Submission to:

Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change

Focus Area: Methods and Tools

For Impact and Vulnerability Assessments and for Improvement of Adaptation Planning, Measures and Actions

Submission by:

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IISD is undertaking research and supporting practical application of actions that reduce vulnerability to current climate variability and long-term climate change within Canada and internationally. With respect to the Nairobi Work Programme's theme on Methods and Tools, IISD has elected to provide information on three on-going projects:

- CRiSTAL: Community-based Risk Screening Tool – Adaptation & Livelihoods
- Adaptation as Resilience Building on the Canadian Prairies
- Adaptive Policy Making

Descriptions and lessons learned from each of these projects is followed by IISD perspectives on opportunities, gaps, needs, constraints and barriers; possible ways to develop and better disseminate methods and tools; and training opportunities.

Part A: Project Descriptions

1. CRiSTAL: Community-based Risk Screening Tool – Adaptation & Livelihoods

Recognising the urgent need to develop adaptation strategies based on current vulnerabilities and peoples' livelihoods, IISD initiated an international research and policy initiative, *Livelihoods and Climate Change*, in partnership with IUCN—The World Conservation Union, Stockholm Environment Institute and the Swiss Organisation for Development and Cooperation (Intercooperation) in 2002. The project was originally conceived as a non-governmental response to the emergence of adaptation as a leading issue in the global climate change debate. The aim was to inform and influence how the international community invests in adaptation by promoting an integrated approach that draws from four communities that have long been tackling the issues of vulnerability reduction: disaster risk reduction, environmental management, poverty reduction and climate change.

In the second phase of the project (2004—2006), the partners sought to develop practical tools to facilitate risk reduction and adaptation using either ecosystem management and restoration or sustainable livelihood projects as an entry-point. The outcomes of this work is the decision support tool CRiSTAL or "Community-based Risk Screening Tool—Adaptation and Livelihoods". CRiSTAL helps planners and

manager of community-level projects better understand the links between climate change, livelihoods and their work. Specifically, it a) helps users to systematically understand the links between local livelihoods and climate; (b) enables users to assess a project's impact on community-level adaptive capacity; (c) assists users in making adjustments to improve a project's impact on adaptive capacity. By taking the user through two modules built around four framing questions, the tool provides a better understanding of:

- How current climate hazards and climate change affect a project area and local livelihoods;
- How people cope, looking specifically at the resources needed to cope with climate stress;
- How project activities affect livelihood resources that are vulnerable to climate risk and/or important to local coping strategies; and
- How project activities can be adjusted so that they enhance adaptive capacity.

The on-going, third phase of the *Livelihoods and Climate Change* project focuses on capacity building and fostering implementation of local-level adaptation strategies. Planned activities include regional training-of-trainers workshops (primarily in Africa),[1] translation of the tool into French and Spanish, implementation of CRiSTAL-generated project adjustments, and monitoring of tool uptake and how project adjustments affect local vulnerability / adaptive capacity.

Lessons Learned to date in Application

- The tool provides an entry point for discussing local observations of climate variability and the impacts of climate change in a participatory manner, encouraging communities to look for opportunities to enhance their adaptive capacities.
- For project planners and managers, CRiSTAL provides a useful framework for understanding the links among climate, livelihoods and project activities.
- CRiSTAL is also useful for organising and summarising information on livelihood and climate conditions.
- CRiSTAL can be adapted for use at different scales (i.e. information collected from households, social groups, and/or villages, to assess impacts of projects, programmes, and/or policies).
- Participatory processes that engage stakeholders in identifying livelihood assets, potential affects of climate variability and change, and possible responses complement and greatly strengthen the effectiveness of the tool.

Funding for this work has been provided by the Government of Switzerland (2002—2006) and Governments of Norway and Denmark (2006—2008).

For further information about this project, please contract Anne Hammill or visit the project's web site, which includes a downloadable version of the tool as well reports of its application in the field.

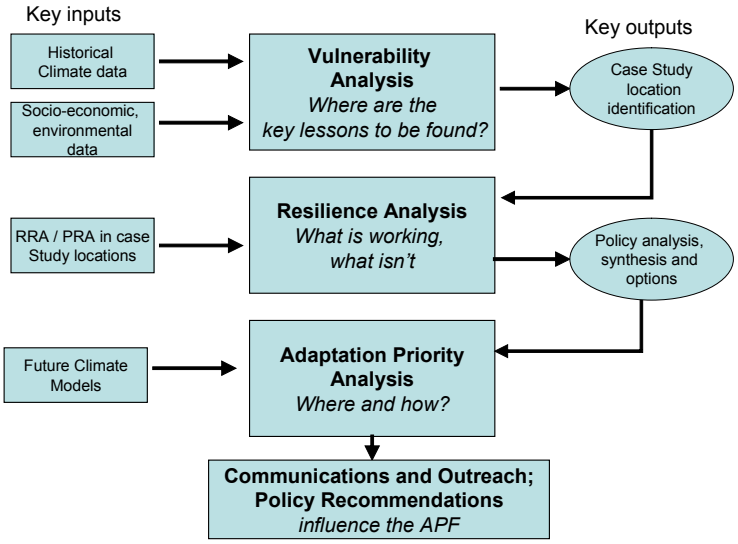
2. Adaptation as Resilience Building on the Canadian Prairies

Initiated in 2004, the "Adaptation as Resilience Building" project is studying actual adaptation responses by Canadian prairie farmers through comparative case studies in Manitoba, Saskatchewan, and Alberta. The premise of the project is that by looking carefully at successful (and unsuccessful) examples of adaptation to existing climate variability in regions of high historic climate stress, it is possible to learn how to promote adaptive capacity and thus build the resilience of prairie communities to climate change.

[1] The first of these workshops was held in Maputo, Mozambique in April 2007.

The project is demonstrating the utility of methodology that fuses the adaptive capacity and resilience approaches for practical policy research. This methodology is comprised of three major analytical elements, as illustrated in Figure 1, along with their key inputs and outputs. These elements are:

- A *Vulnerability Analysis:* integrating historic climate variability, and socio-economic data to identify potential vulnerability "hotspots' for detailed study.
- A *Resilience Analysis*: farm and community-level appraisals of existing adaptive capacity and its role in building resilience to climate change; a synthesis of current and planned policies that will build resilience to climate change.
- An *Adaptation Priority Analysis*: integrating future climate scenarios with crop and land use models to identify regions where building resilience to climate change may have highest priority.



As part of the Vulnerability Analysis, IISD and its partners, the Prairie Farm Rehabilitation Administration and the University of Manitoba, developed and analyzed a GIS-based indicator of the adaptive capacity of agriculturally-based Prairie communities. Twenty indicators representative of adaptive capacity within census divisions across the prairies were derived from Statistics Canada sources. The indicators were organized into six determinants (based on Smit et al. 2001), namely: Economic resources; Technology; Infrastructure; Information, skills and management; Institutions and networks; and Equity. Comparison of adaptive capacity across census divisions required that scores for each indicator be normalized, aggregated to a determinant value and then aggregated into an overall index of adaptive capacity for each of the 53 census divisions.

Information from the adaptive capacity analysis was used in conjunction with an exposure indicator based on an inter-annual growing season precipitation coefficient of variation for the period of 1960-2002 to create a conceptual vulnerability space. Within these information-rich regions, detailed comparative case studies have been undertaken in Manitoba (completed), Saskatchewan (on-going) and Alberta (planned).[2]

Lessons Learned to date in Application:

- Significant data gaps have made it challenging to understand certain determinants of adaptive capacity. Useful indicators of social capacity, in particular, have been difficult to identify and collect information to support.
- Structured comparative case study approach has enabled the project to more clearly distinguish the influence of policy on adaptive capacity and resilience.
- Significant insights into the role of policy and agricultural extension in conditioning potentially mal-adaptive responses (such as ad-hoc drainage) versus learned responses (such as minimum tillage technology and practice).

[2] The project's research protocol requires 30 farm-level interviews and 10 community organization interviews per study area and two study areas in each prairie province.

- To build adaptive capacity of remote rural areas, attention should be given to policy interventions that contribute positively to indicators of adaptive capacity not highly correlated with proximity to urban centres. These indicators include: access to irrigation and associated equipment; promoting sustainable soil management practices; and discouraging farming on marginal lands.
- Policy interventions to increase the adaptive capacity of all producers, regardless of location, could include increased density of transportation networks, improved use of email and the Internet, and greater access to agricultural education institutions.
- Need to continually monitor trends in those determinants most important in building the capacity of farm families and communities to adapt, as well as climate and hydrologic parameters.

Funding for this work is being provided by the Climate Change Impacts and Adaptation Directorate of Natural Resources Canada.

For further information about this project, please contact Henry Venema or visit the Building Resilience on the Prairies project's web site.

3. Adaptive Policies

Government policy must operate in an ever-changing and uncertain world. We know that the climate is changing, energy prices are highly unpredictable, international trade rules are in a state of flux, and domestic security considerations in many countries permeate or overwhelm other policy issues. Experience demonstrates that policies designed implicitly or explicitly to operate within a certain range of conditions are often faced with challenges outside of that range. The result is that many policies have unintended impacts and don't accomplish their goals. Therefore, in order to help policies help people, policy-makers need ways to design policies that are adaptive to a range of conditions.

How can we design policies that will respond well to both anticipated and unanticipated circumstances? IISD and The Energy and Resources Institute (TERI) argue that we can learn from past policy successes and failures to address this question. With a four-year funding commitment from the International Development Research Centre, IISD and TERI are conducting community-level case research in Canada and India to identify policies which have help people adapt to historic climate stresses, and then studying these policies for mechanisms which have helped the policies themselves adapt to anticipated and unanticipated circumstances.

Lessons Learned to date in Application:

Results compiled thus far through over a hundred community-level interviews and desk analysis of specific policy instruments, illustrate that mechanisms which help policies adapt to anticipated and unanticipated conditions fall into four broad categories as illustrated in the table below.

Adaptive Policy Mechanisms	Description	Examples
No regrets	Policies or specific policy rules which work well across a range of anticipated conditions	▪ Diversification of energy supplies ▪ Multiple tax brackets in an Income Tax Act to accommodate different personal income levels
Automatic Adjustments	Policies which internally monitor key underlying conditions and can trigger adjustments to the policy when necessary	▪ Weather-indexed insurance

Adaptive Policy Mechanisms	Description	Examples
Complex Adaptive Systems Principles	Policies designed based on the principles of complex adaptive systems	▪ Promoting opportunity for self-organization (e.g., via local watershed management authorities)
Formal Review	Mandated periodic reviews of the policy instrument to assess performance and identify emerging issues	▪ Policy pilots ▪ Annual policy assessments

For further information about this project, please be in contact with Darren Swanson or visit the project's web site.

Part B: Synthesis

4. Opportunities, Gaps, Needs, Constraints and Barriers

Opportunities:

- The current political momentum behind climate change means that there is more interest than ever in addressing adaptation and integrating it into programming and policy efforts. The level of resources and activity around developing tools and methods for adaptation are consequently increasing. This momentum needs to be harnessed wisely.
- Adaptation to climate change provides an additional motivation for undertaking sustainable development activities to which commitments have been made in the past, such as integrated water resource management, sustainable agricultural practices and rural development.

Gaps:

- In the international development sphere, most of the tools developed to date are focused at the agency / programming level. There is still a need for more grassroots engagement in the development of adaptation responses.
- There is a need to better coordinate and share between different tools. Although there has been a recent proliferation of tools for vulnerability and adaptation, only limited sharing of lessons learned has take place thus far. For example, it was only through an April 2007 forum organized to share tools and experiences related to screening tools was it realized that there is limited overlap/duplication and more complimentarity between current efforts. This knowledge needs to be built upon.
- Tools and methods for establishing policies and practices that are adaptive over time, able to response to changing circumstances and surprises, are needed.
- The availability of the social data and information needed to determine and monitor the adaptive capacity of people is limited.

Constraints / Barriers:

- Paradigm Shift:
  - Policy and decision makers are used to making decisions based on a high degree of certainty and a minimization of risk. There is limited desire to acknowledge the presence of uncertainty and potential for surprise within government, bureaucracy and the public.

- As bureaucrats in Canada (and internationally) have numerous demands on their time and climate change challenges existing paradigms, there is a tendency towards denial of the problem.

- Capacity:
  - Program managers often do not have sufficient awareness of the implications and importance of climate change to pick up and use a project screening tool such as CRiSTAL.
  - The absence of capacity to undertaken integrated assessment, in Canada and elsewhere, is a significant barrier to undertaking adaptation planning. An integrated approach is required given the multifaceted nature of climate change and that it is only one factor to which communities and countries simultaneously are and will be adapting.
  - Increased ability to link qualitative and quantitative analysis methods and perspectives so that they can build upon and complement each other.
- Information:
  - Some tools require detailed information about communities, environmental conditions and climate forecasting that is currently not available (in developed and developing countries).
- Time:
  - There is insufficient time for researchers to undertaken the analysis and tool development needed, and for project manager and policy makers to understand and act upon research findings.
  - Efforts to make the process of integrating adaptation into development policies and practices as seamless and streamline as possible is challenging given the existing range of screening tools / processes that are already required of project and programme developers/managers.
- Transferability:
  - Transferring lessons and approaches from one context to another is limited by differences in culture, political context, ecological conditions and economic profiles, among other factors.

Needs:

- Greater attention needs to be given to the demand side of the issue—to making the intended users interested in accessing the information, method and tools being developed. For example, bureaucrats (in developed and developing countries) working in key sectors that are expected to be adversely impacted by climate change need to be sensitized to this issue and how it can be addressed.

5. Possible Ways to Develop and Better Disseminate Methods and Tools

- There is a need to establish a flexible and open web-based platform where users can post their questions, experiences, suggested adjustments etc. regarding methods and tools for adaptation.
- Enhance interaction with and support for existing communities of practice, and enable them to come together through practitioner networks to share experiences and insights.

- Drawing upon insights gained through current analysis of decision support systems could provide greater insight into how to match adaptation tools and methods to user needs and the development of modular systems that can be scaled to the needs of the user.
- Need to focus on areas in which there is an immediate priority or concern and through these entry points raise knowledge of their links to climate change adaptation.

6. Training Opportunities

- There is sufficient information at this point in time to develop training modules on how to enhance the capacity of people to adapt to the impacts of climate change; how to implement specific adaptation actions; and to develop a toolbox for increasing the adaptive capacity of policies. It is time to move beyond research into implementation, to learn by doing, recognizing that while there are gaps in the information available, we have sufficient knowledge to get started now.