

DESIGNING POLICIES IN A WORLD
OF UNCERTAINTY, CHANGE
AND SURPRISEADAPTIVE POLICY-MAKING FOR
AGRICULTURE AND WATER
RESOURCES IN THE FACE OF
CLIMATE CHANGE

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WEATHERING UNCERTAINTY

Climate change introduces huge unknowns for policy-making. We know that the globe is warming and that there will be significant changes in average weather. We also know that the nature of global warming means that there will be more extreme weather events. Typical precipitation patterns will change, and floods and droughts will become more common and more severe. The implications for human well-being around the world will be enormous. But the precise nature of the impacts and their extent remain, and will always remain, impossible to predict. Figure 1 (on the next page) depicts the basic issue: scientists agree that the globe will warm, but the range of estimates is an order of magnitude greater than the variability in the historic record.

Farmers and water resource managers have a long history of adapting to climate shocks and stresses. However, the current climate change phenomenon is projected to exacerbate these shocks and stresses, and to result in long-term changes in precipitation and evaporation. Increasing our capacity to cope is imperative. **Public policies can help build this capacity. However, a key challenge is developing policies that are robust enough to be useful in a rapidly changing and uncertain future.**

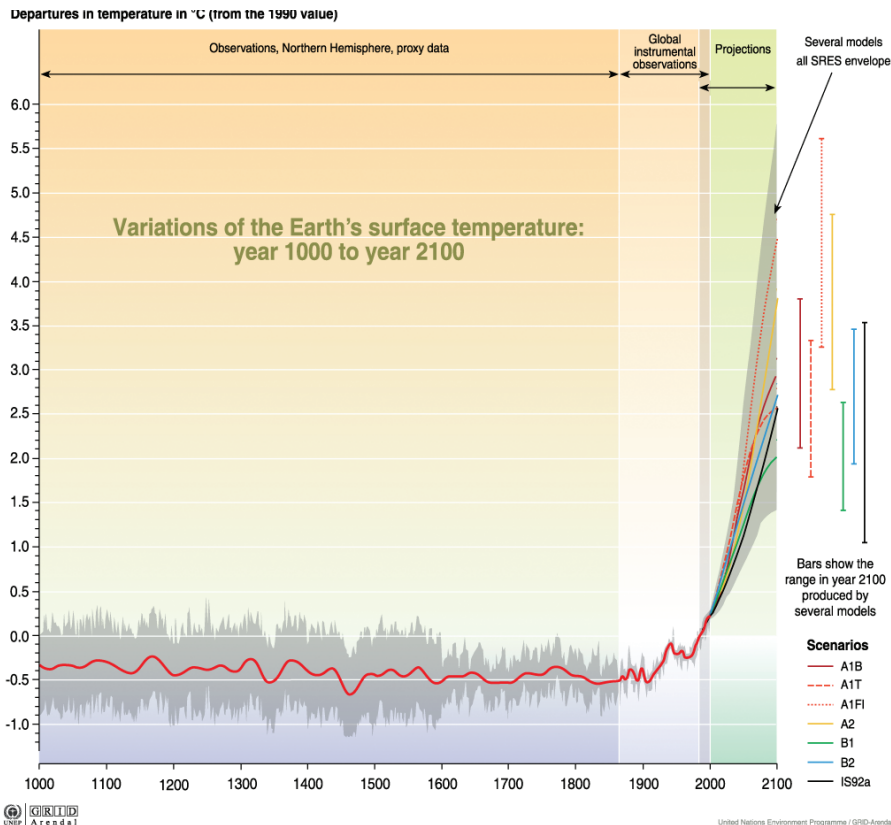


Figure 1. Projected changes in global temperature.

From UNEP/GRID-Arendal Maps and Graphics Library.
Retrieved October 30, 2006, from http://maps.grida.no/go/graphic/temperature_trends_and_projections1

ADAPTIVE POLICIES

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 can adapt to a range of conditions.**

How does one do this? The International Institute for Sustainable Development (IISD) and The Energy and Resources Institute (TERI) argue that we can learn from past policy successes and failures. **Using case study analyses of existing and past policies in the water and agricultural sectors, we can better understand the features that make policies adaptive to changes in underlying conditions.**

In the first phase of our four-year research project entitled "Designing Policies in a World of Uncertainty, Change and Surprise: Adaptive Policy-making for Agriculture and Water Resources in the Face of Climate Change" we review the very young literature on adaptive policy-making and its connections to adaptive management and complex adaptive systems theory. The literature review clarifies that the key policy design challenge is the ability of a policy to adapt to both **anticipated** and **unanticipated** changes in underlying conditions.

POLICY CASE STUDIES

To further understand adaptive policies, we studied four cases drawn from the water and agricultural sectors. Two are from India and two are from Canada, which lets us compare developing and developed world experience. The case studies reveal adaptive as well as maladaptive policy features.

1 In India, we studied **INDEX-BASED WEATHER RISK INSURANCE** contracts which are emerging as an alternative to traditional crop insurance. Unlike traditional crop insurance where settling a claim can take up to a year, private weather insurance contracts offer quick payouts triggered by independently-monitored weather indices (rather than farm loss sampling) and can improve recovery times thereby enhancing coping capacity. The automatic adjustment feature provides a simple mechanism for managing insurer risk and determining farmer eligibility for benefit payments, while also passing along incentives for farmers to adjust to long-term change by providing appropriate signals calculated on the basis of actuarial risk. The case study **provides insights on the importance of automatic adjustment triggered by climate information and, more generally, the utility of using pilot approaches to test key assumptions for iteratively refining program delivery; to better understand risk patterns; and to create awareness among farmers.** The delivery of weather insurance through local microfinance institutions suggests the importance of two-way communication channels in fostering adaptive policy design by building in feedback mechanisms to respond to changing client needs or other conditions.

2 Also from India, the case of **AGRICULTURAL PRICE POLICY IN PUNJAB** provides an interesting example of how price support levels are adjusted through a formal review process to support farm livelihoods. For example, the Commission for Agricultural Costs and Prices takes into account important factors, such as cost of production, changes in input prices and trends in market prices, in announcing the minimum support price each year. However other features of this system may be ecologically maladaptive to future climate impacts. For instance, in the state of Punjab, price incentives that did not internalize natural resource costs resulted in cultivators getting locked into a highly irrigation-intensive cropping pattern, which is drastically depleting limited groundwater supplies.

3 In Canada, our analysis of a long-standing transportation subsidy, **THE CROW RATE**, is a cautionary tale of a maladaptive policy. The rigidity of the policy resulted in the slow deterioration of the rail transportation system as contexts changed over the course of the 20th century. This study illuminates the difficulty in modifying subsidy policies which has implications for adaptation. An overhaul of the policy in response to decades of public scrutiny eventually

introduced a number of adaptive features, including: adjustment of the freight rate based on variable transportation costs, grain volume forecasts and transport distance; and a four-year costing review and ongoing evaluation of system efficiency by a Grain Transportation Agency. Political support for the policy slowly waned and the policy was terminated. Curiously, the increases in crop diversification and improvements in the livelihoods of farmers anticipated in the wake of the policy's termination have not materialized, and today, the Canadian Prairies are suffering some of the worst ecological and economic conditions since the dust-bowl years of the 1930s.

4 The **CONSERVATION DISTRICTS PROGRAM IN THE PROVINCE OF MANITOBA** provides an interesting counter-example to the Crow Rate, primarily in terms of adaptability. Whereas the Crow Rate was a federal program administered homogenously across Western Canada, the Conservation Districts (CDs) are designed to decentralize responsibilities for environmental management to local organizations that can then access various federal and provincial funding programs to suit their needs and preferences. Comparative analysis of different Conservation Districts reveals that they have consistently adapted to new conservation challenges, in some cases with completely unanticipated stakeholders and around unexpected issues. Furthermore, among the CDs we examined, the most successful had physical boundaries that conformed to watershed boundaries, and had clear jurisdiction over water resources management—highlighting the significance of policy design oriented towards ecosystem realities, and drawing attention to questions of decentralization as being potentially significant in adaptive policy-making.

CONCEPTUAL FRAMEWORK AND NEXT STEPS

The literature and a synthesis of the key learning from all four case studies helped us articulate a general conceptual framework for adaptive policy design (see Figure 2). The framework is sensitive to a subtle distinction between conditions that policy-makers can and cannot anticipate during policy design and implementation. We find that “No-regrets” policies and “Automatic Adjustment” based on triggers and actions improve adaptiveness to anticipated conditions. Perhaps most importantly, principles for intervening in complex adaptive systems yield many insights for improving policy adaptation to unanticipated conditions, as do structured learning processes such as scheduled policy review and re-adjustment.

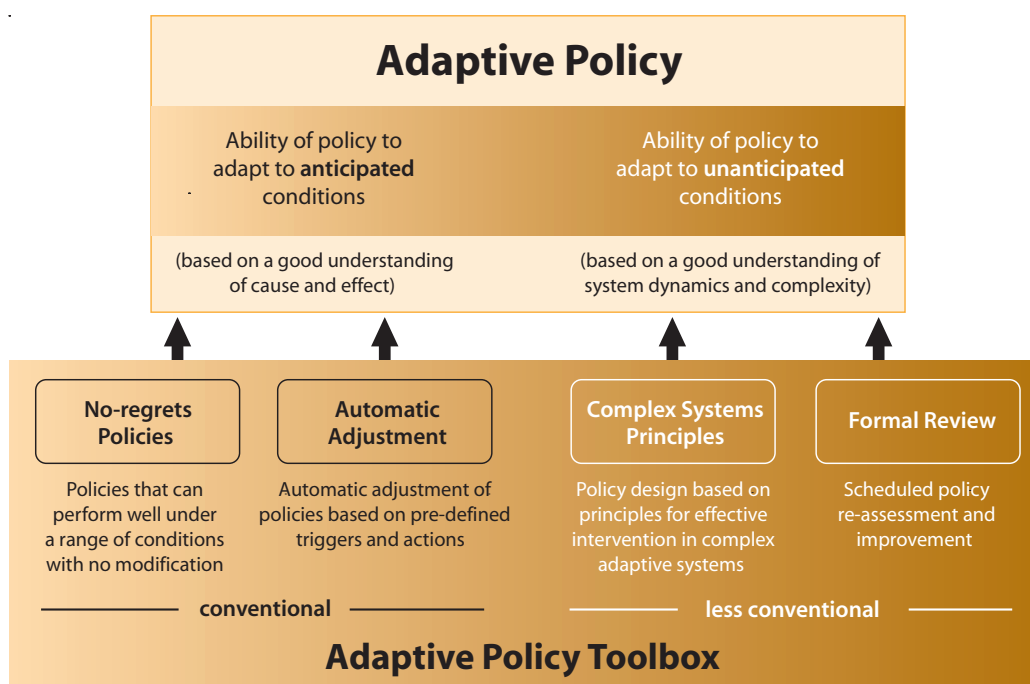


Figure 2. Initial conceptual framework of adaptive policies.

With the continued support of Canada's International Development Research Centre (IDRC), our next phase of research will include community-level surveys to test our hypothesis that the key policies which help build the capacity of communities to cope with climate shocks and stresses contain a core set of features that allow these policies to respond successfully to anticipated and unanticipated conditions. We believe this analysis of policy dynamics and community responses will generate further insights and examples to round out an emerging "toolbox" of adaptive policy approaches for the water and agricultural sectors, and will better enable public policies in helping to build the capacity of agriculture producers, pastoralists and water resource managers to cope with climate change.

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Full report can be downloaded at:

http://www.iisd.org/climate/canada/adaptive_policy.asp

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