

# Climate Adaptation, Local Institutions, and Rural Livelihoods

*IFRI Working Paper*  
# W08I-6



INTERNATIONAL FORESTRY  
RESOURCES AND  
INSTITUTIONS PROGRAM

School of Natural Resources and  
Environment  
University of Michigan  
440 Church Street, MI 48109

Phone: 734-764-9542

Fax: 734-647-5047

<http://www.umich.edu/~ifri/>

Arun Agrawal  
School of Natural Resources and Environment  
University of Michigan

and

Nicolas Perrin  
The World Bank

Climate Adaptation, Local Institutions, and Rural Livelihoods

Arun Agrawal  
School of Natural Resources and Environment  
University of Michigan  
[arunagra@umich.edu](mailto:arunagra@umich.edu)

and

Nicolas Perrin  
The World Bank  
[nperrin@worldbank.org](mailto:nperrin@worldbank.org)

**May 2008**

## **Introduction**

To understand the role of institutions in future adaptation of rural livelihoods to climate change, especially by poorer and more marginal groups, it is essential to attend to the historical repertoire of strategies used by rural populations. Natural resource-dependent rural households are likely to ensure a disproportionate burden of the adverse impacts of climate change -- droughts, famines, floods, variability in rainfall, storms, coastal inundation, ecosystem degradation, heat waves, fires, epidemics, and even conflicts. In some parts of the world, these effects may already be in play with potentially disastrous consequences for the poor (Adger et al. 2007: 79-20). Many households in vulnerable regions could periodically be driven into destitution and hunger and find it difficult afterwards to recover.

Even as it is clear that poorer and disadvantaged groups around the world will suffer greatly from climate change, it bears remembering that the rural poor have successfully faced threats linked to climate variability in the past. History, as the cliché goes, may be a poor guide, but it is the only available guide. Even if future climate related threats might appear prospectively to be historically unprecedented, analyzing past impacts and responses is undoubtedly important in understanding the feasibility of future initiatives. After all, the only alternative to adaptation is extinction unless the world strictly and immediately limits its future emissions, an outcome surely in doubt given the record of the past decade including the negotiations at Bali.

The success of historically developed adaptation practices among the rural poor depends crucially on the nature of prevailing formal and informal rural institutions. Our paper focuses on how rural institutions can help shape and enhance the adaptation practices of the rural poor in relation to climate change-induced risks and how external interventions can help strengthen the functioning of rural institutions relevant to adaptation. It presents a brief typology of rural institutions using the familiar distinction between public, civic, and private sectors, surveys some important recent work on adaptation, and then outlines an analytical framework through which to view the relationship between rural institutions, adaptation due to climate change, and livelihoods of the rural poor. It applies this analytical framework to 118 cases of adaptation practices drawn from the UNFCCC's coping strategies database. Using the basic finding from this analysis – that rural institutions are ubiquitous in framing and facilitating adaptation to climate change, it examines the adaptation projects and initiatives discussed in the eighteen National Adaptation Programmes of Action prepared by national governments with the support of the UNFCCC. The analysis of the NAPAs shows the relatively limited attention national governments have paid to institutions even as the scholarly literature views institutions and governance as the centerpiece of future adaptation efforts. The paper ends with an urgent call for action in three broad institutional domains if adaptation efforts are to meet successful outcomes.

### **1. Rural Institutions and Livelihoods**

Institutions are humanly created formal and informal mechanisms that shape social and individual expectations, interactions, and behavior. They can be classified as falling into public (bureaucratic administrative units, and elected local governments), civic (membership and cooperative organizations), and private sectors (service and business organizations) (Uphoff and Buck 2007: 47). Table 1 below provides some indicative examples, but by no means a comprehensive listing, of the type of formal and informal institutions that may be present in rural areas and play a role in the ways rural households respond to climate change.

Table 1 Indicative examples of formal and informal rural institutions relevant to adaptation (I=informal institutions; F=formal institutions)

	Public (state)	Private (market)	Civic (civil society)
Types of institutions	(?) (I) -Local agencies (F) -Local governments (F)	-Seed banks (I) -Service organizations (F) -Private businesses (F)	-Labor exchanges (I) -Collective gatherings (I) -Membership organizations (F) - Cooperatives (F)

Livelihoods comprise the capabilities and material and social assets necessary for a means of living (Chambers and Conway 1992). A sustainable livelihood includes the idea of coping with and recovery from external stresses so as to maintain or enhance existing capabilities and assets – a notion central to the definitions of resilience being discussed in relation to climate change.

Institutions influence the livelihoods and adaptation of rural households in three important ways.

1. They structure the distribution of climate risk impacts. How particular social groups and populations will be affected by climate hazards is in part a function of the physical and structural characteristics of the hazard. It is also in part a function of the way macro- and micro-level institutions in a variety of domains affect distribution of risks related to climate hazards.
2. They constitute and organize the incentive structures for household and community level adaptation responses which shape the nature of these responses. Institutional incentives are key in determining whether adaptation responses will be organized individually or collectively because institutions affect the emergence of leadership in different contexts, costs of collective action, and the extent of transactions costs.
3. They mediate external interventions into local contexts, and articulate between local and extra-local social and political processes through which adaptation efforts unfold. External interventions in the shape of finances, knowledge and information, skills training, new institutional inputs, and technological support can assume many different forms. Local institutions shape the acquisition and distribution of these interventions in fundamental ways, thereby affecting the degree of success of such interventions.

These basic points about the role of institutions in adaptation are summarized in the Adaptation, Institutions, and Livelihoods framework represented in figure 1 below (Agrawal 2008).

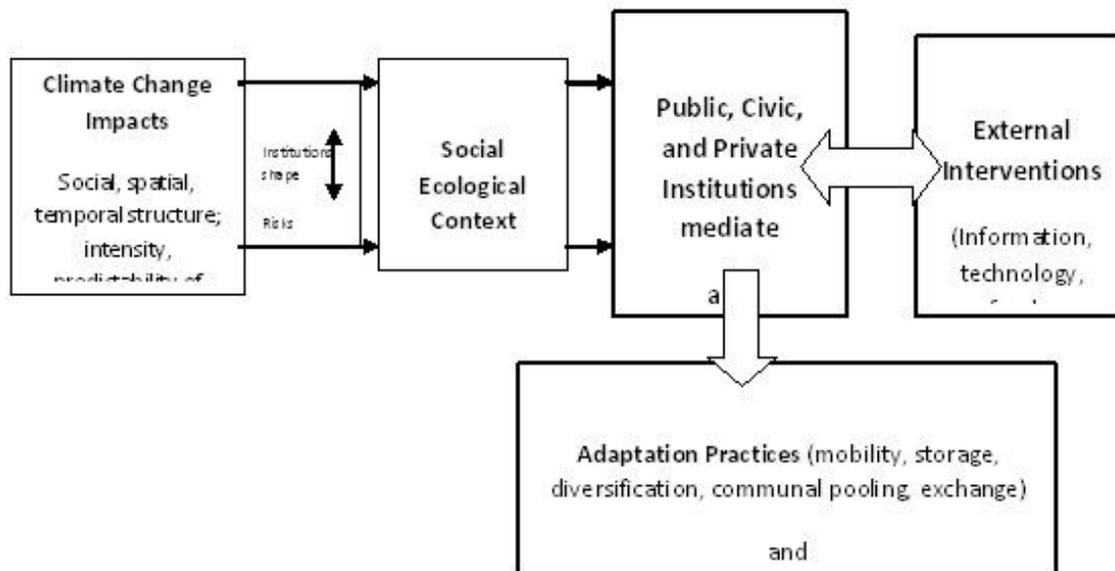


Figure 1: Adaptation, Institutions, and Livelihoods Framework

Although much work on climate change and social responses to climate risks recognizes the relevance of institutions to adaptation, existing work on the subject has tended either to focus on highly specific case studies of local adaptation, or to examine national level policies around adaptation. Comparative analyses of adaptation strategies that provide broadly generalizable insights into the role of different kinds of institutions, show how institutions link local responses to external interventions, and examine the institutional articulation at the local level among different kinds of institutions are sorely needed. Such comparative studies could play a significant role in developing middle range generalizations about the role of institutions in adaptation – necessary both for deepening the theoretical understanding of the role of institutions in the context of climate change, and using such theoretical understanding to guide policy debates and discussions. Accordingly, the ensuing discussion examines especially the right half of the above framework in relation to the role of institutions in adaptation by poor and marginal rural households across a variety of locations.

## 2. Climate Change and Adaptation

Given the nature of climate change hazards – droughts, heat waves, flooding, and storms, among others – the stresses they create for rural livelihoods will have two major aspects: reduction of existing livelihood options, and perhaps more importantly in the short to medium run, greater volatility and unpredictability in streams of livelihoods benefits, especially in semi arid, mountainous, polar, and coastal ecological environments. The major uncertainties in how specific micro-locations and groups will experience and be affected by climate change, it is likely more fruitful for policy interventions to focus on improvements in adaptive capacity of disadvantaged rural populations rather than on identifying specifically how a given group of rural poor in a particular village or district will be affected by climate change.

Development strategies and institutional interventions that focus simply on improving total benefits to households without taking into account how households can address fluctuations

in their livelihoods seem ill-suited to address the impacts of climate change. On the one hand, they ignore the most important characteristics of climate-related stresses – increased riskiness of livelihoods. On the other hand, they ignore the very real concerns of the rural poor about preventing hunger and destitution. Given that many rural households have only limited access to markets – for reasons both of ill-developed infrastructure and of limited purchasing power, high levels of riskiness in the environment cannot in a vast number of cases be ameliorated by engaging in market exchange.

To strengthen the adaptive capacity of the rural poor, therefore, governments and other external actors need to strengthen and take advantage of already existing strategies that many households and social groups use collectively or singly. Examining the environmental risks that rural populations have historically faced, their cultural responses to these risks, and the institutional configurations that facilitate individual and collective adaptation strategies is therefore a fruitful area of inquiry and policy analysis for generating effective coordination with external interventions.

### **3. Forms of Adaptation in Response to Climate Risks**

A policy-relevant framework for examining adaptation practices in the context of rural institutions and livelihoods needs to be sufficiently general to cover the many empirical examples of adaptation practices used by different social groups, but also needs to be based on an analytical approach that takes into account the most important characteristics of the impacts of climate change on rural livelihoods – likely increases in environmental risks, reduction in livelihoods opportunities, and stresses on existing social institutions. Few existing writings on adaptation, focused as they typically are on specific case studies or national level policy concerns regarding appropriate interventions, present the kind middle-range theories necessary to understand historical adaptation responses comparatively.

Climate change is likely to manifest around increased risks to rural livelihoods. These risks can be classified into four different types: across space, over time, across asset classes, and across households. The basic coping and adaptation strategies in the context of livelihoods risks can correspondingly be classified into a set of four analytical types: mobility, storage, diversification, and communal pooling. In addition, where households and communities have access to markets, market-based exchange can substitute for any of the four classes of adaptation strategies above (Agrawal 2008, Halstead and O’Shea 1989). Where successful, these responses either reduce spatial, temporal, asset-related, and/or community-level risks directly, or reduce them by pooling uncorrelated risks associated with flows of livelihoods benefits from different sources.

*Mobility* is perhaps the most common and seemingly natural responses to environmental risks. It pools or avoids risks across space, and is especially successful in combination with clear information about potential precipitation failures.

*Storage* pools/reduces risks experienced over time. When combined with well constructed infrastructure, low levels of perishability, and high level of coordination across households and social groups, it is an effective measure against even complete livelihood failures at a given point in time.

*Diversification* reduces risks across assets owned by households or collectives. Highly varied in form, it can occur in relation to productive and non-assets, consumption strategies, and employment opportunities. It is reliable to the extent benefit flows from assets are subject to risks and risks have different impacts on the benefit streams from different assets.

*Communal pooling* refers to adaptation responses involving joint ownership of assets and resources; sharing of wealth, labor, or incomes from particular activities across households, or mobilization and use of resources that are held collectively during times of scarcity. It reduces risks experienced by different households.

*Exchange* is perhaps the most versatile of adaptation responses. Usually it is viewed as a means to promote specialization and increase revenue flows. But it can equally substitute for the first four classes of adaptation strategies to reduce risks when the poor have access to markets. As a means to reduce risks it can go together with high levels of specialization and institutionalization of exchange relations: consider as an example, buying insurance to cover risks of crop failure. Resorting to exchange or promoting exchange-based adaptation to address climate risks needs however to be treated with some caution given the highly unequal access to markets across different social groups, especially those who are in marginalized situations.

The success, and more generally the prospects of adaptation practices, depends on specific institutional arrangements -- adaptation never occurs in an institutional vacuum. Thus, all adaptation practices require property rights, norms of trust are necessary for exchange, storage requires monitoring and sanctions, mobility cannot occur without institutions that provide information about the spatial structure of variability, and agricultural extension institutions can facilitate diversification.

The adoption of adaptation practices by specific households and communities is more or less likely depending on their social and economic endowments, networks of relationships, and access to resources and power. For example, the poor are more likely to migrate in response to crop failure; the rich more likely to rely on storage and exchange.

There are natural affinities and incompatibilities among the broad classes of practices above. Storage and mobility tend not to go together. Other combinations complement each other: storage and exchange can play off temporal variability against spatial variability (Halstead and O'Shea 1989: 4).

Finally, the effectiveness of adaptation can be institutionally enhanced by external interventions and local collective action: provision of information to reduce unpredictability associated with climate-related events and trends; technical advances leading to higher crop or resource productivity; financial and investment supports that make the adoption of technological changes more widespread; and leadership interventions that reduce costs of collective action (see figure 1 above).

#### **4. Case Evidence on Adaptation Practices and Rural Institutions<sup>1</sup>**

Although there is a large case literature on adaptation and adaptive responses, there are few comparative studies of cases of adaptation. In this context of limited comparative work, the cases collected in the United Nations Framework Convention on Climate Change (UNFCCC) database on coping strategies form a useful empirical basis for assessing the usefulness of the framework represented in figure 1, and for examining the relationship between different classes of adaptation practices and institutional types. The database includes cases from a large number of different countries as part of the effort undertaken by UNFCCC to explore the nature and distribution of adaptation responses and adaptive capacities in the poorer countries of the world.

Although the UNFCCC refers to the information collected on coping strategies as a database, the actual information conforms less to what is typically imagined as a structured

---

<sup>1</sup> All data for section 4 and 5 on the UNFCCC coping strategies database and the National Adaptation Programs of Action documents are available on the UNFCCC website:

database, more to a compendium of cases and different kinds of documents pertaining to a specific case. For each case, the UNFCCC website provides some basic information – ecological context, nature of hazard, types of impacts, location and the name and location of the case – and a brief description of the adaptation practice. For a majority of the cases included in the database, the UNFCCC also provides additional links to other documents (not all links are active) from which additional information about the case can be gleaned. Much of this information has likely been supplied by personnel in the relevant environment ministry or agency in a country, or non-government organizations involved in consultations around climate. As a result, it is likely that most of the cases on which information is available in the database are ones that have reached some level of official notice.

The cases included in the database are widely distributed around the world, covering 42 different developing nations in Africa, Latin America, and Asia. It is evident that the UNFCCC database on coping strategies constitute perhaps the most comprehensive effort worldwide to collect information on how different social groups around the world have attempted to cope with environmental variability.

It is worth mentioning that although the UNFCCC cases focus on coping strategies, analytically it is difficult to distinguish between coping and livelihoods strategies. Adaptation strategies are viewed by some scholars as being prospective in nature in contrast to coping efforts which are seen as being retrospective and in response to specific experiences of variability. However, given that many climate hazards are recurrent – whether sudden or slow-onset, strategies adopted as responses to experiences of climate risks are also prospective in terms of future experiences of scarcity. Further, historical efforts to cope with production failures associated with some kinds of risks can have significant utility in relation to other kinds of risks as well.

The ensuing discussion of adaptation cases in the UNFCCC database builds upon an analysis of 118 distinct cases. Table 2 provides information about the distribution of different kinds and combinations of adaptation practices, and finer distinctions within the five classes of adaptation practices mentioned earlier. The evidence in the cases also indicates some interesting patterns. Perhaps the most interesting points concern the absence of mobility in the examined cases (see table 2), and the occurrence of exchange typically only in combination with at least one other type of adaptation practice. For exchange to occur, it would appear, households and communities need also to resort to at least one other type of adaptation practice as well. Table 2 also suggests that the most common classes of adaptation responses are diversification and communal pooling on their own, and diversification and exchange as a pair.

Table 2 Frequency distribution of major classes of adaptation practices  
(N=118)

Class of Adaptation Practice	Corresponding Adaptation strategies	Frequency*
Mobility	1. agropastoral migration 2. wage labor migration 3. involuntary migration	
Storage	1. water storage 2. food storage (crops, seeds, forest products) 3. animal/live storage 4. pest control	11
Diversification	1. asset portfolio diversification 2. skills and occupational training 3. occupational diversification 4. crop choices 5. production technologies 6. consumption choices 7. animal breeding	33
Communal pooling	1. forestry 2. infrastructure development 3. information gathering 4. disaster preparation	29
Market exchange	1. improved market access 2. insurance provision 3. new product sales 4. seeds, animal, and other input purchases	1
Storage and diversification	Examples of combinations of adaptation classes are drawn from the strategies listed above.	4
Storage and communal pooling		4
Storage and market exchange		6
Diversification and communal pooling		4
Diversification and market exchange		26
Total		

The above patterns at a minimum can be taken as being informative about the more than 100 cases included in the UNFCCC database, in itself an advance over the state of the field which has tended to focus typically on single cases. But the conjunction of exchange with at least one other class of adaptation practice may also be representative of adaptation practices more broadly – it makes analytical sense that households will pursue exchange typically when they have some surplus to exchange – and such surplus is likely generated when households are also involved in some other classes of adaptation. The limited representation of mobility in the data seems an

artifact of reporting bias – agropastoral and wage labor groups have used mobility as an adaptation to environmental variability for generations – indeed, mobility often also occurs in conjunction with other adaptation strategies such as diversification. Some form of the common official bias against mobility, often visible in climate change discussions in the invocation of climate refugees, may be at play in the under-representation of mobility as an adaptation strategy in the UNFCCC database as well.

The UNFCCC data also show other interesting patterns. In nearly all cases, local institutions are necessary enablers of the capacity of households and social groups to deploy specific adaptation practices (see table 3). In 70 cases, the primary structuring influence of adaptation stems from local institutions without external interventions. In 41 other cases, local institutions work in conjunction with external interventions. The inference is evident – without local institutions, rural poor groups will find it far costlier to pursue any adaptation practice relevant to their needs. Table 3 also indicates that when rural institutions work in conjunction with external interventions, it is more likely that benefits from adaptation practices will be shared more widely in the collective.

Table 3 Types of institutions and distribution of benefits adaptation  
(N=118)

	Individually oriented benefits from adaptation practices	Collectively oriented benefits from adaptation practices	Total
Local institution functioning in conjunction with an external intervention	15	26	41
Local institutions without external interventions	55	22	77
Total	70	48	118

Source: UNFCCC Coping strategies database

Table 4 uses the data collected by the UNFCCC to examine how different kinds of institutions are associated with different types of adaptation practices, using the broad classification of private, market based, public state-sponsored, and civil society institutions as the relevant categories. The table indicates that civil society institutions play a striking role in adaptation. In contrast, market-based private institutions seem to play a far more limited role in existing cases of adaptation collected in the UNFCCC database.

Table 4 Association of adaptation Practices with institutional arrangements  
(N=118)

	Public	Civic	Private	Public and civic	Private and civic	Total
Storage	0	8	0	3	0	11
Diversification	0	<b>19</b>	1	<b>12</b>	1	33
Communal pooling	4	<b>11</b>	0	<b>14</b>	0	29
Storage and diversification	0	2	0	2	0	4
Storage and exchange	0	4	0	1	1	6
Diversification and exchange	0	<b>13</b>	<b>4</b>	5	<b>4</b>	26
Other	2	4	0	3	0	9
Total	6	61	5	40	6	118

Source: UNFCCC coping strategies database.

Although the UNFCCC database does not provide enough information to make a detailed assessment of the subdivisions within the broad categories of public, private, and civic institutions, it does suggest that public institutions are only infrequently associated with market exchange processes promoting adaptation; and that when market actors are involved in adaptation practices, it is likely that they would assist exchange-based efforts.

Given the overall distribution of institutional arrangements through which adaptation is facilitated at the local level, it is not surprising that much of the institutional action is focused around civic and a combination of public and civic institutions. A few points are still worth highlighting from the information in this table (the relevant cells have the numbers in bold in table 4). The first is that civic institutions and partnerships between civic and public institutions seem to occur more frequently to promote diversification and communal pooling. There are relatively few instances of civic institutions promoting storage or mobility, or for that matter a combination of different adaptation strategies. In contrast, much of the involvement of private institutions and the partnership between civic and private institutions seems to focus on the promotion of diversification and market exchange. This is an expected finding in many ways – one expects market actors and processes to be most suited for exchange-based activities, and indeed this is also the finding in the data.

Table 5 provides a summary overview of how public, civic and private institutions mediate external interventions to promote adaptation. It focuses on the 41 out of the 118 cases in table 3 that clearly show the involvement of external actors in promoting adaptation. The total number of cases is too small, therefore, to make broad generalizations, but in looking at the distribution of the specific cases based on the main patterns in the data, there are some useful lessons to be derived.

Table 5 Local institutions and their mediation of external interventions to promote adaptation (N=41)

	Public	Civic	Public and civic	Civic and private	Total
Information	0	2	8	0	10
Technical inputs	2	4	1	0	7
Financial support	2	0	6	1	9
Information/Technical inputs	0	4	2	0	6
Technical Inputs and financial support	0	4	1		5
Other	0	2	2	0	4
Total	4	16	20	1	41
Source: UNFCCC Coping strategies database					

The information in the table above suggests that the major external interventions to support local adaptation efforts have focused on providing information and financial support. There are fewer cases in which a variety of external interventions have been combined to facilitate adaptation, and in no case have external actors provided strong leadership or attempted local institutional reconfiguration to support adaptation. A closer look at the data explains these patterns. The vast majority of cases of information provision and financial support concern adaptation practices related to disaster preparedness, early warning systems about failure of rains, and private or public infrastructure that could withstand climate hazards such as floods and storms. Certainly, the role of external interventions in promoting adaptation is not exhausted by these three types of adaptation to the threat of climate change. As indicated by the list of specific adaptation strategies in table 4, itself only a subset of the different types of adaptation practices that rural populations have already been attempting, there are many more ways in which external support can reinforce adaptation efforts and support institutions that are shaping, facilitating, and reinforcing local adaptation efforts. The conclusion is inescapable that external forms of support focus on an incredibly small slice of the huge diversity of adaptation mechanisms that local actors and institutions are inventing and attempting.

In summary, the discussion above of the information on adaptation and institutions in the UNFCCC data brings out four important points. One, institutions are ubiquitous in local rural efforts to adapt to climate variability. It is important to highlight this point both because of the nature of much policy debate on institutions. Many such discussions tend to focus on the institutions at the national and international level that would be necessary to facilitate adaptation, missing the point that adaptation is inherently local and therefore it is critical to attend to local institutions in thinking about effective adaptation. The cases in the UNFCCC database were collected without reference to whether institutions were involved in the adaptation practices being described. The fact that institutions are relevant all the cases of adaptation included in the UNFCCC data indicates with a very strong probability that local institutions are crucial, perhaps even necessary to adaptation.

The second point to be highlighted from the data is the absence of mobility as an important class of adaptation. It is quite likely that the absence of this adaptation strategy is the result of reporting bias, but it also indicates that official discourses around climate adaptation

need to refer to and analyze mobility more carefully because different forms of mobility are undoubtedly one of the major ways in which social groups are likely to adapt to climate change.

The third important issue that the UNFCCC data bring up is the relative importance of civil society institutions in adaptation, either on their own, or in combination with public institutions. Civil society institutions are not only active in facilitating different kinds of adaptation practices, they are also very commonly associated with the mediation of external interventions for adaptation.

Finally, it is worth highlighting that unlike the situation for climate change mitigation, private and market institutions have been relatively absent in facilitating adaptation in rural areas. This absence constitutes an important arena of interventions for public policy to begin to craft incentives that can draw private institutions more centrally in facilitating adaptation.

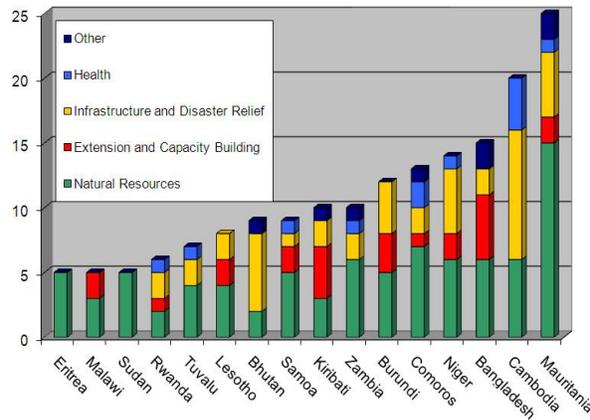
## **5. Examining the National Adaptation Programs of Action**

It is interesting to compare the information from the analysis of the data brought together by the UNFCCC with the types of adaptation priorities identified in the National Adaptation Programmes of Action (NAPAs) that different national ministries of environment have prepared with the support of the the United National Development Program (UNDP). Information on only about 18 NAPAs is publicly available as others are still under preparation or review. Each of these NAPAs identifies the projects in which national ministries would like to invest adaptation funds if and when such funds become available. Unlike the data in the UNFCCC coping strategies database which indicate the type of historical adaptations that have been pursued in specific cases, the adaptation projects described in the NAPAs constitute expressions of what different countries would like to do around climate adaptation in the future. The most interesting parts of these NAPA documents for this paper are their lists of priority areas and activities.

A review of the NAPA documents from the 18 countries listed on the UNFCCC website suggests that in all cases there was widespread participation by a cross-section of national government agencies and non-government organizations in their preparation, In many ways the NAPAs provide a comparable set of national level statements by official agencies about what they view as adaptation priorities, and how they expect to go about pursuing adaptation. It is therefore an appropriate set of documents to examine to assess the extent to which national level planning around climate adaptation has taken local rural institutions into account.

The figure below presents basic information about NAPA adaptation projects concerning their thematic focus and numbers.

Figure 2: Sector-wise NAPA Adaptation Projects



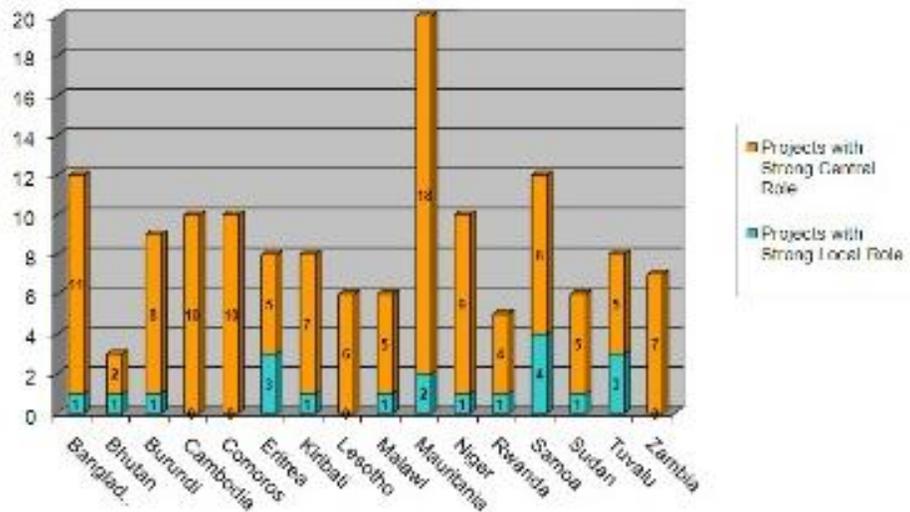
The figure shows that the largest number and proportion of adaptation projects are focused on sectoral issues related to improvements in natural resources related activities such as in agriculture, forestry, water conservation and irrigation, and in the development of infrastructure and disaster relief. Very few of the countries have identified urban impacts of climate change or new research on the best means of adaptation as high priority areas needing support.

Although a detailed analysis of these projects along the lines of the UNFCCC database is not possible given the nature of information presented in the NAPA documents, it is still possible to make basic comparisons that point to the ways the policy process has worked in different countries to engage with local institutions in the urgent issues surrounding adaptation in the context of climate change. First, in contrast to the actual instances of adaptation described and enumerated in the UNFCCC database, most of the projects in the NAPA documents seem far more aimed at building the capacity of national governments and agencies to coordinate adaptation, to provide services to the general population, or to create infrastructure rather than to strengthen the capacity of local actors and institutions to undertake adaptation. Figure 8 provides information on two areas of concern to this report – the extent to which selected high priority projects focus on communities, and the role they identify in the project design for community or local level public, private, or civic institutions.

Thus, local institutions are incorporated as the focus of adaptation projects in just about 20 percent of the projects described in the NAPA documents. The limited focus on local actors is especially striking when it comes to the anticipated role of local level institutions in adaptation. Only 20 of the 173 projects described in the NAPA reports identify local level institutions as partners or agents in facilitating adaptation projects. Indeed, given this minimal level of attention to local institutions – even for projects that are focused on agriculture, water, forest management, fisheries, small scale infrastructure, and capacity building for which local institutions could be viewed as basic components of an adaptation strategy – it is perhaps unnecessary to develop a refined argument about local institutions and adaptation. Despite widespread consultations that went into the production of the NAPA documents, it appears that

the process was attentive in only a limited manner to the historical experiences of adaptation, indigenous or local adaptation strategies, and forms of local and cross-scale vulnerabilities of marginal peoples. In any further efforts to develop national adaptation plans the potential role of local civic institutions and institutional partnerships both at the local level and across multiple scales must receive much greater attention than it has hitherto received.

**Figure 3: Relative Importance of Local Institutions in NAPA Adaptation Projects**



The analysis of the information on high-priority projects selected by relevant ministries in the least developed countries as identified by the UNFCCC brings home the enormous ground that still has to be covered by the national planning process in relation to adaptation and local institutions. Despite an explicit commitment to grassroots processes and institutions articulated in the NAPA process, the actual documents and projects have paid relatively limited attention to rural institutions. Not only do most projects not incorporate local communities and institutions in adaptation plans, little evidence of consultation and coordination between the local and national level can be seen in the descriptions of the selected high-priority projects. Given that only a small proportion of all NAPA documents have been finalized at present, there is both an opportunity to redress this gap in the process by identifying how rural institutions can play a more defining role in projects targeted toward rural areas, and to provide guidelines for other attempts to develop territorially based adaptation plans in which interactions among institutions would be important to analyze and understand. Because the World Bank is involved in some national level adaptation planning, it is especially useful to point to possible ways in which the analysis of NAPAs above may be useful – by calling for greater institutional coordination across levels, involvement of local institutional actors in project design and selection, and integration of different projects so as to promote a more holistic vision of adaptation in the context of climate-related threats to rural livelihoods.

## 6. Conclusion

This paper identifies a framework through which to view the relationship between rural institutions, adaptation owing to climate variability and change, and livelihoods of the rural poor. Using the existing literature on risks and livelihoods, the paper proposes five major classes of adaptation practices available to the rural poor in varying measures depending on their social networks, access to resources, and asset portfolios: mobility, storage, diversification, communal pooling, and exchange. Using data from the UNFCCC's local coping strategies database, the paper identifies empirical patterns in the incidence and compatibility of these strategies. A comparison of these patterns with priority activities in NAPAs suggests that the NAPA documents – presenting the most widespread current national policy statements around adaptation -- have paid relatively little attention to civil society or micro-level institutions in crafting national responses to climate change. It is quite likely that this inattention to local institutions is partly the result of the inadequate thought that has gone into the NAPA process, despite hundreds of thousands of dollars being spent on the NAPA process in each country. If adaptation is local, attention to local institutions is critically important in the design of adaptation projects and policies. Further, a close integration of different institutional arrangements is also likely critical for enhancing the effectiveness of adaptation practices. Without greater attention to local institutions and their role in adaptation efforts of different kinds, and the ways in which local and external institutions can be articulated in the context of adaptation, it is unlikely that adaptation interventions and investments will achieve much success.

## ACKNOWLEDGMENTS

We thank Andrew Norton, Robin Mearns, Mafalda Duarte, Gretel Gambarelli, Catherine McSweeney, Paul Siegel, Maria Lemos, Jesse Ribot, Neil Adger, Erin Carey, Rachel Kornak, Simon Batterbury, Julien Labonne, Daniel Miller, Nilufar Ahmad, and participants at “Are there Limits to Adaptation” Conference in February 2008 in London, and at the “Social Dimensions of Climate Change” conference in Washington DC in March 2008.

## References

Adger, W.N., S. Agrawala, M.M.Q. Mirza, C. Conde, K. O'Brien, J. Pulhin, R. Pulwarty, B. Smit and K. Takahashi, 2007: Assessment of adaptation practices, options, constraints and capacity. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 717-743.

Agrawal, Arun. 2008. The role of local institutions in adaptation to climate change. Paper prepared for the Social Dimensions of Climate Change, Social Development Department, The World Bank, Washington DC, March 5-6, 2008.

Halstead, Paul and John O'Shea (eds) 1989. *Bad Year Economics: Cultural Responses to Risk and Uncertainty*. Cambridge: Cambridge University Press.

Uphoff, Norman, and Louise Buck. 2006. Strengthening rural local institutional capacities for sustainable livelihoods and equitable development. Paper prepared for the Social Development Department, World Bank, Washington DC.