Livestock and land

Equitable and secure access to land is a critical factor for the rural poor, especially livestock owners, who depend on agriculture and animal-related activities for their livelihood. Having secure access to land for agriculture and pastoral activities reduces their vulnerability and enhances their opportunities to invest in land for agriculture and livestock activities. Indeed, it contributes to the development of more equitable relations among sedentary groups (farmers) and nomadic and semi-nomadic communities (livestock owners and pastoralists). Fostering investments in sustainable livestock development as well as in equitable and secure access to land for rural poverty reduction is recognized by the International Fund for Agricultural Development (IFAD)\(^1\) as a key goal to be achieved through its projects and programmes.

This thematic paper is based on the assumption that secure investments in livestock infrastructure and assets can be encouraged by ensuring equitable and secure access to land, and that this approach will help reduce rural poverty. To this end, it will identify experiences and lessons learned regarding livestock and land-related issues, drawing on experiences from IFAD development projects and programmes all over the world, with a special focus on Africa. It will examine the following interrelated issues: livestock and access to land, access to reliable sources of water, encroachment, land degradation, grazing and mobility. Case studies based on IFAD experience and related to the above-mentioned dimensions will be analysed to illustrate linkages between current theoretical approaches and activities in the field. Although one specific case study will be presented in each paragraph, all provide information and examples relevant to the other issues addressed in the paper. For the sake of clarity, each will be inserted in a specific section to highlight one particular issue.

The paper will end by drawing general lessons and conclusions on the importance of taking into account equitable and secure access to land together with livestock activities in agricultural and rural development interventions.

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\(^1\) See IFAD Strategic Framework 2007-2010 and IFAD policy “Promoting Equitable Access to Land and Tenure Security for Rural Poverty Reduction”.
Livestock and land
Land tenure and the different uses of land
Access to land and land tenure security are at the heart of all rural societies and agricultural economies. Land tenure comprises the rules and norms governing how, when and where people access land and other natural resources. These rules and norms can be administered by statutory (formal) and customary (informal) systems. In this section, the two systems will be described briefly to highlight existing linkages with livestock-related activities.2

(a) Statutory laws refer to legislation and other legal instruments promulgated by official authorities. The term is used to denote law as made by the State, in contrast to customary law, which derives from the customary institutions specific to particular contexts and circumstances.3 In statutory systems, access to and use of natural resources are governed formally by the State and any dispute deriving from conflicting interests by various categories of stakeholders (pastoralists, farmers, tenants) is also regulated by national laws.

(b) Customary systems are context-specific and diverse. They tend to balance individual and group rights and generally have a collective element to resource management, including group decision-making for determining access and use and management of resources in common areas. In such contexts, group identity plays a significant role in managing access to land and resources. Indeed, the right to access common property is based on forms of group membership, in particular ethnicity, village affiliation and residency. For these reasons, customary systems may not be recognized by state and legal authorities, and there may be problems related to the adequate representation of the interests of all relevant community members.

However, evidence shows that it is possible for non-group members to negotiate access to resources although, in some cases, outsiders are excluded from accessing common property under all circumstances. Secure investments in livestock infrastructure and assets can be encouraged by ensuring land tenure security.

IFAD experience shows that land tenure systems have influenced investment in croplands: following a comparison of rangeland management options in various countries, it was shown that, in rangelands, existing property rights systems were failing to provide an appropriate balance between

Case study 1:
Development of Integrated Crop-Livestock Production Systems in Low Rainfall Areas of Mashreq and Maghreb – IFAD Grant 385

In most countries with low-rainfall areas in the Mashreq and Maghreb regions, traditional local institutions governing access to grazing lands have been disrupted, resulting in a system of open access, with no regulatory mechanism to control the extent and intensity of grazing. In these areas, small ruminants represent a source of income for farmers and nomadic or semi-nomadic herders.

The goal of the research programme was to develop productive and sustainable production systems based on small ruminants within the framework of existing property rights. To this end, a preliminary study on local property rights has been conducted on the following aspects: evaluation of property rights, identification of links between property rights, resource use and productivity; comparative analysis of institutions in rangeland management; assessment of community water property rights and land property rights; and institutional options in rangeland improvement.

Although in some communities there may be conflicting interests and objectives (e.g. between crop and livestock farmers regarding the use of marginal communal land, as in Iraq) in Morocco this has not been the case. Here it has been easier to introduce the community approach in the barley livestock system areas, where land is privately owned, than in the rangeland-livestock system, where it is owned and used on a customary basis.

2 See also case studies 1, 4 and 6.
4 IFAD Learning Note No. 3.7: Land Tenure.
individual and community interests in the control and management of common pastures.

With reference to the use of land and livestock, the following three key issues will be addressed: access to reliable sources of water, encroachment and land degradation. Needless to say, these are all closely interrelated as they look at the same issue from different perspectives. However, for the sake of clarity here, each has been analysed in a separate paragraph.

**Limited access to reliable sources of water**

Water-related tensions occur when resources are scarce and access is limited. Water use by the livestock sector is not limited to drinking water, since water is also required for feed production and processing byproducts. Livestock drink 20-50 litres per tropical livestock unit per day, although drinking and service water volumes vary greatly by species and breed, ambient temperature, water quality and water content of feed, animal activity, pregnancy and lactation (International Water Management Institute).

Limited access to reliable water sources can create tensions and lead to conflicts as the competing demands of private, agricultural and industrial uses for water increase pressure on resources. Conflicts over scarce water resources are common, especially in arid areas, both within and between communities. In these areas, livestock owners are often seen as a potential danger for two reasons: (i) they could take possession of water points for their own livestock and (ii) animals journeying to water points could destroy local vegetation and cause soil degradation (see case study 2).

In an attempt to settle water conflicts, governments are often asked to intervene in order to provide and regulate access to and control over sources of water.

IFAD experience shows that water resources management increasingly requires compromise and broad consensus if solutions to problems are to be properly formulated and effectively implemented.

Indeed, the nature of global water security has also been affected by climate change, which has led to changes in rainfall patterns; increased frequency and severity of flood and droughts; changes in growing seasons and in water quality and quantity; and impact on animal genetic breeds. In this context, development interventions could support local communities in mitigating the effects of climate change and provide both farmers and pastoralists’ groups with effective tools to deal with emerging challenges together.7

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**Case study 2:**

**Gash Sustainable Livelihoods Regeneration Project in Sudan** – IFAD

In The Sudan, interventions to increase access to reliable sources of water and to capture flood waters have had positive effects on both pastoralists and farmers. In the GSLRP, a holistic approach has been implemented in order to sustainably address the ongoing issues of land and water governance. Approximately 40,000 tenants have access to irrigated land and more than 50 *hafirs* [water reservoirs] are being rehabilitated, taking into consideration hygienic outlets for livestock water use as well as domestic water use. The local animal resources administration estimates that about 30 per cent of project area herds have benefited from the water containment reconstruction. Activities contributed to shortening the long journey to water points in many cases; herds in the project area were not benefiting from high-yielding pasture because of water shortages. Nomads previously grazed their animals around the limited water points, resulting in tremendous overgrazing and soil erosion (about 30 per cent of these problems were solved as a result of the project).

Throughout the intervention by the Government of The Sudan, ongoing disputes on the use of water sources between local communities have been settled and GSLRP will be included in the country’s land reform agenda as a successful pilot initiative in the land and water governance reform programme.

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5 For further details, see InnoWat publication Water and livestock for rural livelihoods available on www.ifad.org/english/water/innowat/Topic2web.pdf
6 For further details visit: www.ifad.org/english/operations/psd/630ed/index.htm
7 For further details, see IFAD thematic paper on livestock and climate change.
Encroachment

The term refers to situations in which the use of rangeland or pastureland for crop farming is favoured, at the expense of pastoralism. In such contexts, farming areas have encroached on pastoralists’ lands.

The rural poor may rely on livestock to improve their diet and food security, earn cash for basic requirements or investments, and accumulate animals as savings for emergencies and/or as symbols of wealth. Although livestock is often the most important income generator for farm families, encroachment leads to crop cultivation being preferred to pasture. This may cause conflicts to emerge among farmers and herders. The focus should be placed on the entire integrated farming system: food and cash crops, livestock and value-added processing.

Participatory development approaches involving different land users (see case studies 3, 6 and 7) can reduce conflicts among pastoralists and sedentary communities. In this context, pastoralist organizations play a leading role in advocating for pastoralists’ land rights, particularly in building the capacities of pastoralists to organize themselves and to represent their own interests at local, national and regional levels.

To this end, the following two different categories of pastoralist organizations could be clearly identified:

- Pastoralist organizations: different types of herders’ organizations operating at the local and national levels, ranging from committees to associations and federations. They carry out various interrelated functions and often have a primary aim of defending and securing pastoralists’ land rights.

Case study 3:
Integrated management of pastoral land and the pastoral units approach in Senegal – IFAD

Extensive livestock farming as practised in the Ferlo region is based on herd mobility and the exploitation of natural resources that are being degraded year by year as a result of climatic fluctuations and the herders’ lack of organization. Herders have long suffered from the absence of a discussion and coordination framework, a situation that has led to an overly individualistic spirit.

The collaborative approach developed for the management of pastoral land consists of seeking synergies between the IFAD-financed investment project in Senegal, PRODAM, and herders and actors involved in natural resource management.

The approach is based on the study of local people’s practices in pastoral natural resource use and implementation of a participatory management model involving all the actors concerned: herders, local communities, technical experts and government authorities. It is based on the following principles:

- Ensuring protection of existing natural resources and rehabilitation of degraded areas to increase their productivity;
- Making local people effectively responsible for implementing programmes drawn up with them, and involving them in sustainable natural resource management.

In particular, a number of initiatives have been implemented, including:
- Construction or rehabilitation of wells and associated structures;
- Construction of firebreaks;
- Establishment of pastoral management plans;
- Organization of herders and creation of management committees for infrastructure installed;
- Implementation of a major programme of capacity-building (literacy, training), support and advice; and
- Establishment of a pastoral unit umbrella organization.

This approach could be replicated in all areas with collaborative management of pastoral land to improve people’s living conditions, since it is based on traditional practices with regard to the use of natural resources. To ensure success, all management documents, including digital maps, have been translated into the national language and are accessible to herding communities.

8 For further details on IFAD’s experience with pastoralist organizations, see: www.ifad.org/km/theme/po.htm
Case study 4:
Gash Barka Livestock and Agricultural Development Project in Eritrea – IFAD

The Gash Barka project area covers 27 per cent of the country’s total land area and supports investments in livestock and crop production enterprises, benefiting a total of 16,000 households. The main stakeholders in Gash Barka include pastoralists, agro-pastoralists, army ex-combatants, investors and elites, returnees and immigrants from the highlands. In these areas, the encroachment of commercial farming into areas formerly used for grazing creates problems for pastoralists who increasingly find their traditional grazing areas diminished and their access to dry season water points along the riverbeds blocked by newly cultivated land. The situation is chronic along the Barka river to the west of Akordat, where banana plantations have proliferated in recent years. There is no precedent for registering grazing land for range management, though this may be legally possible and could be one way of formalizing land use patterns in certain areas.

- Initiatives to support pastoralists’ organizations: multi-stakeholder associations supporting local and national pastoralist associations, promoting debates and exchanges on the main challenges faced by pastoralists, advocating for land rights and providing training to pastoralists on specific issues (e.g. ensuring land rights to nomadic pastoralists by training paralegal pastoralists as in the example of the Mbororo Social and Cultural Development Association in Cameroon). 9

Indeed, participatory approaches make a positive contribution to the development of land improvement practices, particularly investments in livestock and water infrastructure. In these circumstances, collaborative management approaches are needed to enhance the natural resource while avoiding conflicts on its use: soil conservation, water harvesting and drip irrigation, rotations with legume crops and nitrogen-fixing tree species and mixed crop-livestock systems should be combined. 10

IFAD experience shows that focusing investments on only one type of activity - farming systems, cropping or livestock activities, inevitably leads to conflicts among land users with adverse effects on the management of natural resources, food security and income generation for all community members. Optimal yield and productivity cannot be achieved without adequate plant nutrition, timely planting and proper plant densities, as well as sufficient moisture and protection against insects, pests and plant and animal diseases. Multiple cropping systems integrating cereals and root and tuber crops with grain legumes (groundnuts, cowpeas, pigeon peas, soybeans, dry beans and chickpeas) and with livestock-related investment activities are necessary to define a sustainable development strategy.

In such contexts, an integrated development approach is needed that combines increases in crop production and investments in animal-related activities: the first can provide feed and forage for expanded livestock operations for milk, egg, meat and other enterprises that can substantially increase smallholder incomes.

IFAD experience shows that a holistic approach that includes investments in cropping and farming systems together with investments in livestock and range management practices leads to sustainable development and avoids conflicts around access to natural resources. Moreover, in an attempt to reduce risks and the overall vulnerability of the rural poor, development strategies should take into account both farmers’ and livestock breeders’ needs, avoiding the current trend of farming areas encroaching on pastoralists’ lands.

Land degradation and livestock

Land degradation leads to soil erosion, an insidious degradation process that can quickly

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9 For further information, see case study 8 at www.landcoalition.org/pdf/08_CSD_16_CP.pdf
10 For further details, see IFAD thematic paper on integrated livestock/crop farming systems.
lead to a downward spiral in vegetation cover, especially with the warmer and drier conditions expected in the future. Causes of soil infertility include a shortage of manure, tillage practices, continuously cropping the same land, limited crop rotation, indiscriminate cutting of trees, burning of crop residues and bush fires.

Various types of land degradation can occur as a result of water and wind erosion, chemical and physical deterioration or a combination thereof (Food and Agriculture Organization of the United Nations – FAO, Land and Water Digital Media Series No. 20\(^\text{11}\)). The most common causes of land degradation are deforestation, overgrazing, agricultural activities (improper agricultural management), overexploitation of vegetation and industrial activities (mainly pollution).

Among them, pastoralism is often considered to be the main cause; there is a common belief that grazing inevitably causes losses in soil fertility. Losses in soil fertility are often presumed to be related to herd size, so that bigger herds are thought to cause the most damage to land. However, the World Initiative for Sustainable Pastoralism (WISP)\(^\text{12}\) underlines the role of pastoralism as an environmentally important practice that makes a positive contribution to land conservation. Recent studies\(^\text{13}\) show that where pastoral mobility and local decision-making institutions are constrained, land degradation often occurs, as well as losses in biodiversity. On the other hand, where pastoral mobility is protected and customary institutions still function, land degradation is avoided and sustainable development is maintained.

IFAD experience shows that soil erosion is higher in contexts of inappropriate policies and inadequate livestock management. Accordingly, FAO (2006) produced a report in collaboration with the multi-institutional Livestock, Environment and Development (LEAD) Initiative\(^\text{14}\) suggesting the three following remedies: (i) controlling access and removing obstacles to mobility on common pastures; (ii) use of soil conservation methods and silvopastoralism together with controlled livestock exclusion from sensitive areas; and (iii) payment schemes for environmental services in livestock-based land use to help reduce and reverse land degradation.

Indeed, the high spatial variability of soil depth and bulk density are relatively easy to map with aerial photographs and satellite imagery, and therefore appropriate training can quickly provide the skills necessary to identify critical variables. In an attempt to ensure sustainable impact and active involvement by local populations, training is needed to enable the rural poor to develop such practices.

**Grazing**

Since livestock is the major user of primary production in arid and semi-arid regions, land degradation has commonly been attributed to grazing. However, the degradation of land and plant cover as a result of unsustainable grazing pressures is often a consequence of complex interactions between climate change; inappropriate resource management practices, policies and regulations; lack of enforcement and political dominance of groups or individuals (IFAD, 1998). The shift to sustainable alternatives ideally involves giving more control to indigenous people or to those with traditional rights.

Pastoralists often graze their animals on land that is owned by the State, but whose use is actually governed by complex interactions between customary institutions and rules and national laws. In this context, land tenure laws and traditional rules become important to protect pastoralists’ rights when pastoral land is sought by outsiders for pasture or other uses.\(^\text{15}\) In arid regions, land and water rights must be dealt with together, as pastoralists may have to compete with farmers growing crops or urban dwellers.

A huge variety of grazing styles exists, ranging from simply releasing animals from an overnight corral or shed to wander freely in communal pastures (e.g. Tunisia-El Jaffara) to transporting

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12 This is a global initiative that supports the empowerment of pastoralists to sustainably manage dryland resources. It is a catalytic partnership that promotes pastoralism as an effective and efficient land use and production system for the drylands of the world.
13 See: www.iucn.org/wisp/
14 LEAD is a multi-institutional initiative of FAO formed to promote ecologically sustainable livestock production systems. Further info: www.virtualcentre.org/
15 See also section on encroachment herein.
animals to rented pastures many kilometres from the owner’s farm, or long-distance seasonal migrations to summer pastures. However, they all involve the following three main elements (Thornes, 2007): (a) An origin: this could be a farm, an overnight pasture or even a village: a place where the livestock usually spend the night; (b) A route to the grazing grounds: such routes often form a complex network supplied with forage field or water points; these were created by royal decree in Spain and Italy. 16 (c) A common grazing area: shared by several communities (e.g. paddock).

Regardless of their grazing style, pastoralists are commonly considered to be responsible for land degradation, based on the assumption of a positive correlation between land degradation and so-called overgrazing. 17 The term refers to the almost universal tendency to blame poor pastoral communities for causing erosion by “overgrazing” as a result of “overstocking” (Thornes, 2007). The concept is then related to the definition of “carrying capacity”, supposedly to provide a safe stocking rate beyond which catastrophic erosion will always occurs. Poor communities are penalized for exceeding the carrying capacity.

It is commonly stated that any removal of vegetation by whatever means results in an increase in soil erosion, and that when plant cover falls below 30 per cent erosion has catastrophic consequences. However, overgrazing depends largely on socio-

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16 Often identifiable on Google Earth by the severity of erosion near staging posts. There is even a European Society of green lanes and in England and Scotland some are many centuries old.
17 Scoones, 1996.
economic circumstances as well as biophysical causes. Since it is a very dynamic concept, what is considered overgrazing one year may not be the next year, or even in the same season. Recent investigations (Thornes, 2007) of historical circumstances reveal other interesting points: blaming overgrazing without an in-depth analysis of the specific context could lead to a misidentification of the true cause of land degradation.

Based on the above-mentioned assumptions, pastoralists are often marginalized. Laws become more and more important to provide them with a legal basis to access and control their lands and natural resources. However, laws and tenure systems are often complex and may differ among the adjacent countries through which pastoralists move during the year. Two key related issues to be addressed are the types of local organizations recognized under national laws and the possibility of recognizing the authority of traditional leadership.

**Mobility**

Pastoral and agro-pastoral communities differ from other rural groups because of the central importance of livestock products and income in their livelihoods. Unlike breeders or livestock-keeping farmers, pastoral herds move through places according to the season; also, they feed on natural forage rather than cultivated fodder and pasturage. 14

Pastoral production systems, and particularly food security and livelihoods, are under serious threat from various man-made and natural risks (B. Yemane, 2003), such as the following:

- Expansion of sedentary agriculture;
- Expansion of agricultural projects;
- Expansion of agricultural projects;
• Expansion of wildlife parks inside rangeland;
• Emergence and expansion of agro-pastoralism;
• Encroachment of unwanted plant species; and
• Conflicts over rangeland resources.

Climate change, particularly rising temperatures and increasing rainfall variability, is affecting different regions, locations and population groups. This paragraph analyses the rationale of mobility for pastoralists and the effects of climate change on pastoralists.

Rationale for mobility: By keeping track of resources, pastoralists are able to make optimal use of available resources and match livestock numbers to pastures each year. This reduces the risks of overgrazing and land degradation, which are associated mainly with sedentary forms of livestock-rearing.

Mobility patterns range from purely nomadic (opportunistic, no fixed base), through various forms of transhumance (set migratory routes on a seasonal basis) and levels of agro-pastoralism (attachment to seasonal crop production) to more sedentary patterns (ranching). Each demands a different kind of involvement by household and herd members. Mobility enables herders to raise several livestock species at once (cattle, sheep, goats), thereby making optimal use of the range of pastures available (grasslands, shrubs, trees).

Based on this assumption, mobility and seasonal movements are essential for pastoralists as rainfall and temperature result in marked spatial and temporal variations in grazing resources. Freedom of mobility over large tracts of land is essential to pastoralist production. Agro-pastoralists occupy areas where the human population is moderately dense and their livestock normally spend the night in the vicinity of the household’s permanent residence. On the other hand, pastoralists occupy areas with low human density and will either frequently move their residences or spend the night at a considerable distance from their homes with all or part of their herds.

Sedentary communities often believe that such mobility is evidence of disorganized lives because of the innate incompetence of herders; hence the need to impose policies to settle them down, often in unsuitable places. Herders are viewed as people who escape government administration, as potential threats to security and as tax evaders, so that national policies have been implemented in an attempt to sedentarize nomadic and transhumant populations. Nomads have been encouraged to settle near towns and centres to give them access to basic services such as health and education. These policies, combined with uncontrolled water development, have led to degradation around their settlements and exacerbated the effects of drought. In other cases, pastoralists have been driven towards establishing and developing reciprocal and interdependent relations with sedentary communities in order to benefit from local facilities. In all these cases, the main challenge is to provide sustainable services to a society that is constantly on the move.

Throughout Africa, governments are currently investing in land titling activities in the belief that these programmes can provide higher security levels to achieve higher levels of production and protect resources from destruction. Mobility is also constrained within each state by district boundaries, game parks, nature reserves and/or quarantine zones.

IFAD experience in East Africa shows that a key issue underpinning livestock and rangelands development plans is the conflicting interaction between nomadic and sedentary groups (often between agro-pastoralists and crop farmers) with different development needs and strategies. IFAD’s approach focuses on involving all land users, pastoralists and farmers, in planning a common comprehensive rangeland strategy. As highlighted in the specific case of the United Republic of Tanzania, the provision of
charkos dams could be considered as a possible sustainable solution in order to manage emerging disputes over grazing lands and water.

Changing climate patterns will have significant consequences for many pastoralists, increasing resource variability while reshaping overall availability. Accordingly, mitigation and adaptation strategies are promoted by governments and development institutions with the aim of alleviating the effect of climate change. In this context, pastoralists and local communities may play a key role thanks to their in-depth knowledge of the complex ecological dynamics of their surroundings: they are often the best detectors of environmental change. They own a diverse array of indigenous livestock, selected on the basis of survival and productivity and well adapted to the surrounding climatic conditions. Their rangelands are also characterized by species diversity to optimize different range resources and properly conserve the ecosystem. More attention ought to be paid to indigenous environmental knowledge, which contributes to conserving biodiversity and preserving species and habitats. This makes pastoralism essential to the ecological health of dryland environments.

Conclusions
This paper has argued that a holistic approach focused on the cross-cutting issues related to equitable and secure access to land and livestock is key to promoting sustainable agricultural development strategies. Conclusions drawn from IFAD experience,
presented here through a selected number of interrelated case studies, are of practical relevance to actors at international, regional and local levels aiming to foster agricultural and rural development with reference to both farming and pastoral systems.

One key issue highlighted in this paper is that land tenure security and investments in livestock-related assets are not mutually exclusive. Investments in livestock infrastructure can be encouraged by ensuring secure access to land and vice versa.

IFAD experience shows that conflicts between nomadic or semi-nomadic and sedentary communities could be avoided through the implementation of participatory approaches involving all interest groups.

Pastoralists often live in marginalized areas with low potential for crop cultivation due to variable rainfall conditions, dry land and highly variable temperatures. Accordingly, they have developed endogenous adaptation strategies to conduct their activities while maintaining ecological balance. Current development strategies can build on traditional knowledge in order to achieve sustainable impact.

Finding a balance among pastures, livestock and crops is a key issue to be addressed in every sustainable development programme. Investments in livestock infrastructure and agricultural activities can be promoted by ensuring equitable and secure access to land. As demonstrated by IFAD experience, it is possible to develop comprehensive strategies in order to increase access to reliable sources of natural resources with positive effects on both pastoralists and farmers.

In closing, the following strategic issues need to be addressed and taken into account over time in sustainable rural development interventions:

- Analysis of trade-offs between supporting agricultural practices to enhance local productivity and absolute production levels including livestock-related activities, equity and equality of access.
- Ensuring equitable land access to nomadic, semi-nomadic and sedentary communities, including women, youth and indigenous people.
- Promoting the participation of pastoralists and ensuring the inclusion of their views in land policy decisions at appropriate local, national and international forums through pastoralists’ organizations.
- Linking land reform with rural poverty reduction- failure to address these issues undermines the impact of other investments in other areas, especially the livestock and rangeland sector.
- Scaling up participatory methodologies for securing land rights in order to avoid possible conflicts among land users is essential. Linking land tenure security to participatory methodologies for land use planning and sustainable land management is a key approach for scaling up greater land tenure security.

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24 See case studies 1, 3, 4 and 6.
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