

Institutional assessment for climate change adaptation, Didahara, Borena, southern Ethiopia



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Food Security**



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Institutional assessment for climate change adaptation, Didahara, Borena, southern Ethiopia

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Executive summary

In this study climate-change-adaptation governance issues and the various actors working on climate change adaptation at Didahara level focusing on the 2009 'grand' Borena rangeland management strategy meeting were assessed. This meeting was held in Yabello in response to the concern among herd owners, development practitioners and other stakeholders on the increasingly deteriorating rangeland condition, poor resource governance and declining livestock productivity, the mainstay of the livelihood of Borena herders. The study seeks to build capacity of communities and other stakeholders to assess local level climate-change-adaptation governance issues and the related institutional environment. The research is grounded in participatory qualitative research methodologies. Data was collected from a multi-stakeholder workshop, and individual and group interviews. Overt observation was part of data collection methodology. Relevant related literatures were also consulted. Key informants from the community (e.g. Jaressa, women, wealthy, poor, pastoralists and agro-pastoralists, government agencies and NGOs experts) were sources of data for this study. A total of six individual key informants from NGOs, a government agency and the community were interviewed. Twelve homogeneous focus-group-discussion (FGD) sessions with various stakeholders, including Raba Gada members (leadership of the traditional institution) were organized. Moreover, a one-day multi-stakeholder workshop was conducted with segments of the community, NGOs and government agencies.

The study revealed the following findings:

- The institutional system lacks consistent cooperation and coordination to pursue climate-change-adaptation good governance actions.
- A lack of an effective and efficient decision-making process is the most challenging problem in the institutional system to exercise climate-change-adaptation good governance and increase adaptive capacity.
- Some important traditional institutions and their functions, such as Aba Rera, Aba Dedha, are disappearing and others, e.g. Aba Olla, are being suppressed and replaced by the government structure on decision enforcement processes.
- The trust the community put on the traditional institutions is declining.
- Traditional and government institutions blame each other, instead of working together for effective climate change adaptation.
- The climate-change-adaptation institutional system supports and promotes some level of autonomous decision-making, leadership and involvement of multi-stakeholders.
- The 'grand' Borena rangeland management strategy meeting didn't highlight some important issues, such as accountability of Raba Gada, ritual sites and the movement of the members of the Raba Gada, and the source of human and financial resources.

Thus, this research confirms the presence of positive and negative institutional-system effect to increase the herders' adaptive capacity in the face of climate change. The government should strengthen the monitoring and evaluation system and horizontal and vertical stakeholders' linkage. The new rangeland management guideline should be revised and embedded within the modern judiciary system, like the community bylaw experience in Tigray region. The government should support and provide legitimate power to lower level authorities and increase the role and responsibility of customary institutions in resource management and decision enforcement.

I Introduction

Climate change is the greatest developmental challenge of the 21st century (IPCC 2007). Its impacts are far-reaching and, to varying degrees, potentially very damaging to all nations, sectors and communities. Climate change undermines the gains accrued from development investments and hits the poorest and most vulnerable sections of the society hard. Especially in semi-arid and arid areas of developing countries its potential impact could reverse the economic contribution of vulnerable sectors to the national development and put additional pressure on fragile resources. By constraining the productivity of critical livelihood bases, such as agriculture, water, energy, wildlife and tourism, climate change would undermine poverty reduction endeavors (ibid).

Developing countries are most vulnerable to climate change due to their low objective and subjective adaptive capacity, in addition to their heavy reliance on sectors sensitive to drought, flooding, epidemics, shortages of water, pasture etc. that are brought about or exacerbated due to climate change. The majority of the sub-Saharan African population is dependent on rainfed farming and or pastoralism, which are sensitive to climate change. Among social groups, the poor, women, the elderly and children would suffer the most from climate change (Ayal and Muluneh 2014; Aklilu and Alebachew 2009; IPCC 2007). Food security will severely be compromised by climate change (ESAP 2013). Thus, the poorest of the poor in rural areas with the least financial, institutional and technological capacity to adapt to climate change would bear the brunt of climate extremes (IPCC 2007).

Ethiopia is among the most affected countries by climate extremes. For instance, severe drought that occurred in 1958, 1965, 1973, 1984, 1992, 2002, 2006, 2010 and 2011 (Hassan 2006; Desta *et al.* 2002) caused substantial damage to the livelihood of its citizens. Frequent and severe drought, especially in the northeast, south and southeast lowlands and northern highlands of Ethiopia causes extensive damage to livestock and crop production. It jeopardizes food security, availability and access to pasture and water (Desta *et al.* 2002; Little *et al.* 2012), thereby causing extra resource commitments to manage livestock and crop production (Ayal and Muluneh 2014).

Over centuries, pastoralists have developed knowledge and capacity to adapt to climate change and variability. However, emerging problems—such as the expansion of individual enclosure and crop farming, severe rangeland degradation, reduced mobility—pose unfamiliar pressure on pastoral systems and increase vulnerability to climate change. Naiper and Desta (2012) noted that in Borena and Somali region, the expansion of privately owned enclosures that were carved out of the common grazing land by the wealthier and powerful pastoralists have hindered mobility, denied equitable access to communal resources and compromised the ability of the large majority of herders to cope with drought. Devereux (2006) also observed that more than meteorological drought increasing restrictions on the mobility of animals and people, it has made Ethiopian Somali pastoralists vulnerable to climate change. This is because restrictions on mobility deny herders the ability to maximize temporal and spatial variability in the availability of pasture and water, which is an inherent characteristic of arid and semi-arid environment. Restrictions on mobility also lead to conflict, limit cross-border trade of livestock and consumables, and distort traditional rangeland management practices. Lacking political power, pastoralists are victimized by the decisions of land-use planners and administrators who overlook indigenous knowledge, skills and customary institutions with which pastoralists use to regulate rangeland management (Yohannes and Waters-Bayer 2002; Mebratu 2009).

An assessment of how the system is working and identifying opportunities and challenges faced by various stakeholders, in attempting to undertake innovative institutional transformation to adapt to climate and non-climate stressors, is crucial to making informed decision. Although, numerous are the studies on different aspects of climate change, only a few of them have looked into the capacities of adaptation governance. Understanding the climate-change-adaptation governance dimension effort is very important to enhancing the herders' adaptive capacities. Hence, this study was designed to assess climate-change-adaptation issues and the governance system aimed at increasing the capacity of communities and stakeholders' institutional environment.

2 Methodology

This project focuses on the institutional assessment of climate change adaptation at landscape level in Didahara, Borena zone, southern Ethiopia. Specifically, the study was based on the 'grand' Borena rangeland management strategy and Didahara 'grand' Borena rangeland management strategy decision implementation meetings, which were held in 2009 and 2010 respectively. The meetings were organized and chaired by the Borena traditional leader (Aba Gada). The research was grounded in constructive research philosophy. The qualitative research approach enables in-depth investigation of the institutional system of various stakeholders in the face of climate change and non-climate stressors. Accordingly, the research approach was based on a framework developed by ILRI for the assessment of institutional climate-change-adaptation governance dimension (Robinson et al 2014). The framework drew on previous environmental governance research (Gupta et al. 2010; Graham et al. 2013). The methodology provides guidelines for determining the level of institutional assessment, criteria for selection of the study site, and relevant stakeholders and participants. The research team visited the research site three times. Data on climate-change-adaptation issues and the institutional system was collected using a multi-stakeholder workshop, and individual and group interviews.

Based on interviews with key informants from community (PA leaders and Jaressa), government agencies (Rural Land Use and Environmental Protection and Women's Affairs offices) and NGOs (SOS Sahel, CARE), the research team identified the study site, potential actors and climate-change-adaptation issues. A figure depicting climate-change-adaptation governance linkages was also prepared and commented by one heterogeneous FGD participant.

- **Study site selection:**The implementation of the decision of the 'grand' Borena rangeland management strategy meeting which was aimed at reversing the rapidly deteriorating rangeland situation and pastoral livelihood due to climate change and non-climate stressors was started in Didahara. Hence, the research team purposely selected this location for the climate-change-adaptation governance system study. Didahara, formerly one vast PA, has since been subdivided into three PAs: Dikale, Dembelaseden and Abuno. The study site corresponds approximately to a traditional Borana Rera, a customary level of decision making for pasture and water management. Implementations of relocation and concentration of villages (Olla), which was one of the key components of the new strategy, were made at Didahara level rather than at the lower PA level. It was found more logical and appropriate to undertake the study at Didahara level.
- **Stakeholder analysis:**The climate change issues are cross-sectoral. Moreover, its impact is felt differently among various segments of the community. Hence, participants for the FGD and a multi-stakeholder workshop were selected from different set of actors to capture the perspectives and interests of various groups. In consultation with key informants, various institutions were selected based on their activity on climate change-adaptation-governance strategy. For instance traditional institutions (Aba Olla, Jaressa, Aba Rera, Aba Dedha, Hayu, Ladu and Raba Gada), government agencies (Yabello woreda Rural Land Use and Environmental Protection office, Women's Affairs office, Health office, Peace and Security office, Pastoral Development office, woreda Administration office and Zone Administration office) and NGOs (Gayo Pastoral Development Initiative, Hundee-Oromo Grassroots Development Initiative, SOS Sahel and CARE), were identified as potential stakeholders for climate-change-adaptation governance system.
- **Data collection:**A total of ten FGD sessions and a multi-stakeholder workshop were arranged to collect data on climate-change-adaptation issues and eight climate-change-adaptation governance dimensions. Data on climate-change-adaptation issues and institutional linkages were collected at a heterogonous FGD session that included

participants from respective PAs Bulcha ganda, Jaressas and knowledgeable individuals. Nine homogenous FGDs were held as follows: Jaressa and Hayu, wealthy herders, Bulcha ganda, PA managers, DAs and water and pasture committee, poor, women, two sessions of agro-pastoralists, government agencies and NGOs. These stakeholders discussed climate-change-adaptation dimensions, such as room for various actors to participate and pursue solutions, governance linkages, room for autonomous decisions, resource mobilization (authority, human resource and financial resource), fair governance (legitimacy, equity, responsiveness and accountability), effective decision-making, learning capacities (trust, deliberation, makes use of diverse types and sources of knowledge, governance memory) and leadership. In the multi-stakeholder workshop, data was collected on the causes of the collapse of water and pasture committee at Didahara level i.e. Kore, the general view of stakeholders on the implementation and gaps in the 'grand' Borena range management strategy to climate-change-adaptation meeting decisions, as well as solutions to improve observed weaknesses.

- **Analysis:** The initial analysis was done in a participatory way by participants in the FGDs, with participants scoring different dimensions of governance for the overall institutional system. As building the capacity of communities to conduct their own governance assessment was one of the core objectives of the study, participants actively participated in the assessment process. Data collected from individual interviews, FGD and workshop sessions were further analyzed thematically. Paraphrasing, identification and characterization of the recurring themes was performed in the analytical procedure. FGD participants' range of responses—graph (see Fig. 1), institutional system assessment graph (see Fig. 2) and institutional linkage graph (see Appendix I)—demonstrate the actors level of satisfaction of various assessment criteria, the overall institutional effect on climate-change-adaptation governance, and the hierarchy and linkage between the institutions respectively constructed.

3 Description of the site

Yabello woreda is located 570km south of Addis Ababa, the capital city and seat of the Federal Democratic Republic of Ethiopia. Yabello woreda is divided into 23 PAs and its administrative centre is Yabello. It is located north of Dire woreda, south of Bule Hora woreda, west of Arero woreda and east of Teltele woreda. The woreda has a total area of 5,550 sq km. Didahara, found in Yabello woreda, is located in between 4.70'-4.98'N and 38.28'-38.55'E. Currently Didahara is divided into Dikale, Abuno and Dembelaseden PAs.

Yabello woreda's geographic feature is dominated by plain topography. Except few mountain peaks with an elevation of 2200 m.a.s.l., the landscape is gently undulating across an elevation of 1450-1600 m.a.s.l., which falls within the Rift Valley System of East Africa (Leykun 1991; Coppock 1994). It receives rainfall twice a year. Yabello woreda receives annual average rainfall amount of 667.7mm. About 60% of rainfall occurs during the March-May (Ganna) period and 40% of rainfall occurs between the September-November (Hagaya) period (BLPDP 2004). The period from June-September is characterized by heavy cloud cover, mist and occasionally short showers, while the main dry season (Bonna Hagaya) occurs from November to March with high evapotranspiration (BLPDP 2004). The prominent feature of Yabello rainfall is more erratic and highly variable. The study site experiences an average annual minimum and maximum temperatures of 16.600C and 27.170C respectively (Ayal and Muluneh 2014). The erratic nature of rainfall and more frequent drought adversely affects the livestock system (Ayal and Muluneh 2014; Coppock 1994). Besides, in addition to the climatic conditions; the low fertility of soil in the area makes crop production less viable (Coppock 1994).

The rangeland is characterized by sparse vegetation mainly composed of grass, bushes, shrubs, small trees and bare land (Alemayehu 1998). Bush lands and thickets, which cover most of the lowlands, are dominated by the Acacia and Commiphora species. Moreover, species of the genera Boscia, Maerua, Lannea, Balanites, Boswellia and Aloe are common in the study area (Gemede et al. 2006). Yabello woreda is characterized by a scarcity in surface and underground water resources. The study site has no perennial rivers. The main water sources for human and livestock consumption in the woreda are deep wells (Eellas) and ponds (Haros). There are nine major wells in the district. Ponds are found in greater concentration than wells. Harobeke is the largest pond found in the woreda which is the main water source for livestock during both dry and wet seasons. The pond is also utilized by pastoralists of neighbouring woredas when there is severe water scarcity.

Pastoralism is the dominant livelihood, followed by agro-pastoralism in Yabello woreda (Ayana 2007). Livestock production is the main source of food and money. Beyond this, it plays a major role as being a symbol of a Borena identity and culture, as well it is a central element of their social and political organization. The livelihood system has its roots in a traditional Gada system. The Gada system has been functioning for the last 550 years as an economic, resource management and socio-political institution (Legesse 1973; BLPDP 2004). The entire Borena rangeland is divided into traditional grazing based land management units called "Dedha, Rera and Arda etc". The Borana rangeland system comprises five main grazing lands or Dedha, each of them having a distinct feature in terms of grazing and water potential and suitability. These rangelands are called Gomolle Dedha, Dirre Dedha, Malbe Dedha, Golbo Dedha, and Wayama Dedha (Mercy Corps, Borana Rangeland System, N.D). Didahara is a Rera in the Gomolle rangeland. Reras are often centred around one or more permanent water sources, usually traditional deep wells or big ponds or water depressions and associated vast area of land for wet and dry season grazing. The permanent wells and water points are the focal points of the production, economic and social life of Borana herders (Coppock 1994).

The Rera is further sub-divided into sub-grazing units called "arda", which consists of a few encampments that have jurisdiction over a defined grazing area, cultivated land and to a lesser extent, on water resources (Kamara et al. 2002). The encampments or Ollas, which comprise about ten or more households, are the smallest administrative units in the traditional system. There could be several PAs in a Rera. A PA is the smallest administrative unit in the

government structure. The Borena household unit consists of one household head, one wife or more depending on the number of animals one has, and three to seven children depending on the number of wives (BLPDP 2004). In some of the pastoralist PAs in Borana, there are small tracts of lands which are tilled only to satisfy household grain requirement. Crop production and keeping camels are recent activities in Yabello woreda. The land-use classification of Yabello woreda shows that potentially cultivable land, cultivated land, covered by bush and forest, rangeland, range with encroachment, and others account for about 11.2%, 2.25, 7.15, 59.2%, 20% and 0.5% of the land respectively (YWPDO 2013). The ecological environment of Borena rangelands is more suitable for extensive grazing than for crop production, which is unreliable due to the erratic nature of rainfall (Boku 2008) and poor soil fertility ((Napier and Desta 2011; Coppock 1994). Although currently it is slowing down, herd mobility is one of the best strategies the Borena use. The Borena rangelands are exploited mainly by a mobile herd management system.

4 Institutional and climate change adaptation issues at Didahara

The challenges associated with adaptation to climate change and extremes in the study area have been identified during various stakeholders' group discussions and individual interview sessions. The mutually reinforcing challenges identified include shortage of rainfall, frequent drought, shortage of water and pasture, conflict, rapid growth in human and livestock population, increasing human and livestock death rate, bush encroachment, reduced livestock productivity and the fading away of wild roots and fruits that used to supplement food in times of hardship. Participants explained that areas around water points were severely degraded. Weakening of the traditional rangeland management institutions have led to mismanagement of rangelands that have worsened direct and indirect climate change and non-climate stressor impacts, such as drought, livestock disease epidemic, conflict, shortage and inequitable access to water and pasture.

In an attempt to cope with such challenges, the Borena 'grand' rangeland management strategy meeting, organized and chaired by the Aba Gada in 2009, passed critical decisions to save the rangeland and Borana pastoralism from further deterioration. The decisions fostered the relocation and concentration of settlements in a pattern that demarcates wet and dry season grazing sites that were assumed to open equal access and better utilization of water and pasture (e.g., wells, ponds, enclosures, open communal grazing lands) to all permanent and temporary settlers, regardless of wealth, as long as they observed the rules and regulations of resource utilization. In addition, the 'grand' Borena rangeland management strategy meeting prohibited privatization of enclosures (Kallos) and the unregulated expansion of croplands and alcoholism.

Key informants explained that the rangeland management strategy decision supports and promotes the Borena traditional rangeland management system. It is being perceived as a new avenue that encourages equitable access to and utilization of resource among the Borena community. The Borena pastoralists have detailed knowledge of their grazing lands and well organized socio-cultural networks to manage and effectively utilize the rangeland (Kamara *et al.* 2002; Coppock 1994), and shared early warning information (Ayal *et al.* 2014). However, key informants and FGD participants confirmed that the roles and responsibilities of the Borena traditional institutions, designed to cope with issues related to rangeland management, have been eroded. This claim is in line with previous findings (e.g. Ayal *et al.* 2014; Desta *et al.* 2004; Johan 1998).

In 2010, the 'grand' Borena rangeland management strategy decision implementation meeting was organized in Didahara. Accordingly, the Olla relocation and concentration (resettlement) program, considered as a key resource management strategy, was started in Didahara. The resettlement sites were selected based on set criteria (e.g. far from water points, outside the communal grazing lands, etc.) and the participation of communities from neighbouring PAs and woredas. Therefore, it can be concluded that the resettlement lines were selected based on the consent of all users. However, during the Borena 'grand' rangeland management strategy decision and Didahara decision implementation meetings, the Health office, Gender Affairs office and Education office did not participate. Consequently, the resettlement site selection did not take into account health issues and schools left out of villages. At the beginning, the resettlement schedule was also opposed by women.

Key informants and FGD participants explained that climate-change-adaptation governance issues are becoming a major concern for various stakeholders. They observed that in their locality climate-change-adaptation issues are getting critical as presented below:

Drought: The frequency and magnitude of drought has increased over time. When drought occurs, its impact is so severe that it is felt and observed immediately with unprecedented emaciation of livestock, in particular cattle, and their ultimate death.

Shortages of water: Participants observed that shortages of water occur due to frequent drought, reductions in the amount of rainfall, and increasing livestock and human populations. Both availability and accessibility of water have declined. Water points have begun drying up quickly. Hence, shortages of water for domestic purposes and livestock are getting worse. Climate change and non-climate stressors affect surface and underground waters (IPCC 2007; Gleick 1998 and 2000) and increases are predicted in the future (IPCC 2007). An improved water-use efficiency and livestock management system to adapt to the emerging situation is becoming critical for Borena herders.

Shortages of pasture: Bush encroachment, the expansion of crop land at the expense of high-potential rangeland pocket areas, the expansion of private and semi-private enclosures, and increasing livestock pressure and rangeland degradation are mentioned as the causes for shortages of pasture. Key informants and FGD participants explained that the Borena rangeland carrying capacity has decreased and available grazing land is shrinking. They underscored that uncontrolled grazing systems, increased human and livestock populations, and restrictions in livestock movement make shortages of pasture more critical.

Bush encroachment: The rangeland is invaded by unwanted and non-palatable bush, shrubs and grass species. Participants underlined that the expansion rate of these unwanted bush, shrubs and grass species is very fast. On top of the loss in the grassland, the problem requires an investment of resources (time, energy and money) to control the encroachment. In most places, bush encroachment has gone beyond the community capacity to control it. According to FGD participants, prohibitions on traditional bush control mechanism, e.g. use of fire, makes the situation worst. Key informants highlighted that the reluctance of community members to actively engage in bush-control endeavours, using their own resources and high turnover of PA leaders and committees, hindered the development of bush-control intervention activities.

Livestock pressure: In Borena, unlike per-capita livestock holding, the total livestock population has drastically increased. On the contrary, the size of the commonly accessible grazing land is decreasing, due to an expansion of crop cultivation, bush encroachment, land degradation and conversion for other purposes e.g. private and semi-private enclosures, settlements. FGD participants and key informants indicated that, in addition to the aforementioned problems, the re-demarcation of PA boundaries that resulted in land fragmentation has weakened traditional rangeland management and utilization at Didahara level. Thus, the rangeland is serving over and above its carrying capacity.

Fast human population growth: The human population has increased drastically. With increased and accessible health facilities and health extension, child and adult mortality have dropped substantially. This, coupled with low outward migration from the system, has resulted in an increasing human population (Coppock 1994).

Livestock productivity: Due to direct and indirect impact of climate change and non-climate stressors, livestock productivity has decreased. FGD participants and key informants have indicated that milk yield per cow is not as high as it used to be. The cattle parturition rate is also coming down. This could be attributed more to feed shortages and breed dilution (CCAFS-MARIL 2012).

Rangeland degradation: Key informants and FGD participants explained that the rangeland, especially in areas around water points and settlements, has become severely degraded. Some areas are irreversibly degraded. The formation of gullies have hindered the free movement of livestock and human, as well as reduced the amount of land available for grazing. Rangeland degradation was also mentioned as cause for siltation of water points. Some ponds in and around Didahara have lost a substantial portion of their capacity for siltation (Coppock 1994).

The accessibility of wild plants: The accessibility and availability of wild plants, fruits and roots (which the Borana used to eat during drought time) have decreased, and some valuable species of plants are on the way to extinction.

Conflict: In Borena, resource-based conflict is time specific. Key informants and FGD participants underscored that climate-related extremes, particularly drought, is source of conflicts. In times of drought, pastoralists and agro-pastoralists compete for scarce rangeland resources and conflict arises within a village (enclosures) and across clans, which consumes human and livestock lives. In all within-enclosure conflicts, those who have less livestock (or the poor and powerless) are wrongly blamed for violating the bylaw by the wealthy and the powerful. This finding is in line with previous studies (CCAFS-MARIL 2013; Napier and Desta 2011). The free movement of people in search of water and pasture is difficult because of clan and tribal conflict, for example, among the Somali, Konso, Gabra and Gare. Cognate with participants' observation USAID (2011); Abate, Ebro and Nigatu (2010) reported that conflict over scares natural resources was one of the challenges facing the Borana community.

In line with key informants and FGD participants' observations, there is a consensus among scientific community that the impact of climate change and non-climate stressors is getting worse (Little *et al.* 2012; Leary *et al.* 2008; Collier *et al.* 2008; IPCC 2007). Issues brought by climate change are beyond the lived experience of pastoralists and agro-pastoralists (IPCC 2007). Direct and indirect climate change and non-climate stressors have the potential to undermine the functions and services of the ecosystem, and hence, reduce the resilience of the community's livelihood system. Key informants and FGD participants' observation was supported by previous research (e.g. Little *et al.* 2012; Desta and Coppock 2004; Johan 1998). Climate change and non-climate stressors have the capacity to erode social bonds, exacerbate resource-based conflict, and deepen poverty. Thornton *et al.* (2006) pointed out that for developing countries, adaptation is not an option but a necessity.

As observed by Riche *et al.* (2009) we argue that the aforementioned climate-change-adaptation governance issues, especially when accompanied by illiteracy, social inequality, marginalization and lack of skills, have the potential to undermine pastoralists' and agro-pastoralists' adaptive capacities. Therefore, they are vulnerable to current and future climate change and extremes, such as drought, shortages of rainfall and indirect effects, such as shortages of pasture and water, conflict, etc. Hence, as indicated by Hari (2008), strengthening climate-change-adaptation governance is a key strategy of which to be aware and prepare the community on how climate change is affecting and will continue to affect their livelihood system and food security in the coming years.

It has been in recognition of the aforementioned climate and non-climate stressors that the 'grand' Borena rangeland management strategy meeting passed the following key adaptation strategies in 2009:

- Relocation and concentration or resettlement: During the 'grand' Borena rangeland management strategy meeting, the resettlement program was passed. It was considered as a key strategy to manage seasonal rangeland grazing. Moreover, participants emphasized that resettlement was a means to manage, and optimally and equitably utilize available pasture and water resources, and avoid land degradation along water points.
- Demarcation of wet and dry season grazing sites: The community members have identified and demarcated wet and dry season grazing sites within the grazing radius of each group of settlements.
- Pasture and water to remain accessible to all Borena as long as the grazing rule and regulations are respected and observed.
- Prohibited private enclosure: This is a key strategy to enhance the fair utilization of resources for all Borena. These private enclosures are basically owned by the wealthy and powerful.
- Prohibited expansion of crop land: Currently high potential grazing rangelands are under cultivation. The Borena culture and ecological setting discourages crop production. Nevertheless, people are cultivating despite an 80% probability of crop failure (Desta 2004).
- Prohibited expansion of alcoholism: The Borena tradition is to have been eroded by the expansion of alcoholism.

5 Assessment of the overall institutional system

Good governance is a critical element to the efforts made to sustainably adapt climate change and extremes (AFD VII 2010). The functions of institutions, such as information gathering and dissemination, resource mobilization and allocation, skills development, capacity building, and the provision of leadership, could play crucial role in encouraging and promoting climate change adaptation (Agrawal 2008). On the contrary, weak connectedness of institutions and a lack of good governance could hamper effective climate change adaptation. Climate change and allied stressors affect all members of Borena society. Inherently, the climate-change-adaptation governance system requires the active participation and coordination of all community segments and the various perspectives of the relevant stakeholders and institutions at the different levels (Clark *et al.* 2002).

In this research, we identified Aba Olla, Jaressa, Aba Rera, Aba Dedha, Hayu, Ladu and Raba Gada as key and functioning traditional institutions in Borena. A cell of six people with a leader, commonly called 'one to five', Aba Gare, Aba Zone, water and pasture committee, Ganda (PA) Bulcha, PA manager, DA, health extension agents, Kore, Rural Land Use and Environmental Protection office, Women's affairs office, Pastoral Development office, Security office, woreda Administration office are government agencies which are directly and indirectly involved in climate-change-adaptation and resource-management issues. Gayo Pastoral Development Initiative, Hundee-Oromo Grassroots Development Initiative, SOS Sahel and CARE are NGOs working on climate-change adaptation and resource management. These are some of the most important actors which, together with values, networks, power relationships and linkages, constitute the institutional system. While our focus in this study was on the institutional system at local levels—from Didahara level downward—important linkages connect this institutional system to key stakeholders at woreda and other higher levels. The institutional system is depicted graphically in Appendix 1. Information was collected from various stakeholders using individual interviews, FGD, and a multi-stakeholder workshop to assess the institutional system on climate-change-adaptation good governance. The mean score summary of FGD participants was computed to assess the level of climate-change-adaptation governance system and presented as follows.

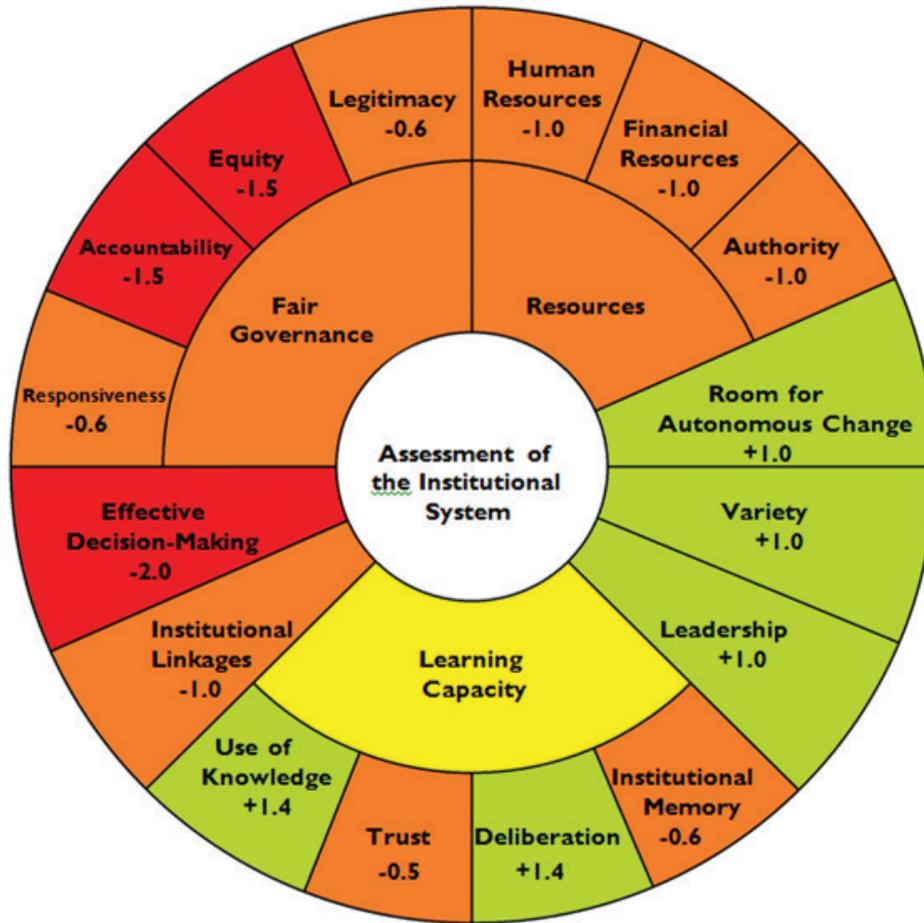
5.1 Learning capacity

Deliberation

Climate change is a complex problem and a multi-dimensional issue. Different stakeholders could have different perceptions, interests and strategies to address climate-change-adaptation governance issues. Informed participation in the decision-making process lays foundations of trust and understanding for climate-change-adaptation good governance. Hence, deliberation is a means to developing mutual respect and establishing common shared values (Lukensmeyer 2012). This confirms the importance of both objective and subjective adaptation capacity. Discussions and deliberations could balance actual available resources and the cultural dimension to adapt to the changing situation (Grothmann and Patt 2005). Discussion helps to understand how various stakeholders deal with the issue and enables

them to incorporate different skills and knowledge. Besides, community involvement in the decision-making process creates a sense of ownership (Grothmann and Patt 2005).

Figure 1: Climate-change-adaptation governance system—Summary of scores.



Key for indicator scores

Effect of the Institutional System on Adaptive Capacity	Score
Positive effect	+1.5 to +2
Slightly positive effect	+0.5 to +1.49
Neutral or no effect	-0.49 to +0.49
Slightly negative effect	-0.5 to -1.49
Negative effect	-1.5 to -2

As illustrated in Figure 1, Borena culture and the institutional system allow and encourage open discussion and dialogue to pass decisions. For instance, the 'grand' Borena rangeland management strategy decisions, as well as

resettlement and the seasonal grazing sites, were decided based on discussion and the consent of the various actors and beneficiaries. In the NGO and government programs, there is some level of open discussion and dialogue, starting at the stage when the project is launched. The actors present their area of intervention, the scope, the objectives and goals, and incorporate comments and ideas from the communities. Though there is no direct participation of females in most of the meeting of traditional institutions, their views are reflected through their clan representatives and husbands. They also receive information from their husbands and clans. Hence, every Borena community at least has information about the decisions passed by traditional institutions, government agencies and NGOs. Therefore, the climate-change-adaptation institutional system has a positive effect on discussions and deliberations.

Trust

Trust and respect stimulates cooperation and coordination (Portes 1998) among stakeholders with common interests and enhances cohesion which enables them to address issues together (Lukensmeyer 2012; Narayana 2005). In pastoralist areas like Didahara, traditional institutions play an important role in rangeland sustainable management and equitable utilization. Experience has proved that traditional institutions are very effective, especially in solving societal problems e.g. conflict and risk sharing. On the contrary, the erosion of customary practices and values weakens societal readiness to help one another in times of need which can only have the effect of dwindling cultural assets of pastoralists that are critical for sustainable adaptive responses to climate change (Fazey *et al.* 2011). Besides, missing this component of climate-change-adaptation local governance promotes tension within the community, as observed in Darfur (Collier, *et al.* 2008).

Figure 1 shows that the institutional system has slightly negative effect on climate-change-adaptation governance. Key informants explained that at the study site the level and culture of trust and respect for government, traditional institutions and NGOs, and even from project to project, varies depending on the results achieved. Relatively speaking, the communities have trust in the Aba Olla. The violation of rules and regulations by decision makers themselves, the lack of follow up on decisions made, delays in the enforcement of decisions, skills and knowledge gaps were mentioned as causing mistrust among different actors. The community trust and respect for Aba Gare and Aba Zone declines from time to time due to the repeated failure to keep promises and the lack of timely responses to issues which need immediate action. This is because positions are not assigned to the appropriately experienced and skilled individuals.

FGD participants underscored that in Borena, in the past traditional leaders were highly committed to their words and also respected their community. They were responsive and accountable for their actions. Decisions were also made in a more transparent and participatory manner. Hence, the community respects them. Nowadays, authorities have no problem making promises and are not shy or fearful about not keeping their word. Some community leaders consider their promises “as wind” and “no one can catch wind”. On the traditional wing, the enforcement of rules and regulations are abused by the powerful and wealthy. The wealthy and the powerful often get their way. Hence, trust, especially in the high level traditional wing, has been eroded. High level traditional institutions discriminate in the enforcement of rules and regulations. Sometimes, their practices go against Borena culture. For example, the members of higher Gada leadership are supposed to shift their settlements for ritual purposes regularly, every two to three years, but some of them permanently settle for five to seven years, if they like the area for its water and pasture potential. The Raba Gada and Hayu members have engaged in crop cultivation in violation of traditional norms. In the Borena culture, for example, cultivating the land and charcoal production were considered taboo, a sign of laziness, or of someone summoning disaster, etc. In conclusion, high level traditional institutions lack accountability, transparency in decision-making processes and responsiveness, which are eroding the confidence and trust the wider community has placed in them.

Use of diverse types and sources of knowledge

Modern rangeland management practices are said to be scientifically proven as effective and sustainable. Equally, pastoralists and agro-pastoralists have comprehensive knowledge of their rangeland, which has been accumulated by years of observation and practice (Ghorbani *et al.* 2013; Mapinduzi *et al.* 2003). Their skills and knowledge are effective and efficient for sustainable rangeland rehabilitation (Gemedo *et al.* 2006). Indigenous knowledge is the basis for local level decision-making in areas of natural resource management, agriculture and other livelihood activities (Tekwa and Belel 2009). Therefore, the integration of modern and traditional adaptation skills is essential and could be sustainable (Lipton *et al.* 1996; Nel *et al.* 2001; Adger 2003; Ostrom *et al.* 2007). Therefore, pastoralists' climate-change-adaptation strategies could be successful when the system promotes the use of diverse types and sources of skills and knowledge.

Unlike the previous research claims (e.g. Abate, Ebro and Nigatu 2010; Gemedo 2004; Amaha 2006), the institutional system makes use of indigenous and modern knowledge and skills (see Fig. 1). For example, in the settlement and seasonal grazing site selection, both indigenous and modern knowledge were applied in an integrated manner. The question of how we can go about restoring the traditional pastoral system, as it fits into the emerging changing environment, was initiated by the community and accepted and promoted by Gada leaders. In the 'grand' rangeland management strategy meeting, government sectoral offices, NGOs, Gada leaders and community representatives participated and decisions were made based on input from all stakeholders. Community FGD participants confirmed that most of the new guidelines and suggested activities for decision implementation have made use of traditional skills and knowledge.

Institutional memory

Traditional and government institutions at different level have no written, video or audio monitoring and evaluation recorded documentation. Government offices have the 'grand' Borena rangeland management strategy and the Didahara 'grand' Borena rangeland management strategy decision implementation meetings memo. It is challenging to keep and transmit information orally. The oral horizontal and vertical transmission of information could be distorted and the probability of being able to recall information is low (Garcia *et al.* 2009). Therefore, it is important to take corrective measures on weaknesses and strengthen and scale up best practices use of institutional memory and documented baseline information. This is important for further and enhanced development interventions. It seems clear that especially the traditional institution lacks a culture of documentation and a well-established monitoring and evaluation system and mechanism for feedback. NGOs have a culture of documentation in a form of written publications, audio and video. For example, task accomplishment, periodical progress, midterm project review, and project completion reports, etc. In conclusion, the institutional system has diverse institutional documentation practices. However, it does not promote and support a culture of documenting success stories and challenges. In the area studied, a lack of development intervention documentation by most stakeholders, coupled with the high turnover of PA leaders and committee members, has adversely affected climate-change-adaptation governance (see Fig. 1).

5.2 Variety

The institutional system is inclusive of traditional institutions, government agencies and NGOs. The system allows all stakeholders to participate, interact and even promote different solutions (see Fig. 1). However, key informants and FGD participants underscored that there are weaknesses in all actors at different levels. Some actors are not actively involved in decision implementation and enforcement processes. Decision implementation activity is restricted to lower structures (Aba Olla, Aba Gare). The participation of lower structures varies from PA to PA. Top level traditional and government institutions do not actively participate in the implementation and enforcement of rules and regulations.

The representation of various sectors and segments of the communities is central to include the voice of actors in the decision-making process (AFD VII 2010). Some relevant institutions—such as the Health office, Education office, Women’s Affairs office, youth associations etc.—were left out from the ‘grand’ Borena rangeland management strategy and the Didahara ‘grand’ Borena rangeland management strategy decision implementation meeting decisions. In the climate-change-adaptation governance process, sectors like education, health, media, youth and women’s affairs, are pertinent to the mobilization of the community and awareness raising about the impact of climate change (Collier *et al.* 2008).

Compared with the past, the system encourages and promotes women’s participation. Their task was restricted to house construction and other home activities, e.g. taking care of kids, elders, cooking etc. But nowadays they participate in development activities e.g. bush clearing, sustainable land and soil management activities, hay collection, livelihood diversification and income-generating activities e.g. petty trading, milk processing, saving and credit association etc. However, due to cultural influences, women and youth still do not fully participate in climate-change-adaptation community dialogue and decision-making processes. They generally receive decisions on climate-change-adaptation solutions from third parties. However, these segments of the community equally, if not more, share the brunt of the challenges.

According to NGO participants, from a climate-change-adaptation and sustainable development intervention perspective, there is a duplication of efforts by many government and NGO actors. For example, various actors are involved in community capacity-building and awareness raising, promotion of hard adaptation. This is an indication of the failure of the system to support and promote solutions to cope with the changing environment. Hence, there are challenges and opportunities in pursuing climate change adaptation solutions and opportunities. In conclusion, there is a good trend for various actors to exercise a range of adaptation measures. Interaction between all the relevant actors could help tackle climate-change-adaptation issues in a sustainable way.

5.3 Room for autonomous change

In the rural community, autonomous decisions on their livelihood are targeted towards either risk minimization or capital accumulation (Binns and Nel 1999; Thomas *et al.* 2007). However, the level of their autonomous decisions is governed by the political environment and the wider economy.

As indicated in Figure 1, the institutional system promotes and supports some level of autonomous decision making. However, different views were reflected regarding the available room for autonomous decision making. According to participants from traditional institutions and government agencies, the system allows space for making some level of autonomous decisions. For example at Olla level, the community can build a range enclosure for use during difficult circumstances, such as extreme drought, and can also decide the time for grazing and watering of different livestock species in their locality. However, the enclosure should be open to all Olla members, as long as the user respects the access and use decisions. Individuals also have the right to use pasture in and around their crop land (small enclosure or hay etc). To manage climate change and associated risks, individuals can shift to keeping camels and goats, instead of cattle or sheep.

Currently keeping camels and engaging in crop production are considered as best strategies for adapting to climate change for a household. Though crop production and camel rearing were not accepted activities in Borena culture, no actor (Aba Gada or government agencies) would intervene in the decision of individual households. Though not as strong as in their fathers’ time, in Borena culture there are decisions autonomously made by Aba Gada, Hayu, Aba Olla or clans in the case of risk sharing, resource sharing (pasture and water), resource mobilization, without the intervention of government agencies or NGOs. NGO participants explained that their development interventions are highly controlled by the government and donors. Hence, there is no room for autonomous decisions for solutions and opportunities among the NGOs.

5.4 Leadership

Figure 1 shows that the institutional system promotes the emergence of leaders and champions within stakeholders. However, key informants confirmed the absence of a uniform environment to be leader and champion. For instance, traditional institutions and government agencies promote and support individual and group leadership and championship. Borena culture encourages individuals who bring innovative ideas which could solve problems at any level. Government agencies promote and support individuals interested in local soap production and expansion of aloe tree for raw material. Whereas, the NGOs whose activities are governed by donor interests and objectives do not enhance individual innovativeness. Therefore, unlike the traditional institutions and government agencies, there is no fertile ground among NGOs to be a champion in one specialization.

5.5 Institutional linkages

To adapt climate change and non-climate stressors to the local level, linking and networking with various stakeholders is central (Koch, Vogel and Patel 2007). FGD participants explained that at the beginning of the 'grand' Gada meeting, there were good vertical and horizontal linkages between different actors. But there are currently visible weaknesses. The institutional system linkage is not well organized and sustainable (see Fig. 1). The coordination and sharing of information, resources and experiences by actors is full of interruptions. After the accomplishment of certain tasks, collaboration between actors stopped. The performance of the annual Sustainable Land Management (SLM) campaign, Disaster Risk Reduction (DRR) activities, the 'grand' Borena rangeland management strategy meeting decisions are examples of poor coordination and a lack of sustainable follow up among various actors. Another example is after the decision passed at 2009 'grand' Borena rangeland management strategy meeting, all participant actors failed to participate in the implementation of activities.

Generally, the weaknesses increase as we go up on to the hierarchy. At Aba Olla, one to five and Aba Gare level relatively, there are strong linkages. They are trying to implement decisions at ground level. Participants underscore that there is very weak relationship between Raba Gada and government actors, such as zone administration, woreda administration and various woreda sectors. Top traditional institutions and government agencies run parallel to each other, instead of working together to tackle climate change issues. According to community FGD participants, most of the Raba Gada members are illiterate, reluctant to get involved in development interventions, and lack administration skills. On the government side, one to five and the Aba Gare are well organized and informed. The government structures above Aba Gare are not as active as they are supposed to be, especially in the implementation and follow up stages. The traditional institutions at different levels have weak and very weak linkages (see Appendix I).

Participants further explained that the institutional system structure becomes very complex. In the past, traditional structures like Aba Dedha or Aba Rera, currently equivalent to Kore, Aba zone in government (kind of water and pasture committee) were responsible for Aba Gada. At that time, there was effective and efficient linkage to pass information on decisions made and to implement them at grassroots level. In the recent past, the Aba Dedha function has been replaced by a government structure known as the Aba Zone, which is responsible for Aba Ganda and its management. This shows how the system is highly controlled by the government structure. The problem is Aba Ganda and PA managers are always very busy with government tasks, more than with meeting the needs of the community. They are over tasked with government political agendas, and this create delays in decision-making and implementation. Sometimes actors wait for weeks for a response to requests for their cooperation on development interventions (especially during government SLM campaigns). Besides, the government structures are not effective and efficient in settling community problems, like conflict. Raba Gada FGD participants explained that traditional institutions have been weakened and eroded due to government influence and intervention. Participants underscore that some traditional institutions have been replaced by new government structures. They also recognized that the traditional institutions linkage with the community have declined because of a lack of government support.

The degree of connectedness between traditional institutions, government agencies and NGOs determines the effectiveness and efficiency of coordination and resource mobilization. Smooth communication among stakeholders

facilitates effective climate-change-adaptation efforts (Agrawal 2008). Effective and efficient decision implementation processes are fundamentally influenced by the underlying distributions of power and relationships within and between institutions (Adger *et al.* 2003). In the study area context, there is a need to encourage the various stakeholders to strengthen their linkages. Since climate change adaptation is inevitably local, there is a great need to involve traditional institutions. Traditional institutions could play an important role in climate-change-adaptation good governance, if they received government support and were promoted. As indicated by Agrawal, (2008) enhancing local institutional capacities and improving institutional coordination across various levels could be key strategy to successfully managing rangeland resources for climate change adaptation and equitable utilization.

5.6 Resource

As demonstrated in Figure 1, the institutional system has negative effect to mobilize resource on the stakeholders' contribution to increase the adaptive capacity of the community. The institutional system neither provides legitimate power to the authority, nor establishes an enabling environment to mobilize experts, knowledge and financial resources. Therefore, various stakeholders' effort to avert the impact of climate change is compromised by resource constraints.

Authority

In principle, the system provides for the appointees to make decisions and exercise their power at different levels. However, there is lack of coordination among decision makers to enforce decisions passed at the 'grand' Borena rangeland management strategy meeting. Higher level government and traditional actors do not support them in enforcing rules and regulations. For example, one of the PA leaders was arrested by the police while he was trying to implement the given rules and regulations. This is an indication of the fact that the lower level position holders or authorities lack support from the higher government bodies, and they are not completely recognized by the traditional institutions. For the most part, the Raba Gada members act in contravention of the 'grand' Borena rangeland management strategy meeting decisions and cannot be held responsible for misbehaviour. In the past, the decisions of an authorized person used to be respected and accepted in Borena culture.

The authority of the traditional wing has been weakened. For instance, the authority of Aba Olla, Jaressa and Hayu have been suppressed by the 'one to five', Aba Gare, Bulcha ganda and the manager respectively. Participants explained that the traditional institutions clearly reflect their feeling that their power and authority has been suppressed by government agencies. In some cases, the traditional authorities have been replaced by the new government structure, (e.g. Aba Rera by Aba Zone, Aba Dedha by water and pasture committee, etc). Key informants underlined that the current parallel traditional and government institutions structures has created confusion, making it difficult to distinguish clearly the level of authority and responsibility exercised by each of them. In conclusion, the institutional system does not empower the authorities to enforce the rules and regulations of the new guidelines (see also Fig. 1). Authority and power is shared between traditional institutions and government agencies. For instance, the breakdown of power and authority between Aba Olla and 'one to five' is not well defined.

Human resources

How to mobilize expertise and human resources was not highlighted at the 'grand' Borena rangeland management strategy meeting. The capacity to mobilize human resources to implement decisions at grassroots level is relatively better at Aba Olla level. The FGD participants from the government agencies and NGOs explained that there was good opportunity to mobilize experts from the government-line departments and other NGOs and labour from the community in favour of development interventions. However, there are no set guidelines as to how to mobilize human resources. The absences of clear guidelines, limited financial resources and shortages of skilled manpower were mentioned as hindrances to the effective mobilization of human resources. Human resource mobilization lacks

coordination and sustainability, e.g. the lack of follow up by government on the annual SLM campaign was mentioned as one good example. Other challenging issues to human resource mobilization are the high turnover of focal persons, who are familiar with the project and the community's need of immediate incentives, financial or otherwise, for the community's contribution to its development.

Routine bureaucracy, low staff capacity and ignorance—especially when NGO development interventions are not in line with government priorities, when experts are busy with political commitments on the government side—lead to an unnecessary waste of time and resources. NGOs suffered from skills and knowledge transmission gaps. Their efforts of capacity building of and by government experts at grassroots level mostly failed to reach local communities. The current structure is dominated by the government agencies and is too complex to work with, as compared to the traditional structure in the past. NGOs also occasionally face community resistance. There are also unnecessary interventions by the government actors. (Sometimes when we are working in accordance with the guidelines and agreed and signed project contracts, government agencies officially write letters to stop implementation of activities).

Depending on the needs and priorities of the community, there is opportunity to mobilize the community. For example, when HUNDEE constructed a water pond in Dikale, the community participated in bringing stone and sand. HUNDEE similarly used the expertise of other NGOs in the design of the pond and in the quantification of the amount of required construction materials, etc.

Financial resources

Like human resources, the system to raise financial resources was not highlighted at the 'grand' Borena rangeland management strategy meeting. There are opportunities to obtain and mobilize financial resources from different sources. For instance, for the 'grand' Borena rangeland management strategy meeting, the Rural Land and Environmental protection office received financial support from different NGOs. The office also got motor bicycle, GPS and other digital equipments for other developmental activities. Delays at different levels in mobilizing financial resources effectively and efficiently from NGOs and other actors is a critical problem.

5.7 Fair governance

Addressing climate change adaptation requires protecting the interests of all segments of the community equally (Paavola and Adger 2006). Hence, recognizing and creating an enabling environment for the participation of affected communities in the planning and collective decision process is very important. This draws attention to how fair governance is central to climate-change-adaptation efforts. Fair governance is a means to balance collective adaptive responses (Paavola 2005). However, as depicted in Figure 1, the institutional system lacks fair governance. The rules and procedures do not treat all equally. The authorities are not answerable for their actions. In conclusion, the institutional system lack of fair governance adversely affects climate change adaptation.

Legitimacy

Various actors and FGD participants pointed out that the 'grand' Borena rangeland management strategy meeting decisions, such as resettlement, demarcation of seasonal dry and wet grazing areas, the prohibition of individual enclosure and expansion of crop land etc., were in line with the consent and interest of all actors. However, Raba Gada members and Hayu have hindered and violated the implementation of the guidelines. The implementation of the guidelines is being abused by wealthy and the powerful herders. This leads to a decline in the community's acceptance of the authority of high level traditional institutions. Therefore, traditional institutions should respect the 'grand' Borena rangeland management strategy rules and regulations. This could help to build their legitimacy within the community and establish good governance system to adapt to climate change coherently.

The communities, including females, participate in development activities. The reaction of the communities to government institutions has improved. Females are encouraged to participate in the development activities e.g. bush clearing, crop farming, savings and credit, elder activities through established structures, such as women groups, SACCO etc.

Equity

Climate-change-adaptation governance should address social, economic and institutional equity among social groups within the community. These indicators of social equity play crucial role in encouraging or constraining climate-change-adaptation governance (Kelly and Adger 2000).

FGD participants and key informants explained that there is no problem with the overall framework of the 'grand' Gada meeting. The problem arises with the implementation of the rules and regulations at local level. The implementation of rules and regulations has been abused by the powerful and wealthy. The wealthy have links with Raba Gada members. The community referred to 'Raba Gada as money in the pockets of the wealthy'. The wealthy can graze on prohibited grazing sites without any fear of being fined by the traditional system. Enforcement of rules and regulations are often bent to favour the wealthy. For example, if the wealthy and the poor graze on the wrong site, the poor will be penalized immediately. The wealthy also have informal channels to government agencies, which they can use to alter things to their own benefit. The Raba Gada members also violate the guidelines under the guise of organizing ritual activities. Raba Gada members FGD participants underlined that those wealthy Raba Gada members who have linkages with government agencies violate the rules and regulations. The community respect and acceptance of the Raba Gada members is declining over time. Raba Gada FGD participants also explained that there is no support from government to enforce the 'grand' Borena rangeland management strategy guidelines. In conclusion, lower level government institutions and various community FGD participants argue that the wealthy and high level traditional institutions have become hindrances to the enforcement of the 'grand' Gada decisions. Whereas, high-level traditional institutions decision makers argue that the lack of government support and deliberate weakening of the traditional institutions are factors delaying the implementation of decisions passed at the 'grand' Borena rangeland management meeting.

Accountability

Due to socio-cultural influences, Raba Gada members are not strictly answerable for their actions (the violation of 'grand' Borena rangeland management strategy decisions). Both the lower level and higher level traditional and government actors are reluctant to challenge them for their violation of rules and regulations. Community FGD participants argue that Raba Gada members are above the law. Raba Gada himself sometimes fails to take measures against Raba Gada members for the violation of rules and regulations.

Responsiveness

While the system allows all stakeholders to appeal their issues, responses to issues raised and/or opportunities to resolve these are sometimes abused by those in power and with wealth: there are always delays in taking action and resolving problems. In Borena culture most issues are resolved by discussion. This results in delayed responses in resolving disputes, especially when decision makers are not interested in acting promptly. For instance, if a poor herder submits a case against the wealthy herder, the latter will approach the elders or the relevant decision-making body to cancel or postpone discussion on the case. The tendency of the high level traditional institution to delay enforcement and respect of decisions emanates from individual selfishness, ignorance, a lack of awareness and the weakness of the traditional wing. The traditional institutions become less responsive. In the past when somebody from a traditional institution promised to do something, they were committed to fulfilling that promise. Elders of the traditional institutions were much respected. Nowadays, it is not uncommon to see list of unfulfilled

promises made by leaders from both traditional and government agencies. This has undercut their reliability and trust. In most cases, the delegation of power in the government structure is not assigned on merit. Most position holders in government are very young and inexperienced in administration and community mobilization. FGD participants also mentioned that responsiveness is very low in higher traditional institutions. On top of the aforementioned factors, the government agencies are over tasked and unable to provide timely responses to issues and opportunities. The Kore (committee) were responsible for communicating to the community about early warning and weather forecasting and also for providing advice to take actions, such as saving hay, water and grain for bad times. They are also expected to listen to the voice of the community.

5.8 Effective decision-making

Incapability of effective decision making on climate-change-adaptation governance could arise from political willingness or resource constraints (human and financial resources). Figure 1 portrays that ineffective and disorganized decision-making processes are critical problems. All FGD participants explained that no immediate action is taken no matter how much urgent and critical the issues may be. According to participants, the reasons for lack of effective decision-making are:

- Coordination and collaboration of different actors are not set in a systematic and sustainable way: Mostly different actors are actively involved during annual or periodic campaigns (e.g. annual SLM campaign).
- Failure to mobilize relevant actors: For example, during the 'grand' Borena rangeland management strategy meeting the Women's Affairs office, Health office, Education office, youth associations did not participate. Hence, most health issues were overlooked. School sites were not considered when determining the relocation and concentration of the sites selected. At the beginning, there was a strong opposition by women to the resettlement schedule.
- Some decisions are not based on relevant and quality data: For instance, some decisions are not passed by considering the socioeconomic and cultural values of the community (e.g. the grand Gada meeting decision didn't present an alternative strategy for agro-pastoralists, an appropriate follow up system to various actors, overlooked the Raba Gada ritual activities).
- Lack of commitment among actors: After a discussion and decisions are made, there is a delay in implementing the decisions. Resettlement, seasonal grazing areas, the prohibition of individual enclosure, expansion of cropland decisions were made by Aba Gada with the participation of government agencies, NGOs and community representatives. When implementation is delayed and rules are violated, the government faced difficulty intervening because decisions were passed by the traditional institution. Decision implementation and rules and regulation enforcement are left exclusively to the lower level structure. Conversely, when lower level structures are trying to enforce rules and regulations, they face challenges by the Raba Gada (they are accused of overstepping the boundaries of their authority).
- Lack of priorities and poor strategy to deal with issues: The government is heavily involved mostly on issues of risk reduction after disasters have occurred, rather than risk management in a sustainable and capacity-building manner. Due to donors' interests, government interference and delays in responding, human resources and cultural influences, NGOs waste time and resources in responding in a timely manner.

5.9 Assessment of the Institutional System—overview

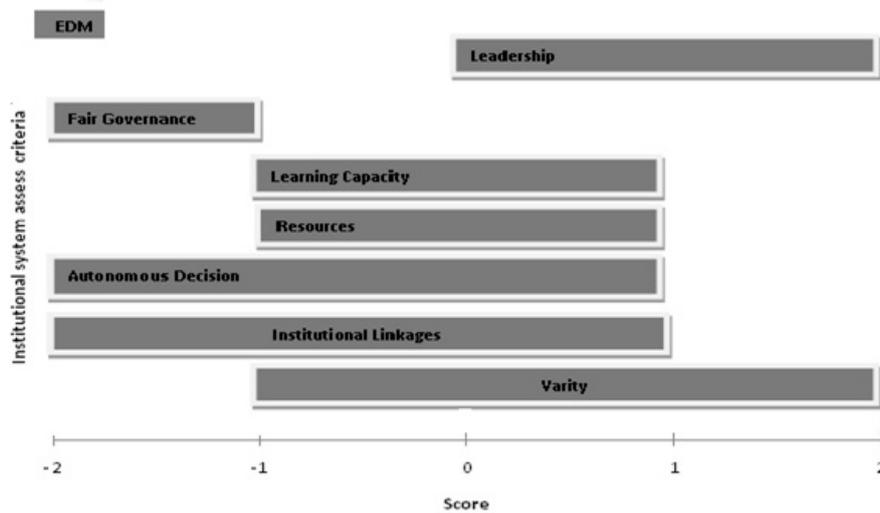
Range of interest and level of satisfaction

The nature of institutional linkages and access for different social groups is a central element to climate-change-adaptation governance (Agrawal 2008). The collective adaptation actions of various institutions lead to success in adapting to climate change and in enhancing livelihood resilience. In this study the mean score value illustrates the expectations and level of satisfaction of various actors differs across institutional assessment criteria (see Fig 2). This could be due to the fact that different social groups and institutions have varying levels of access to existing institutions, power and resources which

are considered as means to participating in the decision-making process. As observed in the study area and elsewhere, vulnerable groups in general have less access to institutions than do the more powerful or better off (Paavola and Adger, 2006).

Figure 2. Climate-change-adaptation institutional system assessment score range.

In each FGD discussion session, participants were asked to score each institutional system assessment criteria. The mean score value ranges from -1 to 2, -2 to 1, -2 to 1, -1 to 1, -2 to -1, -1 to 1 and 0 to 2 for variety, institutional linkage,



autonomous decision, resources, fair governance, learning capacity and leadership respectively. Whereas, uniformly all FGD participants were unhappy with the effective decision-making practices of the institutional system. All FGD participants' responses were negative for effective decision-making and fair governance. Besides, a narrow response gap was observed among various actors on effective decision-making, followed by fair governance assessment criteria (see Fig 2). A negative satisfaction was observed on fair governance climate-change-adaptation governance assessment criteria.

There was a positive response only for leadership. A wider gap between positive and negative responses was observed in institutional linkages, autonomous decision and variety.

Institutions reduce the impact of climate change and allied non-climate stressors through shaping the access of individuals and groups to assets and services, and allocate available and external resources by structuring impact of actions and decisions. The analysis suggests that some collective adaptation actions enhance livelihood resilience to climate change and variability, but others have negative spillover effects on other scales.

6 Conclusion

In Didahara, an increase in the frequency of drought, the erratic nature of rainfall, rapidly increasing human and livestock populations, a reduction in livestock productivity, an expansion of cultivated land at the expense of key grazing land, advancing bush encroachment and an expansion of private and semi-private enclosures are climate-change-adaptation issues. Cooperation and coordination of activities and resources among various actors, such as traditional institutions, government institutions and NGOs are poor and lack consistency. The delay in effective and efficient decision-making weaken community adaptation efforts to climate and non-climate stressors. Some important traditional institutions for rangeland management such as Aba Rera, Aba Dedham are disappearing. Due to socio-cultural influences, Raba Gada members are not held accountable for their actions. Women participate in decision-making and various development activities, in particular NGO-led interventions. Traditional institutions and government agencies blame each other, rather than working together and complementing each other. Climate-change-adaptation institutional system supports some level of autonomous decision-making and leadership.

In this research, we recommend the government should support and promote traditional institutions. The new guidelines should be revised. Monitoring and evaluation and horizontal and vertical linkages should be strengthened.

7 References

- Abate, T., Ebro, A. and Nigatu, L. 2010. Traditional rangeland resource utilization practices and pastoralists' perceptions on land degradation in south-east Ethiopia. *Tropical Grasslands* 44: 202–212
- ADF (African Development Forum) VII 2010. *Acting on Climate Change for Sustainable Development in Africa. Governance and Leadership Response to Climate Change*. Issues Paper No. 1. ADF VII 10 - 15 October 2010. United Nations Conference Centre Addis Ababa, Ethiopia
- Adger, N., Huq, S., Brown, K., Conway, D. and Hulme, M. 2003. Adaptation to climate change in the developing world. *Progress in Development Studies* 3: 3, 179–195
- Agrawal, A. 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.
- Mengjstu, A. 1998. *The Borana and the 1991-92 Drought. A Rangeland and Livestock Resource Study*. Addis Ababa, Ethiopia: Institute for Sustainable Development French Catholic Committee against Hunger and for Development.
- Angassa, A. 2007. *The Dynamics of Savanna Ecosystems and Management in Borena, Southern Ethiopia*. Ph D dissertation, Norwegian University of Life Sciences (UMB).
- BLPDP. 2004. Borena Low Land Pastoralist Development Program Documentation on Seven Years of Field Experience, Volume I: *Overview of Borena Pastoral Production and Livelihood System*. BLPDP: Addis Ababa, Ethiopia.
- Tache, B. 2008. *Pastoralism under Stress: Resources, Institutions and Poverty among the Borana Oromo in Southern Ethiopia*. PhD Thesis, Environment and Development Studies. Norwegian University of Life Sciences.
- Collier, P., Conway, G. and Venables, T. 2008. Climate Change and Africa, *Oxford Review of Economic Policy*, 24:2, pp. 337–353.
- Coppock, L (ed.) 1994. *The Borena Plateau of Southern Ethiopia: Synthesis of pastoral research, development and change, 1980-1991*. Addis Ababa, Ethiopia: ILCA (International Livestock Centre for Africa), 393 pp.
- Devereux, S. 2006. *Vulnerable livelihoods in Somali Region, Ethiopia*. Research Report 57. Brighton, UK: IDS.
- Edstrom, J.; Moser, S. and Torn, M. 2010. *Barriers to Adaptation: A Diagnostic Framework. Final Project Report*. Sacramento, USA: California Energy Commission.
- Ethiopian Society of Animal Production (ESAP). 2013. *Livestock at the Crossroads of Climate Change and Variability*. Proceedings of the 20th annual Conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, October 03-05 2012. Addis Ababa, Ethiopia: ESAP, 284 pp.
- Gemedo, D., Maass, B. and Isselstein, J. 2006. Encroachment of woody plants and its impact on pastoral livestock production in the Borena lowlands southern Oromia, Ethiopia. *Africa Journal of Ecology* 44: 237-246.
- Gemedo, D., Johannes, I. and Brigitte, L. 2006. Indigenous ecological knowledge of Borana pastoralists in southern Ethiopia and current challenges. *International Journal of Sustainable Development and World Ecology* 13: 2, 113–130.
- Ghorbani, M., Azarnivand, H., Mehrabi, A., Jafari, M., Nayebi, H. and Seeland K. 2013. The role of indigenous ecological knowledge in managing rangelands sustainably in northern Iran. *Ecology and Society*, 18, 2, 15
- Gleick, P. 1998. *Water in Crisis: Paths to Sustainable Water Use*. Ecological Applications. 8(3), 1998. pp. 571-579.
- Gleick, P. 2000. The Changing Water Paradigm: A Look at Twenty-first Century Water Resources Development. *Water International* 25: 1, 127-138.

- Graham, J., Amos, B. and Plumptre T., 2003. *Governance Principles for Protected Areas in the 21st Century*. Report prepared for the Vth World Parks Congress, Durban, South Africa Institute on Governance, Ottawa. [online] URL: <http://dspace.cigilibrary.org/jspui/bitstream/123456789/11190/1/Governance%20Principles%20for%20Protected%20Areas%20in%20the%2021st%20Century.pdf>
- Gupta, J., Termeer, C., Klostermann, J., Meijerink, S., van den Brink, M., Jong, P., Nooteboom, S. and Bergsma, E. 2010. The Adaptive Capacity Wheel: A method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. *Environmental Science & Policy* 13: 6, 459–471.
- Hari, J. 2008. Bangladesh is set to disappear under the waves by the end of the century, *The Independent*. UK, *The Independent*
- IPCC. 2007. *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the 4th Assessment Report of the IPCC, Cambridge, Cambridge University Press.
- Helland, J. 1998. Institutional Erosion in the Dry lands: The Case of the Borana Pastoralists. *Eastern Africa social science research review* vol. 14 no. 2 pp. 49-72
- Koch, I., Vogel, C. and Patel, Z. 2007. Institutional dynamics and climate change adaptation in South Africa. *Mitigation Adapt Strategy Glob Change* 12:1323–1339.
- Legesse, A. 1973., *Gada: Three Approaches to the Study of an African Society*, The Free Press: New York.
- Leykun Abune. 1991. *Range use in Ethiopia: A case study of wildlife/livestock interfaces in Yabello wild life sanctuary and adjacent areas, Borena region*. Unpublished M.Sc. Thesis. Agricultural University of Norway.
- Lowe, A., Foster, J. and Winkelman, S. 2009. *Asking the Climate Question: Lessons Learned in Effective Adaptation from Urban Leaders Partners*, Center for Clean Air Policy: Washington, DC.
- Lukensmeyer, C. 2012. *Bringing Citizen Voices to the Table: A Guide for Public Managers*. San Francisco.
- Mebratu K. 2009. *Pastoral land tenure and legislation in Ethiopia*. Workshop on Documentation of Land Tenure and Use in Pastoral Areas of Ethiopia, 12–22 March, Addis Ababa
- Moser, S. 2009. A framework to diagnose barriers to climate change adaptation. In: Adger W. N., Lorenzoni I. and O'Brien K.L. (eds) *Adapting to Climate Change: Thresholds, Values, and Governance*, Cambridge University Press, Cambridge), pp 313–334.
- Napier, A. and Solomon, D. 2011. *Review of Pastoral Rangeland Enclosures in Ethiopia*. PLI Policy Project. USAID Ethiopia. November 2011.
- Narayana, D. 2005. "Institutional Change and its impact on the poor and excluded: The Indian decentralization experience" OECD Development Centre Working Paper Series 22.
- NRC (National Research Council). 2009. *Informing Decisions in a Changing Climate*, National Academies Press, Washington, DC).
- Oba, G., and Kotile, D.G. 2001. Assessment of landscape level degradation in southern Ethiopia: pastoralists versus ecologists. *Land Degradation & Development* 12:461–475.
- Osbaahr, H., Twyman, C., Adger, W.N. and Thomas, D.S.G. 2010. Evaluating successful livelihood adaptation to climate variability and change in southern Africa. *Ecology and Society* 15: 2: 27.
- Paavola, J. and Adger, N. 2006. Fair adaptation to climate change. *Ecological Economics*, 56, 594– 609.
- Podsakoff, P., MacKenzie, S., Moorman, R., and Fetter, R. 1990. Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *Leadership Q* 1:107–142.
- Robinson, L.W., Ontiri, E. and Förch, W. 2014. *Governance Dimensions of Climate Change Adaptation: Methodology for Landscape-Level Institutional Assessments – Draft*, January 2014. Nairobi: International Livestock Research Institute.
- Skinner, D. 2010. *Rangeland Management for Improved Pastoralist Livelihoods: The Borana of Southern Ethiopia*. MA Thesis oxford Brookes University
- Tekwa, I. and Bebel, M. 2009. Impacts of traditional soil conservation practices in sustainable food production. *J. Agric. Soc. Sci.* 5: 128-130.
- Tribbia, J. and Moser, S. 2008. More than information: What coastal managers need to plan for climate change. *Environ Sci Policy* 11:315–328.
- Vink, M. J., Dewulf, A. and Termeer, C. 2013. The role of knowledge and power in climate change adaptation governance: a systematic literature review. *Ecology and Society* 18: 4, 46.

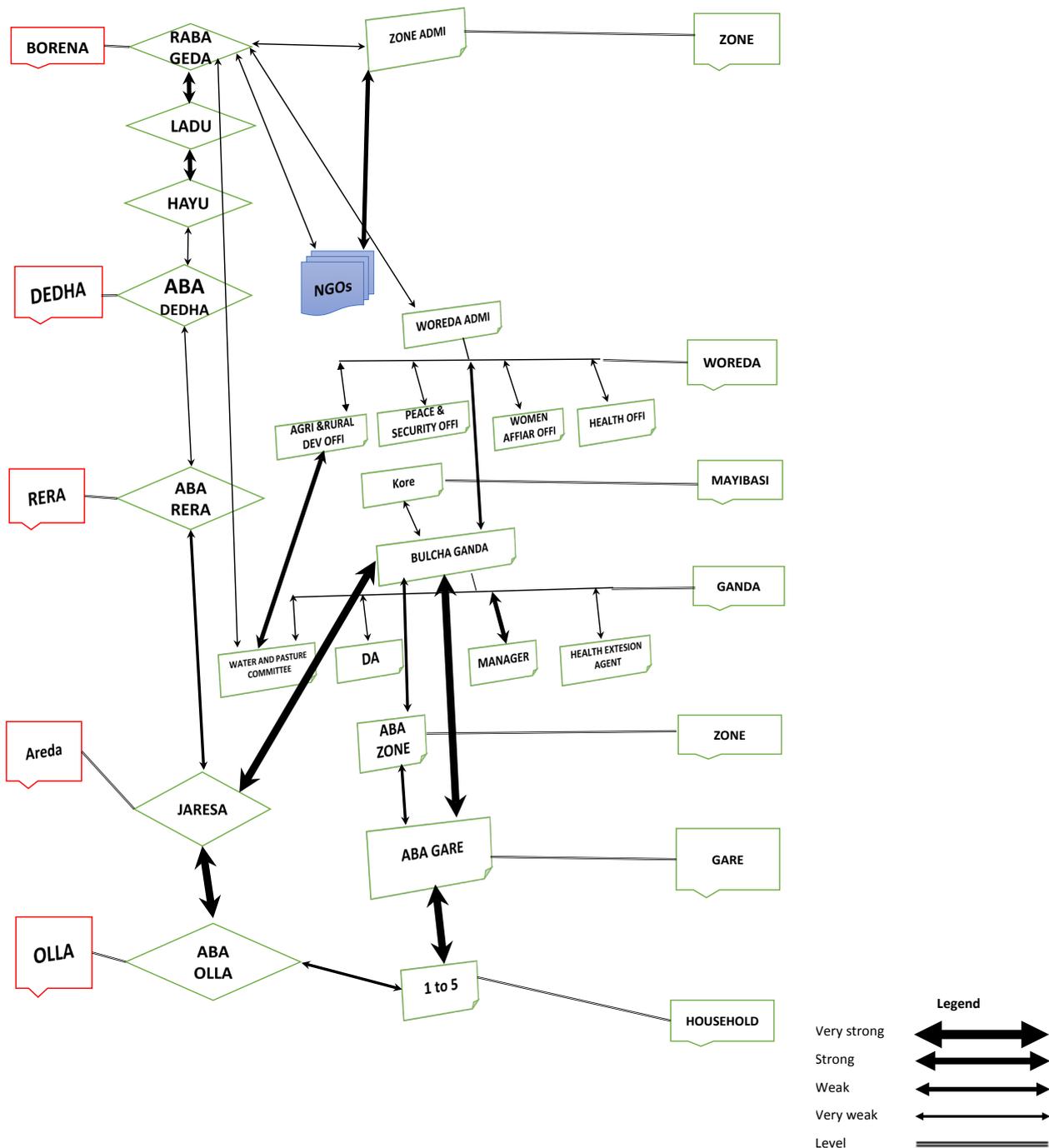
Yohannes, G.M. and Waters-Bayer, A. 2002. *Evaluation of natural resource management programme in the pastoral area of Somalia region*, Study commissioned by NOVIB, Addis Ababa.

YWPDO. 2013 *Annual Report*, Yabello woreda Pastoral Development Office Yabello.

Zand, D. 1997. *The Leadership Triad: Knowledge, Trust, and Power*, Oxford University Press: New York.

Appendix I. Climate change adaptation governance institutional system linkage

Level Traditional Institutions Government institutions and NGOs Level



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