and it is shown typically by the institution in US and also in China today. But the institution guided by logic of capital cannot protect natural environment, because it encourages people's greed.

Modern civilization is unsustainable, and eco-civilization is the only choice of human being in 21 century. In order to get out of the crises of modern civilization and to construct eco-civilization, we have to change four dimensions of civilization:

1. Change of ideas

We have to give up mechanical materialism, dogmatic rationalism, ethical materialism and consumerism, and turn to ecologism. We have to know that human knowledge can never exhaust the secrets in nature, and nature will always have the power to punish human's bad and wrong actions. Human beings are always dependent on the health of biosphere of the earth. The more powerfully we conquer the nature, the more dangerous the world will become to us. We can no longer take the growth of material wealth as the token of meaning of our lives.

2. Change of science-technology

There is no internal logic for the unity of science. Science-technology has to serve human life or practice. Science-technology would enslave human being if so called internal logic of the unifying science is imposed to society. Science can never end all the secrets in nature. And technology will be more and more dangerous to human being when it gets more and more powerful, and it may bring the destroy of human civilization. The end of innovation of science-technology should be to ensure safety and happiness of human being. To live safely and happily in the earth, science-technology should try to maintain the health of bio-sphere of the earth.

3. Change of social institution

The guidance of institutional construction should be changed from logic of capital to laws of ecology. It does not mean to abolish market economy and logic of capital, but means to obey ecological laws in priority to logic of capital.

4. Change of mode of economy and structure of industry

The economy should be changed into ecological economy. We have to find clean energy, develop technology of clean production, and construct the systems of ecological industry. And we have also to construct ecological cities.

Most importantly, we have change the way of lives and consumption. If you want to keep on "mass production and mass consumption", you cannot expect that mass waste will disappear. We have to go for green and moderate consumption.

Climate Variability and Vulnerability in Pastoral Society:

A case from Inner Mongolia∗

Wang Xiaoyi, Zhang Qian

Abstract

As the primary characteristic of arid and semi-arid areas, climate variability has played an important role in both grassland protection and animal husbandry. If the institution of grassland use failed to deal with drought, which is one of results brought on by climate variability, grassland degradation and herders' poverty will happen. Based on a case study conducted in Hexigten County of eastern Inner Mongolia, we found that drought impacts caused by climate variability were aggravated by the conflicts on resource use. A series of social and economic changes in pastoral societies, including grassland segmentation, sedentarization, expansion of fodder trade, decrease of herders' cooperation and industrial development, have made herders more vulnerable to drought. Less fodder output, increased costs, then heavy debt within a disrupted community make herders' life unsustainable. The paper points out that, changes driven by policy-makers may aggravate herders' vulnerability and a reverse approach adaptation should be developed.

Key words: drought, sedentarization, grassland privatization, vulnerability, Inner Mongolia

1. Introduction

In Gonger Village in Hexigten County in 2010, Nadam Fair, a traditional Mongolian cultural activity, was held on a pasture nearing a lake. Suri, the chief of the village, said that herders were not very enthusiastic in the traditional competitions as usual because there had been no rain for a long time. The livestock husbandry would be a failure this year if there was no rain in the near future. Without rain, there would be no forage for mowing, and no way to pass the winter. In the village, all of our talking concentrated on rain and drought. The first evening, when a snake passed the door of Suri's House, he was very happy because in the local saying, it is a sign of rainfall if snake passed road. When the morning was very cold, he was upset again because he believed that the colder the weather, the drier the summer.

Since 2000, Inner Mongolia has entered a period with frequent disasters, especially drought. Even though most of area of Inner Mongolia is semi-arid, arid and extremely arid, and 'ten droughts in ten years' is the primary characteristic of the climate (Gong and Wang 1994, Weather Society of Inner Mongolia 1985, p. 37), the frequency of drought in recent ten years is much higher than before. According to the data of Water Conservancy Bureau of Chifeng City, compared with multiyear average level, water supplies of nine reservoirs had decreased by 73.7 % in 2010. Moreover, several main rivers of Chifeng City had appeared zero flow since last year (www.xinhuanet.com/chinanews/2010-04/11/content_19485235.htm).

How to cope with natural disasters has been an important concern of local government in Inner Mongolia for a long time. After snow disaster of 1977, disaster forecast, defending and relief have become one of the main focuses of animal husbandry development in Inner Mongolia. Fencing grassland and developing irrigation to increase forage productivity in Wushenzhao of Yikezhao Prefecture had become a model of combating disaster and protecting livestock in winter and spring in Inner Mongolia (Experiment Planning Group of Wushenzhao Commune 1977). At that time, there was a common view that nomadic animal breeding was backward and harmful to grassland. Because of long-term unreasonable extensive livestock breeding and grassland management, grassland ecosystem was degraded, which amplify the impacts of natural disasters (Li et al. 2005). Therefore, to increase investment to develop intensive livestock breeding, including irrigated grassland, warm barn, mowing fodder and settlement construction, had become the main methods to combat snow disaster (Han 1995, Wang 1995). Even though these methods had played effective role in some disasters, they are weakening due to two reasons. One is that these measures did not take full account of drought, which is the primary disaster confronted by herders in Inner Mongolia in recent years. The other is there is little concern about social economic institutions, such as property rights arrangement facilitating movement and reciprocal relationship among herders, which provide essential support for surviving natural disasters. Institutions such as tenure and social organization are fundamental in enabling adaptation and coping strategies by determining different people's access to various types of assets (Anderson et al. 2010).

Since the 1980s, there have been dramatic changes in social economic institutions in pastoral areas in Inner Mongolia. The implementation of Livestock and Grassland Double-Contract Responsibility System (LGDCRS) had changed the mode of grassland use from community common use to individual household use. Herders' lifestyle was also changed from nomadic to sedentary, and herders' households became the economic unit of grassland management and livestock breeding (Li and Zhang 2009, p. 72). A series of problems gradually appeared in pastoral areas, such as shrinking grazing land, a shortage of grassland management and a decline in herders' cooperation (Wang 2009). These changes did not only bring many limits on herders' strategies to natural disasters, but also amplify the impacts of natural disasters. The development of mining industries occupied large amount of water resources which made herders more vulnerable to cope with drought. Diversification of livestock type and communal pooling strategies had been abandoned due to grassland segmentation and elimination of common property rights regime. Herders were more and more dependent on forage trade to buy fodder storage for winter rather than keeping winter reserve as a storage strategy. However, they found that the low price of livestock products could not cover high production costs since 1992 (Sneath 2000).

The year of 2000 is not only the beginning of herders' difficulties in combating drought, but also the turning point of government's concerns on grassland protection caused by the frequent large-scale sandstorms. From 2000 to 2009, one trillion USD was invested in Inner Mongolia, including $270 million USD to the Beijing-Tianjin Sandstorm Sources Control Project and $730 million USD to Converting Pastures to Grasslands Project (news.sohu.com/20091206/n268713310.shtml). Based on the conclusion that overgrazing is the main reason for grassland degradation and sandstorms, the primary method of these two projects is grazing ban, including seasonally (spring) and whole-year for several years. During this period, herders have to bought fodder and forage to feed animals, which increased costs of livestock breeding to a large degree and made livestock too weak to survive from drought (Wang and Zhang 2010). As a result, herders fell into poverty and had to borrow money to buy fodder and forage.

With the changes in both climate variability and social institutions, herders have become more and more vulnerable to natural disasters. Based on a case study in Gonger Village, this paper tries to analyze herders' social vulnerability, which is the susceptibility of social groups or society as large to potential losses (structural and nonstructural) from hazard events and disasters (Adger 2000, Cutter 1996). Based on this definition, social vulnerability can be divided into two aspects: one is the disturbance results in damaging events on individual and group livelihood; the other is their adaptation and effect of coping with these changes (Adger 1999). This paper explores the complex process of drought impacts, and explains how the capacity of herders to deal with drought was weakened, especially from social perspective. Herders' countermeasure to decrease their vulnerability will be discussed at the end.

2. Case study and research method

Gonger Village is a pastoral village located in western Hexigten County of Chifeng City, Inner Mongolia (Fig 1). There were about 80 households in five sub-villages. The total area of grassland was about 15,000 ha, which consisted of 3 parts: 10% is summer pasture along rivers, 30% is winter pasture in sandy-land, and the other is spring and autumn pasture. Most herders built their houses in spring and autumn pasture. The total livestock was around 10,000, about 30% were cattle and 70% were sheep. Camel is less than 100. Local government has prohibited breeding goats from 2004 because they think goats damaging grassland more seriously by digging grass roots. As a result, there is no goat in Gonger Village.
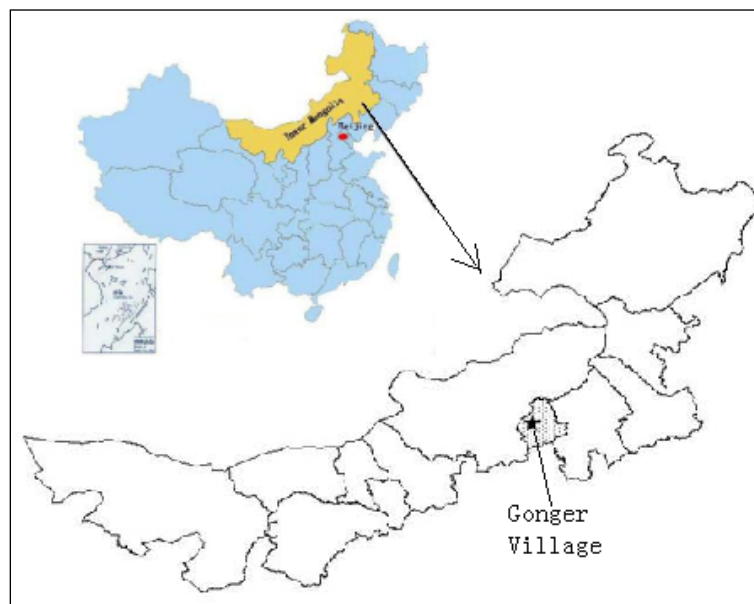

Figure 1. Location of Gonger Village

The analysis of this paper is based on two groups of data: one is meteorological data (1959-2009), the other is data collected from case study of April, July and August, 2010 and May, 2011. By using statistical methods, the characteristics of climate variability of temperature and precipitation during 1959-2009 are analyzed. The interviews were conducted based on semi-structured questionnaires, which

covered the benefits and costs of livestock breeding in 2009 and 2010. Open questions included herders' perception on climate variability, loss caused by natural disasters, strategies to cope with disasters, grassland use, water resource use and implementation of government projects.

3. *Climate variability in Hexigten County and its impacts*

The climate conditions of Mongolia plateau have been fluctuating continuously; drought and *dzud* are the frequent natural disasters for herders. The climate variability does not only bring great impacts on livelihood within pastoral communities, but also changes their relationship with outsiders. Brian Fagan concluded in *The Great Warming*: nomadic people were sensitive to climate change. Mongolia herders intended to stay in their grassland whilst weather was good and invaded to other area whilst in drought. It was the warming and drought in Mongolia plateau that made Genghis khan's invasion in Europe (Fagan 2008). In Hexigten County, heavy snow and drought were common throughout history (Table 1). For instance, between 1959 and 1990, there were ten snow disasters and five winter droughts. Droughts in spring and summer happened almost every year. Before the 1980s, herders relied on long-distance mobile herding to over-come the difficulties brought by natural disasters.

Table 1. The disasters occurrences in Hexigten County

Disaster		Time period	Frequency	Probability of occurrence (%)
Drought	Spring	1961—1990	12	40
	Summer		16	53.3
	Autumn		7	23.3
Snowstorm		1959—1990	10	31.3
Winter drought		1959—1990	5	15.6

Data source: Hexigten County Annals, 1993

3.1 Characters of climate variability

Since the 1980s, droughts have increased on the Mongolia Plateau (Liu 2005). Data from Hexigten County also confirmed the trend of warming and drying. Fig 2 and Fig 3 show the changes of seasonal temperature and precipitation of Hexigten County in recent 51 years. Temperatures of all four seasons show increasing. After the year 2000, spring, summer and autumn temperature had been higher for several years, while winter temperature had wider fluctuation range. For precipitation, there is an increase in spring and winter and a decrease in summer.
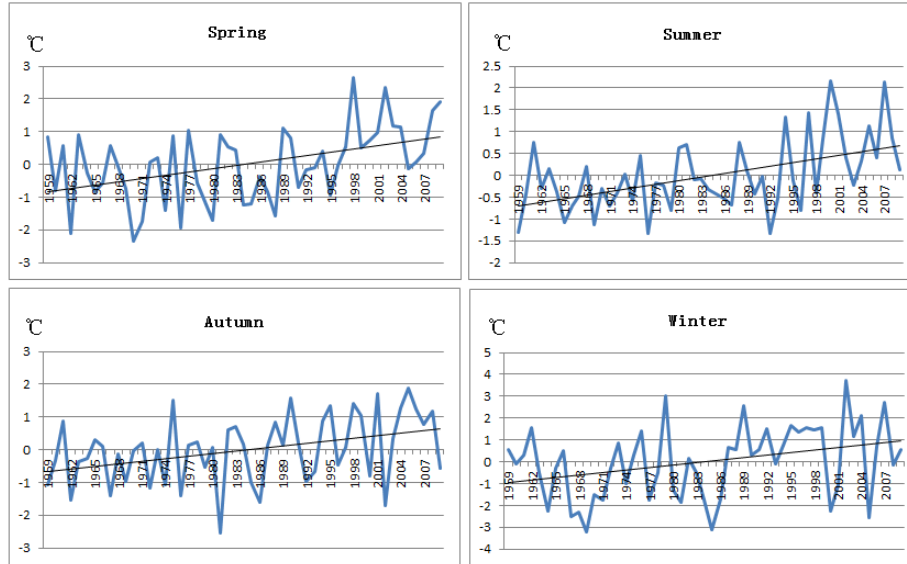
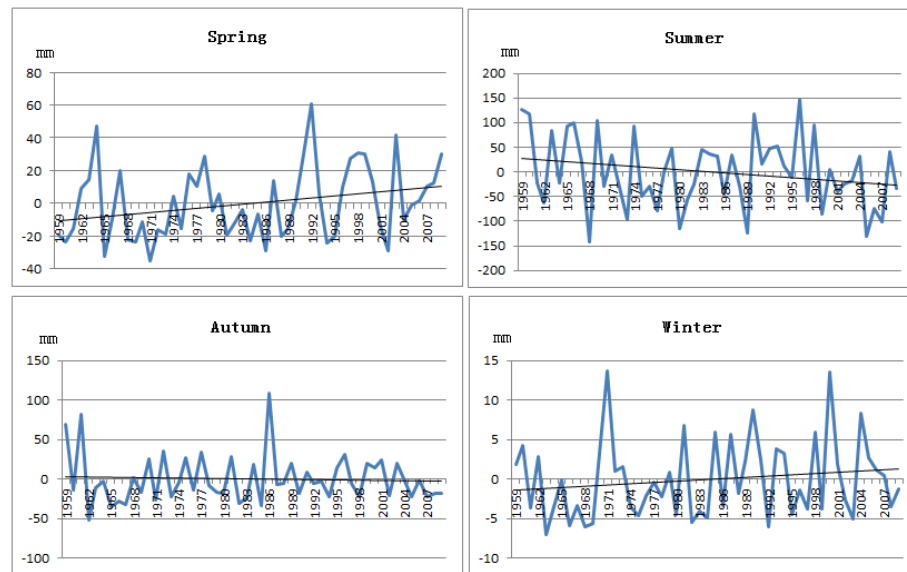**Fig 2. Seasonal temperature anomaly of Hexigten County (1959-2009)**

Fig 3. Seasonal precipitation anomaly of Hexigten County (1959-2009)

Due to the trend of warming and drying, drought has been a problem in Gonger Village for more than ten years, among which there were five years with very serious drought. In 2010, when we went to the village, the grassland was yellow in summer when it should be green. An old herder mentioned that he did not remember any drought between the 1970s and the 1990s. If there was drought, it would not last very long. But since 2000, drought was more serious, especially in the past 5 years. In 2010, there was no rain from spring to summer (Interview in July, 2010).

In the interview, herder emphasized the trend of warming and drying in summer and winter. Summer has much higher temperature, especially in July and August, and there is little rain until the end of August. The droughts decrease grassland productivity to a large degree. According to herders, the mowing

grassland could produce 100-150kg grass in the 1990's, but now only 20-25kg. Many plots for grass mowing have been changed into grazing land. In winter, the number of cold day has decreased, and the amount of snow is also reduced, but the wind is stronger. However, for spring and autumn, herders have different perception on climate variability from the results shown in Fig 2 and 3. For spring, instead of getting warmer, herders said that spring had been delayed for about half month during the last five years. In the past, the weather became warm after the middle of March and grass turned green in April. The livestock would have enough fresh grass in April. Now the wind is strong in spring, and there is little rain, which made it impossible to have fresh grass until May. In autumn, it becomes cold earlier than before. Herders need to wear cotton-padded clothes even in the period of mowing grass in the end of August. Moreover, autumn rain is tending to fall after mowing, which cannot contribute to grass growth.

There are three reasons for the differences between herders' perception and meteorological data analysis. First, the data of Fig 2 and 3 were collected at the nearest weather station in Jingpeng Township, which is over 60 km from Gonger Village. Different from Jingpeng Township where it is surrounded by hills, Gonger Villager is located on open steppe, where strong wind may lead to a temperature decrease in spring and autumn. Second, the reason why the spring rainfall has an increase in Fig 3 but herders said it decreases is that the spatial distribution of rainfall has unforeseen differences from village to village, even from one household to household. For instance, when Gonger Village has been in drought for more than ten years and serious drought for about five years, another village, which was about 70 kilometers away, had good weather for few years. The fodder harvested from their pasture did not only feed all animals of the village, but also be sold to other villages where drought happened. Climate variability resulted in the un-even spatial distribution of precipitation (Interview in 2010). As herders mentioned, now only narrow belt of grassland has rain, which did not happen before. Finally, the perception of spring coming delay may be caused by the abandonment of using sandy land as winter pasture. Before the 1990's, most herders moved to sandy land in winter, where it is warmer and grass turn green earlier. But now they stay in their houses, which were built on their spring and autumn pasture, for the whole year. In the early spring, it is colder than sandy land.

3.2 Impacts on grassland and water resources

Drought has reduced grass output to a large degree. It has been estimated that, the output of grassland output would be reduced to about 25% of normal (interview in May, 2011). All grass in mowing pasture was too short to harvest. Forage for feeding animals in winter was necessary since late 1980s because the implementation of LGDCRS limited herders moving to their traditional winter pasture. If herders could not harvest forage, they need to purchase forage, which is costly, especially in drought years. Suri emphasized: "it is only 45 days for grass growing this year. If there is no rain in half month, there will be no forage to harvest. Who knows how to pass the coming winter?"

Due to an ongoing increase in temperature and decrease in rain, surface water in Gonger Village has sharp decrease. In the past, there were at least three puddles in the village, now they all disappeared. Two rivers, Gonger River and Shali River, have much less water and even appeared zero flow. Dali Lake is one of the four largest lakes in Inner Mongolia and it is 20 kilometers away from the village. It has become smaller and smaller, and the water level decreased by 3-4 meters per year. The decreasing of

water level in Dali Lake reflected the underground water level decrease. As Zha Laceng (a herder) explained, when underground water was enough, a small rain would make grassland recovering, but when grassland dried up, it need more rain to recover. Besides climate variability, herders emphasized that an iron mine in the upstream and water overuse by Datang Company (coal-to-gas production) are the most important reasons for decrease of groundwater and surface water. The rivers were cut off by a dam. Most water was transferred to meet the demand of mining. Together with less precipitation, less water from river and decrease of ground water level were the causes of poor pasture conditions.

This has brought two important impacts on herders' livelihood. One impact is that herders could not water livestock with surface water any more but had to dig wells. Now even short-time drought will become very serious because water shortage. Moreover, compared with water in the lake and rivers, which is exposed to the sun, the well water is too cold to promote livestock fattening. The other impact is underutilization of summer pasture due to water shortage. The summer pasture is located between two rivers. Now herders have to move back from summer pasture to spring pasture, where there are wells, before summer has ended.

Briefly, we can conclude that, in the past 51 years, precipitation in Gonger Village has decreased, especially in summer. It causes frequent droughts and more uncertainty in Inner Mongolia grasslands. Compared with frequent snow disasters but few droughts in the past, it is a new challenge for herders' livelihood. In drought, more competition for water resources happened not only in livestock husbandry, but also between livestock husbandry and the mining industry.

4. Changes in grassland use after 1980s

Traditionally, grassland was used as common pasture for rotational grazing, in which all animals were moving between different pastures in different seasons. There are three types of grassland in Gonger Village: sandy-land, steppe and carex grassland between two rivers. Fig 4 shows the location of these three types of grassland. Sandy-land is used as winter pasture because it is warmer than steppe and grass turns green early. It accounts for one third of total grassland of Gonger Village, 5,500 ha. Carex grassland as summer pasture is about 10% of total grassland and is an area with higher productivity. The rest is spring and autumn pasture, about 60 % of the total area of Gonger Village. The three parts of grassland were far away each other, 50 kilometers from spring pasture to summer pasture and from summer pasture to winter pasture. Before LGDCRS was implemented in 1980s, herders and all livestock moved three times each year to use different grassland types in different seasons. Since the late 1970s, mowing grass for winter was promoted to cope with snow storms, and herders selected some flat areas with high grass productivity as mowing grassland. Among total 280,000 mu grassland of Gonger Village, there are 40,000 mu of mowing grassland.

From the 1960s, in order to improve living standard of herders, local government promoted herders to settle down. The collective selected some parts of spring and autumn encampment as residence centers for herders to build their houses. The five sub-villages were arranged into different parts, which formed as a square. Second Group and Third Group are in the north, First Group and Fourth Group are together in southwest and Xin Group is in southeast.
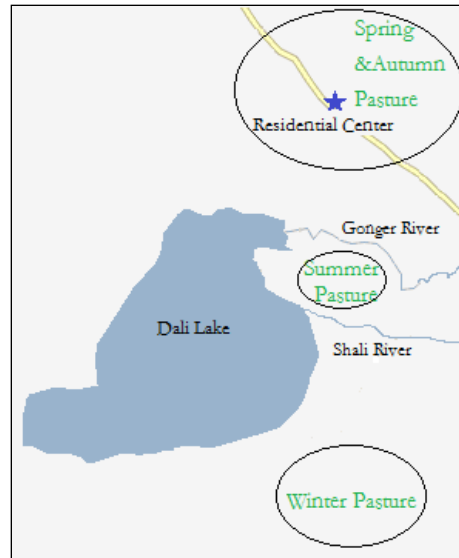
Fig 4. The location of seasonal pastures in Gonger Village

LGDCRS was implemented in Gonger Village in 1983. Livestock was distributed according to the number of laborers in 1983, but grassland has not been divided until 1997 due to the complexity of grassland division and inconsistency in herders' livestock breeding habit. Because herders wanted to have grassland close to their houses and every type of grassland is necessary for their livestock, grassland was broken into very small pieces, ranging from 100 mu^i to 500 mu. Most herder households have several pieces of grassland, including three types of grassland. It was assumed that, herders would follow the traditional mobile grazing, but in reality, most herders did not go to the summer or winter pasture again. Some of them transfer their winter pasture to other households, while some just abandoned it. When most summer pasture and winter pasture was abandoned, the total pasture using for grazing shrank. Most herders relied on the spring and autumn pasture. From late 1980s, more herders settled in spring and autumn pasture. They built houses and barns for livestock; the mowing pasture was also in spring and autumn pasture. Except for a few households, most herders grazed their animals on spring and autumn pasture throughout the year, which caused over-use of grassland. After five years of serious drought, grassland was much worse than before, about half or more output reduced, comparing to that of ten year before, according to herders' observation.

After 1997, herders began fencing their grassland. Different types of grassland have different fencing methods, and even for one type of grassland, different sub-villages have different processes. Summer pasture, which is located between two rivers, is not fenced at all because fence would bring too much trouble for grazing and watering livestock. It is still used commonly, every household has a number of summer pasture contracted by them, but nobody knows exact locations. For winter pasture, every household has a piece of sandy-land, but only a few households fenced it because it is too far from their houses. In fact, after livestock was distributed to individual households in 1980s, the number of herders going to winter pasture decreased gradually. Until 1992, about two-thirds of households go to sandy-land in winter. However, after the grassland was divided in 1997, the proportion was decreased sharply. There are two reasons for this decrease. One is a labor shortage. Under LGDCRS, every household conducts

livestock breeding independently. Without herders' cooperation, it is difficult for individual household to move livestock to winter pasture far away. The other is occupying and using winter pasture by neighboring villages in summer[ii]. They leave little grass for livestock of Gonger Village to eat in winter. In 2009, herders decided to transfer their winter pasture to forestry conservation land, which was monitored by forestry authority, to avoid the mal-use of winter pasture.

For spring and autumn pasture, different sub-villages have different fencing results. First, Second and Third groups have fence on each individual household's grassland. Fourth Group fenced its herders' grassland as a whole. In Xin Group, every three to four households cooperated to fence their grassland together. Herders explained that the reason for different fencing methods is grassland quality and promotion of fencing projects. For example, for Xin Group and Fourth Group, they had support from local government to fence large areas because they thought that grassland would be degraded if it was fenced into very small pieces. But First Group had grassland with high quality, so they had to invest on fence to protect their grassland from use by other herders.

To sum up, the implementation of LGDCRS has brought tremendous changes on grassland use in Gonger Village. Most of herders stopped seasonal movement and did not use winter pasture any more. Moreover, they cannot protect winter pasture from being occupied by neighboring villages. Nearly all spring and autumn pasture was fenced, but different sub-villages have different methods, which provide herders different support to cope with droughts.

5. Herders' vulnerability to cope with drought

Most herders like to compare the grassland today with that in 1970s or 1980s. At that time, grass was much higher, around 30cm in height, but they were very short in 2010, even difficult for cows to eat. When the herders were asked to recall past drought in history, they did have few impression of drought.[iii] The disasters they recalled were heavy snows. Historically, heavy snowing was the major threat for their livestock husbandry. To combat snowing disaster, herders built barns and reserved mowing pasture with government support. They reserved the mowing pasture and harvest forage since 1970s. When their capacity to combat heavy snow is strengthened, the major disasters have changed from snows to droughts. In drought years, the reserved mowing pasture has little grass to harvest. In order to survive from winter, they had to buy fodder and forage from outside to feed the animals, and this is the most prominent change in livestock husbandry in Gonger Village.

As drought has become the frequent natural disaster in Gonger Village, herders' capacity to deal with drought was weakened by a series of changes in grassland management. As livestock privatized and rangeland was leased to individual households, mobility of livestock husbandry decreased. Meanwhile, cooperation within communities and between communities has been weakened. Instead of a reciprocal relation, herders have relied more on the market rather than mutual help to overcome the difficulties in drought.

The traditional adaption to drought is to move to other pasture, which is called 'Otor' in Mongolian language. When herders met drought, they could move animals to the pasture without drought impact. It

is local custom in pastoral society to accept the other herders to use their own pasture. It was reported, in 1960s and 1970s, with the government coordination, herders could move longest distance to avoid disaster in contemporary history.[iv] It was reciprocal system in nomadic society which strengthens herders' capacity to combat drought. But after rangeland leased to individual households, *Otor* was totally stopped because no herders like to accept other livestock without payment.[v]

When the rotational grazing stopped, there were three choices for individual herder who met the drought difficult. First was to sell livestock; second was to rent pasture and the third was to buy fodder.

Many households reduced their livestock population because of drought. Sheep population of the whole village had decreased from 10,647 in 2005 to 7,375 in 2010. The total livestock population had reduced from 23,347 SSU in 2005 to 19,850 SSU in 2009, and then recovered to 22,965 SSU in 2010. To maintain their livelihood, herders cannot reduce their livestock below a certain number. If the herds is less than the certain number, the herder would fall into poverty and difficult to reverse. Based on our calculation, it is around 100 sheep per person are needed. Livestock to herders is the same as machines to enterprises or land for farmers. They did not want to reduce livestock, but drought made them sell some of animals to survive.

When rangeland was leased to individual households, some herders rented pasture to complement the fodder shortage. Normally the rangeland herders rent was mowing pasture, not grazing pasture. To rent a piece of rangeland for harvest forage was cheaper than to buy fodder. For instance, Si Qin, the chief of a sub-village, rented pasture to harvest forage for many years. Three years before, 5,000 Yuan[vi] was enough to rent a piece of pasture, and in 2009, he spent 7,000 Yuan. But he could not find a pasture to rent and had to buy forage directly in 2010. Normally, herders rent pasture for short period, mostly one year. When serious drought happened, herders would not rent again because there was probably no grass for mowing. If the pasture was still good, the price would be increased dramatically. Siri Guleng complained about the cost increasing in rent pasture. In 2009, he paid 16,000 Yuan for a 69 *mu* pasture, around 230 Yuan per *mu,* but in 2010, 30,000 for 100 *mu,* 300 Yuan per *mu*, and it was not as good as the pasture in 2009. In 2010, most herders stopped to rent mowing pasture, because they could not find good pasture.

If herders did not want to sell all of their animals, they need to buy fodder in drought conditions. Herders recalled that, ten years ago, only few households bought very limited forage. When drought was not serious, animals could be grazed in winter and spring, forage they prepared was mostly for the pregnant animals and new baby animals. They could harvest fodder from mowing pasture. While droughts were more serious, herders need more forage while they have almost no harvest from mowing pasture, then it was necessary to buy forage. Due to continuing droughts and increasing herders buying forage, the price of forage has kept increasing. For instance, in the late autumn of 2009, forage was sold for about half Yuan a kilo, but in late winter when less forage left, the forage price increased 3 or 4 times. The increasing costs on forage made herders difficult to maintain livestock breeding as a profitable work.

Su Ri, the village chief, mentioned: "Before 2005, there was no need to buy forage. The forage harvested from mowing pasture was enough for them. But after that, they should buy more and more forage." For his households, about 40,000 Yuan was spent in forage in 2009 while income was about 60,000. To cover the cost in forage, he borrowed 50,000 Yuan.

Zha Lazeng, the former village chief, has bought forage for four years, in 2009, he sold livestock for about 40,000 Yuan, among which 20,000 were spent on forage. Drought made the livestock husbandry a loss. Few years ago, though income may be lower than current, the cost was relatively lower, so he was never in debt. Now, after he paid the forage and other costs, he could not make a living only depending on the income from livestock. He borrowed 10,000 Yuan in 2009.

Above two households were relatively better off in the village. For the other households, the impact of drought on their livelihood was even worse.

Another Si Qin was a young woman who married in the village in 2004. Since her marriage, her family borrowed money every year. As the weather dried, their life was much worse. In 2005, her family rented a piece of rangeland for 800 Yuan and harvested 10,000 kg forage. As weather became drier, it was difficult to rent pasture which they could harvest forage. They started to buy forage at very high prices, especially in a dry year. In 2007, she spent a few thousand Yuan for forage, but in 2009, about 30,000. To afford the cost of forage, Si Qin borrowed large amount of loans. By 2010, the loans accumulated to 70,000 Yuan.

The increasing costs of forage made herders impossible to sustain their livestock breeding without loan. All the households we visited had more or fewer loans. Credit providers included formal Rural Credit Cooperation (RCC), store owners and money lenders. RCC was the only formal finance institute in pastoral area. Interest rates were relatively low, but not easy to access, especially for poor households. Normally store owners sold commodities to herders in advance and collected payment when herders sold their animals. When they sold commodities in advance, price would be higher. If herders could not pay back in time, they should pay interest. According to the shopkeeper of Gonger Village, there were about 10 percent herders on credit ten year ago, but now the proportion increased to 50 percent, among which there were 20—30 percent cannot pay back within the year. Money lenders were increasing in pastoral area due to the drought, and they charge very high interest rate. When more herders reply on credit to buy fodder, even their daily life supplies, the interest of loans also increased. In the interview with local herders, the highest interest rate was 36% annually. With five years of continuing drought, all herders relied heavily on informal finance, which changed their livelihood. Normally they don't have cash in hand, so they bought most goods with credits. It formed a vicious cycle. Each autumn, when they sold their animals, most income, even all of their income was paid back for loans. They should pay for the credit they owed to the fodder sellers and store owners. For the better-off households, they did not have much cash in hand after they paid the credit. For others, the income was not enough for paying the credit. Some households would borrow credit in winter, and some in early spring. After May, no households in the village would have cash in hand. All of them relied on credit.

Contrasts to herders' adaptation, government efforts were to reduce livestock population with ecological compensation and urbanization. It was believed the traditional herding was a low efficiency production and the cause for grassland degradation. In the vision of policy makers, the traditional herding should be transferred to modern livestock husbandry, and most herders should be transferred as urban residents. In Gonger village, about 20% herders moved to town for non-pastoralist employment. However it is very difficult for these herders to find jobs in town.

Based on the above analysis, we can see that herders are more and more vulnerable to cope with drought. First of all, they lost their most important advantage in livestock breeding by using natural

grassland, which is free of charge. All the herders have to pay high costs to buy forage. According to herders' calculation, if a sheep was totally fed with the forage from market, at least 3 kilograms were needed per day, which costs about 3-5 Yuan. If the period of feeding lasted for 6 months, which means forage alone would cost 500-700 Yuan, and the best price for one lamb was 400-600 Yuan. [vii]As a result, herders' livestock decreased but loans increased. Now there are about 20 households having no animals, which accounting for 25 percent of total households in Gonger Village. However, government measure on grassland protection did not aim to reduce herders' burden to cope with drought, but use over-simplified policies to reduce livestock and herder population in pastoral areas.

6. Cooperation and mobility: adaptation to drought

Herders also wished for other ways to have cheap fodder to maintain the balance in their livestock husbandry. Developing grassland for forage plantation, mainly corn, was common strategy in Inner Mongolia. In 2009, Gonger Village cultivated a forage field. Most herders hope the forage plantation could make their livestock husbandry cheaper. The cost for cultivating land and digging wells was funded by government. More than a million Yuan was invested in land development and well digging, but a further 200,000 Yuan was needed to install irrigation equipment. It was estimated that the fodder produced in the field would be cheaper—one fourth or one third of the cost of forage in market. With the cheap fodder, livestock husbandry would be profitable. But there are two doubts in their mind: first, if the government investment was included in the calculation, planting of forage may be not profitable. The second is the impact of irrigation on the underground water, and the impacts of decreasing underground water, the irrigation may be unsustainable. As they did not find anyone provide the 200,000 Yuan to install the irrigation equipment, the field was not planted in 2010. They still need to buy large amount of forage. It was evident that feeding animals with forage buying from market was not sustainable.

To adapt to serious drought, some herders restored the herding mobility. From their herding experiences, herders understood the importance of mobility. With rotational herding, the summer and winter pastures would be used, which could protect spring and autumn pasture. The balanced use of rangeland would not only protect grassland, but also reduced their demand on costly fodders. But the difficulty to use winter and summer pastures was social issues: how to reduce the labors needed and how to exclude the invasion of winter pasture by herders from other villages.

Su Ri, as a member of Xin Group, overcome this difficult by cooperation. In contrast to other herders, Su Ri did not stop grazing the winter pasture. Every winter, he collaborated with his brother-in-law. He mentioned, for most herders, animals should be fed with fodder for 3-6 months, from January, if in serious drought, from November. But Su Ri fed his animals after they came back from winter pasture, normally in March. Fewer 2-3 months to feed animals means large amount forage saved. Why he can continue to use winter pasture whilst other stopped? Su Ri mentioned it was the cooperation with his brother-in-law. The two households worked together to enclosed their winter pasture. In winter, the two households would send labor to take care livestock there alternatively.

Confronting continuing drought, Su Ri collaborated with other seven households to form a group to graze cattle in summer pastures. The village enclosed a piece of summer pasture two years ago.

From 2010, village heads decided to give the pasture to sub-village to use. Single households could not use it because of limited labors in anyone household. The cooperation of eight households used the pasture collectively. All of their cattle were grazing there. Every week, the eight households would send three herders from different households to stay in the summer pasture to take care of animals.

Pastoral mobility could enhance herders' capacity to deal with drought by more reasonable use of rangeland resource. From Su Ri's case we can find the possibility for mobile herding. There are three preconditions for herders to increase their cooperation and mobility. First is common use of rangeland. Xin Group did not divide its grassland to individual household, and herders are using grassland in common. It has provided basis for herding cooperation and large-area grassland to move around. Second is local regulation or institutions. There should be regulations on the rangeland use and labor division. Some procedures to solve conflicts would be necessary. The regulations would be formed bottom-up, not by official regulations. Finally, the reciprocal relationship between herders plays an important role in herders' cooperation. It is not only within one herder group, but also between the different groups. And the latter is the most important flexibilities of herders to cope with natural disasters. However, after LGDCRS has been implemented for nearly thirty years, most herders' communities had lost these preconditions, which make it difficult to establish cooperation among herders.

7. Conclusion and discussion

From Gonger Village, we can see parallel changes in both climate conditions and social economic institutions of grassland use happened in Gonger Village. However, herders have become more and more vulnerable in the process, as shown in Fig 5. In the past 51 years, precipitation in Gonger Village has decreased, especially in summer. It causes frequent droughts. Compared with frequent snow disasters in the past, drought has become a new challenge for herders' livelihood. In drought, more competition for water resources use happened not only in livestock husbandry, but also between livestock husbandry and the mining industry, which make herder cannot use summer pasture due to water shortage in the two rivers.
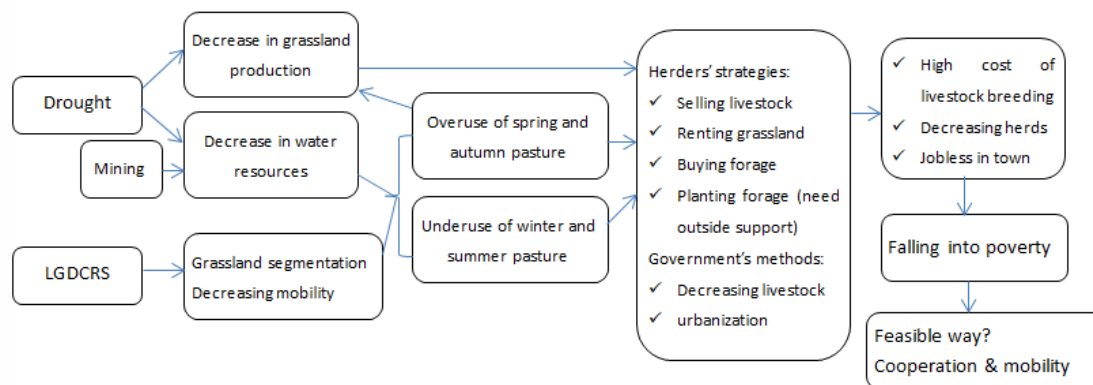

Fig 5. Herders' vulnerability to cope with drought

Meanwhile, the implementation of LGDCRS has brought tremendous changes on grassland use in Gonger Village. Most herders stopped seasonal movement and did not use winter pasture any more. Moreover, they cannot protect winter pasture from being occupied by neighboring villages. Nearly all spring and autumn pasture was fenced, but different sub-villages have different methods, which provide herders different support to cope with droughts.

With these changes happened herders fell into a vicious circle and become more and more vulnerable to cope with drought. They lost their most important advantage in livestock breeding, which is low cost by using natural grassland. All the herders have to pay high costs to buy forage during drought years. However, the countermeasures of grassland degradation implemented by local government have not help herders cope with droughts, but add more costs and difficulties. As a result, herders' livestock decreased but loans increased, and many of them fell into poverty.

Compared with dominant strategy of forage plantation, which is still very costly, some herders in Gonger Village have developed cooperation and mobility to cope with drought based on the common grassland use institutions and reciprocal relationship with their relatives. For herders, after climate conditions and social institutions changed so much, it is the only possible way to decrease cost of livestock breeding. However, the recovery of cooperation and mobility needs preconditions and policy support, which could be the focus of local government to facilitate reasonable grassland management and sustainable livelihood in pastoral areas.

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Notes:

[i] A Chinese unit for area, 1ha=15*mu.*

[ii] Before LGDCRS, there is few herders stay in sandy land except winter. However, to implement LGDCRS, different villages have different methods. Some villages like Gonger, they had paid much attention on their traditional use of grassland and every household have three types of grassland. However, some villages divided grassland thoroughly and distributed only one large piece of grassland to individual household. As a result, some households only have sandy land and they must stay in sandy land throughout the year, which make it possible to invade winter pasture of other village when there is no herder living there in summer.

[iii] We didn't know exactly why they didn't have any impression on droughts in history when there are frequent droughts recorded in the history of the county. We guessed that, (1), there were no serious droughts in the village, because the village was nearing the largest lake in the County and 2 rivers ran across the village; (2) they kept animals in rangeland the whole year and no need to harvest forage at that time. Now, they worried the mowing because they must feed animals with fodder in winter (3) Previously, they could move to other pasture, even it is far away and owned by other herders, where no drought at that time.

[iv] Liu Shuren, personal interview, July, 2010.

[v] Herding animals from other village was not allowed since 1980s. It was considered that, to herding animals from other village would aggravate the pressure on grassland and then caught damage to other villagers. Only the powerful herders could graze their animals in other village, even in the natural disaster.

[vi] 1 USD=6.5 Yuan.

[vii] The interview was done by Yu Xiaoyan in July, 2010. In pastoral area, herders normally sold the one year old lamb and keep the adult sheep for reproduction. The major income from livestock husbandry was selling lamb.

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