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COMMUNITY PARTICIPATORY SUSTAINABLE LAND MANAGEMENT BYELAW FORMULATION IN THE HIGHLANDS OF CENTRAL ETHIOPIA

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ABSTRACT

Widespread adoption of sustainable land management (SLM) innovations by land users is considered key in addressing the rampant land degradation in the high rainfall and densely populated highlands of eastern and southern Africa. However, absence of enabling policy environments hamperes massive adoption of SLM innovations among rural communities. This paper presents the process and outcomes of a participatory approach for formulating and implementing SLM byelaws in the central highlands of Ethiopia. The participatory approach utilised three complementary tools, namely, stakeholder analysis, community needs assessment and policy dialogues. The stakeholder analysis revealed that several government institutions, non-government organisations (NOGs) and community groups promote SLM practices. Poor coordination among actors, top-down approach in planning and implementation, and limited capacity of communities hamperes SLM scaling up efforts. Stakeholder engagements culminates in establishing innovation platforms (IPs) at district and watershed levels tasked with coordinating SLM scaling up efforts. While the community needs assessment identified and prioritised SLM issues that needed to be resolved, the policy dialogue engaging IPs formulated three SLM byelaws and mechanisms for implementation.

Key Words: Innovation platforms, policy reform

RÉSUMÉ

Une large adoption des innovations de la gestion durable des terres (SLM) est considérée comme une clé importante pour adresser le problème de la dégradation accrue des terres dans les hautes terres à pluviométrie élevée et densement peuplées de l' Afrique de l'Est et du Sud. Par ailleurs, l'absence de politiques environnementales handicape l'adoption massive des innovations de SLM parmi les communautés rurales. Cet article présente le processus et les résultats d'une approche participative pour la formulation et l'exécution des lois de SLM dans les hautes terres de l'Ethiopie centrale. L'approche participative a utilisé trois voies complémentaires, dont l'analyse de partenaires, l'évaluation des besoins communautaires et le dialogue sur les politiques. L'analyse de partenaires a révélé que plusieurs institutions gouvernementales, organisations non gouvernementales (ONG) et groupes communautaires encouragent les pratiques des SLM. Une pauvre coordination parmi les acteurs, une approche de haut en bas dans la planification et l'exécution, et une capacité limitée des communautés handicapent les efforts fournis dans le SLM. L'engagement de partenaires culmine dans l'établissement des plateformes d'innovations (IPs) au niveau du district et du basin versant avec pour tâche la coordination des efforts d'innovation de SLM. Alors que l'évaluation des besoins communautaires a identifié et prioritisé les problèmes de SLM qui ont besoin d'être adressés, le dialogue sur les politiques ont formulé trois lois et mécanismes pour l'exécution de SLM.

Mots Clés: Plates formes d'innovation, réforme des politiques

INTRODUCTION

Natural resources degradation is a fundamental problem in efforts to increase land productivity and improve food security in the densely populated highlands of eastern and southern Africa (Wiebe, 2003; Yirga and Hassan, 2010; Nakhumwa and Hassan, 2012). Previous interventions, mostly in the form of publicly sponsored re-aforestation and land reclamation programmes, however, do not bring the promised impacts (Shiferaw and Holden, 1998; Zeleke, 2003; Gebremedhin and Swinton, 2003). Many of these programmes relied on top-down approach, which did not involve the users of the land, depended on food-for-work programmes to carry out soil conservation structures, and lacked a clear policy, especially concerning ownership, control and utilisation of afforested areas and closed hillsides.

Consequently, smallholder farmers continued to use traditional production technologies, leading to yield stagnation at low levels. Land degradation persisted; while per *capita* food production continued to fall as the population increased. It then became apparent that land degradation and its accompanying ill effect of low productivity and food insecurity were not simply technical issues, rather complex including socio-economic and behavioural factors. Hence, this requires a holistic and participatory approach in order to deal with the complex nature of natural resource degradation (Mekuria, *et al.,* 1992; Shiferaw and Holden, 1998; Zeleke, 2003; Gebremedhin and Swinton, 2003).

In Ethiopia, the adoption of sustainable land management (SLM) innovations; therefore, got renewed priority in the national drive to achieve the much desired food for the increasing population. The need to develop SLM innovations in a participatory manner and creation of a favourable policy environment for wide scale adoption of SLM innovations, necessitated the proliferation of integrated natural resource management (INRM) efforts in Ethiopia. Among others, the African Highland Initiative (AHI), in partnership with the Ethiopian Institute of Agricultural Research (EIAR), launched an action oriented participatory NRM project in pilot sites in the Highlands of Ethiopia (Galessa in Dendi district and Areka in the Southern Nations Nationalities and Peoples). From these efforts, several INRM innovations and methodologies, including entry- points linked technologies (crop variety-terraces-manure/mulching-tree-fodder), collective action, policy dialogue (negotiation support) have been generated. Adoption of the SLM practices and approaches; however, has so far been patchy and restricted mainly to the pilot sites and participant households (Mekuria *et al*., 2008).

Studies elsewhere in Africa, indicate that technological interventions and technical advice alone, in the absence of a favourable policy environment, do not bring the much desired wide-scale adoption of NRM technologies (Sanginga *et al*., 2004). Such a policy environment rarely exists in most developing countries, including Ethiopia.

Experience from elsewhere in Africa (Uganda) indicates that participatory processes that strengthen local institutions, provide information, link byelaws to NRM innovations, find and promote incentives and build a network of influence, are likely to influence policy action that facilitate wide scaling up of NRM technologies (Sanginga *et al*., 2004). This paper documents the approaches used in formulation and implementation of byelaws, and the factors that determine the effective participation of communities in formulating and implementing them (byelaws) in the central highlands of Ethiopia.

MATERIALS AND METHODS

This study was conducted in the Dendi and Wore Jarso districts of central highlands of Ethiopia, namely Berdo and Mekantuta pilot watersheds. The watersheds are about 374 and 1307 ha in size, respectively; and comprise of cultivated hill-slopes of 0 to 118 % slopes. The area is densely populated, with severe features of soil erosion and nutrient mining, due to continuous and cereal mono-cropping. Several interventions, especially targeting corrective and preventive arable land mismanagement were promoted by the local government (Dendi and Wore Jarso district ministry of agriculture) and non-government organizations, but with limited visible impact. This study comprised of three parts, namely

through (i) stakeholder analysis; (ii) participatory need assessment; and (iii) policy dialogue.

Stakeholder analysis. The aim of the stakeholder analysis was to identify and assess the importance of key people, groups of people or institutions and their interests in natural resource use and control. Specifically, there were four components to the stakeholder analysis. The first focused on identifying the policy actors and their roles in various administrative hierarchies (district, kebele and watershed). The second concentrated on eliciting and documenting SLM practices known and promoted, experiences of stakeholders in scaling up of SLM (what worked and what did not work), and local policies that governed natural resource use and control. The third component involved analysis of the information gathered to reflect on links with local people knowledge and devise mechanisms for sharing information, mobilise resources and improve coordination.

Community need assessment. Community need assessment is an extension of participatory rural appraisal (PRA), and involves the adaptation and use of participatory tools by communities to analyse problems, identify and screen potential interventions that could address the problems (ASARECA, 2010.). The main objective of the PRA was to develop trust and learn about the current problems, aspirations and other issues concerning the local people, through face-to-face discussions with the people. The community needs assessments were conducted both at Borodo and Mekantuta watersheds during 2011.

Three focus group discussions (FGDs) involving three segments of the population (community leaders mainly elderly men, men household heads and women comprised of female headed households and wives) were conducted in order to understand a broad range of local people's opinions. The FGDs consisted about 8-12 individuals, selected from each kebele (the lowest administrative unit in Ethiopia) based on prior criteria such as location (village representation) age, sex, land and livestock holdings. Selection of the households for the FGDs was done by three development agents (extension workers) residing and working in the respective watersheds.

Policy dialogue. A policy intervention prepared by the people for the people is the very foundation for improving up-scaling SLM practices (ASARECA, 2010). The communities in the two watersheds, though, aware of the threats that natural resources degradation has posed on their livelihood, had neither the initiative nor the capacity to develop and implement counter measures. The first main activity of the policy dialogue was clarifying the roles and responsibilities of the community, benefits to be expected from the policy intervention and support needed form the local government. The initial focus group discussions suggested that, without facilitation by outsiders, it was unlikely that the local people took the initiative to organise themselves, plan and implement SLM interventions that would involve the wider community. Communities demanded for the establishment of a facilitating team responsible for guiding them in the process of policy dialogue. The team composed of a community representative, a natural resource specialist, a representative from the local government and an extension agent residing in the pilot watershed. The facilitating team was responsible for preparing the ground for the launch of the byelaw formulation.

Among the initial tasks of the facilitating team were defining the objectives of the policy reform, identifying the potential stakeholders to participate in the process and defining the institutional arrangements required for the implementation of the byelaw. The second main activity of the policy dialogue was to identify and agree on the natural resources constraints that warranted policy intervention. This was achieved through community visioning. Community visioning is a process through which a community views the future it wants, and then plans how to achieve it. It brings people together to develop a shared image of "where" they want their community to be in the future (ASARECA, 2010). Community members in the piloted watersheds listed all the natural resource problems identified during the PRA exercise,

prioritised them, identified and agreed on potential interventions to plan policy interventions.

The third main activity of the policy dialogue involved formulating the byelaws, specifying the interventions and the procedures required for their (byelaws) implementation. The fourth main activity of the policy dialogue focused on devising institutional arrangement for implementing the byelaws.

The study was based on process documentation and analyses of consultations with key stakeholders. The consultations (field level meetings and workshops), conducted at Kebele, Watershed and Distric levels, focused on identifying the policy actors and their roles at the various administrative hierarchies; identify technical and policy issues that needed further policy interventions; and facilitated byelaw formulation and implementation by local communities. In all cases, the facilitating team documented both the process and outcomes of the stakeholder meetings, community needs and the policy dialogue.

RESULTS AND DISCUSSION

Situation analysis. A number of institutions and projects were involved in the promotion of SLM related innovations in the two watersheds. At a district level, the rural and Agriculture Coordination Office (ACO), which consisted of the office of agriculture, irrigation and natural resources development was responsible for coordinating sectorial offices and extension SLM related issues. Several NGOs, including Farm Africa and the German Technical Cooperation (GTZ) in Dendi district and, Canadian Physician and Aid Relief (CPAR) in Wora Jarso district were also involved in promotion of SLM innovations. These institutions and projects, although, shared the same or closely related agenda; pursued their own independent goals. Realising the need for better coordination and alignment of efforts, a mechanism for coordinating all agricultural and rural development efforts, Agriculture and Rural Development Actors Advisory Council (ARDAAC) was established by the local government in Dendi District. The ARDAAC was supposed to meet at least once every three months to plan, monitor and evaluate agricultural development efforts in the district. The council, however, neither met regularly nor accomplished its responsibilities.

It was clear from the stakeholder meetings that SLM related innovations and methodologies that could help address land degradation problems were available in Dendi and Were Jarso districts. Most of these innovations were promoted among smallholder farmers through a number of programmes. Adoption of SLM innovations, however, was patchy and restricted to pilot demonstration areas. Among the major bottlenecks, limited implementation capacities of the institutions at grass root levels and top-down approach in planning, implementation and monitoring SLM interventions were identified as major impediments to scaling up of SLM innovations (Table 1). Realising the need for better coordination of the efforts among stakeholders, enhance knowledge production, sharing, use and mobilizing resources indispensable for scaling up of SLM practices, innovation platforms (IPs) at district and watershed levels were established. The composition and function of the IPs are given in Table 2.

Innovation platform (IP) refers to a forum providing different actors an opportunity for knowledge production, sharing, use and mobilising resources and capacities. The IPs operated at district and micro-watershed levels, bringing together district and lower level local government actors, NGOs and communities to address SLM issues.The IPs at all levels were actively engaged in community needs assessment, using participatory rural appraisal (PRA) tools. The IPs were also instrumental in mobilising political, social, human and technical resources indispensible for initiating policy dialogue (byelaw formulation and approval), translating policy decisions into community actions (implementing byelaws) and sustaining participation of various actors.

Community needs and priorities. Participatory community needs assessment identified a host of problems that limited land productivity and restricted wider adoption of SLM innovations. Issues identified pertaining to SLM included: soil

TABLE 1. Key challenges and opportunities to byelaw development and implementation in the Central Highland of Ethiopia

Challenges/constraints	Examples	Desired Actions to be taken
Low level of awareness of the economic impacts of land degradation	Land degradation is often associated with loss of top soils	Quantify the economic impacts of soil degradation
Many perceive SLM as soil and water conservation practices	Soil and water conservation practices were the focus of many programs and projects since the 1970's	Intensify efforts to develop, acquire and disseminate knowledge to stimulate the local people's participation and commitment to SLM
High upfront costs of SLM practices	Public SWC investments were largely based on food for work or cash	Focus on low cost SLM practices
Lack of skilled human resources	Physical SWC structures were constructed haphazardly	Train local communities on how to implement SLM practices
Lack of access to appropriate technologies	Development agents are not sure of what works where and under what conditions	Engage in research and development activities in SLM
Limited institutional capacity	Local communities fail to get institutional support	Increase efforts in building local capacity
Low level of coordination among and between agencies	Individual projects strive to meet its objectives with no regard to projects implemented by other actors within the district	Strengthen Innovation Platforms for effective coordination
Institutions at the district level and local communities are told what to do	Communities participate only nominally	Empower communities
Application of some SLM practices could not be justified on financial grounds	High initial costs of some SLM technologies	Demonstrate profitable SLM technologies to communities
Lack of a clear policy, especially concerning ownership, control and utilisation of afforested areas and closed hillsides	Farmers prefer to use inorganic fertilizers on less secured plots but use manure on back yard plots which carry better security	Instate policies that enhance tenure security such as land certification

SLM = Sustainable Land Management, SWC = Soil and Water Conservation

TABLE 2. Decentralized structures involved in implementation and enforcement of byelaws in Dendi and Were Jarso districts, Ethiopia

Local Institution	Composition	Function
District IP	Representatives from the respective district offices of administration, agriculture, land and environmental protection, livestock production and marketing agency, cooperative office, women and children affairs, water supply, justice, health, education and youth association; **Research Institute** (Holetta Agricultural Research Center); **NGO's (**Oromiya saving and credit association, CPAR(Were Jarso), Water Action (Dendi, Save the Children(Dendi) and Hunde(Dendi); **Farmers Representative (**Watershed committee)	Coordinate agricultural research and development activities in the district;Oversee implementation of agricultural development activities including watershed development in the district;Support watershed IPs
Watershed IP	PA administrator, 5 watershed committee members, Gare Missoma chairpersons, three DAs and 3 elders	Coordinate all NRM related activities in watershed;Approve byelaws in the watershed
Watershed Committee	Six elected community representatives (Chairperson, secretary, casher and 2 members)	Participate in Watershed IP meetings;Formulate byelaws;Monitor and evaluate byelaw implementation in the watershed
Gare Missoma	A group of 20 – 30 households run by a chairperson, secretary and treasurer	Implement byelaw,Monitor and evaluate byelaw implementation
Gare Hoji	A sub group of Gare Missoma composed of 11 HHs and run by three elected farmers (Chair person, secretary, treasurer)	A working group of households responsible for the implementation of day to day watershed activities

IP = Innovation platform, NGo = Non-Government Organisations, CPA R = Canadian Physician and Aid Relief, DAs = development agents, NRM = Natural Resource Management

erosion, high inorganic fertiliser prices, shortage of land for cultivation and unrestricted livestock grazing. In many villages, majority of the farmers thought that chemical fertilisers were the answer to low and declining soil fertility. In places where farmers knew about benefits of SLM practices, high initial costs of SLM interventions, lack of skills and information were the main reason for not using SLM. The PRA results are consistent with many available studies (Getachew *et al*., 2006; Haileslassie *et al*., 2007). A number of recent studies have argued that land productivity decline is due to the lack of knowledge and skills, use of conventional agronomic practices (sub-optimal crop rotations, poor seed bed preparation), limited or no use of chemical inputs and the use of unimproved cultivars with low genetic potential (Getachew *et al*., 2006; Haileslassie *et al*., 2007).

Following the community needs assessment, the community visioning and planning meetings clarified the need for collective action and regulations (byelaws) governing community and individual behavior in the use and control of natural resources. Community visioning revealed seven NRM related issues which required either collective action or byelaws for successful resolution of conflicts emanating from control and access of natural resources (Table 2). Areas that required policy reform included: free movement of livestock in out fields; planting the wrong trees in inappropriate places (around springs and farm boundaries); uncontrolled cutting of trees in natural forest reserves (Chilimo natural forest and water sources); gully stabilisation on common holdings such as roads and pasture lands; input delivery and marketing of farm products; and equitable dissemination of new technologies.

Processes and outcomes of the policy dialogue. Byelaws are understood as rules or regulations initiated by local communities and passed by local governments at district or lower levels through local government council resolution (ASARECA, 2011). In Ethiopia, byelaws are made at Kebele (Peasant Association) and other lower local government levels such as villages and *gotes* through a local government resolution (ASARECA, 2011). Effective policy reform, therefore, presupposes that local communities are encouraged and appropriately supported to analyse their problems, design, implement, enforce, monitor and evaluate progress and ultimately adapt and adjust according to their constraints and opportunities. Such a process ensures that communities not only actively participate in the policy reform, but also own and value the product (byelaw). A five-step procedure, including agenda setting, consultations and formulations, review and feedback, approval by the wider community, endorsement and publicity was employed to design, implement and enforce byelaws in Dendi and Were Jarso Districts.

Setting the agenda (the preparation phase). Following the processes outlined in the byelaw development manual (ASARECA, 2011), two multi-disciplinary and multi-institution byelaw facilitating teams (one for Dendi and the other for Were Jarso) were established. The byelaw facilitating teams were selected by the watershed innovation platform (WIP) based on the following criteria: (i) commitment and interest to fighting natural resource degradation, (ii) fair representation of stakeholders (institutions and villages), (iii) moderating and facilitation ability, and (iv) legal mandate. Besides, due attention was given to include fair representation of social groups (men, women, youth and elders).

The facilitating team was led by an enthusiastic natural resource expert, representing the AHI country team. The byelaw facilitating teams were instrumental both in the preparation of the ground for the launch of the policy reform and spear-heading the process of byelaw formulation. Among the initial tasks of the teams, were defining the objectives of the policy reform, identifying the potential stakeholders who would participate in the process, scheduling the various meetings and securing the required resources.

Consultations and formulations. Seven NRM related issues were identified by communities in Dendi and Were Jarso districts (Table 3) that warranted byelaw formulation. Further stakeholder consultations, however, revealed that byelaws could not be formulated for all the identified NRM issues, mainly due to scarce resources, anticipated difficulties of

TABLE 3. Issues identified through local communities visioning, requiring either policy reforms or collective action scaling up of SLM innovations in Dendi and Were Jarso district in Ethiopia

Issue necessitating byelaw/collective action	Current status	Implications of current practice or policy on natural resources and house hold wellbeing
Livestock movement in out fields	Government policy prohibit free grazing, but not implemented	SWC structures destroyed, trees trampled and grazed and drainage ditches destroyed
Planting the wrong trees in inappropriate places (around springs, farm boundaries)	Government policy prohibits eucalyptus planting near springs, waterways and on farm lands, but not respected	Water sources dried up when eucalyptus is planted above water; tree shades negatively affect crops on neighbouring farms
Unrestricted access to natural resources (Chilimo natural forests, water sources)- negotiating use rights relative to protection and maintenance responsibilities	Local custom allows all community members use rights irrespective of contributions to protection/maintenance	Natural forests and water sources poorly managed impinging on the long term sustainability and wellbeing of communities
Soil and water conservation (i) Gully stabilization (ii) Drainage channels (iii) Tree nurseries (iv) Enhancing collective action	Conflicts among upslope and down slope farmers;Poor access to adaptable tree seedlings	Upslope farmers do not respect the rights of down slop farmers; Gullies are widening and in some cases restricting human and livestock movement; Communities incur a lot of cost to get tree seedlings
Marketing of agricultural products- farmers feel they are cheated by traders	Government policy encourage farmers to form service cooperatives, but not always implemented	Communities receive low prices and cheated in weights
Technology dissemination (i) Improved agricultural technologies are hardly available at affordable prices (ii) Not all community members have access to new/improved technologies (dairy cows, improved seeds)	Government policy asserts that all farmers regardless of gender, wealth or age have the right to receive extension services	Most communities still relay on age old traditional agricultural and SWC practices; Women headed and the less poor complain that they have not benefited from the extension
Dependency syndromes	Although government policy encourages local initiatives, communities expect outsiders to solve obvious community problems	Community owned natural resources such as grazing lands, forests, springs mismanaged and degraded

SLM = Sustainable Land Management, SWC = Soil and Water Conservation

implementation in equity in terms of sharing benefits and limited experience in enforcing byelaws. Hence, it was found imperative to prioritise and focus on three NRM related issues.

Three SLM related issues, namely soil erosion, shortage of seedlings and limited access to improved technologies were identified as priority issues for the facilitating team to work based on the following criteria: (i) severity of the problem, (ii) enforceability, (iii) equity of benefits, and (iv) potential for improving rural livelihoods. Having identified and prioritised SLM issues that necessitated the development of byelaws, watershed communities tasked the facilitating team and community representatives to draft three byelaws that address priority SLM issues, namely, implementing SWC practices, establishing community nurseries and mechanisms for equitably sharing benefits from introduced crossbred cows, specifying the procedures required for its implementation.

Review and feedback. Upon drafting the three byelaws, the byelaw formulation team, presented three draft byelaws to the watershed innovations platform (WIP). The WIP composed of six community representatives, three development agents (agricultural extension agents) working and living in the watershed, the Kebele administrator (one in each watershed), three elders residing in the watershed, sub-kebele leaders (nine in Ware Jarso and five in Dendi) with the support of the facilitating team discussed and made amendments to the draft byelaws. In the subsequent meeting, the WIP discussed on the amended draft byelaws and recommended it to be presented to the wider community for approval.

Approval by the wider community. The draft byelaws were presented to the wider community involving about 500 people for approval. After a lengthy discussion (6 hours) and some amendments, the communities approved the byelaws and recommended the draft byelaws to be presented to the Kebele Council for formal approval and legal recognition. After five consultation meetings, the Kebele Council approved the three byelaws.

Endorsement and publicity. Endorsement or ratification of the approved byelaws was the final official acceptance of the bye law by the community for implementation (ASARECA, 2010). At watershed resident meetings, the approved byelaws were presented and discussed. Upon consensus of the community, the three byelaws were officially approved by the community for implementation in the two pilot watersheds.

Byelaws and the watersheds. Although similar procedures for formulating the three byelaws were followed to address the same SLM issues, the soil and water conservation (SWC) byelaws of Were Jarso (Mukehantuta watershed) and Dendi (Bordo) district differed in several ways. The common elements of SWC byelaws included:

(i) all members of the watershed shall participate in any SWC campaigns according to the schedule provided by the team leaders;

(ii) all members of the watershed should conserve the soil, protect soil nutrients and seed loss by runoff within the watershed;

(iii) all households shall allow artificial water ways to pass through their land if there is no natural water way in the area;

(iv) each member of the watershed shall contribute labor, materials and oxen plough for the implementation of soil and water conservation practices, and gulley treatment;

(v) all members of the watershed shall protect damaged structures and engage on maintenance activities;

(vi) each member shall prevent his/her animals from going into closed areas and constructed soil bunds;

(vii) all members of the watershed should participate in conservation campaigns anywhere (waste land, affected areas) in the

watershed where the team is assigned to work; and

(viii) each member of the watershed shall protect water ways not to be changed to gullies.

Although, the central elements of SWC byelaws of the two watersheds were quite similar in many respects, they differed in at least three ways; namely, number of days in a month declared for implementing SWC practices, specific days declared for the campaigns and work norms to be accomplished by a participating member. These included:

(i) while in Ware Jarso, five days in a month are set aside for implementing SWC practices on communal and individual plots, in Dendi district nine days are set aside for the same purpose;

(ii) in Ware Jarso district, the nineteenth, twenty-fourth, twenty-fifth and twenty-ninth, according to the Ethiopian calendar, are dedicated for implementing SWC practices. Similarly, in Dendi districts the fifth, twelfth, sixteenth, nineteenth, twenty-first, twenty-third, twenty-seventh and twenty-ninth are dedicated for implementing SWC practices. According to the Orthodox Christian tradition, on the days dedicated for the common good, most community members abstain from performing agricultural tasks; and

(iii) the work norm for digging a conservation structure is set to be 1.5 meters in length, 50 cm in depth and 1meter in width per day per individual in Ware Jarso District whereas the work norm for Dendi is set at 3m in length, 50 cm in depth and 1m in width per day per individual.

Similarly, the byelaw on equitable sharing of benefit from improved dairy cows stated that:

(i) a farmer who received a crossbred cow under the arrangement should mange the cow according to recommended husbandry practices of the Holetta Agricultural Research Center (HARC);

(ii) a farmer who received a crossbred cow under this arrangement shall transfer the first two calves from the crossbred cow to two eligible households in the watershed. The framer receiving a calf shall compensate the farmer transferring the calf with ETB 600 in case of a female calf and ETB 400 for a male calf (1USD = ETB 19.05);

(iii) all farmers receiving crossbred cows shall mange the calves according to recommended calf management practices of HARC for one year until the calf is officially transferred to the eligible watershed member;

(iv) individuals who received crossbred cows submit themselves to regular monitoring and evaluation by the watershed committee;

(v) farmers receiving crossbred cows under this program shall cooperate with the HARC in participatory dairy management research; and

(vi) farmers who receive crossbred cow shall not sell to a third parity before meeting the obligation of transferring two calves to the designated individuals.

Effectiveness of the byelaws. Communities having endorsed the byelaws required reliable mechanism for implementing and enforcing them. It was agreed that, locally existing institutions and traditional norms and values for rewarding champions and sanctioning offenders, would be more effective than the formal legal procedures. Hence, drawing on past experience and local tradition, a multi-level decentralised system involving a watershed committee, watershed IP and "Gare Missoma" was set to effectively motivate champions and penalise free riders and offenders at micro-watershed level (Table 3). A "Gare missoma" was a group of 20-30 neighbouring households who often interacted closely as a result of living in the same neighbourhood, use common resources and face

similar constraints. Again, each Gare Missoma was organised into smaller working sub-groups of 11 households, referred to locally as "Gare Hoji". The watershed IP was responsible for the overall coordination of natural resource related activities in the micro-watershed. Detailed planning and implementation tasks, however, were relegated to the watershed committee. The watershed committee implemented planned watershed activities through the "Gare Missoma".

The byelaws were under implementation for three years (2011 to 2013). Participatory monitoring and evaluation revealed encouraging results of effective implementation of the byelaws. So far, in Dendi District, the community managed to construct 2030 meters of soil bunds, treated three gullies with check dams, raised and planted 31,000 seedlings of various species on communal and private holdings. Similarly, in Were Jarso district, communities in the watershed treated three gullies with check dams and raised and planted 37, 000 tree seedlings of various species on private and communal holdings.

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