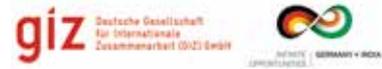


The Value Chain Approach for Mountain Development: Case Studies from Uttarakhand, India



About ICIMOD

The International Centre for Integrated Mountain Development, ICIMOD, is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush Himalayas – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and based in Kathmandu, Nepal. Globalization and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities, while addressing upstream-downstream issues. We support regional transboundary programmes through partnership with regional partner institutions, facilitate the exchange of experience, and serve as a regional knowledge hub. We strengthen networking among regional and global centres of excellence. Overall, we are working to develop an economically and environmentally sound mountain ecosystem to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now, and for the future.



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The Value Chain Approach for Mountain Development: Case Studies from Uttarakhand, India

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Acronyms and Abbreviations

CFC	common facility centre
CHEA	Central Himalayan Environment Association
CITES	Convention on International Trade of Endangered Species of Fauna and Flora
FIGs	Farmers' interest groups
GBPIHED	GB Pant Institute of Himalayan Environment and Development
GIZ-RED	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH – Regional Economic Development Programme
GMVN	Garhwal Mandal Vikas Nigam
GRAMYA	Watershed Management Directorate, Uttarakhand
HAKVSS	HARC Alaknanda Krishi Vyawasaya Swayatt Sahakarita
HARC	Himalayan Action Research Centre
HAPPRC	High Altitude Plant Physiology Research Center
HRDI	Herbal Research and Development Institute
HKH	Hindu Kush Himalayas
HVPS	high value products and services
ICIMOD	International Centre for Integrated Mountain Development
IFAD	International Fund for Agriculture Development
ICT	Information and Communication Technology
IMPCL	Indian Medicines Pharmaceutical Corporation Limited
IWMP	Integrated Watershed Management Programme
MAP	medicinal and aromatic plants
NABARD	National Bank for Agriculture and Rural Development
NGO	non-governmental organization
NTFP	non-timber forest products
OSV	off-season vegetables
R&D	Research and Development
RLTV	Road Less Travelled Venture
RML	Reuters Market Light
SHG	self help group
SME	small and medium enterprise
SGDP	State Gross Domestic Product
SRTT	Sir Ratan Tata Trust
UFDC	Uttarakhand Forest Development Corporation
UBFDB	Uttarakhand Bamboo and Fibre Development Board
ULIPH	Uttarakhand Livelihood Improvement Programme for the Himalayas
UTDB	Uttarakhand Tourism Development Board
VC	value chain

Executive Summary

The levels of poverty seen in mountain populations are linked, directly or indirectly, with specific mountain conditions. These include geographic isolation, socio-cultural marginalization, poor physical and economic infrastructure as well as poor access to markets, technologies, and information. Development interventions that do not take into account these constraints – and opportunities – are destined to failure. For instance, agricultural growth in the mountains of Uttarakhand, as in other mountain regions, has been slow due to the relative unsuitability of the intensive technologies first introduced during the green revolution and promoted ever since. These technologies have proved unsuitable to the Uttarakhand hills where agriculture is dominated by scattered farms, low yielding traditional crops, and water stress, which is further aggravated by both climate change and socioeconomic dynamics.

It is, however, possible to reverse the trend of slow economic growth in the Uttarakhand hills by generating local employment that takes advantage of the niche strengths of the mountain ecology. In this context, several interventions have been made over the years to develop the high value products and services sector in Uttarakhand. This publication, targeted at policy makers, donors and researchers, highlights the imperative role value chain development can play in improving livelihoods and promoting inclusive growth in mountain regions. The whole range of stakeholders, especially the rural poor, can benefit from upgrading value chains. This is demonstrated by six value chain cases based on action research carried out by ICIMOD, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Regional Economic Development Programme (GIZ-RED), and other partners.

The action research findings show that value chain interventions in the high value products and services sector can successfully engage small farmers and producers. The output of the engagement is their improved access to information, skills, technology, markets, policy, and institutional support. The involvement of strong local institutions is central to this process as small farmers are best integrated when they work together under a common goal. The state and the private sector are also crucial in creating the framework conditions, especially in supporting highland-lowland linkages. Experience has proven that the trickle-down approach does not work in mountain areas. Instead, processes and systems to increase the participation of small producers must be instituted at all stages of upstream value chain interventions.

This publication lays out the findings of action research on six value chain interventions. Based on the findings, the publication recommends continued support for the development of livelihood options related to high value products and services. For further success, the development process must be taken forward in an integrated manner. It is necessary to link the appropriate policies, institutions, markets, and programmes with capacity development and an adaptive management approach.

Background

Mountain poverty and livelihoods

The majority of the population of the Hindu Kush Himalayas (HKH) depend on subsistence agriculture and natural resources for their livelihoods. Only five per cent of the total area in the HKH region is arable. The high altitude, steep slopes, and unpredictable seasonal rainfall patterns further limit the use of this land for intensive agriculture (Rasul and Kollmair 2009). It is well documented that traditional agriculture alone is insufficient to meet the food requirements of the growing population. Economic growth, shifting population dynamics, and climate change have taken place so rapidly and intensely in recent years that traditional adaptation mechanisms are losing their efficacy. Poverty is widespread and ubiquitous in the countries of the HKH region. ICIMOD studies reveal that mountains have, on average, five per cent higher poverty than the plains (Hunzai et al. 2011).

Mountain areas are characterized by a high degree of fragility, marginality, limited accessibility, diversity, and specific niche resources. Human adaptations to these conditions both generate opportunities and impose constraints. These conditions are neither exclusive to mountain regions nor uniform across all mountain areas. Nonetheless, due to the specific combination of conditions, their high degree of prevalence, and their crucial operational implications, they are referred to as 'mountain specificities' (Jodha 1992). The dimensions of poverty are directly or indirectly associated with mountain specificities, characterized by geographic isolation, sociocultural marginalization, and poor physical and economic infrastructure as well as poor access to markets, technologies, and information.



In the natural environment context, mountain regions are characterized by remote and scattered farms as well as poor means of communication and transport. The persistent lack of connectivity and market links is one of the main factors leading to their marginalization. Mountains also have harsh climates and frequently encounter natural disasters. Alongside this, weak human capital poses challenges as mountain people lack knowledge of production, processing, and marketing. They also have poor negotiating skills. A powerless voice means that the demands of mountain people for equitable market integration are unheard by mainstream decision makers. Combined, these factors lead to limited employment and economic opportunities. The resultant insecurity triggers the outmigration of youth. Consequently, the resident population of Uttarakhand today is largely comprised of women, the elderly, and economically less active populations.

Economic development in the mountain regions of Uttarakhand

Uttarakhand was carved out of the state of Uttar Pradesh on 09 November 2000. With a total population of 10.11 million (Census 2011; GIZ-RED and Doon University 2011), 74.38 per cent rural, the state is divided into 13 districts. Ninety per cent of the state is made up of high mountains and deep valleys. Many hill districts are earthquake prone, falling into seismic zones IV and V. The state is also divided into four agro-climatic zones: the tropical zone ends at an altitude of 1000 m, the sub-tropical zones ranges from 1000 to 1500 m, the cool temperate zone ranges from 1500 to 2400 m, and the sub-alpine and alpine zones start at 2500 m (NABARD 2010). Forests covers close to two-thirds of the area and 14 per cent of the land is used for agriculture.

Agriculture has traditionally been the mainstay of the Uttarakhand economy. Individual land holdings have, however, always been small. While the national average for individual holding size is 1.57 ha, the average land

holding in Uttarakhand is 0.95 ha. Within the state, the average land holding in hilly areas is 0.82 ha. Similarly, while 90 per cent of the net sown area in the plains is irrigated, the corresponding figure is 19 per cent in the hills. There is a huge difference in the nature, input use, productivity, and management of mountain farming systems as compared to the practices of the plains. Farming in the mountains is largely subsistence and characterized by poor yields. Forest resources such as non-timber forest products (NTFPs), livestock products, and some cash crops provide additional income to mountain households.

That the agriculture sector is ailing is evident through the sectoral breakdown of the state gross domestic product (SGDP). According to the 2011 GIZ-RED and Doon University's Diagnostic Study Report, Uttarakhand's SGDP grew at an impressive 8.9 per cent in the previous fiscal year. The main drivers of growth were construction, public administration, and manufacturing. Meanwhile, the contribution of agriculture declined from 29 per cent in 2000 to 17 per cent in 2008-2009. A discrepancy between the contributions of the hills versus the plains is also built into these numbers. For instance, the nine hills districts in the state have not contributed more than 20 percent to the SGDP since the year 2000. Similarly, the urban-rural divide is further exacerbated by the trajectory of economic growth as the expansion of the secondary and tertiary sectors has largely benefitted urban residents, comprising only 26 percent of the total population. This implies that the agricultural sector, which is the main source of livelihood for 65–78 per cent of the total population, has not been the beneficiary of growth. Whatever the reasons – and they are numerous and complex – the agriculture sector has grown by only 2.4 per cent per annum over the past decade.

Successive state governments have launched initiatives to reverse the trend of uneven growth and development. One of these initiatives is the Integrated Industrial Development Policy 2008. The objective of this policy is to accelerate the pace of industrial development in the remote and less developed hill regions of the state. To this end, the policy guarantees infrastructure for the development of entrepreneurship, including market access and financial assistance.

There have also been numerous interventions to modernize hill agriculture. Many such efforts focus on the cultivation of high value products and services (HVPS) such as organic crops, fruits, vegetables, floriculture, medicinal and aromatic plants (MAPs), NTFPs, and tourism. These initiatives have already started to yield results in many areas with the support extended to mountain farmers by different agencies. Nonetheless, the uptake of HVPS has been low due to a number of factors.

Regional Economic Development and Value Chain Approach

The Regional Economic Development (RED) Programme (2007-2014) is a broad-based approach in which the state, the private sector, and civil society act in concert to formulate and implement a regional development strategy. Broadly speaking, RED aims to reduce poverty and improve the living conditions of a region's entire population. It does so by implementing an economic and social development strategy. In this context, RED facilitates local enterprises and organizes poor populations in user groups. Following a market-driven approach, RED focuses on three key areas. First, it works to develop selected value chains (VCs) or clusters with potential for inclusive growth. Second, it seeks to create better framework conditions. Third, it improves market access for small and medium-sized enterprises as well as producer associations through regional marketing.

VCs are one of the most important elements of the overall RED strategy. VCs can be defined as "the full range of activities that are required to bring a product from its conception to its end use. The use of the terminology 'chain' suggests a focus on 'vertical' relationships between buyers and suppliers and the movement of a good or service from producer to consumer" (Ponte 2008). The VC approach was originally devised as a business tool to optimize production within an enterprise. In the last two decades, it has been used by the development sector to understand why developing countries and small producers benefit so little from national, regional, and global chains. Recently, the VC approach has been identified by an increasing number of development organizations as an efficient method of addressing sustainable livelihood issues and challenges.



Preparing for bay leaf plantation

The VC approach revolves around analysis of the structure, actors, and dynamics of chains that connect the different stages, from production to processing to marketing and end use. The approach includes the examination of types and locations of actors in the VC, the linkages between these players, and the dynamics of inclusion and exclusion within a chain. The VC approach is a powerful tool for identifying and analysing where and how value is added, from the producer to the end user. The process also helps in highlighting how profits can be better distributed along the chain. To implement a successful VC intervention, it is necessary to understand the following: the structure of cost and benefit sharing among participants in the chain, the functional division of labour and its changing shape, and the role of standards and labels in facilitating or hindering participation by producers.

Understanding VC governance – the process of organizing activities with the purpose of achieving a certain functional division of labour along a chain – is a key element of VC mapping and analysis. The end result is a specific allocation of resources and distribution of gains (Ponte 2008). VC analysis also allows for the identification of regulatory and institutional constraints. Consequently, it is possible to identify and address leverage points for improvement of the VC to benefit poor and disadvantaged actors. In 2010, Hoermann et al. analysed the structure and functioning of mountain VCs and developed an analytical and strategic framework for VC development in mountain areas. Their findings confirmed that the mountain economy benefits from the promotion of products and services with special development potential in mountain agriculture and ecosystems. Interventions should aim to strengthen the institutional sphere as well as the market relationship between actors of the VC, namely production, distribution, trade, and services.

The activities that comprise a VC may be contained within a single firm or embrace many firms. They can be limited to a single country or stretch across national boundaries. With developments in infrastructure and communication combined with increased state and donor support, VCs are becoming competitive not only between firms but

also increasingly between regions. The HVPS sector generally will not become competitive without a supportive environment of related facilitators and service providers.

A region's attractiveness for businesses depends on a variety of factors. These include the population's education and skills, the infrastructure and quality of public governance, and public and private sector investments. These factors are instrumental in determining whether the economic development options in a region operate productively, deliver competitive products and services, and are able to create and sustain opportunities for the local population. Mountain producers are embedded into a network of actors, facilitators, and firms. These actors provide services such as access to resources, material inputs, and specialized business services including training and market information. The more developed these complementary networks, the more mountain regions can specialize in certain core capabilities.

Upgrading value chains

In VC analysis, the concept of upgrading refers to the possibilities for producers to 'move up the value chain'. Producers can move up the chain by either shifting to more rewarding functional positions, or by making products with more value-addition invested in them, and/or by providing better returns (Bolwig et al. 2010). A key feature of the VC literature is the manner in which the relative position of firms and the dynamic governance structures within which they trade – internal as well as external – condition their potential upgrading options (Mitchell et al. 2011). It is thus unrealistic to expect small enterprises to be competitive in the global market without external facilitation and in the absence of substantial investments in quality and performance. In essence, upgrading is about acquiring capabilities and accessing new market segments through participation in particular chains (Ponte 2008).

Four types of upgrading strategies are applied in VCs (Ponte 2008):

- **Process upgrading** aims to effect a more efficient transformation of inputs into outputs through the reorganization of productive activities.
- **Product upgrading** aims to move into more sophisticated products with increased unit value.
- **Functional upgrading** aims to acquire new functions that increase the skill content of activities. Alternately, upgrading can involve abandoning old functions.
- **Interchain upgrading** aims to apply competences acquired in one function of a chain and use them in a different sector or chain.

Other forms of 'upgrading' also exist: delivering larger volumes; matching standards and certifications; delivering on logistics and lead times; and getting paid better for the same product by adopting, for example, fair trade practices (Ponte 2008). Similarly, VC coordination is also an upgrading strategy that takes the socioeconomic framework into account while reaching out to larger community groups, the government, and other stakeholders. Coordination upgrading can increase small farmers' access to markets, resources, services, and information by enabling policy readjustments and the coordination of activities among all stakeholders (Choudhary et al. 2012).

Riisgaard et al. (2010) adopted a broader definition of upgrading, which allows for the consideration of 'horizontal' as well as 'vertical' aspects of VCs. By their definition, upgrading is a desirable change in chain participation that increases rewards and/or reduces exposure to risk. Rewards and risks are understood both in financial terms and with regard to outcomes related to poverty, gender, labour, and the environment. This is a new dimension in the analysis and upgrading of VCs.

Forms of upgrading for small producers

Understanding the key issues faced by small producers in mountains is the first step to planning interventions. In general, most small farmers face the following problems:

- Lack of market information and infrastructure required to manage HVPS.
- Lack of capacity to produce value-added products in increasingly competitive and globalized markets.
- Lack of the capacity to organize, negotiate, and sustain comparative advantages in production and marketing.
- Lack of ability to produce large volumes.

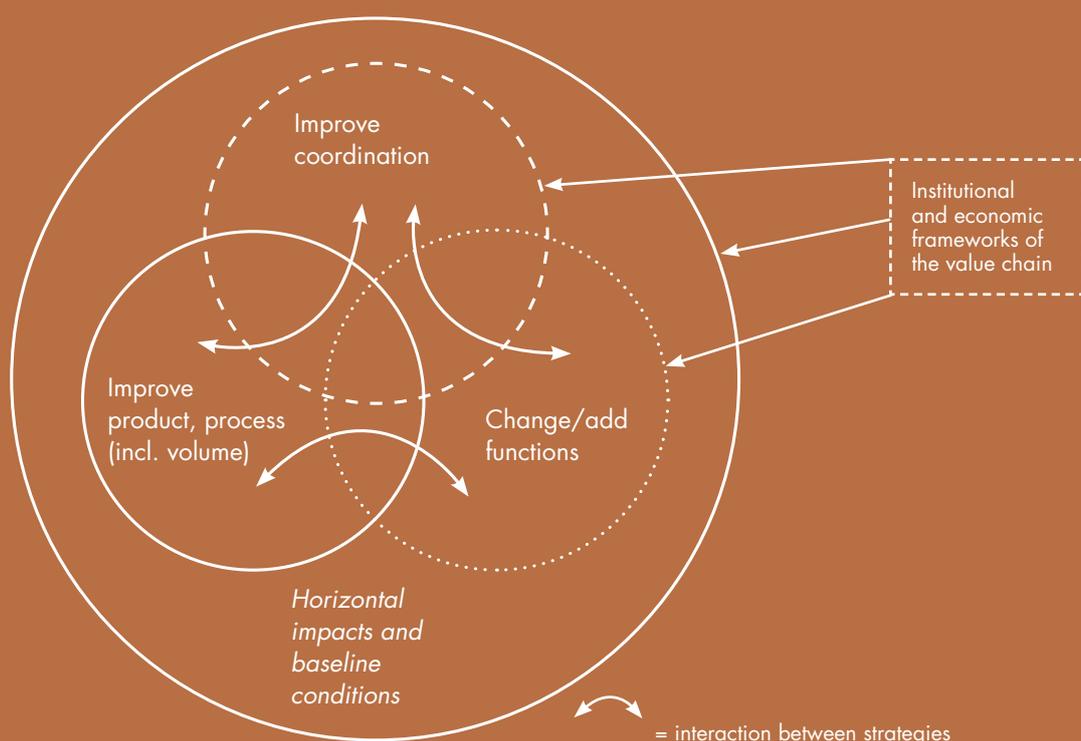
- Lack of supportive policies and institutional framework to promote HVPS.
- The lack of processing facilities results in meagre benefits.
- The increasing market demand for HVPS has resulted in the massive and unsustainable exploitation of natural resources.

Based on the above list, it is important that most upgrading activities should focus on improving farmers' performance or position in the VC. In other words, the intervention should seek to increase farmers' rewards or reduce their risks. For instance, upgrading interventions could be based on improving the process and the product. Product upgrading would address quality, volume, and marketing. Small farmers can also upgrade functionally by taking up more than one function in the VC. On the other hand, functional downgrading by giving up one or more functions to remain competitive can also be a risk reduction strategy (Riisgard et al. 2010).

Considering the circumstances, interventions related to horizontal (same actors and functions in the chain) and vertical (two actors in different functions) contractualization also become important (Riisgard et al. 2010). Horizontal contractualization leads to better coordination among producers in aggregating products, maintaining quality standards, accessing inputs, and improving bargaining powers. Vertical contractualization leads to better integration and relationships with buyers. As demonstrated in Figure 1 below, it is evident that each of these strategies interact. The types of upgrading strategies chosen depend on the baseline situation of the target groups. The baseline takes into account indicators such as income, social and gender relations, and ecological vulnerability, among other factors. It is similarly important to note that the larger institutional and economic frameworks influence the results gained from upgrading.

With the structural transformation within the agricultural sector towards more modern activities and products such as HVPS, there is a need to enhance the role of producer associations. It is necessary to link producers with buyers as well as ensure that producers are able to meet buyers' specifications. In contrast to the more traditional strategy of simply 'getting prices right' so as to induce supply-side responses, a more targeted approach to linking producers with demand (with state support) is increasingly being followed (Mitchell et al. 2011). As a result, strengthening rural entrepreneurship has become relevant. With enterprises very interdependent, it is crucial to focus on the interlinkages between different sectors as well as the forward and backward linkages.

Figure 1: Types of upgrading strategies for small producers



Source: Riisgaard et al. 2010.

A key issue that disadvantages mountain producers is the unequal terms of trade between rural (highland) and urban (lowland) areas. Improving the quality and productivity of highland products is crucial to addressing this inequality. In addition, interventions should emphasize innovative marketing strategies. This alone, however, is inadequate. Attention must also be given to the local and national economic context in which poor mountain farmers are strongly disadvantaged.

High Value Products and Services in Mountain Areas

It is an unfortunate reality that mountain economies are relatively disadvantaged when competing in regional, national, and global markets. This is, however, not an irreversible reality. The diversity of the mountains provides a comparative advantage in producing a variety of HVPS. Of particular interest are MAPs, fibres, ecotourism, and cash crops such as off-season fruits and vegetables. The cultivation of these HVPS has a strong potential to provide sustainable livelihood options for mountain people. However, the HVPS sector is constrained for a number of reasons as outlined below:

Documenting value chain experiences on high value products and services for livelihood development in Uttarakhand

The diversity of the mountains provides a comparative advantage in producing a variety of HVPS. The cultivation of these HVPS has a strong potential to provide sustainable livelihood options for mountain people. Since the state was formed in 2000, the mountains of Uttarakhand have been the site of several interventions aimed at developing the HVPS sector. Broadly speaking, these interventions have sought to encourage the efficient management of natural resources such as land, forests, and water, among others. A wide range of stakeholders, including the state government, donors, and local non-governmental organizations (NGOs), has been a part of these interventions. Indeed, several NGOs have successfully piloted activities that have contributed to capacity development, improved rural incomes, local employment generation, and the sustainable management of natural resources. The private sector is actively engaged in contractual arrangements with producers for organic products and tourism services.

The key challenge faced by the state government and the donors in Uttarakhand is leverage. How can interventions be used to foster systemic change, thereby benefitting a large population, rather than simply providing direct assistance to a few enterprises or farmers? The issue of leverage has been a serious consideration in the VC and enterprise development activities of ICIMOD and GIZ-RED programmes in Uttarakhand. The following sections provide case studies of these interventions as a means to understanding their implications in enhancing rural livelihoods, generating competitiveness, and providing inputs for policy and programme development. Following the case studies, a set of recommendations on pro-poor VC programme development and implementation is provided.

Cultivation of off-season cash crops provides mountain farmers with a competitive advantage



Methodology

This report is based on the experiences of GIZ-RED and ICIMOD in implementing VC action research and development projects in different parts of Uttarakhand. The information and data used has been generated from project reports, meetings with stakeholders, and experts on the subject. Additionally, secondary information and literature on HVPS and VCs was also reviewed. Field visits to the respective sites were also made to collect primary information on the VCs. Several meetings between the two teams – GIZ-RED and ICIMOD – were organized to map the VCs collectively as well as to provide a standardized approach for each of the cases.

In the course of the discussions, it became clear that the nature of the interventions had been diverse ranging from micro to meso to macro strategies. It was thus important to group the VC cases based on the type of intervention. For instance, direct interventions with mountain producers and stakeholders was adopted in the cases of the Malta oranges, Indian bay leaf, and kuth and kutki VCs. Indirect interventions at the sector level, and in leverage points to promote competitiveness, were adopted for tourism and Himalayan nettle VCs. Meanwhile, an intervention aimed at facilitating the use of information services by farmers was adopted for off-season vegetables (OSVs). Both qualitative and quantitative indicators were used to document the outputs produced at different levels against the type of intervention adopted. Personal observations and cross-verification of information were used to validate results. The VC cases are also documented in the form of a movie, a copy of which is attached to this publication.

Category I: Empowering Producers to Engage in Value Chains

The case of Malta oranges

Introduction

The Malta orange (*Citrus sinensis*) is cultivated at altitudes between 900 and 2200 m in Uttarakhand. Some three decades ago, Malta oranges were introduced and promoted by the state's horticulture and watershed departments under the mission for horticulture development in the hill districts. To facilitate its cultivation, these departments also provided subsidies for inputs and preparation of orchards. The government has also set a minimum support price to guarantee income to farmers. As a result of this institutional support, almost all the households comprising of small farmers in the Chamoli District of Uttarakhand have cultivated Malta oranges for the last 30 years.

As such, the Malta orange is well suited to the hilly Uttarakhand terrain as it provides cover to fragile mountain soils and much-needed cash income to farmers. The Malta orange also has a high comparative advantage because it can be processed into value-added products. With value addition, employment opportunities can be generated locally. In turn, this creates livelihood diversification and economic development opportunities. In 2009, ICIMOD partnered with the Himalayan Action Research Centre (HARC), an NGO based in Dehradun with a strong presence in Chamoli, to implement a VC pilot in the Ghat block of Chamoli. The project sought to improve the production, processing, and marketing of Malta oranges.

As stated above, the state government has been active in supporting farmers growing Malta oranges, including in providing market access. For instance, the Garhwal Mandal Vikas Nigam (GMVN), a state agency tasked with developing the Garhwal region of Uttarakhand, is responsible for marketing the Malta oranges. However, the oranges are mostly sold through local traders who procure produce directly from farmers, sometimes in exchange for other commodities. Although the state government established a minimum support price of INR 5.5 per kg, traders

and middlemen offered prices to farmers ranging between INR 1-2 per kg. Traders normally book the orchards in advance but pay farmers only after the fruits are sold in downstream markets. Malta oranges are also sold as a substitute for 'mousambi', a variety of citrus consumed as fresh juice and as a fruit in the plains, for INR 8-10 per kg. No value addition is reported by the farmers of Ghat. (See Figure 2 for the Malta oranges VC map).



Harvested Malta being packed by farmers

Key constraints

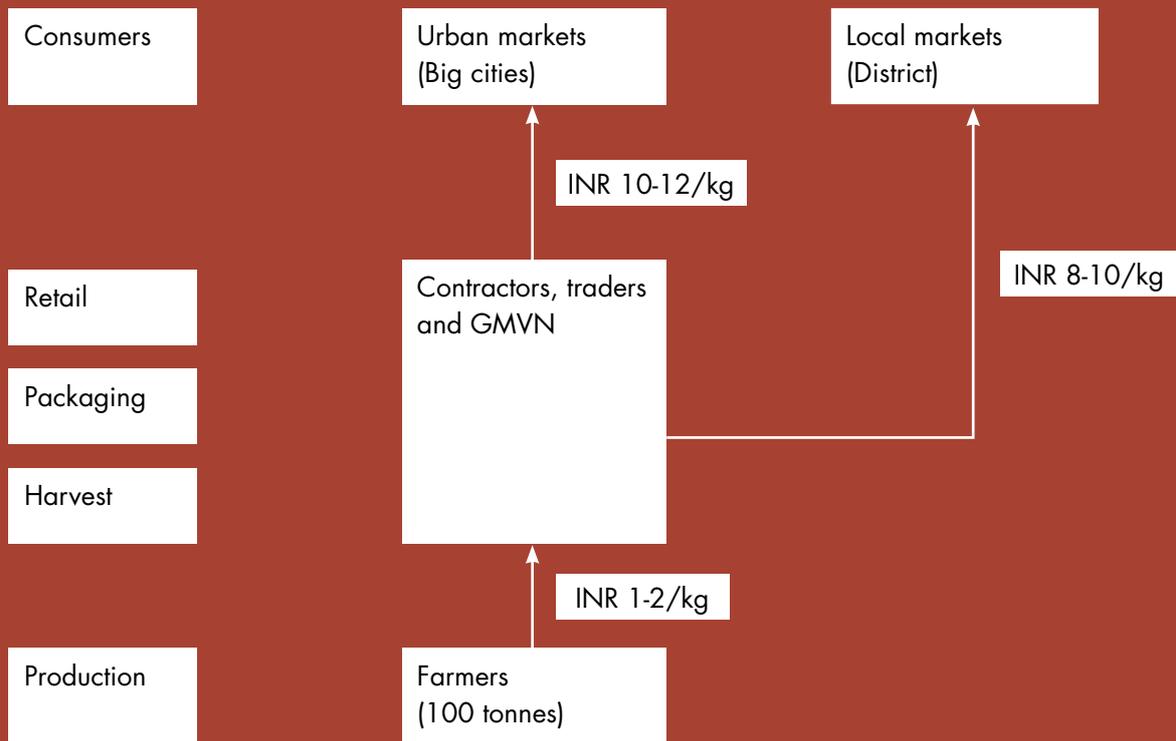
Overall, while Malta oranges have great potential for competitive advantage, small farmers face four significant constraints.

Farmers suffer due to inefficient marketing and low prices. The markets for Malta oranges are unorganized and are marketed by traders and their

agents from lowland markets. The marketing mechanism set up by the state government through the GMVN does not function as per the needs of the people. As a result, there are consistent delays in payments to producers. Farmers thus depend on traders to fulfil their need for cash during the lean season when they do not have any other sources of income. This system results in substantial price discrimination against farmers, who never receive the minimum support price.

Second, the potential for value addition is greatly underutilized. No local processing and value addition of Malta oranges was reported from the area. All products were sold in the raw form to traders. One factor contributing to this is the short shelf life of oranges, which cannot be stored for more than two months.

Figure 2: Malta value chain pre-intervention (2008)



Source: HARC, Field survey (2008)

The producers suffer from poor capacity and a lack of technical services. For instance, farmers were not aware of orchard and tree management practices to increase quality and yield. In addition, the lack of organization and coordination among the farmers reduced their bargaining powers and ability to leverage their strengths.

Upgrading strategies

The joint ICIMOD and HARC project adopted a multipronged strategy to promote the Malta VC. The specific strategies are listed below:

Horizontal coordination: A cooperative – the HARC Alaknanda Krishi Vyawasaya Swayatt Sahakarita (HAKVSS) – was established to facilitate linkages between producers, processors, and markets. Local women were facilitated to form self help groups (SHGs) to produce value-added products. Farmers were facilitated to form farmers’ interest groups (FIGs) for management of orchards. Alongside, farmer federations ensured upstream coordination of the production and marketing.

Functional upgrading: The women-led SHGs were provided technical and financial assistance in preparing value-added products from Malta oranges. Business plans were prepared for the women engaged in processing activities in the common facility centre (CFC) established by HARC. These plans included their monthly production planning, costing, market strategy, and monitoring.

Process upgrading: HAKVSS played a coordinating role to streamline production, processing, and marketing aspects. The upstream VC was organized to ensure coordinated harvesting, quality control, and the selling of Malta oranges by the federations of FIGs. Training programmes were organized on tree management, group management, organizational development and financial planning, post-harvest practices, and marketing. These trainings were aimed at achieving farmer driven harmonized upstream and downstream linkages.

Improved marketing: A marketing strategy was developed linking farmers and processors to markets. Different target market segments were identified for the raw and processed products.

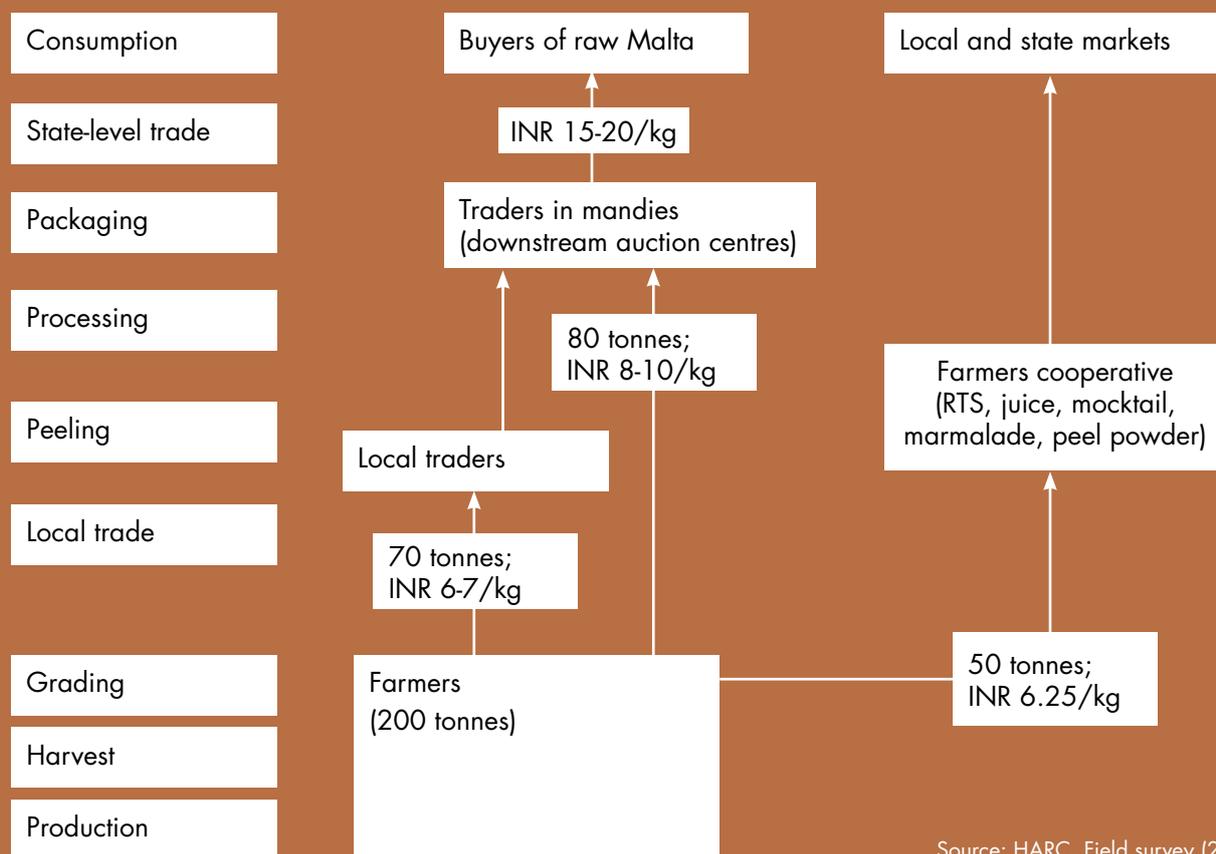
Intervention outputs

- Minimum support price of INR 5.25 per kg made available to collectors at the village level as opposed to INR 1-2 per kg paid by the traders.
- SHGs processed 50 tonnes of Malta oranges to produce five different product lines – juice, squash, face pack, marmalade, and mocktail – which were introduced for local and state markets under the brand ‘Switch On’. (Figure 3 shows the upgraded Malta VC map).
- The state government increased minimum support price of Malta oranges to INR 6 per kg starting from the 2009-2010 fiscal year.
- Grading of Malta oranges in various sizes was introduced and farmers were facilitated to sell the superior grades in downstream markets for INR 8-10 per kg.
- Overall, 200 tonnes of Malta oranges were traded and processed by the project areas in 2010. Income of small and medium farmers increased significantly due to the rise in prices.
- INR 0.3 million person days were generated by SHGs from grading, packing, and processing activities in 2010. SHG members earned INR 200-300 each per 100 kg of processed item due to their association with the cooperative.
- Qualitative improvements were noticed in the size, taste, and colour of the fruits. Yield increased by 10 per cent per tree.

Impacts

- Demonstrated a community-based enterprise model for promoting niche products in mountain regions.
- Demonstrated possibilities for local value addition of mountain products.
- Generated employment opportunities for local people in the context of male outmigration and the feminization of mountain agriculture.

Figure 3: Upgraded Malta value chain post-intervention (2010)



Source: HARC, Field survey (2008)

- Introduced innovative approaches for packaging and branding mountain products.
- Introduced ideas relevant to broader agribusiness development in Uttarakhand.

The case of kuth and kutki

Introduction

Uttarakhand is a major supplier of medicinal and aromatic plants (MAPs) in the Indian market with more than 40 species listed by the state forest department. Some examples of high-altitude medicinal plants with a high market demand include kuth (*Saussurea costus*), kutki (*Picrorhiza kurroa*), atis (*Aconitum heterophyllum*), jatamansi (*Nardostachys jatamansi*), buch (*Acorus calamus*), and chiraita (*Swertia chirayita*). Further, Uttarakhand is home to a number of ayurvedic and pharmaceutical industries, which consume a large amount of MAPs. Due to unsustainable extraction, many MAPs are endangered. One possible way to conserve valuable biodiversity is to bring species with high market demand under cultivation.

The cultivation of medicinal plants is promoted by a number of organizations in Uttarakhand including the Herbal Research and Development Institute (HRDI), High Altitude Plant Physiology Research Center (HAPPRC), and GB Pant Institute of Himalayan Environment and Development (GBPIHED) in Srinagar. In order to improve the existing system of MAP marketing, the state also designated three sites as *mandies*, or auction centres downstream, in 2004.

In this context, the GIZ-RED project analysed the priority species in the state and selected kuth and kutki for a pilot intervention. Kuth and kutki are cultivated at altitudes between 2000 m to 3000 m in Uttarakhand. Both species come under the regulatory status of the Convention on International Trade of Endangered Species of Fauna and Flora (CITES). These species have also been recommended for conservation by research institutes working on MAPs in the state. In terms of farming, these species are safe from wildlife depredation, have low volume, a long shelf life, and fetch higher market rates compared to cash crops such as potatoes. Further, there are standardized packages of practices (PoPs) available for their cultivation and post-harvest management. About 2,236 farmers were already cultivating these two species before the intervention, thus assuring a substantial marketable volume.

In 2009 before the intervention, traders made no distinction in price between cultivated and collected produce (Figure 4). Decisions on the price were made solely by the buyer and the product was often bartered for other essential goods. Certificates issued for the cultivated produce were used for transporting illegally collected produce from the forest area. In short, there were no incentives to encourage cultivation. During 2007-2008, the Ankur NGO and HAPPRC had done minimal work in aggregating and grading the harvested kuth and kutki roots and stolons. In this context, GIZ-RED collaborated with Ankur and the Uttarakhand Livelihood Improvement Programme for the Himalayas (ULIPH) to promote MAP cultivation in the Ghat and Deval blocks in Chamoli District. Similarly, GIZ-RED collaborated with HRDI, HAPPRC, the Forest Department, and the private sector to upgrade the VC for cultivated MAPs (Figure 5).

Key constraints

There were several key constraints to successfully developing the kuth and kutki VC:

Lack of market information: Kuth and kutki from the hills is mostly consumed by the ayurvedic, pharmaceutical, and related industries located in the plains of Uttarakhand – mainly Haridwar and Rishikesh. However, buyer-specific demands and information in terms of volume, quality standards, and seasonality were not available to farmers. Cultivators were dependent on middlemen and thus unable to benefit from the high value of their products.

Lack of appropriate incentive mechanisms to promote cultivation: Local traders always positioned the cultivated material at par with material collected from the wild. In the case of cultivated kutki, which takes three years to grow, the prices offered in the local market were the same as for collected produce. The cost of the gestation period required for cultivation was not factored into the price. In short, the economics of cultivation was not viable for farmers.

Figure 4: Cultivated kuth and kutki value chain pre-intervention (Ghat and Dewal Blocks, Chamoli District)

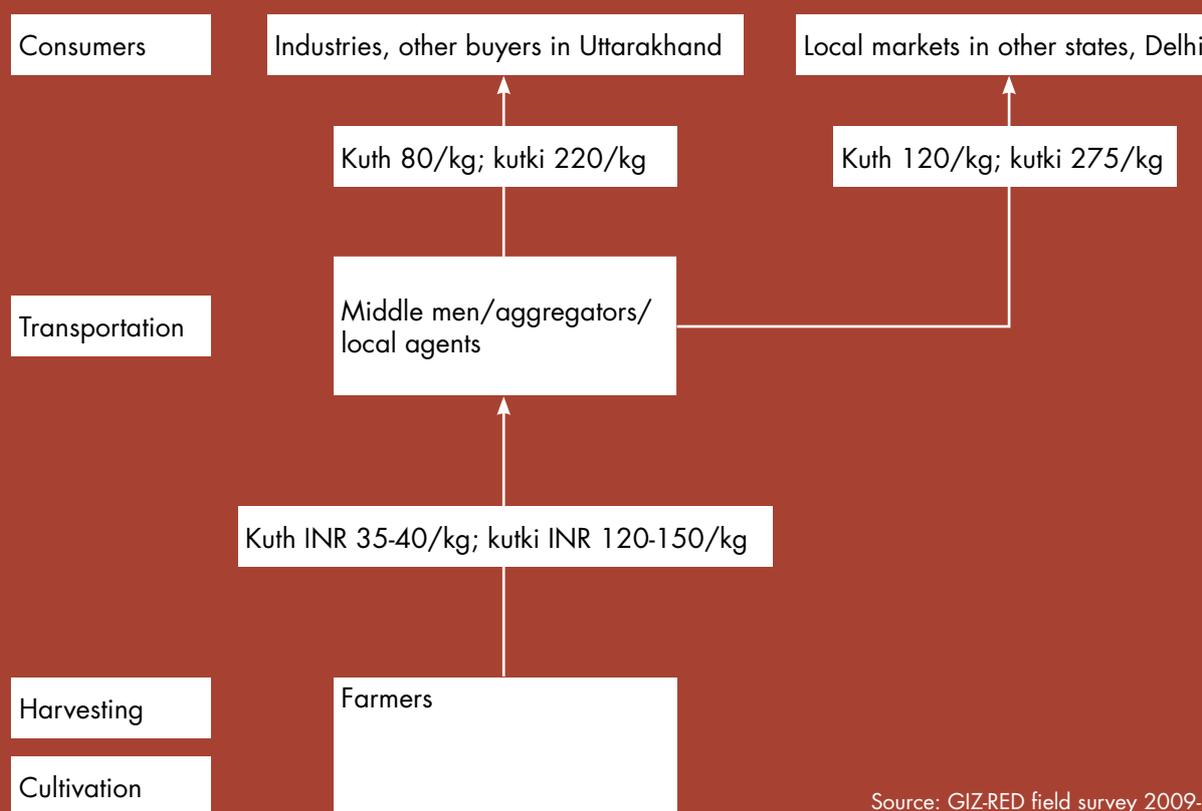
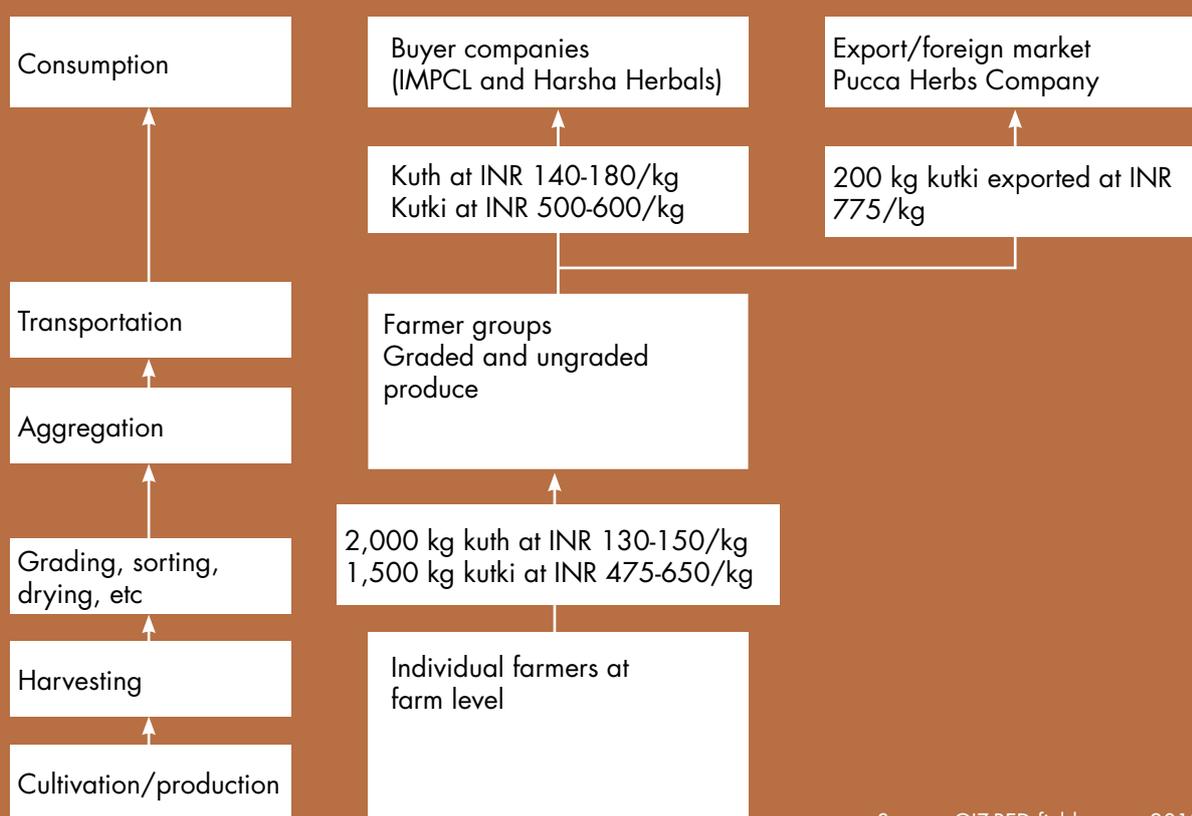


Figure 5: Upgraded cultivated kuth and kutki value chain post-intervention



Lack of aggregation of produce: Farmers in the MAPs sector, especially in high-altitude regions, were largely unorganized. No aggregation points were identified either by the government or by other developmental projects. Multiple factors hindered aggregation, including scattered cultivation plots, the small volume of produce, and the lack of infrastructure. These factors discouraged buyers from travelling uphill to buy produce from individual farmers. Consequently, farmers had little bargaining power and were paid low prices by local traders.

Upgrading strategies

The most crucial problem in the kuth and kutki VCs was the complete lack of differentiation between collected and cultivated produce. Meanwhile, institutional buyers interested in traceable products did not have access to individual cultivators. All the other constraints in this VC either result directly from this complication or are closely affected by this phenomenon. Three key questions were considered by the intervention:

- What could be done to form direct links between institutional buyers and kuth and kutki producers?
- What could be done to ensure logistically and economically viable volumes?
- What could be done to ensure quality?

The following strategies were implemented to address these key questions.

Vertical coordination with buyers: A buyer-seller meet was organized where farmer representatives and buyers interacted. Similarly, raw material procurement representatives from interested companies were invited to the event. Farmers were asked to bring samples of their produce along with an approximation of the quantity they could sell. The event was structured to allow for one-to-one interaction between buyers and sellers. These negotiations were, however, moderated by neutral and respected referees from HRDI and HAPPRC. Formal agreements for the supply of 2,000 kg and 1,500 kg of kuth and kutki respectively at INR 150 and INR 425 were agreed upon between the state-owned Indian Medicines Pharmaceutical Corporation Limited (IMPCL) and farmers. The buyers agreed to also pay for the transportation charges from the farmers' aggregation points.

Process upgrading: The key constraint to facilitating a single point of transaction between buyers and the farmers was addressed in two phases. First, MAPs farmers' federations at the village level were promoted by ULIPH in kuth and kutki cultivation areas. Second, an aggregation point for logistical facilitation was established at Karanprayag by Ankur and ULIPH. At the village level, the produce was collected from growers at the price negotiated during the buyer-seller meet. The produce was then aggregated at Karanprayag for transport in a single vehicle.

Functional upgrading: Farmers were provided support to sort and grade produce at the village level after the contracts were signed. Apart from physical quality parameters, HAPPRC was involved in certifying the chemical quality of the produce, which was also a requirement of the buyers. Samples were tested from each lot at the HAPPRC laboratory prior to transportation to the buyer. Each lot transported had the test report enclosed.

Intervention outputs

- In the pilot intervention, about 35 quintals of kuth and kutki were sold.
- Prices for both products more than doubled. Kuth, previously INR 35-40 per kg were sold at INR 130-150 per kg post intervention. Kutki previously INR 120-150 per kg now sold at INR 475-650 per kg at the farm itself.
- Risks were reduced due to aggregation of the produce by farmers' groups.
- Farmers' knowledge about the products' market increased due to their interactions with the end markets.
- Farmers not cultivating at the project site also discovered the market options and started selling directly to the companies instead of to traders.
- The offered prices became the minimum farmers expected to receive.

Impacts

- Empowerment of farmers due to improvement in negotiation skills and bargaining power.
- Farmers began to aggregate products at the local level.

- Grading of the produce as per market standards was done at some locations.
- Increase in the cultivation area.
- Establishment of an informal minimum price point at the village level.
- Farmers established contacts with new buyers in subsequent years and started formalized dealings (Harsha Herbals, a domestic private limited company and Pucca Herbs for export).

The case of Indian bay leaf

Introduction

Indian bay leaf (*Cinnamomum tamala*), a tree belonging to the *Lauraceae* family, is found in the forests and farmlands of Uttarakhand's mountains. The leaf of this species, called 'tejpatta' in India, features among the 178 species that have demand exceeding 100 tonnes in India. The total size of the bay leaf market in Uttarakhand alone is 1,470 tonnes. The dried leaves are used as an ingredient in cooking and in the manufacture of spices. The leaves also have medicinal properties and are used in the flavour and fragrance industry. In Uttarakhand, local communities are not permitted to collect bay leaves from government forests. Meanwhile, large-scale cultivation is practiced in the state's Kumaon region.

Bay leaf was selected for VC intervention due to its wide availability, potential for pro-poor development favouring the landless and lower income households, and its potential for value addition in mountain regions. A VC action research initiative was implemented by the Uttarakhand State Forest Department, ICIMOD, and HARC in the Najmola Valley in Chamoli District. Local farmers there had previously harvested bay leaves in 2003 from government forests in the Najmola Valley. It was evident from the research that the VC was inefficient and had inadequate engagement of the poor. The objective of ICIMOD action research was to enable the local people to participate equitably in the bay leaf VC sourced from state forests in collaboration with the Forest Department, the people's forest council (Van Panchayat), and HARC.

An initial assessment in 2008 revealed that the bay leaf VC is operational when the forest ranges are opened up for harvesting by the Forest Department. According to local communities, bay leaf is collected every five years from government-managed reserve forests, which are governed by a specific working plan of the Forest Department. Discussion with stakeholders revealed that there were five major levels of functions in the bay leaf VC. (Figure 6 shows the bay leaf VC map of 2003, when the leaves were last harvested.)

Key constraints

There were four key constraints to successfully developing the Indian bay leaf VC as explained below:

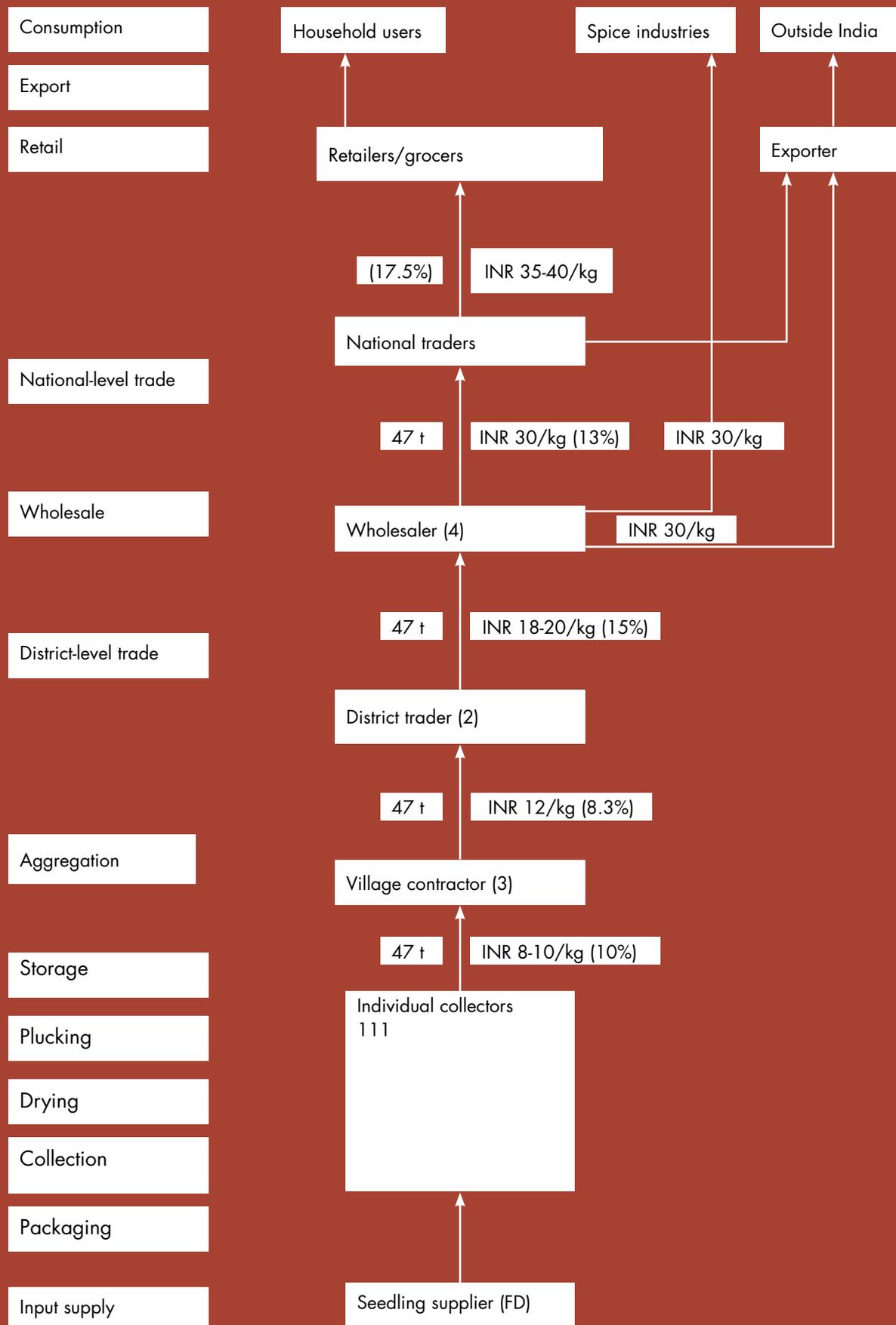
Lack of access to bay leaves: The forest policy in Uttarakhand constrained the local people's access to the bay leaf. At the project site, bay leaf could only be collected once every five years. Further, it was the traders, rather than local populations, who were normally able to get collection permits from the Forest Department. Local people's participation in the management of the resource and the benefits from the harvest was negligible.

Lack of markets: The state government had initiated an innovative system of streamlining the trade of MAPs by establishing auction centres. All MAPs produced in government forests must be auctioned at these centres managed by the Uttarakhand Forest Development Corporation (UAFDC). These centres were, however, located in the plains, far away from the production areas. As a result, local collectors remained excluded and dependent on traders for market access.

Lack of information and skills: Collectors had poor access to information on markets, prices, quality grades, and primary processing. The unorganized nature of operations and the lack of external support also led to poor management.

Unsustainable collection: Collectors were mainly unorganized individuals who often harvested leaves by felling trees and removing bark, thus causing tree mortality. As the prices paid were low, collectors harvested as much as possible to maximize their incomes.

Figure 6: Bay leaf value chain pre-intervention (2003; Chamoli, Uttarakhand, India)



Source: adopted from Choudhary et al. (2011)

Upgrading strategies

Fostering coordination among the stakeholders to facilitate the upgrading process was the most important strategy. The other strategies, as detailed below, revolved around this main overarching strategy.

VC coordination upgrading: The Forest Department facilitated access by providing collection permits to the people's forest council, the local institution at the village level. The Forest Department also readjusted policy by organizing auctions closer to the Najmola Valley.

Horizontal contractualization: Collectors were mobilized through the forest councils with the support of the HARC.

Process upgrading: Common codes for environmentally friendly harvesting were developed. The total harvestable yield was calculated by the people's forest council and the UFDC. The implementation of these codes was monitored by forest council representatives, the Forest Department, and HARC. Further, a system was developed to transfer the collected bay leaves to storage centres for auction. This led to improved coordination of collection, storage, and trading at the upstream level.

Product upgrading: A series of trainings on collection, drying, grading, packaging, and storing were provided to the target groups. Specialized government and private sector agencies were engaged by HARC to impart training and match the quality requirements required by buyers.

Intervention outputs

- Adapting sustainable methods, only 50 per cent of the lower two-thirds of leaves from each tree were harvested as per the Forest Department rules. Of the total permits issued, allowing for the harvesting of 30 tonnes, only 19.6 tonnes were harvested in two seasons.
- Local auctions significantly improved the prices offered to collectors. Prices reached INR 21 per kg during the first auction and INR 39 per kg during the second auction. Figure 7 shows the upgraded VC map.
- The local auction was able to attract buyers from beyond the district and state thus reducing the chances of cartel formation by local traders.
- Farmers received the prices offered at wholesale markets at the production sites due to increased competition.
- The people's forest council members' capacities to harvest and trade in collaboration with the Forest Department improved.
- Horizontal coordination led to improved harvesting, minimal harvest and post-harvest losses, and better quality bay leaves.

Impacts

- Collaboration between stakeholders resulted in better coordination of the bay leaf VC at different levels. As a result, the VC became more equitable and environmentally sustainable.
- The pilot demonstrated a model for community-public-private partnership. The state government has proposed the upscaling of this model to different forest divisions in the state.
- Policy readjustments in the bay leaf VC have opened up options for engaging local communities through institutions such as the people's forest council for management of NTFPs.
- Similar local auctions can be applied to a range of HVPS in mountain regions.
- The experience with bay leaf highlights the need to reduce the total harvest areas in mountain regions and to follow a rotational harvest system. This will enable income generation at shorter intervals while following a more equitable and inclusive approach.

Figure 7: Upgraded bay leaf value chain post-intervention (2010)



Source: adopted from Choudhary et al. (2011)

Category II: Generating Competitiveness in Mountain Value Chains

The case of Chakrata, an off-beat tourism destination

Introduction

Tourism, the largest and fastest growing industry in the world, has had a notable impact on economic growth in Uttarakhand. Tourism in the state has, however, been concentrated in a few locations. Popular sites are either pilgrimage destinations or one of a few much-visited hill stations. For instance, the hill station town of Nainital receive 65 per cent of the state's total tourists. Almora, meanwhile, receives a mere nine per cent. This results in the overexploitation of resources in more popular destinations.



Tented tourist accommodation in Chakrata

Ninety-five percent of the tourism industry worldwide is constituted of small and medium enterprises (SMEs). Today, affordable and easily accessible ICT tools are used by SMEs for various business functions including marketing of products and services. Tourism stakeholders in Uttarakhand, especially those in off-beat locations have not been able to optimally utilize these internet-based options. To promote local off-beat destinations and develop local SMEs, GIZ has developed management interventions in partnership with the Uttarakhand Tourism Development Board (UTDB), the private sector, NGOs, and research institutions. Research has shown that tourists are very interested in such destinations.

One of the interventions focused on easing pressure on heavy tourist destinations by promoting Chakrata, an off-beat location, within the popular Garhwal circuit. The Garhwal circuit already has popular

locations, including Dehradun, Mussoorie, Rishikesh, and Haridwar, which receive high tourist inflows annually. Promoting a location already in this circuit reduces the required level of investment. The plan also has a higher chance of success, as tourists are more likely to make a small detour within an existing circuit.

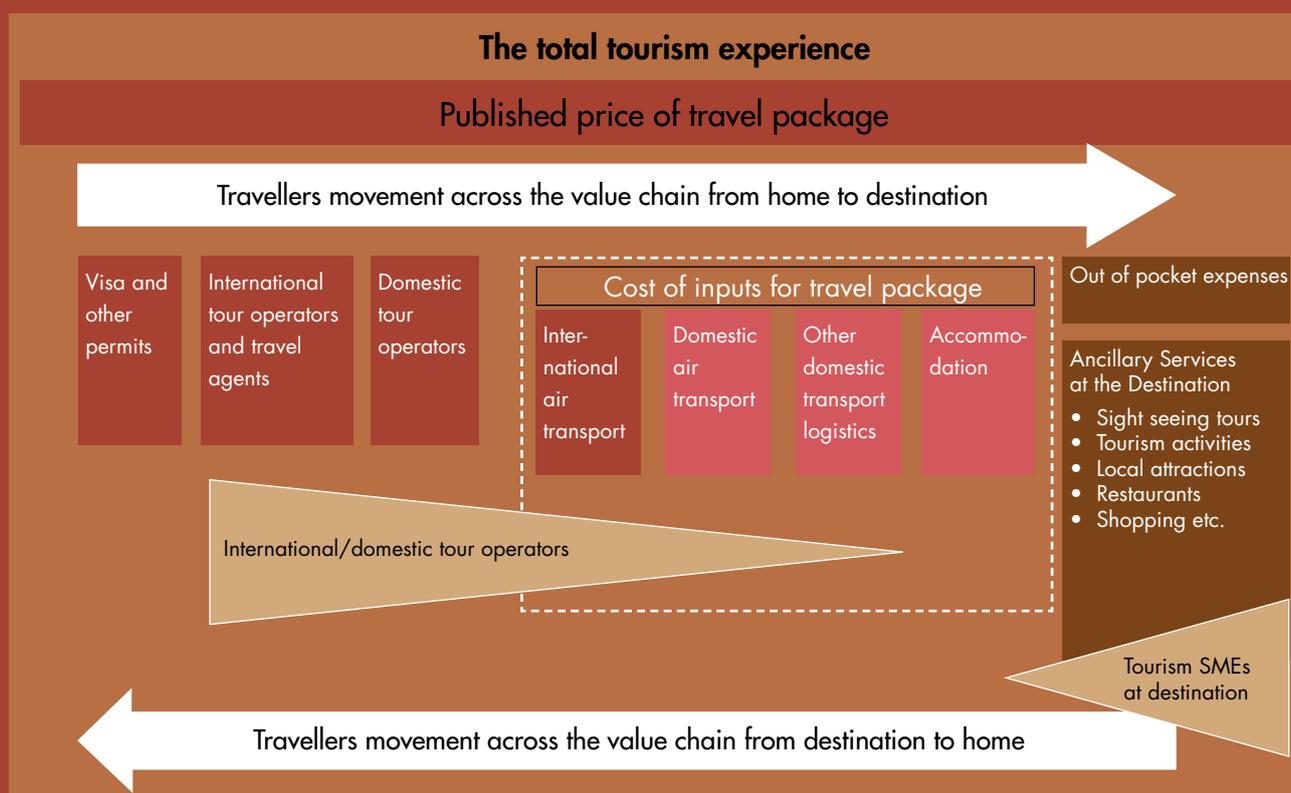
Key constraints

Constraints exist at almost all levels in off-beat tourist destinations, as there is little information about the location and limited infrastructure on arrival (Figure 8). Keeping in mind the mandate to promote pro-poor regional economic growth, the following two issues were identified as the most important bottlenecks.

Negligible marketing and promotion of off-beat destinations: The lack of information on off-beat destinations was a serious constraint. This was compounded by the limited capability of local operators to provide quality services in these areas. The lack of an institution promoting products in the relevant markets and contributing know-how for visitor management was a key deficiency in promoting off-beat locations in the Garhwal circuit.

Inadequate infrastructure and investment in off-beat destinations: Accommodation, restaurants, and connectivity are often limited. The main reason for limited investments is uncertainty over profits in investing in such destinations. In a place like Chakrata, no tourism association takes responsibility for improving visitor services. In the absence of marketing, the prospective tourist fails to know about the destination. Meanwhile, the absence of infrastructure in the destination fails to motivate tour operators to promote it. As both factors impact each other, it is important to plan interventions to address these bottlenecks together.

Figure 8: Tourism value chain in Uttarakhand pre-intervention



Source: GIZ – RED tourism sector analysis 2009-10

Upgrading strategies

The strategy to address these bottlenecks was to focus on investments in and promotion of demand-driven ecotourism in Chakrata. The involvement of the public and private sectors, including significant engagement of the local communities as stakeholders, was ensured. Key interventions came under two headings – marketing and promotion, and investments in infrastructure.

The following activities were undertaken to market and promote off-beat destinations through a public-private partnership:

- A strategy development document was produced through stakeholders' workshops with operators in the circuit to address the bottlenecks identified.
- A branding strategy for off-beat destinations was developed through a regional branding workshop. Promotional materials including a website, web-based interactive platform, and brochures for domestic and international markets were developed.
- Promotion materials on Chakrata, in particular, and Uttarakhand, in general, were taken to domestic and international travel trade events. A travelogue about Uttarakhand, including Chakrata, was promoted through international travel journals.
- Capacities of both travel operators and the UTDB, among other state-level facilitators, were strengthened.

The following activities were undertaken to encourage investments in the tourism infrastructure of Chakrata:

- With a view to promote entrepreneurship, GIZ encouraged investments by local stakeholders in building accommodations, running restaurants, and activities development.
- Venture capitalists desirous of venturing in the field of tourism in Uttarakhand were updated about the strengths and weakness of the destination, helping them to judiciously venture into off-beat destinations such as Chakrata.

Box 1: The case of RLTV

The Road Less Travelled Venture (RLTV) in Chakrata was established as a social enterprise by Vikram Singh Panwar, an alumnus of the Indian Institute of Management-Ahmedabad and a native of Uttarakhand. Beginning with seed capital totalling INR 1,200,000, RLTV was designed to promote alternate tourist destinations in partnership with the local community by sharing local resources. The Blue Canvas Resort, which serves as a base camp for the enterprise, is located on land leased from the local community. The food served in the resort uses locally grown products, and the resort employs local community members.

Offering a mix of cultural activities and adventure tourism in and around Chakrata, the venture also engages local artists. Similarly, it offers livelihood options to local communities through home stays, among other services. RLTV offers a model in ecological and economic sustainability with no permanent construction and minimum disturbance to the local character, culture, and natural resources. The venture has also successfully utilized ICT, allowing potential travellers direct access to the experiences available in the location. Social media mediums like Facebook have helped RLTV reach out to the target audience, who in turn help to popularize the destination online. Unsurprising then that the venture has seen a 50-60 per cent jump in occupancy since it was established in late 2011.

A subsidiary venture in the form of a budget shooting range has opened near the resort. Also started by a local entrepreneur, the range has been a success. Apart from attracting paying tourists as clients, the range also offers free shooting training to locals in the 12-20 age group. In the first year itself, three local youth trained at the range went on to win state-level shooting competitions.

- Due to better information, training programmes and experiences through trade fair participations, travel operators better understand the needs of the domestic and international markets. Operators can now develop better promotional material for travel trade fairs.

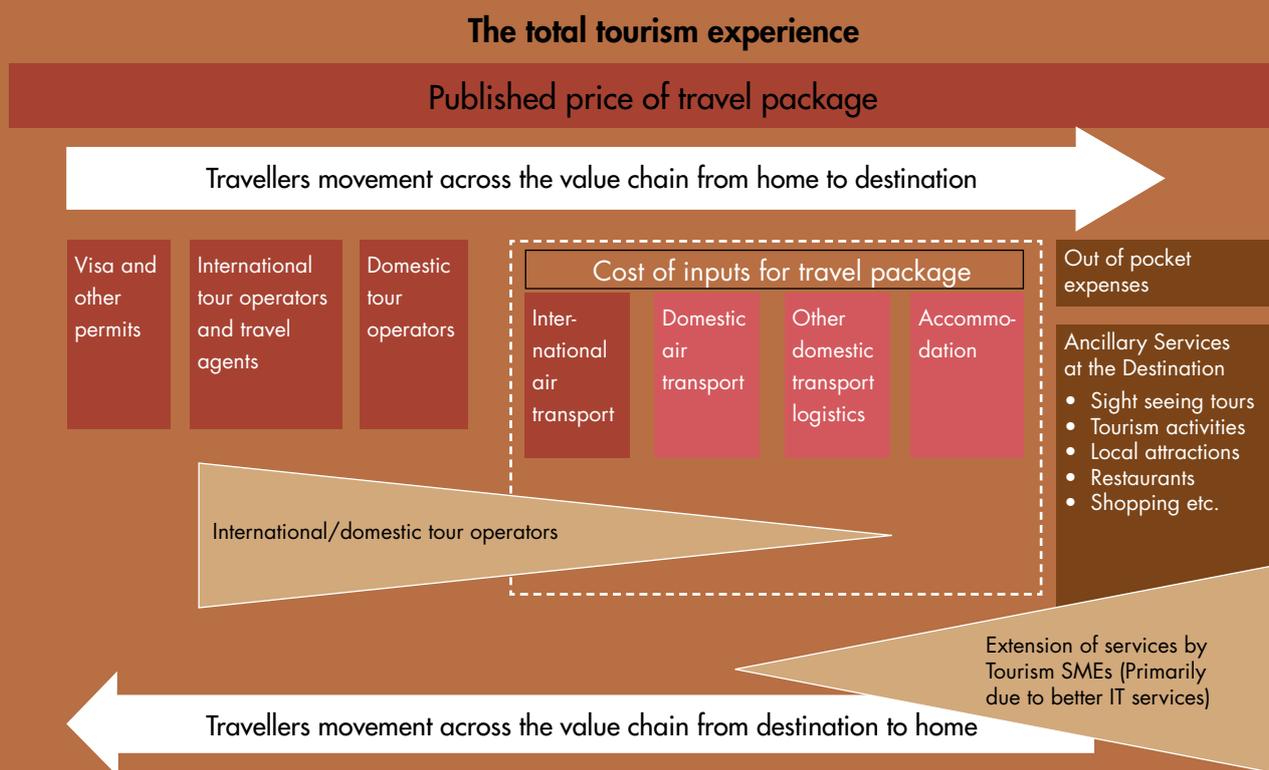
Impacts

- Interventions in the tourism VC have begun to make an impact on the tourism economy in Uttarakhand as a whole (Figure 9). Beyond the Garhwal circuit, tour operators have started incorporating thematic products, such as birding and angling, in other destinations in the state.
- GIZ's vision document for tourism has been deliberated and agreed upon at the tourism platforms and is being submitted as a strategy paper to the government.
- The RLTV model has attracted the attention of financial institutions interested in the off-beat destinations sector. The state government is keen to support investors.

Intervention outputs

- Local stakeholders have partnered with venture capitalists to improve infrastructure in off-beat circuits. Soon after the project started, there was noticeable growth in Chakrata through the work of two local enterprises – Road Less Travelled Venture (RLTV) and a project to build high-end accommodation.
 - RLTV, an initiative of local entrepreneur Vikram Singh Panwar, has invested INR 1,200,000 in Chakrata. RLTV engages local communities in providing allied services such as cultural shows and adventure activities. Moreover, local farmers have also benefitted from the sale of fresh farm products. The venture has seen 50-60 per cent growth since its inception in 2011 (see Box 1).
- Another local resident, Inder Singh Rana, has been making similar investments to build high-end accommodation for tourists in the Kansar area of Chakrata. The project is funded through a 50-50 partnership between the entrepreneur and a venture capitalist firm. The project, which is likely to be completed by the end of 2013, is the result of interactions between the entrepreneur and the venture capitalist, facilitated by GIZ.
- A 65 per cent increase in tourist inflow was observed in 2011 alone.
- RLTV provides direct and indirect income sources to more than 50 people, which include local transports, guides, procurement, and value addition of local food products, etc.
- With the formation of the Uttarakhand Tourism Promotion Forum in July 2010, the private sector is now active in Uttarakhand tourism.
- GIZ and its partners have prepared a vision document for better promotion and marketing of off beat tourism destinations in Uttarakhand.

Figure 9: Upgraded tourism value chain post-intervention



Source: GIZ – RED Tourism Sector Impact study 2011-12

The case of nettle plant fibres

Introduction

Uttarakhand is endowed with several plant species with the potential to produce natural fibres. Natural fibre products are in high demand today in the face of growing concerns about the sustainability of modern techniques used in producing synthetic fibres. The easy availability of such fibres, the low-input costs involved, and the possibility of acquiring carbon credit make cultivating natural fibres a viable green industry.

Himalayan nettle, widely available in the wild, is an underutilized biomass product available in Uttarakhand. The durability and eco-friendly nature of fibres extracted from these plants are an added advantage to their versatility for use across seasons.

As a natural fibre suitable for both winter and summer garments, Himalayan nettle has been of interest among both lifestyle and sportswear garment manufacturers in the textile industry. Indeed, there is a high export potential for nettle fibres. In the domestic market, the multiple uses of nettle make it ideal for the handicrafts sector, which also provides value to the tourism industry. According to the Uttarakhand Bamboo and Fibre Development Board (UBFDB), more than 15,000 tonnes of raw nettle is available in the state. Yet, till recently, the harvesting of nettle from the forest range was not allowed, forcing local communities to extract it illegally.



Carding of nettle fibre an improved machine

At the primary level, the sector has a high involvement of women, who harvest the plant from the forest, extract the bast fibre, and spin the thread. Traditional technology for extracting bast and spinning thread has been small-scale with high inefficiencies both in terms of labour and energy. Weavers use the thread to produce different fabrics, including scarfs, shawls, and cloth material. Market acceptance of the end product has been low to date due to roughness of the fabrics and the limited colour choices. For the same reasons, the textile industry did not use the thread for blending with other fibres. The low volume of production was also a key factor for the textile industry.

Nettle has the potential to generate employment, especially for women, and economic growth if the sector is adequately promoted and linked to growing markets. Promoting the nettle VC provides an ideal opportunity for interventions generating pro-poor growth. The entire VC – from raw material collection to primary processing to weaving and spinning – is highly labour intensive. Relevant interventions will ensure an equitable distribution of income throughout this chain.

The GIZ-RED project in partnership with UBFDB has addressed certain key issues in the nettle VC. One aspect of the intervention has focused on developing technology that is both suitable to the mountain conditions and produces quality threads accepted in secondary markets. Providing research and development and technological intervention to address bottlenecks in collecting, processing and spinning the fibre – the most labour-intensive activities – has been the focus. Another significant aspect of the intervention has been to address issues of access and support through policy advocacy in partnership with UBFDB, the Sir Ratan Tata Trust (SRTT), and various NGOs.

Key constraints

The following three issues have been identified as key constraints in the nettle VC (Figure 10):

Lack of appropriate technology suitable for hill conditions: Technological innovations should focus on two aspects: technology allowing for faster and more environmentally sustainable extraction of the fibre; and technology promoting greater efficiency in the basting process, which currently requires the burning of large amounts of wood. The UBFDB estimates that boiling 1 kg of bast fibre requires 4 kg of wood. In addition, retting, degumming, and beating processes are carried out in open spaces or near the river. In addition to consuming large amounts of water, these processes also pollute the water sources with chemicals used in degumming and softening. However, machines designed to handle coarse material like nettle fibre that are also suitable to the mountain terrain in terms of size were not available.

Lack of adequate policies to promote nettle as a livelihood option: Though large quantities of nettle – which is not an endangered plant – grow in the forests of Uttarakhand, collecting it was an illegal and punishable offence. This was a key problem in developing the VC.

Lack of adequate policy to promote niche products like nettle fibre: As a result of inadequate policy, products from Uttarakhand have had limited visibility among buyers and investors. The natural result of this was limited investment and growth in the industry.

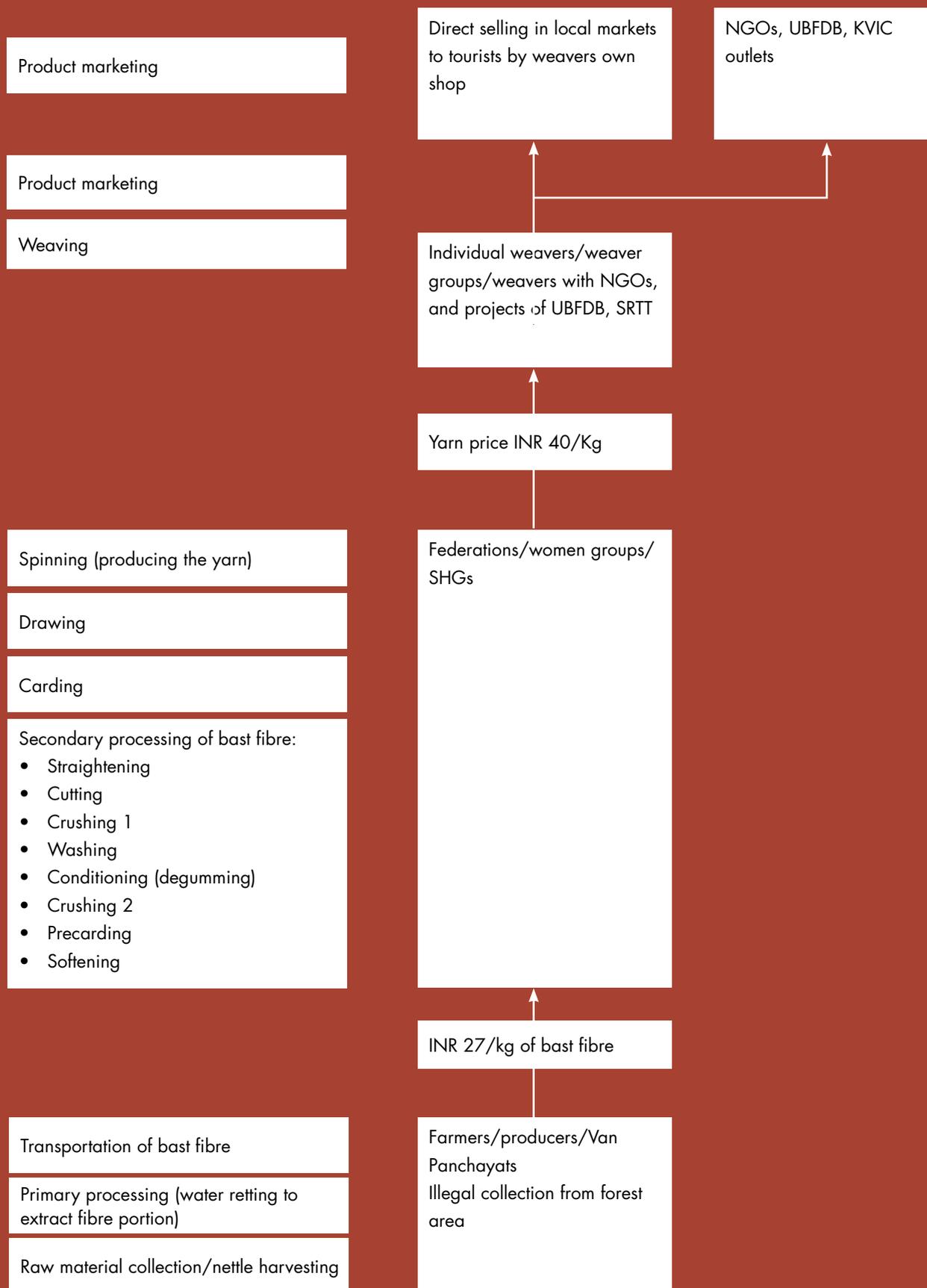
Upgrading strategies

Process upgrading: Research and development to develop technology able to improve economic and environmental efficiency in bast processing was a key focus of the project. To this end, GIZ provided technical and financial support to UBFDB to conduct research and development in nettle fibre processing and standardization. As the majority of technological innovations in the textile sector have focused on cotton, UBFDB has focused on making cotton-based machines more suitable to deal with the coarser nettle. Alongside, the UBFDB has also focused on adaptations to make the machine more suitable to mountain conditions.

Policy advocacy: A series of activities, as outlined below, were initiated to improve the policy framework for the nettle VC (Figure 11).

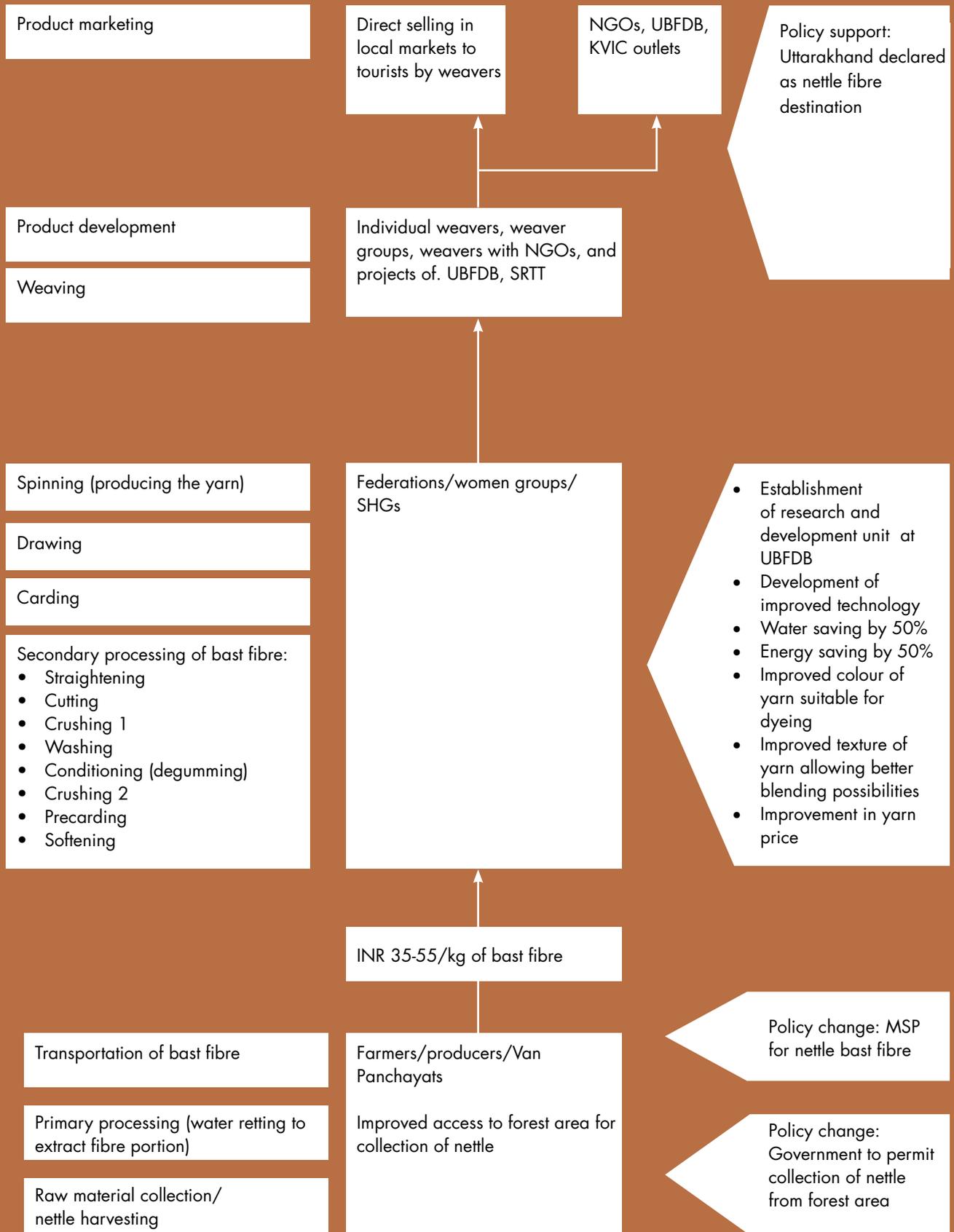
- Discussions were held with the Forest Department and UBFDB on allowing local communities to collect nettle.
- The SRTT and the International Fund for Agriculture Development (IFAD), prominent donor driven programmes with a mandate for fostering livelihood improvement, were approached to support the promotion of nettle fibre as an industry. Other NGOs were also mobilized to plan extension services.

Figure 10: Nettle value chain pre-intervention



Source: GIZ-RED field survey 2009-10

Figure 11: Upgraded nettle value chain post-intervention



Source: GIZ – RED field survey 2011-12

- The project engaged in multi-stakeholder collaboration aimed at conducting policy advocacy for the nettle sector. In just one example, discussions were held with the Uttarakhand Khadi and Village Industries Board, a government-supported body with a mandate to promote cottage industries in Uttarakhand.

Intervention outputs

While the research and development process is ongoing, outputs to date have been notable. Key improvements are listed below.

- The traditional degumming method involving the heavy use of wood as fuel has been eliminated and mechanized processing has been introduced.
- A chemical-free process for softening the fibre has been established.
- A reduction in water usage and manual labour requirements (reducing physical drudgery) has been achieved at different levels of the process.
- Suitable machines were developed for carding and spinning (the processes which converts fibre into yarn/thread), the coarse material from nettle
- Thus processing of a higher volume of nettle bast fibre using less water, fuel, and manual labour was consequently possible.

The following outputs have resulted from the project's policy advocacy work:

- The government instituted a minimum support price of INR 35 per kg for nettle bast fibre in 2010. This was a direct result of project advocacy. The minimum support price has been increased consistently, reaching INR 55 per kg in 2012.
- After extensive discussions, the Forest Department and UBFDB now allow local communities to harvest nettle from the forests for livelihood purposes.
- As a result of interventions at the policy level, the central government has identified Uttarakhand as the nodal state for developmental activities related to Himalayan nettle.

Impacts

- Project interventions in the entire VC process combined with policy advocacy has resulted in the recognition of nettle and related industries as sustainable and productive livelihood options for the poor.
- The promotion of nettle as a niche product of the state will provide a regional identity as well as foster economic growth. Already, the Indian government has recognized Uttarakhand as a nettle fibre destination, a branding initiative useful in attracting investors.
- Due to the success of the Uttarakhand project, neighbouring states such as Sikkim, as well as neighbouring countries such as Nepal and Bhutan, have expressed interest in the new machines developed for processing bast fibre.
- Following the completion of the research and development pilot, UBFDB is working to introduce the technology in other mountain areas across their existing federations.

Category III: Access to Information for Enhancing Productivity and Improving Marketing

The case of off-season vegetables

Introduction

Climatic conditions in Uttarakhand are ideal for producing off-season vegetables (OSV) with at least two cropping cycles of 90-120 days each. With 75 per cent of the state's population engaged in agriculture, more than 50 per

cent of crop growers in Uttarakhand are vegetable farmers (GIZ-Red Study on Selection of VC, 2009). A significant area, about 56,854 ha, is under vegetable cultivation. About 552,625 tonnes of vegetables were produced in this area during 2008-2009 according to Department of Horticulture and Food Processing.

OSV cultivation is a top priority for the state government, which is interested in promoting the agribusiness sector as a whole. The market value for such commodities is further increased as Uttarakhand is close to consumption centres like Delhi, Lucknow, Moradabad, and Haldwani. However, most farmers engaged in OSV are poor, with average landholdings of about 0.98 ha (Department of Agricultural Economics 2011). Given the favourable market



Mobile-based market information

demand for OSV, there is wide scope for poverty alleviation and livelihood generation for a large section of the hill population through value addition activities in the OSV sector. The full potential of OSV VCs have, however, not been realized due to several constraints, of which a lack of information is among the major bottlenecks.

With an overall aim of addressing the market information gaps faced by small farmers, GIZ facilitated agriculture information dissemination through mobile SMS in Uttarakhand. The goal was to leverage the high penetration rate of mobile phones among farmers in the hills. The programme was implemented in partnership with agencies such as the

World Bank-supported Integrated Watershed Management Programme (IWMP) known as GRAMYA, IFAD-supported Uttarakhand Livelihood Improvement Project (ULIPH), the National Bank for Agriculture and Rural Development (NABARD), the NGOs Himalayan Action Research Centre (HARC) and Central Himalayan Environment Association (CHEA), and with technical service from the Reuters Market Light (RML), which started as a subsidiary of Thompson-Reuters and is now an independent company registered in India.

Key constraints

As mentioned above, lack of access to information was the most central challenge faced by small farmers in the OSV sector VC. Two key issues in this regard are detailed below.



Vegetable auction

Existing sources of information have not been efficient in reaching farmers: Television, radio, and newspapers have been popular mediums for gathering agriculture-related information in the past few decades. With the growth in information technology, over 200 ICT-enabled interventions exist at various stages of implementation in India. In Uttarakhand, ICT-enabled services like web-based tools, farmer help lines, local crop advisory services, and public extension services offer market information for OSV providers. The web-based services are, however, generally not easily accessible to farmers. Help lines such as Kissan Call Centres have registered less than optimal usage of services. Time lag, high cost, and low technological literacy were major impediments to the use of such centres by farmers.

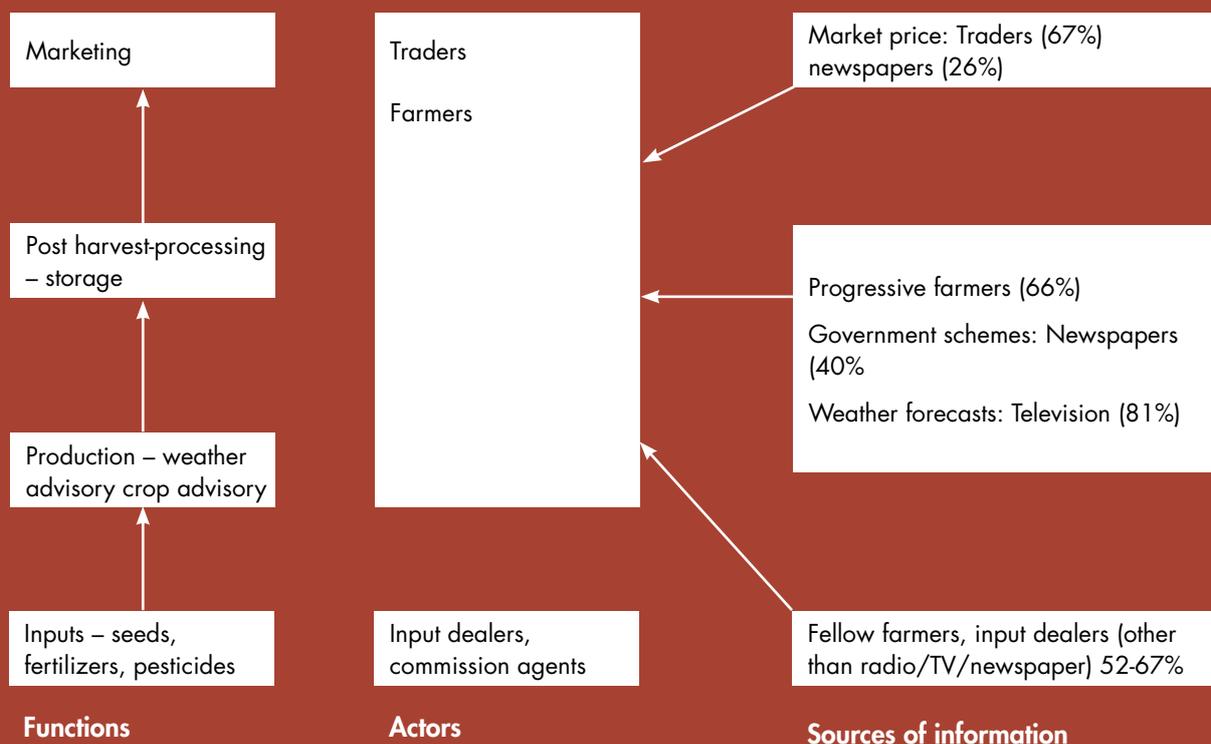
In addition to logistical barriers, the absence of linkages with other input agencies (seeds, fertilizers, and pesticides, among others) resulted in low applicability of the suggestions given by subject matter specialists. Other barriers to access were language of communication by telecentres and sociocultural norms governing the use of technology and public space. A study conducted on the usefulness of the rural knowledge centres in Nainital found that only three per cent of farmers in the area had visited these centres (Barala 2006). In general, static and one-way forms of communication are not suitable to the needs of OSV farmers (Figure 12).

Second, as a result of the lack of accessible information sources, farmers were heavily dependent on traders for market information. Indeed, 67 per cent of farmers relied on local traders for market information (Figure 12). From this disadvantaged position, farmers were susceptible to manipulation, with traders withholding actual market price information. As a result, the majority of small farmers preferred to sell their produce at the local market or in a market located in the same district so as to offload the OSV as well as save time and costs.

Upgrading strategies

The OSV farmers of Uttarakhand required an information source that addressed the drawbacks of existing communication tools and provided accurate information to eliminate dependence on traders. GIZ’s intervention

Figure 12: Sources of Information in the off-season vegetables value chain pre-intervention



Source: adapted from Chauhan and Ghosh (2012)

focused on introducing agriculture information dissemination through mobile SMS to remove these bottlenecks. While ensuring neutrality in dissemination of information, SMS had the added advantage of being personalized, authentic, timely, and suited to two-way communication.

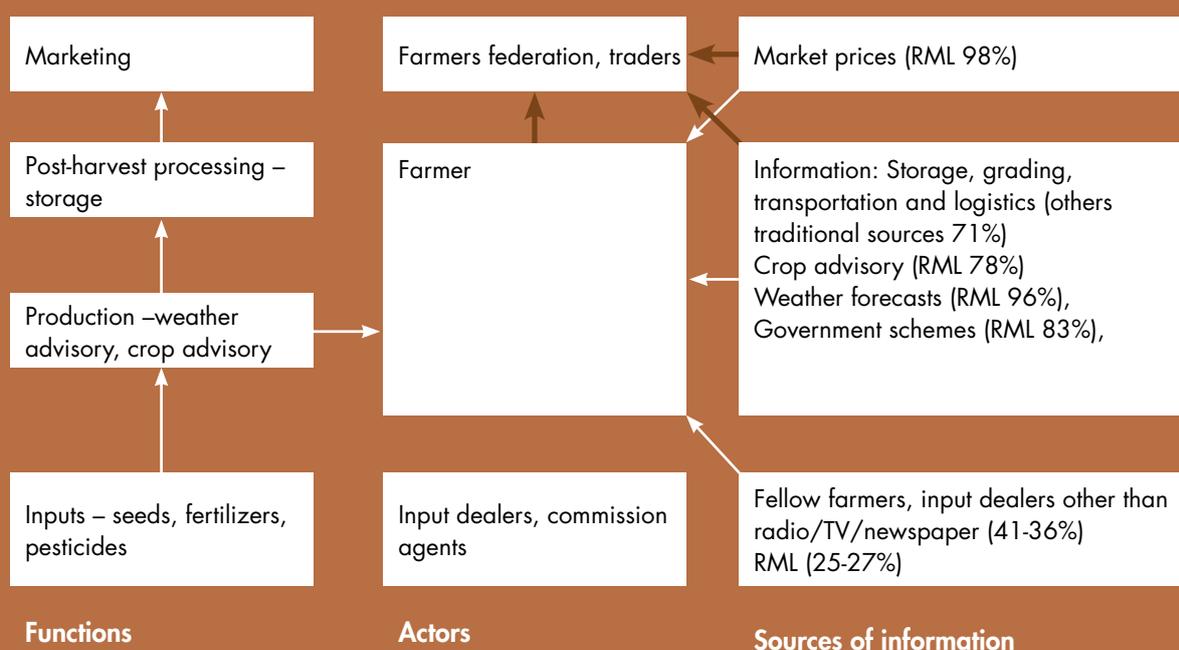
In Uttarakhand, major mobile-based agricultural information service providers such as the Indian Farmers Fertiliser Cooperative's (IFFCO) Kisan Sanchar Limited (IKSL), Nokia Life Tools, and Reuters Market Light (RML) do exist. But all such services come with their own conditions. For instance, only those with a Nokia mobile handset can use Nokia Life Tools. To use IKSL, the subscriber needs an IFFCO green SIM card which only works with Airtel services. In comparison, the RML service can be used in any mobile handset under any service. RML thus offers complete flexibility and freedom to the user. Moreover, the service can be shifted from one number to another, even when the user is switching service providers. It was with these considerations in mind that GIZ partnered with RML.

On a pilot basis, GIZ facilitated the supply of 1,000 RML subscriptions through NABARD, GRAMYA, HARC, CHEA and ULIPH in ten districts of the state. The farmers were selected by the partners as per their ongoing programmes. RML subscribing farmers received actionable information on market prices, crop advisory, and weather forecasts as well as agriculture information as per the stage of crop, soil type, irrigation, and mechanization facility. The RML database covers over 600 crop varieties, 1,300 markets, and 3,500 weather locations in eight languages.

Intervention outputs

Mobile SMS was rated the best information system among the available sources by 93 per cent of subscribers to get information on a regular basis. The introduction of RML provided market information to OSV producers as well as improved transactional transparencies among VC actors (Figure 13). Information use also diversified, with interest in other aspects of agricultural news. The following list highlights the five most important information needs fulfilled by the service in order of priority as ranked by the RML subscribers in GIZ-RED's 2011 study titled "Assessing the scope

Figure 13: Sources of information in the off-season vegetables value chain post-intervention



Note: The dark brown lines show the new information flow post-upgrading.

Source: adapted from Chauhan and Ghosh (2012)

and impact of information dissemination through mobile SMS on profit margins of local agri-produce and incomes of hill farmers of Uttarakhand”.

- Weather advisory: About 96 per cent of farmers used RML’s service for weather information. Of those surveyed, 81 per cent had depended on television for information before the intervention.
- Market prices: About 98 per cent of farmers used RML’s service for information related to market prices. Of those surveyed, 67 per cent had relied on traders and 26 per cent on newspapers before the intervention.
- Government schemes: About 96 per cent of farmers used RML’s service for information on government schemes. Of those surveyed, 40 per cent had relied on newspapers before the intervention.
- Crop advisory: About 78 per cent of farmers used RML’s service for crop advisory information. Of those surveyed, 66 per cent had relied on other sources such as progressive farmers and traditional knowledge before the intervention.
- Quality of information: About 75 per cent of farmers said the daily agriculture news provided by RML’s service was relevant and timely. Information on the accessibility of roads, for instance where there had been a landslide, enabled better planning of harvests or the use of alternative routes to transport goods.

Overall, most subscribers expressed satisfaction on the timeliness of the service. Over the course of two years using the service, 6 per cent of farmers reported having attained 5-10 per cent increases in market price. Meanwhile, 38 per cent of subscribers reported a 1-5 per cent increase in market price attained for their product. Further, a study among respondents from five out of the ten districts where the project was implemented revealed benefits beyond an increase in market price (Table 1).

Impacts

- RML’s market information service has helped farmers get higher prices and reduce risk, thus positively impacting livelihoods.
- Access to accurate and timely information has placed the small farmer in a better bargaining position vis-a-vis buyers and traders.
- Most users have utilized the service for information beyond the OSV VC, including information on other traditional farm products such as cereals, livestock, and horticulture.
- GIZ and RML have formed a partnership to launch DeveloPPP.de, a public-private partnership project, to strengthen and scale up this service. Working through the “Grameen Sookhna, Uttarakhand” initiative, a three-year public-private partnership project between GIZ’s DeveloPPP.de and RML launched in May 2012, the project will make mobile SMS-based agri-information services available to about 12,000 farmers in Uttarakhand in the next three years.
- The RML service attracted the interest of development actors beyond agriculture. For instance, ULIPH facilitated a partnership between the Department of Telecommunications and RML to launch ‘Sanchar Shakti’ in March 2011. The service provides information to women and women’s SHGs about government schemes, health services, and social issues as well as inputs related to livelihood training over the phone.

Table 1: Usefulness of RML mobile SMS services to subscribers

District	Gain to users (%)	Timeliness of information (%)	Usefulness of weather advisory (%)
Almora	95	30	74
Bageshwar	86	43	75
Nainital	100	53	80
Tehri	64	91	100
Uttarkashi	88	23	100

Source: adapted from GIZ-RED 2011

Discussion and Lessons

As demonstrated by the cases highlighted in this publication, the commercial harnessing of high value products and services (HVPS) presents a significant opportunity to generate local employment and income for the otherwise marginalized mountain communities. The cases presented in this publication highlight interventions by GIZ-RED, ICIMOD, and their partners in HVPS VCs to address socioeconomic, policy, and institutional barriers that prevent upstream producers from equitably benefiting from HVPS. The end goal of the interventions is to develop mountain focussed, sustainable and innovative pro-poor upgrading strategies. This publication focuses on documenting key lessons and bringing out good practices for enhancing economic security of mountain communities by maximizing their benefits by using a value chain approach in the HVPS sector in Uttarakhand. While the cases have been documented in depth in the above sections, key lessons learnt through each intervention are highlighted below.

The case study of the Malta oranges shows that horizontal coordination helps increase bargaining power. Strengthening producers' institutions is a key leverage point for facilitating improved upstream coordination of value chains. It was only by working with farmers' federations and local women that the intervention was able to achieve success. Through the intervention, and in collaboration with experts from universities and the state Horticulture Department, the farmers were familiarized on a number of best practices. For instance, they were informed about pruning techniques, time of pruning and lopping, basin preparation for rain water storage, and low-cost pest and disease management techniques. A practice package for Malta tree management by the farmers was also developed. This led to a ten per cent increase in production during the action research process.

Enterprise development has a major role in generating income and employment options in mountain regions. As a result, the common facility centre (CFC) for processing agricultural produce, the establishment of which was facilitated by HARC, was managed by a farmers' cooperative. Local women from the nearby villages were facilitated to form SHGs and were assisted to prepare their business plans for processing Malta. The SHGs were linked to banks for finance. The processing activities were planned in such a way that the SHGs could manage the work with their capacities and that they could get processing opportunities throughout the year. In the mountain context, increasing the shelf life of the products through processing is a significant competitive advantage. The case study shows that CFCs run by local cooperatives is a key strategy for promoting value addition with the potential for pro-poor and inclusive outcomes. Finally, it is important to create strong linkages with line agencies that are able to provide access to technology, finance, and facilitate policy change.

The case study of cultivated kuth and kutki shows the key role of vertical contractualization and process upgrading in VC development. Kuth and kutki farmers lacked access to market information and were dependent on the local traders for market access. Further, the prices offered by the local traders were the same as that of wild collected produce, which did not account for the cost of cultivation and other inputs required during the gestation of three years. Moreover, the lack of aggregation of the produce at the production level led to difficulties for buyers to place bulk orders while reducing the bargaining power of the farmers. The system for upgrading thus required interventions at various levels with different stakeholders. As a result, the NGOs and state level programmes like Uttarakhand Livelihood Improvement Programme for the Himalayas (ULIPH) facilitated the aggregation of the produce at the production sites in Chamoli District. Meanwhile, the Herbal Research and Development Institute (HRDI) and High Altitude Plant Physiology Research Center (HAPPRC) facilitated the contractualization process between the buyers and the farmers. This led to the signing of a contract with specified quantity, quality, and delivery norms. The quality assurance mechanism was further strengthened with laboratory test reports provided by HAPPRC for each batch.

The action research highlights that promoting a new MAP through cultivation in private lands is not possible without a fair and transparent VC mechanism. The roles of different stakeholders need to be acknowledged and their collaboration in the VC upgrading process needs to be ensured. Similarly, market mechanisms need to be fair and equitable for the farmers through the provision of information related to market demand and quality assurance, and in enforcing contracts on both ends.

The case study of Indian bay leaf shows that policy readjustments through 'value chain coordination strategies' were prerequisites for success. Before the intervention, people's participation in the management of the resources

and the benefits from their harvest were negligible. Under the then policy scenario, all NTFPs harvested from the reserve forests had to be sold through auction centres located far away in the lowlands. The upgrading process was based on the hypothesis that access to resources alone is not sufficient to improve the terms of engagement of collectors. It is also important that collectors have equitable market access. The bay leaf VC upgrading through policy readjustments showcased a strategy balancing resource management with income generation by engaging local communities in harvesting from reserve forests rather than engaging contractors from the plains. The case points to the critical role of pro-poor and mountain sensitive policies in ensuring benefits to mountain communities. The model has been appreciated by the state forest department and has the potential to be implemented at scale across the state.

The case study of promotion of off-beat tourism destinations shows that the benefits of tourism can be geographically diversified by harnessing ecological and cultural diversity. The major tourist destinations were facing heavy tourist inflow with consequent infrastructure, environmental, and management problems. Off-beat tourism was an opportunity to deal with such problems. Ensuring that the state creates an enabling policy environment and promotes private sector investments in the off-beat destination sector were major challenges. To begin with, a public-private partnership is the best approach to develop a promotional strategy for off-beat tourism. This is also the first step to generating private investment in the sector. Being a new sector, capacity building of both state and private actors is essential.

These strategies led to investments from local entrepreneurs with support from venture capitalists. In turn, investors facilitated the engagement of local communities in providing different support services. In the process, the off-beat destination Chakrata gained better visibility from tourists. The knowledge generated through the intervention is being utilized to shape the state's tourism policy through the preparation of a vision document for sustainable tourism development. From this action research it is evident that the state needs further investments, promotion, and infrastructure to facilitate the development of off-beat tourism aimed at enhancing livelihood gains for a large section of the population. Going forward, developing sustainable tourism guidelines for operators will help the tourism industry in Uttarakhand as a whole.

The case study of research and development on nettle fibres was designed to improve the quality of Himalayan nettle yarn through technological improvements while making the process of collection and primary processing environmentally sustainable. The GIZ-RED programme partnered with the UBFDB to establish a research and development centre for nettle fibre processing and standardization. This led to improved processing by introducing mechanized degumming process that reduced water usage and reduced the drudgery of women primarily engaged in producing nettle fibre. The treatment of the fibres was made chemical free. The machines were adapted to mountain conditions in terms of size and capacity. A large scale adoption of these machines by mountain communities is possible.

The intervention was successful in designing an efficient process for improving the quality of fibre, thus making them acceptable to end industries. The collaboration with other development agencies led to a sustained lobbying for a minimum support price (MSP) for nettle bast fibre. The action research demonstrated that partnerships with local institutions who understand the geographic, socioeconomic, and policy constraints of the region is crucial to the success of new technologies. Further, it is not necessary to reinvent the wheel. Rather, it is more effective – in terms of cost and time – to adapt existing technologies to unique local conditions. Over a two-year period, the MSP for nettle bast was increased from INR 35 to INR 55. These processes provided a fillip to promote Uttarakhand as a nettle fibre destination.

In the case of OSVs action research, non-static, two-way communication through mobile SMS was used as a trigger for improving the terms of engagement of farmers in the VCs. The challenge was to provide farmers with a complete package of relevant information including weather forecasts, inputs, market prices, and daily news highlighting the local infrastructure conditions that could hinder transportation to markets. The information services from RML, the service provider, relayed information on market prices, crop advisory, weather forecasts, agricultural information as per the stage of crop, soil type, irrigation, mechanization facility, and news related to agriculture. This flow of information enabled farmers to make informed decisions on farm management, harvesting,

transportation, and marketing. This helped increase farmers' bargaining powers, reduced wastage, and generally impacted farmers positively. A survey of the mobile service users showed that 88 per cent of the farmers appreciated the service and were willing to pay for it in the future.

It is important to highlight the fact that RML was selected as a service provider because of its flexibility. It was the only available option that did not force users to choose handsets or services provided by particular companies. It is desired that more players provide similar or improved information services for rural communities, especially in hill regions. The action research indicates that mobile-based communication systems could be the critical link allowing farmers to provide better produce and gain better prices. In view of its beneficial impact, the scope for replication of such a service exists in other agricultural sectors – organics, cereals, and horticulture – and beyond to sectors such as health services.

Conclusions and Recommendations

The cases show that there are several opportunities for livelihood development in mountain regions through value chain development of high-value products and service. The coordination of activities by local communities is, however, crucial for upstream interventions in mountain areas. Despite economic growth and the improved access provided by infrastructure development and communication systems, mountain producers remain vulnerable to unorganized and exploitative VCs. They also suffer from a lack of access to services and policy support. In this context, improved access to information, skills, technology, markets, policy, and institutional support leads to better terms of engagement for small farmers.

The state, NGOs, and the private sector must all be active participants in creating framework conditions that facilitate growth in the HVPS sector. These actors are equally crucial in forging effective highland-lowland linkages. The upgrading process inevitably requires a wide array of services. Therefore, a holistic and integrated approach incorporating all aspects of the VC and including different stakeholders is most effective. In this context, it is clear that the trickle-down approach does not work – small producers must be key players in all levels of the process.

Based on the six case studies, the following recommendations to promote and develop the HVPS sector in Uttarakhand can be made:

Strengthen policy and institutions: Policies are arguably the most important factor in promoting HVPS VCs in mountain regions. HVPS should be promoted with the objective of reducing poverty, providing local employment options, and reducing the large scale migration of mountain people to the plains. Policies need to be implemented fairly and/or developed with a pro-poor and mountain bias. There is a need to promote equitable and transparent value chains that facilitates access to resources, fair prices, access to markets, storage infrastructure, and different processing and value addition opportunities. Emerging challenges from global change – including climate change and globalization – need to be considered in developing a vision for mountain development where income generation and employment from the HVPS will be a predominant adaptation strategy.

Design relevant programmes and implement them effectively: VC development programmes and projects in mountain regions need to reflect specifically on the constraints posed by inaccessibility, marginality, and fragility. This requires adjustments in current practices with the role of the state being restricted to facilitating and creating an enabling environment without directly being actors in the VC. Mobilizing and empowering communities with information, skills, and support services are paramount. Similarly, a great deal of resources must be employed for VC mapping and analysis. The results need to be shared with all relevant institutions for developing collaborative upgrading strategies and for harnessing the comparative advantage of different stakeholders.

Implementation of HVPS projects and programmes needs to ensure that the poor and vulnerable and their local institutions are engaged in the VC development process. While the external environment is sometimes out of the control of the local stakeholders, significant gains can be achieved from improved conditions in the internal power relationships. The engagement of the private sector in providing information, markets, value addition, and investments is paramount. Bridging both the demand and supply side gaps should be a critical component in HVPS VC programmes with a long-term vision.

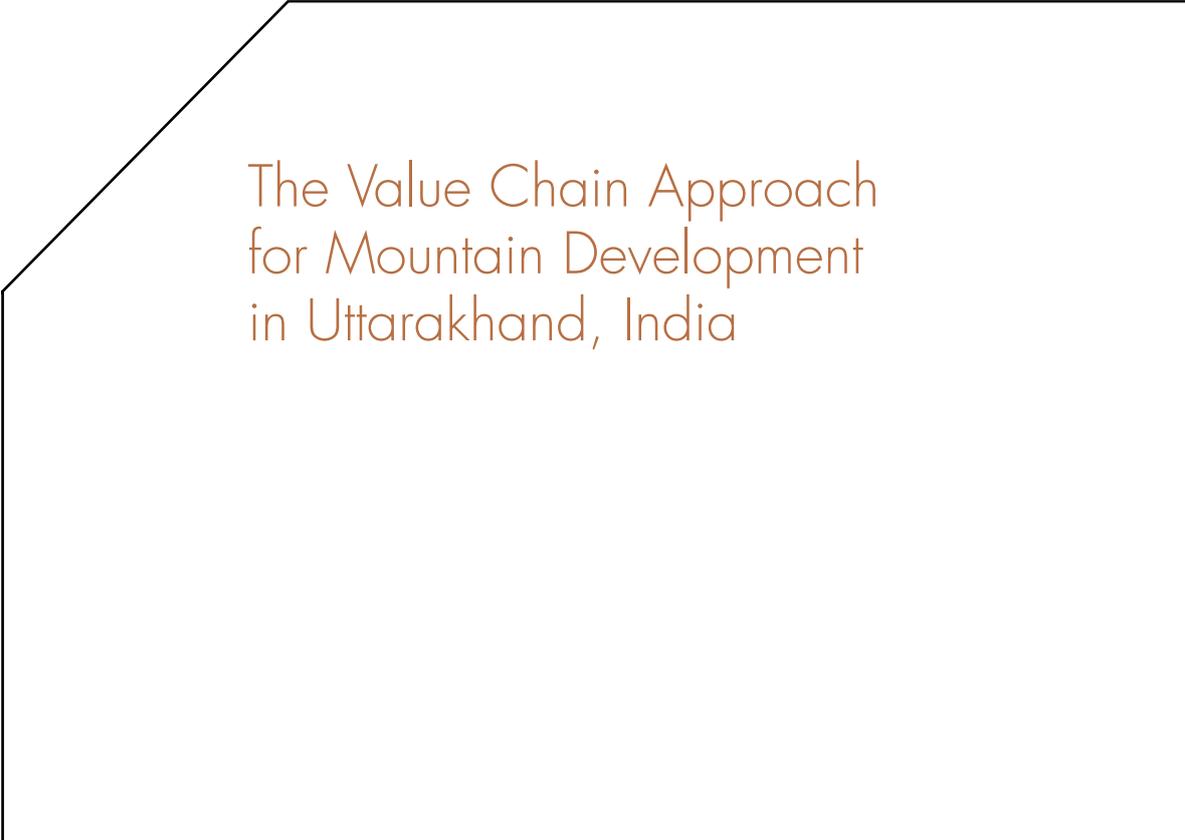
Follow an adaptive management strategy: The promotion of HVPS VCs in mountains needs to follow an adaptive management approach. There is a need to set goals, implement strategies, conduct monitoring and evaluation periodically, and take steps to address the constraints. With the diversity of HVPS in the mountain region, a blanket strategy does not seem to be feasible for all situations. There is a need to understand the local situations and the key leverage points that can address the problems of small mountain producers. There is a need for innovative strategies that take into consideration both inter- and multidisciplinary actions that can address the constraints.

Engage in capacity development: The participation of strong implementation agencies across sectors is key to developing efficient HVPS VCs. It is important to develop the capacities of all these agencies and the actors within. The first step in this process is identifying the capacity gaps of all stakeholders. At the local level, capacity development programmes need to be tailored to the ongoing VC programmes by adopting the ‘learning while doing’ approach. Appropriate programme planning and a step-by-step approach to upgrade the mountain poor in their respective VCs are essential here. Training programmes should have follow-up sessions built-in, with guidelines to monitor impacts and deviations from the desired results. Further, processes to ensure implementation of the learning and for measuring effectiveness must also be established. Training programmes on the selected HVPS could also assist in upscaling good practices beyond Uttarakhand.

Ensure high-quality facilitation: A key factor in the success of VC interventions is the quality of facilitation. Different results can be anticipated depending upon the core competency and strategic vision of the implementing agencies. Often, a project-driven approach is short term and fails to take sustainable VC development into consideration. It is clear that the mountain poor will not be able to improve their gains from HVPS VCs on their own. The lead agencies responsible for the promotion of different HVPS sectors in Uttarakhand should dovetail their programmes, develop synergies, and seek partnerships. Only in this way can the strategic vision of sustainable development, equitable growth, and poverty reduction in hilly and mountain regions become a reality.

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