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## **Cows and kin: innovations and issues in post-soviet indigenous communities**

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**Abstract:** In the wake of communism's fall, the majority of rural Russia's inhabitants were left without the state farm agricultural infrastructure that fed and employed them. Most adapted by innovating to create new forms that combined pre-Soviet subsistence practices with contemporary modes. This paper explores one group's innovation, 'cows-and-kin'. Viliui Sakha, the highest latitude horse and cattle breeders in contemporary times, inhabit western Sakha, northeastern Siberia, Russia. Their cows-and-kin innovation is based on household-level cow keeping with interdependence of kin households. In addition to describing this post-soviet community-level innovation, this paper also explores relevant issues about the capacity for continued innovation such as: (1) what is the future of the cows-and-kin innovation, considering that many youth are out-migrating from the rural villages? (2) how is the cows-and-kin innovation affected by the forces of globalisation and modernity? and lastly (3) how can the cows-and-kin innovation face the challenges posed by rapid climate change?

**Keywords:** innovation; climate change; adaptation; Viliui Sakha; post-soviet; arctic indigenous peoples.

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### **1 Introduction**

Insight sometimes comes unexpectedly. Lana and I had just gotten our lunch and a brief catnap before heading back to the hayfields just down the road from her house. Once out the door, we climbed through the four-posted fence, shouldered our wooden hay rakes

and began the ascent to the road. I, being in the lead, came to the road first and cited a swirl of hay, leaves and dust coming towards me diagonally from the other bank. I turned back and showed Lana, who was just reaching the crest of the road and upon seeing my discovery, she quickly turned away and headed back down, telling me not to look and to follow her away. After a few minutes of walking in silence towards the hayfield, in the grassy area paralleling the road, I asked her what had happened. Her serious demeanour broke to a patient smile and she explained that I had almost collided with a *kholoruk*, or whirlwind, that will bring bad luck, sickness and sometimes death if you recognise it. Sakha consider *kholoruk* the physical manifestation of the angered spirit of an *oiuun* (shaman) who died in the locale. She assured me that no harm would come to me since I was not Sakha. We continued to walk and I continued to ponder what had just happened and how Lana, a 30-year-old Sakha woman who, like other Sakha her age, has had and continues to have ample exposure to western culture but continues to hold strongly to age-old beliefs of her people. As we raked and stacked hay into *buguls* that afternoon, I mulled over the many ways that Lana and her people have preserved their cultural ways and also adapted and innovated to the rapidly changing world.

One way that human negotiate complex human–environment relationships is via belief (Berkas 1999; Rappaport 1984). Viliui Sakhas’ adaptation to the subarctic is highly dependent upon maintaining the proper relationships with the spiritual world, which grounds them as part of an intricate web of plant, animal and spirit relationships. Lana’s persistent belief, exemplified by our experience that day with the *kholoruk*, testifies to the resilience of that sacred belief system in Sakha culture to this day.

Sakha have retained some old ways, appropriated some, and abandoned the rest in order to adapt to a changing world. To the extent that adaptation is based on innovation is a living testament to both the tenacity of cultural meaning and original design and the need to create something new based on those prescriptions. If we consider the various environmental, climatic, political, socio-cultural and economic changes of the last centuries, it becomes clear that Lana and her people are experts at innovation. The 20th century presented some of the biggest challenges, due to the rise and fall of Soviet power. Sakha rose to those challenges. What remains to be known is how Sakha (and other native people with a direct dependence on their local environment) will rise to the complex challenges of the 21st century, specifically, to climate change – how can innovation contribute to survival when change is so rapid and unpredictable?

## 2 Innovation, adaptation, resilience and sustainability

The same way that biological diversity, commonly expressed as genetic variation, is central to ecosystem resilience, cultural diversity, based on its richness and innovative potential, is central to mitigating human–environment relations and paramount to 21st century global survival (Crumley, 1994, p.12; Davis, 2001). A discussion of innovation in the context of human–environment interactions involves at least three other key concepts: adaptation, resilience and sustainability. Adaptability, often founded upon innovation, is a society’s capacity for reorganising and developing coping strategies (Hassan, 1994, p.159). In the majority of cases, societies have adapted and innovated successfully to mitigate human–environment relations.

One of the three defining features of resilience, or the way systems, both ecological and cultural, maintain themselves in the face of perturbation and change, is that system's "ability to build and increase the capacity for learning and adaptation" (Berkes et al., 2003, p.13). If we delve further into the actual working of a system's capacity for resilience, we see that it is in the reorganisation phase of an adaptive renewal cycle that novelty and innovation occur (Holling, 1986). Further, novelty is defined as the ability to innovate and an essential part of both adaptability and resilience (Berkes et al., 2003, p.20).

Historically, human innovations in the context of mitigating human–environment relations have been largely compelled by population increases and the need to feed more people on less and less land. If we consider population as an independent variable (as opposed to the Malthusian model that assumes population is a variable dependent upon innovation to enable it to make a new growth spurt), then in terms of agricultural innovation, it becomes the primary force (Boserup, 1965). For example, Boserup's 'induced innovation' concept posits that increasing populations stimulate demand for more products and, in turn, increases the value of land over labour, intensive cultivation replaces extensive. Two of the most fundamental innovations of humankind are the irrigation of bottomlands and the enhancement of slopes through terracing (Redman, 1999, p.128).

Recent anthropological scholarship in sustainability, although varying in views of the concept, does reach consensus that social systems are central to sustainable ends (Stone, 2003, p.95). Local sustainability is founded on three variables: persistence, innovation and responses. It follows that locally determined definitions must acknowledge each local population's move towards change and modernisation by ascertaining what cultural features are key to a community's sustainability and therefore need to persist and what can be discarded in exchange for innovation (Stone, 2003, p.96). In addition to analysing a local culture's need to persist in some practices and discard others for innovation, sustainability also encompasses adaptations to the larger context, beyond the locale, or a culture's responses to stresses and shocks that do not undermine a community's natural resource base.<sup>1</sup>

The case of local fisheries management in the Brazilian Amazon shows how local communities have innovated by replacing their conventional management system with community management based on accords that protect their fisheries from encroaching commercial fisheries (de Castro and McGrath, 2003, p.132). Contemporary research also reveals the capacity for cultural innovations to achieve more sustainable livelihoods. North Tanzanian Maasai communities changed from pastoralist to agropastoralist subsistence strategies in response to the stresses of increasing human population, fluctuating livestock populations, reduced pastureland and a mixed cash economy (McCabe, 2003, p.100). In this case, innovation is also a means to persistence of Maasai pastoral identity that could not have been retained without diversification to agriculture to respond to stress factors threatening it (McCabe, 2003, p.106) – sustainability via innovation and persistence.

Anthropology is a natural discipline to pursue sustainability research because it accounts for the variance in ecosystems and the values, expectations and changing needs of communities. Anthropological research considers diverse contexts and local needs that require an equally diverse set of solutions. Anthropologists have long engaged the concept of sustainability in their work. In many of the subfields of anthropology, take for example cultural and political ecology, sustainability is often

priority criteria for analysis (Hyndman, 2001, pp.177–181; Netting, 1993, pp.135–145; Robbins, 2004, p.13).

Anthropologists have also contributed to understandings about small-scale societies in which conservation is rare but sustainable use and management is common (Smith and Wishnie, 2000, p.493). Anthropology recognises that globalisation affects local systems. In the subfield of development anthropology, the sustainable development concept is anthropology-friendly because it extends measures of development beyond economic criteria to consider environmental protection and social equity and has the potential to provide a framework (model) to assess alternative development scenarios. Indigenous cultures, by nature, possess a relatively high capacity for adaptation to uncertainty and change due to both a generalist and time-tested knowledge of subsistence survival, and a propensity for innovation in the context of environmental, socio-cultural, political and economic change. Recent literature suggests that the longevity of a culture, or its ability to survive to old age in balance with their environment is one key aspect of the sustainability of that culture (Costanza and Patten, 1995). The resilience of human or non-human systems is a function of a capacity to adapt. In contrast to other biological systems, human–environment interactions are more highly complex, involving multiple feedbacks that generate new effects and outcomes.

### **3 Viliui Sakha and innovation**

By tracking Viliui Sakha history we see that they represent a stellar case of innovation. Viliui Sakha are native agropastoralists inhabiting the Viliui River regions of north-western Sakha Republic, northeastern Siberia, Russia. Sakha are a Turkic-speaking people whose ancestors migrated from Central Asia to southern Siberia around 900, then migrated northward, along the Lena River, to their present homeland beginning in the 1200s. They inhabit a subarctic region, characterised by continuous permafrost and average winter temperatures of  $-50^{\circ}\text{C}$ , to which they adapted a southern horse and cattle subsistence by foddering their cows in barns nine months of the year. Viliui Sakhas' adaptive innovations to the extreme northern climate in many ways mirror strategies of the native flora and fauna – to maximise energy accumulation through feeding and storing in the brief and activity-driven temperate period and to minimise energy expenditure through the long winter by way of protective shelter and low activity.

Subsistence strategies of northern areas consistently utilise large animals, either terrestrial caribou, reindeer and musk ox or maritime seals, walruses and whales, supplemented with small game hunting, fishing and foraging. Northern groups adhere to this subsistence pattern across the contemporary pan-Arctic with one exception – the horse and cattle breeding Sakha. The only other group that kept cows in the subarctic have long vanished (McGovern, 1980, pp.245–275). Norse settlers arrived on Greenland between about 800 and 1000 A.D. with an economy based on domestic cattle. However, due to the 1250–1300 climate change and the Norse's inability to adapt alternative subsistence strategies, their settlement vanished within several centuries.

Sakha also innovated by extending the existing resource base. Finding enough hay fodder was often a problem. If Sakha were unable to cut sufficient hay grasses, they would supplement the harvest with less palatable plants, including straw, lake reed, tussocks, larch branches and assorted shrubs. Sakha would drain hay fields that were too wet or divert water to fields that were too dry for optimal hay growth. Sakha also made

new hay areas to meet high fodder needs. The most common way was the draining of lakes, an activity that required a local specialist to determine how to build proper canals (Figure 1). Lake draining was labour-intensive because canals often went through old larch forests that needed uprooting with axes, picks and shovels. Canal digging was either done while the lake water was free to flow or when it was held back to be released later. The latter was easier digging but more accident-prone. Ethnographic accounts tell that in 1835 when Sakha were digging canals, when they let the water through, it came in such abundance that it took several workers with it (Nikolaev, 1970). Sakha understood such accidents as being caused by an angered lake's spirit-keeper. For this reason Sakha would habitually fulfil a special ritual of animal sacrifice to appease the spirit. The larger the water body, the more powerful the spirit-keeper and the greater the sacrificial offering needed. Sakha summoned a shaman to make the offering and to ask forgiveness for the poor herders who brought such unrest to the grandmother lake but who found it necessary to drain for their survival (Nikolaev, 1970). Sometimes they opted to empty the lake only partially at first to expose the lake perimeter, which served as a fertile hay area for a few years while they could continue to exploit the lake fish.

**Figure 1** A contemporary weir



Another innovation to survive in the extreme north was procuring water. In temperate months, Sakha utilised the surface waters of adjacent rivers, streams and lakes. In winter they harvested and melted ice or made *tammakh* (literally 'water drop'), a forked branch packed solid with snow and hung by the *komuluok* (open fire pit that heated houses) with the melt water dripping into a birch-bark pan below. In winter, animals drank directly

from an *oibon* or round hole cut in the ice. They covered the *oibon* with several layers of animal hides or other insulating material, to protect them from freezing.

To replenish meat stores and take advantage of nine-month sub-zero temperatures, Sakha annually slaughtered in November and stored animal products in a protected outbuilding until temperatures warmed, then transferred their animal products to a *buluus*, a deep hole nearing the permafrost where foodstuffs remained frozen year-round. Having a storage capacity was an advantage compared to more southerly cow cultures that only consume meat for special feasts, and rely daily on milk and blood.

Russians began colonising in the mid-1600s, annexing indigenous lands, taking resources and taxing native settlements. However, the greatest challenges have come in the last 100 years – with sovietisation, involving the collectivisation of kin-based household-level production into agro-industrial state farms by the mid-1950s and regional industrialisation. Among the effects included the resettlement of households – from clan-based clusters scattered across the land to compact villages – from extensive to intensive use of the land (Crate, 2002). Soviet industrialisation for Viliui Sakha meant diamond mining in regions adjacent to their homelands. This resulted in contamination of local drinking water with heavy metals and of local air with nuclear fall out (Crate, 2003a).

By engaging history in our analysis we can clarify how events over time interplay with Viliui Sakha innovative choices (Crumley, 1994, 2001; Eagan and Howell, 2001). In the Soviet period we see a transformation of Viliui Sakhas' mode of production when, upon the discovery of Viliui diamonds, the state consolidated all collectives into state farms, with the explicit objective of supplying meat, milk and other foodstuffs for the nascent mining centres. With this move, Viliui Sakha lost their collective relationships in which they were part owners of the farm resources and products, and became members of the working class. This was also the historical moment when diamonds 'got a life' and began their direct and indirect penetration of Viliui Sakhas' local culture, social relations and politics. Diamonds soon became a many-sided cultural symbol: the state's highest pride of socialist industrial activity; the Republic's boast of lucrative mineral wealth; the Viliui Region's way forward into the highest fulfilment of the (Soviet) Plan; and, to many local inhabitants, a bittersweet omen of a race into modernity that would, in the end, undermine the adaptation and resilience of their people (Argunova-Low, 2004; Crate, 2006).

The end of the Soviet period in the early 1990s brought a set of new challenges, most immediate, the dissolution of the centralised state farms where the majority of inhabitants worked and got their foodstuffs. Most worked quickly to again adapt to this change, this time by reinstating household-level food production via a system termed 'cows-and-kin' (Crate, 2003b). In the post-Soviet context, we see again how Viliui Sakha has innovated, this time to the rapid change from a socialist centralised system to a decentralised household-level cows-and-kin production system. With the fall of the Soviet Union, Viliui Sakha communities decided to dissolve their state farms and divvy the farm resources among inhabitants. This divvying, intended to allot equal resources to all in order to insure food security in a transitional period, was anything but equal. Those in decision-making roles chose to allocate a majority of resources to themselves and their kin, leaving most village inhabitants without the necessary resources for subsistence. Viliui Sakha was able to adjust their production mode because of their propensity for innovation and adaptive capacity. They moved quickly to reorganise themselves into household and inter-household level production units based

on kin relations – household-level arrangements based on the pooling of resources, labour, land and technology. Members of household and extended kin arrangements have a responsibility to each other that was absent in other social arrangements in the villages in Soviet times. In many ways, post-soviet production exceeded that of the late Soviet period because inhabitants had once again gained ownership of their means and modes of production. Innovation took a first-place role in that it increased production and included the creation of time-saving devices such as hay tools made from ski poles and even tractors built from various discarded parts of machinery from the state farm (Figures 2 and 3).

**Figure 2** Hay tool made from ski poles



**Figure 3** Tractors made from various found parts



The post-soviet cows-and-kin adaptation, based on household and inter-household production, is parallel with the adaptive responses of other peoples of the world. Robert Netting's analyses of smallholder-householder systems provide many examples of that common ground (Netting, 1993). Research in the circumpolar north that analyses how groups have adapted to recent environmental and socio-economic changes, similarly emphasises the centrality of household-level production (Caulfield, 1997; Nuttall, 1992, 2000; Ziker, 1998).

Much of the success of cows-and-kin, Viliui Sakhas' post-Soviet adaptive strategy, is founded upon having and knowing land (Crate, 2002, 2003c). In this context innovation also plays a large part. Local inhabitants pool land resources with a kin to realise the amounts of hay fodder they need to over winter their herds. Accessing enough land for sufficient fodder is and will continue to be problematic for most Viliui Sakha. Households have to continually negotiate issues of: 1) transportation to and from outlying areas to harvest and haul hay 2) changing climate patterns that can render hay plots either too wet or too dry for production and 3) labour needs to cut, stack and haul hay.

The latter is increasingly difficult with the alienation of youth, who should be moving into adult hay harvesting responsibilities for their household and extended kin but are instead tending to be less involved in the activity. In part, this alienation is due to the effects of globalisation and modernity – as post-Soviet youth are increasingly privy to and influenced by the mass media and other forms of input from the outside world, they orient their goals to a global perspective beyond their small village. This, combined with the long-term disruption of local knowledge bases, which began in the early Soviet period with collectivisation and continued through the state farm period, has rendered local knowledge of little importance in the contemporary context.

However, for decades other circumpolar countries have paid attention to the part that indigenous knowledge plays in native survival (Nuttall, 1992; Wenzel, 1999). Although such efforts continue to be severely lacking across post-Soviet Russia, precedents set in adjacent circumpolar areas, showing the inherent and practical value of local knowledge, could be instrumental in modern day innovations geared towards using appropriate knowledge systems to mitigate contemporary problems. Elder knowledge informs the cows-and-kin strategy, and so it follows that there should be enough motivation for 'insiders', the local Viliui Sakha inhabitants, to formulate useful and objective questions, to record elders' experiences and to use the knowledge in their daily lives and in the education of their youth (Crate 2006b). Similarly, these same redeeming qualities of the knowledge gives 'outsiders', anthropologists, advocates and others, the cue to pay attention to the practical value of those narratives and the imperative need to document them.

Can innovation help Viliui Sakha counteract the negative effects of globalisation and modernity? Local capacities for innovation, adaptation and resilience often have no propensity for the pace of change ushered in by globalisation. In the indigenous context, the forces of globalisation are frequently translated on the local level as the exploitation of nonrenewable resources for distant markets. Since the industrial revolution, the global competition for resources is intensified in response to increasing consumer demand for products and the ability to transport them over long distance. Economic globalisation favours specialists of portable professions who can move freely to maximise gains. Indigenous cultures, which survive via a generalist knowledge of local ecosystems, very



much rooted to place, cannot compete (Young, 1998, p.5). Likewise, local communities like Viliui Sakha, often find themselves in the globalisation process via a cash economy based on nonrenewable resource extraction. This in turn can transform the local mode of production from subsistence-based to working class and, in turn, undermine the survival strategies of locally adapted and resilient cultures (Hyndman, 1994).

Hand-in-hand with globalisation, modernity offers both advantages and disadvantages for local groups. For Viliui Sakha modernity means education and literacy, healthcare and a high standard of living. It brings access to mass media and consumer products. The combination of an accessible 'window to the world' since the end of the cold war, and the revaluation of pre-Soviet subsistence strategies, the temporality of the village setting is mixed – time both races forward and stands still. In the meantime, relevant issues, like who will take on the cows-and-kin legacy when the present-day stewards are unable and how to balance modern ways with time-tested subsistence modes frame the questions of modernity in Viliui Sakha villages.

#### **4 The role of research in fostering innovation**

The arctic has been transformed into a zone of innovation via pan-arctic organisations like the Arctic Council and the fostering of research priorities that forefront collaboration with local populations, governments and indigenous communities. Participatory research is one way that researchers can foster innovation in times of rapid change, like that, which is characterising the north. Local investigations into just what constitutes a sustainable future for Viliui Sakha are telling. As acting PI, I initiated a three-year project to understand how the inhabitants of four Viliui Sakha villages defined sustainability, specifically, what they needed for a robust livelihood for themselves and their generations to come. I was again struck by their propensity for innovation – to think outside the box and imagine ways to combine their potentials and create locally based economies and communities.

Results suggest that Viliui Sakha define sustainability as the building of local diversified economies, communities and health via strong local leadership, a shared vision to work towards common goals, the reinstatement of local knowledge and rights to land and resources. Not surprisingly, respondents may not be saying much that is different from other indigenous contexts; however, the ethnographic context, including the Soviet and post-Soviet legacy of these villages, and their dependence on a centralised government system until the recent past, renders these findings quite compelling. Inhabitants not only understand the need for local food production and consumption, (reversing the Soviet trend of exporting all local production to adjacent urban areas and importing all village-level consumer goods) but also the necessity for other village-level economic activity including food processing, manufacturing of raw materials, the production of animal feed, the forming of small collectives to make cow and horse breeding efforts more efficient and the development of entrepreneurial business activities including tourism, service professions and job training.

Additionally, most of the Sakha youth interviewed understood that the future is in their hands and that the key to having a productive and ample standard of living is to acquire some form of education beyond high school and to get a good job. This is a far cry from the apathy apparent in Sakha youth during the late Soviet/early post-soviet periods (Crate, 2002). Most do desire to return to their villages to work in their

professions, but they face an immediate lack of village jobs. They appreciate and value knowledge of their elders and understand that it holds a central role in sustainable village futures. However compelling these findings are, considering the novelty of these ideas and desires in the context of the Soviet and post-soviet legacy, without action they remain for naught. Although there are major hurdles to realising sustainable communities in the post-Soviet context, new and continued collaborations between circumpolar researchers and communities facilitate the influx of ideas and models of success from other Arctic regions.

## **5 Innovation and climate change**

The newest challenge, and perhaps most difficult for local communities to perceive ways to innovate and adapt to, is climate change. Although comprehensive local climatic data is lacking, village elders possess vital ecological knowledge about how the climate was and has changed. In 2004, while surveying inhabitants of four villages for a community sustainability project, 90% of participants expressed their concern about local climate change – that it was causing unprecedented change in their local areas and that it threatens to undermine subsistence. Part of our three-year community sustainability project has been focused on bringing village youth together with their elders to record and use elder knowledge. Working with these elders, when I returned to the field this summer, I asked in-depth questions about climate change. Of the 33 elders interviewed, 31 said that the climate has definitely changed from years past.

So what are the changes people are observing? Six respondents mentioned that they can't read the weather anymore. Subsistence-reliant peoples, the majority of whom in contemporary context inhabit marginal ecosystems, depend on an intimate knowledge of their local environment. This is particularly crucial in an extreme environment such as the arctic when each day of summer is crucial to winter survival. Case in point is Viliui Sakhas' ability to read the weather – that determines the success of harvesting enough fodder and foodstuffs to survive another long winter. Nine commented that the timing of the seasons has changed – that spring and fall come late. Again, such off-timing of critical production periods jeopardises winter survival. Sixteen elders said that the climate has softened – that winters were not as cold and summers not as hot – and that the heat now had a different quality – it is stifling with too much humidity. Eight people mentioned that the weather changes very suddenly and without warning. Several elders mentioned that new species were appearing from the south and that some old species were now gone. And lastly, most complained about the overabundance of rain that came at the wrong times – meaning no rain in the spring and too much during the hay cutting season. The land itself is changing. Eight people mentioned that they noticed the land was sinking in places, with perhaps the most dramatic being the sinking of a nearby island.

We asked how the climate change was affecting people's lives – and first and foremost, they talked about the effects on harvesting forage for their animals. With rain at the wrong times, the hay has no time to dry in the field and rots. Secondly elders talked about the effects these changes have on their gardens, which most rely on to supplement them through the long winter. Too much standing water in spring after the thaw leaves large areas of garden inaccessible for planting until too late (Figure 4).

Elders also expressed concern about how difficult it has become for horses, which live outdoors year round and in winter depend on the right amount and quality of snow for their fodder. In recent years the snow comes early then melt, forming an ice crust under the snow and making fodder inaccessible for horses. Hunting, a supplemental source of food for many households, is similarly affected. Hay land is diminished by the inundation of water, making the harvest of sufficient animal fodder a challenge for most. Other lands are also impinged. Lakes have been steadily growing in the middle and outskirts of villages, ruining the usable areas near homes (Figure 5).

**Figure 4** Household potato fields waterlogged



**Figure 5** Lakes forming in village centres



Most elders did not express hope for the future but rather concern that things would not get better. They predict that eventually the permafrost will melt completely, water will subsume all their lands and they will have no place to live. A sudden news flash in late July of 2005 worked to support their case. Three northern villages had been completely flooded and inhabitants were forced to permanently resettle to new areas.

The question is no longer whether climate change is occurring but rather how local communities can get the info they need to be able to understand what is going on and how they can adapt to survive the changes in context of their daily survival.

## 6 Beyond innovation?

Negotiating a diversity of factors to survive via innovation and a resilient adaptive capacity is a strategy familiar to Viliui Sakha and other indigenous cultures globally. However, the challenge takes on new meanings when exogenous forces that result in rapid changes, like that of climate change in the arctic, increasingly threaten tenacious human–environment systems. The implications of climate change for Viliui Sakha and other arctic subsistence-based peoples, highlight the need for much creative innovation on the part of those peoples if they are to continue their reliance on local lands and resources.

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## Note

- <sup>1</sup>This discussion dovetails with the concept of sustainable livelihoods, "A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base" (Scoones, 1998, p.5).