

MILESTONE REPORT INSTITUTIONAL ADAPTATION TO CLIMATE CHANGE PROJECT

This milestone report covers the period January 1st, 2004 – December 31st, 2006. It provides a detailed description of the research activities and resources planned for the attainment of the first two objectives of the project (Units 1 and 2), as well as of several related activities (Units 3 to 7). Each unit identifies the name of the unit, its coordinator, the main outcome, a description of the unit and its completion date, the deliverables and their deadlines, the team members who will carry out the unit’s activities, and the unit’s approximate expenditures for the period January 1, 2004 – September 31, 2006. The attainment of the main components of the units is presented in a time frame organized in annual quarters.

UNIT 1: VULNERABILITIES TO CLIMATE VARIABILITIES (Coordinator: Diaz). Outcome: Identification of the current physical and social vulnerabilities related to water resource scarcity in the South Saskatchewan River Basin (SSRB) and the Elqui River Basin (ERB). **Description:** An assessment of the current social and physical vulnerabilities related to current water resource scarcity in the two dryland regions. This unit involves five components:

1.A. An assessment of vulnerabilities of rural communities and households to water related climate conditions (Chile and Canada). **Completion date:** Dec. 2006. **Deliverables and deadlines:** (a) two working papers: one on social vulnerabilities and one on values and adaptation (Dec. 2004); (b) information about physical vulnerabilities and formal institutions relevant to rural communities (Sept. 2005 and Sept. 2006); (c) dissemination material (Dec. 2004, Dec. 2005 and Dec. 2006), and (d) reports (Dec. 2005 and Dec. 2006). **Participants:** Diaz, Gauthier, Morales, Rojas, Salas, and Smit, with the support of Corkall, Kulshreshtha, Marchildon, Morito, and Zavala, research assistants (10 Master, 2 PhD) and 1 Post Doctoral Fellow. This PDF, to be hired in 2004, will work with Smit in the development of a working paper on vulnerabilities and preparation and implementation of ethnographic research activities in rural communities and institutions in Chile and Canada.

Components	03- 2004	06- 2004	09- 2004	12- 2004	3- 2005	6- 2005	9- 2005	12- 2005	3- 2006	6- 2006	9- 2006	12- 2006
Baseline data collection	xxx	xxx	xxx	xxx	xxx							
Development of working papers		xxx	xxx	xxx								
Selection of a group of rural communities		xxx	xxx	xxx		xxx	xxx					
Design of instruments and gathering of information about communities			xxx	xxx	xxx			xxx	xxx			

Ethnographic work						xxx	xxx			xxx	xxx	
Data analysis and interpretation, reports							xxx	xxx			xxx	xxx

1.B Analysis of the role of institutions in the resolution of conflicts related to water scarcity (Chile and Canada). **Completion date:** September 2006. **Deliverables and deadlines:** (a) a working paper on water conflicts and institutions (June 2005); (b) information about the role of formal institutions (March 2006); (c) dissemination material (March 2006), and (d) reports (June 2006). **Participants:** Reyes, Morales and Rojas, with the support of Corkall, Kulshreshtha, Morito, and Zavala and research assistants.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Baseline data collection on regional institutions	xxx	xxx	xxx	xxx	xxx							
Development of working papers				xxx	xxx	xxx						
Identification of cases and engagement with stakeholders				xxx	xxx	xxx						
Ethnographic community fieldwork						xxx	xxx					
Data analysis and interpretation, reports								xxx	xxx	xxx		

1.C A historical study of institutional adaptation to water scarcities. **Completion date:** Dec. 2007. **Deliverables and deadlines:** (a) dissemination material (Dec. 2005), and (b) reports (Dec. 2006 and Dec. 2007). **Participants:** Marchildon with the support of Kulshreshtha, Corkall, Zavala, research assistants and a post-doctoral fellow to be hired in 2005 to carry out the historical analysis in Chile under the supervision of Marchildon.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Gathering and organization of quantitative information – Canada and Chile			xxx	xxx	xxx			xxx	xxx			
Case studies of institutions, Canada and Chile					xxx	xxx	xxx				xxx	xxx
Other case studies								xxxx	xxx	xxx	xxx	xxx
Analysis of a conflict					xxx	xxx						
Data analysis and interpretation, reports												xxx

1.D Analysis of environmental vulnerabilities identified by stakeholders. **Completion date:** Dec. 2007. **Deliverables and deadlines:** (a) a working paper about biophysical and hydroclimatic baseline data; (b) dissemination material (Dec. 2005, Dec. 2006, and Dec. 2007), and (c) reports (Dec. 2007). **Participants:** Cepeda, Fiebig, Sauchyn, Wheaton, with the support of Kulshreshtha, Corkall, Zavala, and research assistants.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Baseline data collection on environmental vulnerabilities	xxx	xxx	xxx	xxx	xxx							
Development of Working paper		xxx	xxx	xxx								
Documenting vulnerabilities to known resource restraints					xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Data analysis and interpretations, reports										xxx	xxx	xxx

1.E. Assessment of the capacities of formal institutions to deal with water related climate vulnerabilities and climate change risks. **Completion date:** June 2007. **Deliverables and deadlines:** (a) two working papers: one on institutions and adaptation to climate change and one about values and institutions; (b) dissemination material (Dec. 2005, Dec. 2006, and Dec. 2007), and (b) reports and academic publications (Dec. 2007). **Participants:** Diaz, Gauthier, Morales, Rojas, Salas, and Smit, with the support of Corkall, Kulshreshtha, Marchildon, Morito, and Zavala and research assistants.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Development of working papers		xxx	xxx	xxx								
Selection of institutions					xxx	xxx	xxx	xxx	xxx	xxx		
Preparation of instruments							xxx	xxx				
Institutional interviews									xxx	xxx	xxx	xxx
Data analysis and interpretation, reports												xxx

UNIT 2: THE EFFECTS OF CLIMATE CHANGE SCENARIOS ON THE IDENTIFIED VULNERABILITIES (Coordinator: Sauchyn). Outcome: Examination of the potential contingent effects of climate change risks on the identified vulnerabilities to water resource scarcity. **Description:** Achieving this outcome will involve (a) an analysis of a range of climate change model scenarios and (b) an assessment of how these scenarios could impact the current social and physical vulnerabilities in the regions as determined from Unit 1. **Completion Date:** June 2007. **Deliverables and deadlines:** (a) A working paper on climate change scenarios and impact scenarios (Dec. 2004); (b) two reports, one on climate change model scenarios and another on potential impacts of these scenarios upon identified vulnerabilities (June 2007); (c) data set for GIS unit, (d) dissemination material (December 2005), and (e) final report (December 2007). **Team members and students:** Sauchyn and Wheaton (Canada) and Cepeda and Fiebig (Chile), supported by research assistants (4 Master and 1 PhD) and one technician; Corkal and Zavala as advisors.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Baseline data collection	xxx	xxx	xxx	xxx	xxx							
Development of working paper			xxx	xxx	xxx	xxx	xxx					
Development of climate change characteristics relative to future risks					xxx	xxx	xxx	xxx	xxx			
Creation of climate change and impact scenarios								xxx	xxx			
Assessment of vulnerabilities (communities and region) under changing climatic conditions										xxx	xxx	xxx
Final report												

UNIT 3: STUDENT TRAINING (Coordinator: Sauchyn). The project will employ and train graduate students in two categories: research fellows and research assistants. The research assistants will provide short-term help with research activities. They will develop their technical and intellectual skills and be provided with the necessary training to assist with the project. The research fellows will also develop thesis research related to the project requiring a high level of interaction with all members of the research team and more advanced analytical and intellectual skills. The research fellows will be invited to participate in project meetings in both Canada in Chile and encouraged to communicate with other students on the project. Training will be oriented to increase the students' methodological skills and their knowledge of climate change issues. It will take place through two activities: (a) training materials posted to the project web site with capability for on-line discussion among students and researchers, and (b) training on the job – acquiring practical skills by being engaged in the research activities of the project. The students will actively participate in: (a) data collection and systematization of the information, (b)

preparation of materials for discussion, (c) assist with organization of seminars, (d) preparation and distribution of working papers, and (e) linking with partners and stakeholders. Research team members are responsible for providing direction and supervising the work and performance of students either as assistants or as thesis students. The experience of the students to their training will be formally evaluated once a year. The annual project meetings will include a review of evaluations and discussions of the training experience with students attending those meetings. **Outcome:** A group of students in Canada and Chile with (a) an advance knowledge of climate change issues (vulnerability, adaptation, risk assessment, climate change models), GIS, and research methods, and (b) with interdisciplinary experience. **Description:** Integration of graduate students to the project. **Completion date:** On-going activity. **Deliverables and deadlines:** (a) GIS training (January 2005 and 2006); (b) Climate change training (December 2004, 2005 and 2006); and (c) posting of research training material in the website (April 2005 and April 2006). **Team members:** all researchers are responsible for on-the-job training and website dissemination materials.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Development of GIS on-line training materials	xxx	xxx	xxx	xxx	xxx							
Development of climate change on-line training materials	xxx	xxx	xxx	xxx								
Development of ethnographic on-line training materials	xxx	xxx	xxx	xxx	xxx							
Delivery of GIS on-line training materials						xxx						
Delivery of climate change on-line training materials					xxx							
Delivery of ethnographic on-line training material						xxx						
Website dissemination of training materials			xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	Xxx
Training-on-the job			xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	Xxx

UNIT 4: GEOSPATIAL DATA (Coordinator: David Gauthier). **Outcome:** Development of a geospatial dataset. **Description:** Data produced by activities in Units 1, 2, and 6 will be organized in a geospatial format using GIS to provide regional context for team members such that the scenarios can be readily applied to regional planning and resource management and used for dissemination purposes. **Completion date:** On-going activity for technical assistance to Unit teams. **Deliverables and deadlines:** Contextual data from Units 1, 2

and 6 will be available by September 2005 with integration completed by May 2006. **Team members:** Dave Gauthier, with the support of research assistants (1 Master and 1 PhD) and two technicians.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Technical assistance to unit teams	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Integration of: (a) Regional context information; (b) Unit 1 material on vulnerabilities to climate variabilities; (c) Unit 2 material on impacts of climate change; (d) and Unit 6 material on indicators and frameworks.								xxx	xxx	xxx	xxx	xxx

UNIT 5: DISSEMINATION (Coordinator: D. Gauthier). Outcome: Development and delivery of dissemination materials to stakeholders, partners, academics, policy-makers, and the general public. **Description:** To maximize access to these audiences during the first 30 months of the project, research processes and results will be communicated through annual project reports; a Website; dissemination meetings (local workshops) involving stakeholders, public presentations; and information about the project that will be distributed among stakeholder groups and public in general using NGO and government newsletters as well as radio programs and local newspapers. Several of our partners will play a central role in this dissemination strategy. Research results will also be integrated into university courses. Dissemination material produced during the first 30 months of the project will be integrated into videos for public education and dissemination during the second half of the project. **Completion date:** dissemination is an on-going activity of the project. **Deliverables and deadlines:** (a) Design and implementation of Website (Sept. 2004); (b) Annual unit and project research reports (May 2005 and May 2006); (c) seven working papers posted on the web site (Oct. 2005); (d) at least five university courses with contents related to project material; (e) participation in scholarly conferences (at least six public presentations during the first half of the project); (f) media information; and (g) three stakeholder meetings (two before December 31, 2005 and one before June, 31, 2006). **Team members:** the entire team.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Identification of stakeholders	xxx	xxx	xxx	xxx	xxx							
Preparation and delivery of annual unit and					xxx	xxx			xxx	xxx		

project reports												
Development and updates of Website	xxx	xxx	xxx	xxx		xxx		xxx		xxx		xxx
Working Papers				xxx		xxx	xxx					
Integration of results into university courses						xxx				xxx		
Dissemination meetings and public presentations	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Media information	xxx				xxx				xxx			
Partners' dissemination						xxx				xxx		

UNIT 6: INTEGRATION (Coordinator: P. Diaz). Outcome: To promote broadly based collaborative research as the central mode of research activity among the members of the team, as well as between the team and partners. **Description:** Collaboration involves the following main components: (a) development of common conceptual frameworks, (b) the planning of integrative activities such as fieldwork, (c) the development of common instruments, (d) the use of GIS and indicator frameworks as integrative tools, (e) the integration of data analysis and interpretation, and (f) research exchange activities within and among units. Those exchange activities will involve: (i) an annual four-day meeting attended by all researchers and research assistants (the purpose of these meetings is to plan and organize future work and to present and discuss project activities and results); (ii) the use of the Web site, where materials in progress will be posted and discussed; (iii) internal reports (each team member will produce an annual progress report to be shared among all researchers and students); and (iv) semi-annual teleconferences among team unit members. Student interaction will occur through shared work activities in some cases; the web site; annual training workshops; and annual meetings. To allow students to communicate directly among themselves, students will have their own bulletin board on the web site and their own session at the annual meetings to discuss issues. **Completion date:** For the first two units (I and II), components (a) and (b) should be completed during the first team meeting (April 2005); (c) should be completed by December 31, 2004; (d) should be completed by May, 2006, (e) should be completed no later than June 2006, and (f) ongoing. **Deliverables and deadlines:** Three conceptual papers (Oct. 2005); a set of data-gathering instruments (March 2005 and March 2006); a data system in GIS format (May 2006); at least three project meetings before June 2006; and the existence of an interactive website (Dec. 2004). **Team members:** The entire team: researchers, collaborators and project assistants.

Components	03-2004	06-2004	09-2004	12-2004	3-2005	6-2005	9-2005	12-2005	3-2006	6-2006	9-2006	12-2006
Development and revision of conceptual frameworks	xxx	xxx				xxx				xxx		
Planning of integrative activities (field work,	xxx	xxx			xxx	xxx			xxx	xxx		

team meetings)												
Design of data-gathering instruments			xxx	xxx			xxx	xxx				
Development of databases in GIS format										xxx		
Data analysis and interpretation										xxx	xxx	xxx
Exchange activities – web site		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Exchange activities – annual meetings		xxx				xxx				xxx		
Exchange activities – internal reports			xxx				xxx				xxx	
Exchange activities – teleconferences and others			xxx		xxx		xxx		xxx		xxx	

