



# Allo Value Chain in Darchula, Nepal

## Process Documentation



# 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 Himalaya – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and based in Kathmandu, Nepal. Globalisation 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.



**Corresponding author:** Anu Joshi Shrestha, [anu.shrestha@icimod.org](mailto:anu.shrestha@icimod.org)

**Cover photo:** A member of Bhumiraj Allo Processing and Collection Center weaving allo fabric at the center

ICIMOD gratefully acknowledges the support of its core donors: the Governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Sweden, and Switzerland.

# Allo Value Chain in Darchula, Nepal Process Documentation

## Authors

Anu Joshi Shrestha<sup>1</sup>, Lipy Adhikari<sup>1</sup>, Robin Amatya<sup>2</sup>, Bijay Subedee<sup>3</sup>, Tashi Dorji<sup>1</sup>

---

<sup>1</sup> International Centre for Integrated Mountain Development (ICIMOD)

<sup>2</sup> SAARC Business Association of Home Based Workers (SABAH) Nepal

<sup>3</sup> Research Centre for Applied Science and Technology (RECAST)

**Copyright © 2018**

International Centre for Integrated Mountain Development (ICIMOD)

This work is licensed under a Creative Commons Attribution Non-Commercial, No Derivatives 4.0 International License (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

**Published by**

International Centre for Integrated Mountain Development (ICIMOD)

GPO Box 3226, Kathmandu, Nepal

**ISBN** 978 92 9115 635 1 (online)

**Production team**

Samuel Thomas (Senior Editor)

Rachana Chettri (Editor)

Dharma R Maharjan (Layout and Design)

**Photos:** Kalash Shakya - cover, pp 14, 15, 16, 25; Lipy Adhikari - pp 2, 10;  
Rajendra Shakya - pp viii, 4, 19, 20, 22, 26

**Reproduction**

This publication may be produced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. ICIMOD would appreciate receiving a copy of any publication that uses this publication as a source. No use of this publication may be made for resale or for any other commercial purposes whatsoever without express written consent from ICIMOD.

The views and interpretations in this publication are those of the author(s). They are not attributable to ICIMOD and do not imply the expression of any opinion concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries, or the endorsement of any product.

This publication is available in electronic form at [www.icimod.org/himaldoc](http://www.icimod.org/himaldoc)

**Citation:** Shrestha, A.J., Adhikari, L., Amatya, R., Subedee, B. & Dorji, T. (2018). *Allo value chain in Darchula, Nepal: Process documentation*. ICIMOD Working Paper 2018/9. Kathmandu: ICIMOD.

# Contents

Acknowledgements	v
Acronyms and Abbreviations	vi
Executive Summary	vii
<b>Background</b>	<b>1</b>
<b>Livelihoods, Innovation and Adaptation to Change</b>	<b>1</b>
<b>Bringing Partners Together</b>	<b>3</b>
<b>Value Chains as an Approach to Livelihood Diversification</b>	<b>4</b>
<b>Selection of Value Chain</b>	<b>5</b>
<b>Value Addition Potential at Local Level</b>	<b>6</b>
<b>Why Allo?</b>	<b>6</b>
<b>Major Interventions</b>	<b>10</b>
<b>Strengthening Local Institutions</b>	<b>10</b>
<b>Private Sector Links and Enterprise Development</b>	<b>11</b>
<b>Adding Value</b>	<b>12</b>
<b>Gender and Social Inclusion</b>	<b>13</b>
<b>Greening the Allo Value Chain</b>	<b>15</b>
<b>Ensuring Sustainability</b>	<b>17</b>
<b>Fostering Transboundary Relations</b>	<b>18</b>
<b>Getting Brand Endorsement</b>	<b>22</b>
<b>A Summary of Major Interventions and Results</b>	<b>22</b>
<b>Challenges</b>	<b>22</b>
<b>Conclusion and Way Forward</b>	<b>26</b>
<b>References</b>	<b>28</b>

## List of Tables

Table 1: Selection criteria for potential value chains	5
Table 2: Resource distribution and seasonal calendar	6
Table 3: Status of allo in Naugad Rural Municipality	8
Table 4: SWOT analysis of allo value chain development in Naugad Rural Municipality	9
Table 5: Upgrading strategies for allo value chain promotion	9
Table 6: Energy efficiency through technology improvement	16
Table 7: SWOT analysis and major interventions considering environmental, social, and economic aspects	17
Table 8: Links with buyers	18
Table 9: Attributes and major benefits for common branding and collective marketing	22
Table 10: Major interventions timeline	23

## List of Map and Figures

Map 1: Naugad Rural Municipality (Gaunpalika)	2
Figure 1: Livelihood co-benefits from sustainable ecosystems management	3
Figure 2: Allo value chain map	7
Figure 3: Governance structure Bhumiraj Allo Processing and Collection Center	11
Figure 4: Enterprise development at various nodes of the allo value chain	12
Figure 5: Enterprise development model of KSLCDI Nepal	13
Figure 6: Training and skills development of participants	14
Figure 7: Kailash business model	21

# Acknowledgements

This study has been undertaken by the International Center for Integrated Mountain Development (ICIMOD) under the Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI) implemented jointly with the Ministry of Forests and Environment (MoFE) Nepal and Research Center for Applied Science and Technology (RECAST) under Tribhuvan University, Nepal. KSLCDI is a joint effort to promote transboundary cooperation on landscape conservation among China, India and Nepal through the respective governments and partners which is supported by the Ministry for Economic Cooperation and Development (BMZ), Germany, the DFID/UKAid, and core funds of ICIMOD contributed by the governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Switzerland, and the United Kingdom. The views and interpretations expressed in this publication, however, are those of the authors.

# Acronyms and Abbreviations

ANCA	Api Nampa Conservation Area
BHPCC	Bhumiraj Allo Processing and Collection Center
CHEA	Central Himalayan Environment Association
DFID	Department for International Development
DFO	Divisional Forest Office
DOF	Department of Forest
DNPWC	Department of National Parks and Wildlife Conservation
ICIMOD	International Centre for Integrated Mountain Development
KSL	Kailash Sacred Landscape
KSLCDI	Kailash Sacred Landscape Conservation and Development Initiative
MoFE	Ministry of Forests and Environment
RECAST	Research Center for Applied Science and Technology
SABAH	SAARC Business Association of Home Based Workers



# Executive Summary

Naugad Rural Municipality (Naugad Gaun Palika), Darchula District in the far west region of Nepal is a pilot site for the Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI). In 2014, the livelihoods component of KSLCDI started developing a value chain for Himalayan Nettle or 'allo' in Naugad Rural Municipality with the aim of providing an alternative income for people in the local community.

For KSL-Nepal, Ministry of Forests and Environment (MoFE) was the nodal agency with RECAST as the implementing agency, while ICIMOD providing technical and financial support. Introducing a private sector agency, SABAH Nepal, as an implementing body in 2015 played an important role in completing the value chain through creating market links for allo products developed as part of the value chain.

To support KSLCDI, the Bhumiraj Allo Processing and Collection Center was established in Godhani in Naugad Rural Municipality as a common facility center (CFC). At present, 84 people work as active members of the CFC, of which over 75% are women. In just two years, KSLCDI has succeeded in building the capacity of CFC members through providing over twelve training programmes on various aspects of skill and leadership development. The CFC in Godhani produces a variety of allo products with improved quality and quantity and community members have been able to find markets for their products.

Developing the value chain also introduced the concept of common branding for KSLCDI. The allo products of Naugad Rural Municipality are sold under the 'Kailash – Truly Sacred' brand in SABAH Nepal outlets in Kathmandu. The branding is not limited to allo products. Kidney beans, chiuri, honey, rittha and nigalo from other pilot sites in Nepal and India are sold under the same brand name. Through common branding, KSLCDI has taken a step towards fostering transboundary networking in the region. The work initiated by KSLCDI required considerable time to generate the desired outputs and therefore, time was always a constraint on the project. Nonetheless, a striking change has been observed in Naugad Rural Municipality in the course of two years (2014-2016). The initiative has brought a noticeable transformation in terms of providing improved livelihood options for the community, especially for women and marginalized groups in this remote mountainous region, thereby ensuring resource sustainability. This process description aims to document the success stories and challenges faced while implementing value chain activities in remote mountain villages such as Naugad Rural Municipality. The report focuses on how disadvantaged groups and women can be mainstreamed into commercial value chains, thereby providing alternative livelihood income sources.

This process documentation includes stories of private sector actors with a social orientation and how they can bring about change in a society through common facility establishment, group formation, linking with local opportunities and finding international markets. This document also sheds light on how communities, government, research organizations, and the private sector can work in harmony and bring transformative change to rural livelihoods. The intended audience for this paper includes policy makers, private sector actors, stakeholders working with allo, development partners and donor organizations.

Showcasing allo products at the 13<sup>th</sup> National Handicraft Exhibition, Kathmandu



## Background

The sacred Mount Kailash and Lake Mansarovar are major attractions for millions of people from across the world. The landscape comprises a wide range of biophysical and sociocultural systems and is amongst the world's most biologically rich, fragile and diverse environments. The region and its people are highly vulnerable to climate change and environmental degradation and threats associated with ongoing globalization processes and accelerated development. Strategies to address the conservation and development of the landscape are needed as this diverse, multicultural and transboundary region has always been seen as a gateway to boundless opportunities by the people of the region.

### About the project

Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI) is a transboundary, collaborative programme covering an area of 31,000 km<sup>2</sup> around Mount Kailash in the tri-junction area comprising the southwestern portion of Tibet Autonomous Region (TAR) in China, the northeastern side of Uttarakhand in India, and the far western part of Nepal. With financial and technical support from GIZ and DFID, it initiated a five-year First Phase Implementation Plan under the Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI) at the International Centre for Integrated Mountain Development (ICIMOD) in 2012.

The Implementation Plan was developed by ICIMOD in consultation with partner institutions in these countries. There were five programme components in the plan: Livelihood Options, Management of Ecosystems for Sustaining Services, Access and Benefit Sharing, Long-term Biodiversity Conservation and Monitoring, and Regional Cooperation. The major objective was to enhance community resilience in KSL in conjunction with long-term conservation of ecosystems and biodiversity whilst maintaining cultural links and promoting sustainability.

The first phase of KSLCDI was completed in December 2017. This report highlights the progress made through the development of an agro value chain under the livelihoods component in Naugad Rural Municipality, Nepal. Naugad Rural Municipality was a pilot site for KSLCDI in Darchula District.

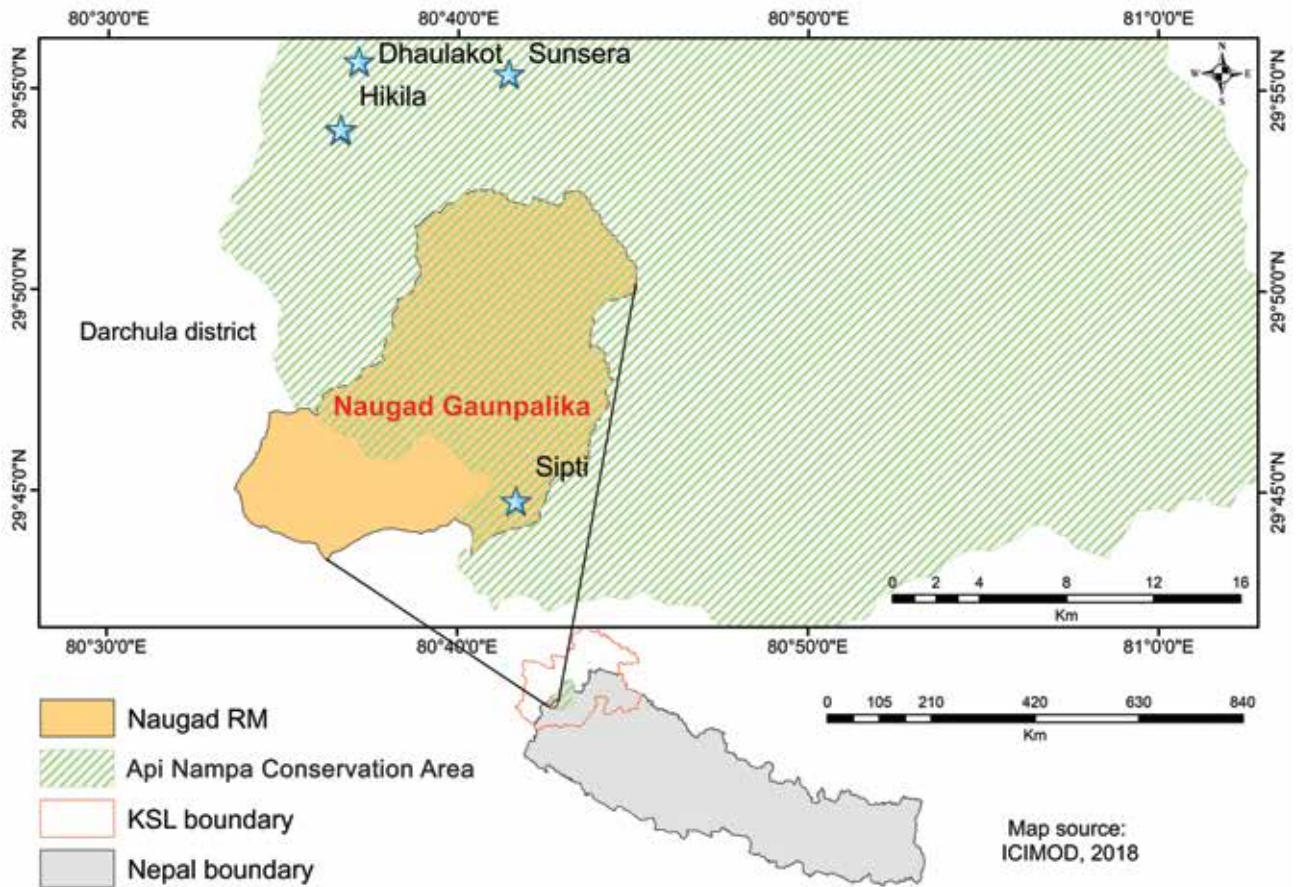
Source: Shrestha et al., 2015 and Shrestha et al., 2016

## Livelihoods, Innovation and Adaptation to Change

With persistent poverty and inequity in the Kailash Sacred Landscape, the region suffers from extreme environmental pressure and natural resource depletion. Small and marginal farmers are exposed to extreme climate stresses and natural disasters (landslides and floods) and are far from relief services or access to government and other development assistance or the conveniences of modern life. These disadvantages make it difficult for poor mountain people to be 'equal players' on an uneven economic playing field. Disparities are further enhanced by uneven access to land, poor access to education and health care services, lack of alternative employment opportunities, low levels of infrastructure development for the transportation of goods, and lack of access to communication facilities. Lack of access to credit limits people's resilience and ability to take risks, which prevents them from producing commercially competitive products. Discrimination and the caste system add to their exclusion and prevent them from claiming their rights. The challenge is to increase participation of these people into modern commercial value chains.

Migration further complicates the situation as it increases the vulnerability of those left behind, mostly women, who assume the dual responsibilities of taking care of their families and making a living. In mountain areas, youth migrate to urban centres and abroad for work. Globalization, urbanization, and increasing inflation have accelerated the process of youth migration as development is happening more in urban areas. Traditional agriculture does not interest young people, who are attracted more by market opportunities and the cash income in cities. In the midst of these challenges, it is important to promote micro-enterprise and bring women to the forefront as entrepreneurs. However, in the Far Western Region such interventions face challenges due to deeply ingrained social stigmas.

Map 1: Naugad Rural Municipality (Gaunpalika)



Source: Authors



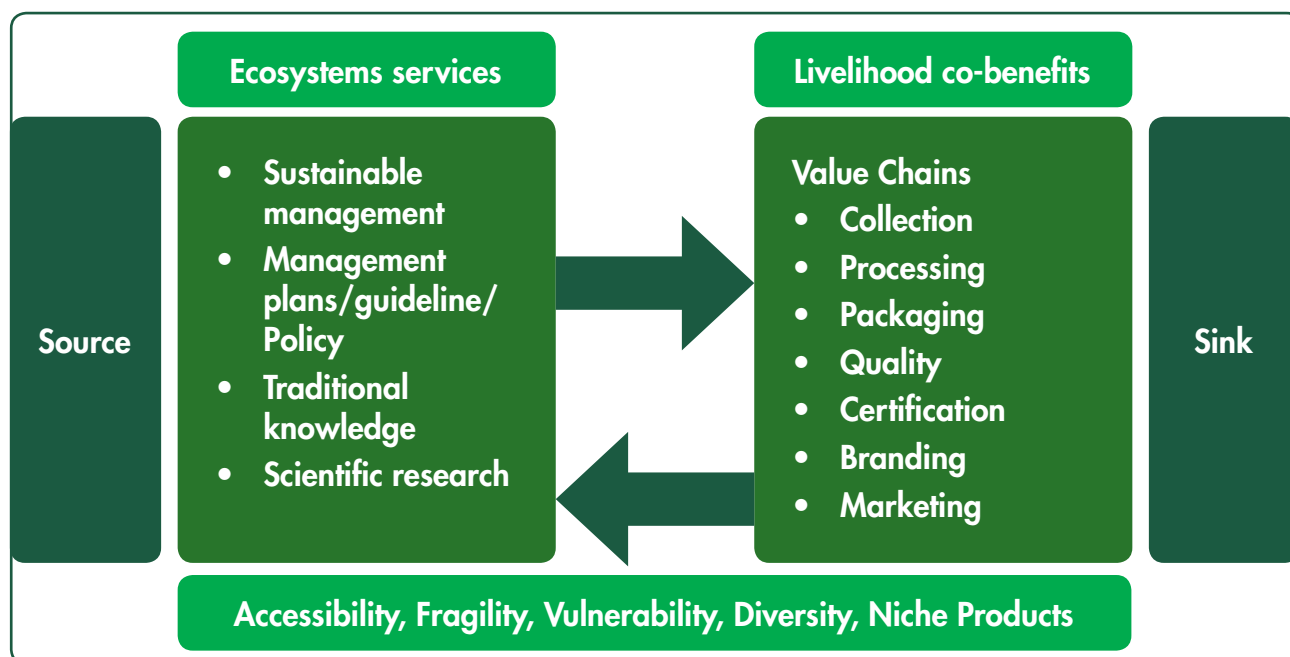
Naugad Rural Municipality, Darchula, Nepal

Driven by global, national and regional development processes and environmental change, the KSL area is characterized by rapidly changing livelihood systems. The traditional subsistence-oriented livelihoods no longer meet the growing expectations of participating in a 'modern' society. The majority of the KSL population are Indian and Nepali and still involved in agriculture and using natural resources for their livelihoods. They depend on marginal and small land holdings, where they typically cultivate less than one hectare per household using diverse crops and livestock. The typical multisource income livelihoods option combines subsistence-oriented agriculture and different sources of cash income from natural resources.

Component one, Innovative Livelihood Options and Adaptation to Change, aims to create and improve livelihood options for the poor and most vulnerable communities of the region through farm and non-farm activities. Development of high value niche products and promotion of heritage tourism have been identified as major intervention areas. The objective of this component is to ensure alternative income generating activities that contribute to livelihoods without compromising environmental sustainability. The main focus of the ICIMOD approach is on strengthening rural-urban and highland-lowland linkages, analyzing and identifying suitable products and leverage points for pro-poor interventions, and identifying interventions that lead to improved and sustainable income for producers without challenging environmental integrity.

Strengthening local institutions, integrating the private sector, promoting gender inclusion, and adopting water and energy-smart technologies are some of the adaptive strategies of this component. The design of livelihood interventions is guided by the understanding that sound ecosystems management is paramount for deriving livelihood co-benefits (Figure 1).

Figure 1: **Livelihood co-benefits from sustainable ecosystems management**



### Bringing Partners Together

In 2012, ICIMOD partnered with MoFE and RECAST for implementation in KSL-Nepal. Roles were defined for each organization for the entire project period. MoFE agreed to provide overall guidance, RECAST focused on research and coordination, and ICIMOD on the technical aspects. A National Coordination Committee approved the overall KSLCDI plan and annual review and planning meetings address finance issues for each component to finalize their outputs.

To develop an allo value chain in Naugad Rural Municipality the initiative worked closely with the Department of Forests and the Department of National Parks and Wildlife Conservation. The Divisional Forest Office in Darchula and Api Nampa Conservation Area Head Office (ANCA) supported the initiative at the field level. SAARC Business Association of Home Based Workers (SABAH)-Nepal became a partner to support product development, design, and linking products to national and international markets.



Representatives from MoFE, RECAST, SABAH-Nepal, CHEA, Revati Essentials, BHPCC and ICIMOD at the 14<sup>th</sup> National Handicraft Exhibition in Kathmandu

## Value Chains as an Approach to Livelihood Diversification

A value chain includes a full range of activities in a product life cycle, from conception and design to sourced raw materials and intermediate inputs to marketing and distribution to the final consumer. The approach is widely recognized for its ability to link farms and firms in remote regions to growing and emerging market opportunities (Joshi et al., 2016, Riisgaard et al., 2010). The complex interrelationships between market imperatives, opportunities and constraints at different levels of the chain and the different interests and power relations between actors influence how value is distributed. Small producers often require specific interventions to stimulate their participation and enhance their 'terms of engagement' with the broader market. A value chain should improve the supply of inputs, extension services, and access to market facilities to ensure sustainable value chains (Rasul et al., 2016).

There is a pressing need to adapt the generic value chain approach to the mountain context. Mountain value chains are influenced by a set of specificities to which they owe their comparative advantage to reap higher returns. Mountain specificities include the availability of unique and niche products and services, accessibility, fragility, diversity, and marginality, which have strong impacts on value chain analysis and the selection of value chain development options. Any neglect of these specificities makes value chain interventions less successful and can expose mountain communities to greater vulnerability (ICIMOD, 2010).

In the Himalaya region, most collection, processing and marketing suffer from problems. For example, local value chains are dominated by a few middlemen that prevent mountain people from benefiting from the resources they are endowed with. Markets are often secretive and disorganized and small producers and service providers lack the capacity to interact and negotiate with more experienced buyers and traders. Most mountain production is based on agriculture or the non-timber forest products (NTFP) sector and products are sold in their unprocessed form. A lack of value chain coordination, weak institutional and policy support, limited market capacities of mountain producers and service providers all result in a 'leakage' of locally generated income. Local value addition is rare and mountain value chain stakeholders only reap a meagre share of the value of the final product or service. Much of the benefit accrues to people and places far away. Therefore, this intervention focuses on the following objectives:

- Provide alternative livelihood options to build resilience for mountain people.
- Organize and strengthen producers, collectors and processors into groups, clusters or cooperatives (pro-poor and gender inclusive) so there are strong grassroots institutions engaging in sustainable business.
- Develop and strengthen skills of women for local value addition through needs-based training and other capacity building initiatives on processing and product development that meets market requirements.
- Support product diversification through design interventions, technology, quality standardization and branding.
- Establish enterprises focusing on women and disadvantaged group's participation in value chains.
- Link groups, clusters and cooperatives to national, regional and global markets through competitive marketing strategies and networking.
- Identify and foster transboundary cooperation through collaboration and knowledge transfer between countries to promote landscape businesses.

## Selection of Value Chains

The great diversity offered by conditions in the high mountains and mid-hills gives these areas a comparative advantage for producing niche products for local consumption and for export (Joshi et al., 2016). Value chain selection is the first and most important step in choosing the 'right' sector for development, taking into account the project and programme objectives. A feasibility study to identify potential value chains was conducted in consultation with the government and communities. The dimensions and key questions for selection are shown in Table 1.

Products were selected to meet the following criteria:

- High value and low volume
- Non-perishable
- Traditional knowledge

Table 1: **Selection criteria for potential value chains**

Dimension	Questions
Product features	<ul style="list-style-type: none"> <li>• Is the selected product (or service) unique to KSL or a similar mountain area?</li> <li>• Could the product or service value chain be linked or scaled up to other goods (basket approach)?</li> <li>• Is it an important product or service for the livelihoods of many people in the area?</li> </ul>
Markets and infrastructure	<ul style="list-style-type: none"> <li>• Are there existing market links to local or regional markets?</li> <li>• Is the existing infrastructure for processing, transportation, and communication sufficient?</li> <li>• Is it feasible to involve the private sector?</li> </ul>
Policy environment	<ul style="list-style-type: none"> <li>• Do existing policies support this value chain?</li> <li>• Is collection, production and trade legal?</li> <li>• Are governmental support structures and services available?</li> </ul>
Socioeconomic equity and pro-poor growth potential	<ul style="list-style-type: none"> <li>• Can sustainable and pro-poor impacts be expected?</li> <li>• Are there backward and forward links to the poor and marginalized?</li> <li>• Are benefits and burdens of the value chain intervention gender balanced?</li> </ul>
Environmental sustainability	<ul style="list-style-type: none"> <li>• Is the resource base vulnerable to overexploitation or irreversible damages?</li> <li>• Is the carrying capacity for increased production and processing maintained?</li> <li>• Can we ensure sustainable use of energy and water?</li> </ul>
Environmental and socioeconomic change	<ul style="list-style-type: none"> <li>• Is the value chain resilient to climate change influences (increased temperature and/or changing water regime)?</li> <li>• Does socioeconomic change (demographics, labour availability, changing values) challenge the value chain interventions?</li> </ul>
Others	<ul style="list-style-type: none"> <li>• Does the value chain have a regional component (transboundary trade or same VC in different countries)?</li> <li>• Could first impacts be expected in a given timeframe?</li> <li>• Are products sensitive to wildlife depredation?</li> </ul>

Source: Kollmair, M., 2013. Study report on Value Chains in the Kailash Landscape Area Assessment and Prioritization

## Value Addition Potential at Local Level

- Market demand
- Participation of women and poor
- Resource availability
- Economy of scale
- Outreach (i.e. many people are interested)

## Why Allo?

In 2014, KSLCDI conducted a value chain assessment to identify potential value chains adhering to criteria for environmental conservation and sustainable development. Following a series of stakeholder workshops with community members and local authorities, allo was selected as a product for promotion. The main reasons for choosing allo were:

- Growth potential and high availability of allo in the landscape.
- Allo is a mountain-specific, non-perishable, high-value, low-volume product.
- Offers a convergence opportunity with a government scheme.
- Opportunities to engage women, marginal groups (Dalits), local youths and entrepreneurs.
- Possibility of scaling out at the transboundary scale



*Girardinia diversifolia* or Himalayan Nettle is locally known as allo. Allo is a fiber-yielding, self-sustaining perennial herb widely distributed in the subtropical and temperate Himalayas (Gurung, 2012; Radhakrishnan, 2015; Shrestha, 1997). In Nepal, the plant grows from east to west between 1,200 to 3,500 meters and is abundant in the forested areas of Naugad Rural Municipality (Singh et al., 1989; Shrestha, 1997; Subedee et al., 2018). Allo can be propagated by detaching the mature root or cutting the long root into small pieces in the nursery. Sustainable harvesting practices will help regenerate the plant in its natural

habitat. The processing is carried out throughout the year (Table 2).

Traditionally, the allo plant was used for making various products like rope, cap, fishing nets, etc. It was also used as a fuelwood for cooking. However, not many people were commercially engaged in allo related work before the Kailash Initiative.

Table 2: **Resource distribution and seasonal calendar**

Rural Municipality		Total allo production area in Naugad Rural Municipality	Estimated dried allo bark production in Naugad Rural Municipality
Naugad Rural Municipality		50-55 hectares	2,400 kg (2.4 tons)
Nursery plantation	Allo flowering season	Allo harvesting season	
February-March	July -September	October-December	
Source: Authors			



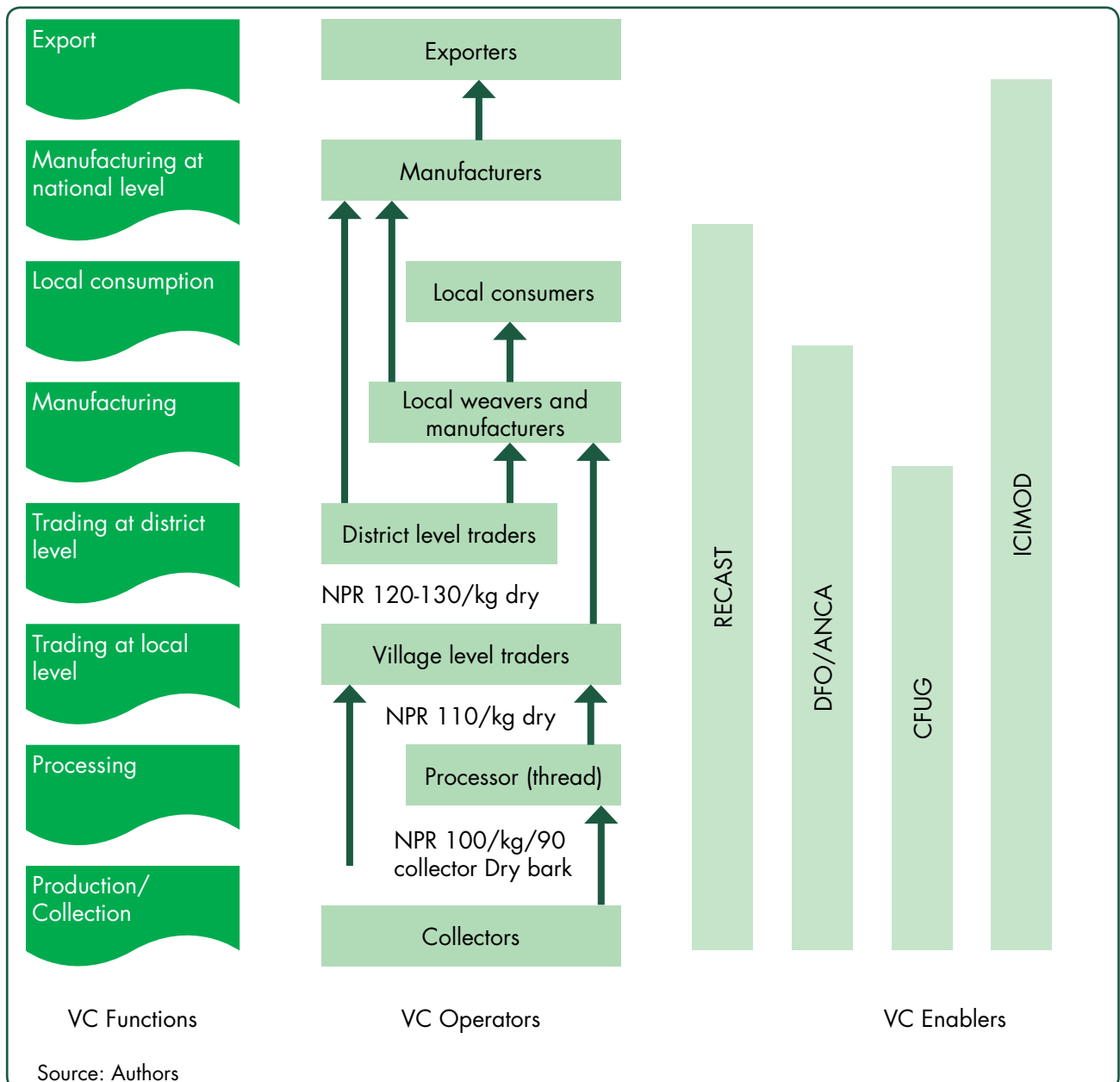
An allo value chain was intended to ensure resilient livelihoods and better income for the Naugad Rural Municipality community. The major objective was to build their competitive advantage, to increase the value addition at local level, and to strengthen vertical and horizontal links between and among actors.

### Mapping the allo value chain

A value chain map shows actors and their relations with each other, the volumes and value each actor gets at each node, and a picture of how the chain functions. Actors involved are collectors, traders at the village, road-head and district level and exporters, processors who are often collectors themselves who process the dried bark to make coarse fibre, manufacturers, retailers, and consumers. ‘Enablers’ work for value chain actors and provide facilitating and regulating support. Activities of enablers range from collection to end-use, including technology, product development, advocacy for simplifying trade policy and procedures, organizing groups and networks for reinforcement, and market information and links for better access. Regulating agencies are also facilitators.

The allo value chain map shows that trading begins with bark collection from forests and ends with export (Figure 2). Allo thread or woven clothes from Naugad Rural Municipality are mostly brought to Darchula Khalanga and then to Kathmandu and sold to entrepreneurs or exporters. The entrepreneurs often weave fine clothes using allo thread from Naugad Rural Municipality, Darchula, Khalanga and Kathmandu and sell to domestic and export markets.

Figure 2: **Allo value chain map**



Income is shared by people in rural communities and urban entrepreneurs. Promotion of quality yarn and cloth production has great potential to alleviate rural poverty in Naugad Rural Municipality.

### Value distribution

Kathmandu, Naugad Rural Municipality, and Khalanga are regarded as end markets for commercial allo producers. The rough thread is used to make carpets and the fine thread to make clothes. The carpets are mostly exported, whereas woven clothes are sold in domestic markets, tourist centres, or exported. There is a growing demand for natural fibre products in Kathmandu and abroad, therefore a huge demand for this product. Exporters purchase quality products and sell it on to other countries. Allo clothing worth seven million Nepalese Rupees was exported from Nepal in fiscal year 2012-2013. The demand for allo clothing is high in international markets and it is a prime souvenir product of Nepal.

The estimated production of allo bark from Darchula is around 20 tons (Subedee, 2014) and that of Naugad Rural Municipality is between 8-9 tons (Table 3). The national production of allo thread is around 1,805 tons per year (MEDEP, 2010a). Half the production is consumed within Nepal and half exported. Dried bark is traded at approximately NPR 100/kg (collectors price), thread at NPR 800-1,300 per kg (determined by the quality of spun thread), and handmade clothing at NPR 1,000-1,200/meter (mixed with cotton or wool). About three meters of cloth can be woven from 1 kg of allo thread.

Table 3: **Status of allo in Naugad Rural Municipality**

Availability	All (except Ward 7 of Naugad Rural Municipality)
National production	1,805 tons per year
Darchula District level production	20 tons/year
Total production and collection in Darchula	8-9 tons/year
Total time for collection and making fiber	60 days
Collectors	approx. 60-80
Traders (village level)	4
Traders (district level)	2
Manufacturers	2
Price	NPR 100/kg dried bark; NPR 800/kg thread; NPR 1,000-1,200/m cloth
Source: Authors	

One person can weave about two meters of cloth per day. Because it is a seasonal plant, collection of allo bark is carried out for about two months only. A collector can gather about 25 kg of fresh bark per day from 100 kg of plants but the quantity of harvest depends on the availability in the wild. The quantity is generally reduced to one fifth after sun drying, therefore, about 5 kg of dried bark is collected per day and the maximum amount that can be collected by an individual per year is about 300 kg. On an average, if a collector harvests bark throughout the season, they can earn about NPR 30,000.

### Expanding livelihood options

People in Naugad Rural Municipality have limited livelihood options and are mostly dependent on yarshagumba fungus<sup>1</sup> as their sole livelihood opportunity. For three months, people risk their lives traveling to high altitudes to collect the valuable yarshagumba. The village almost looks deserted with only some elderly people staying with children while women and men go to the mountains. Often, the money they get from selling the fungus is enough for the rest of the year but not always, hence there is a need for alternative livelihood options such as the allo value chain (Table 4).

<sup>1</sup> *Cordyceps sinensis* is an insect parasite fungus (a combination of insect and plant) which remains inactive in winter and comes out in summer. In Nepal, cordyceps is locally known as *yarchagumba* and has high commercial demand as tonic and aphrodisiac.

Table 4: **SWOT analysis of allo value chain development in Naugad Rural Municipality**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Inputs and equipment supply (locally available raw materials, handmade charkhas and weaving machines).</li> <li>• Attractive to tourists as souvenir products.</li> <li>• Rare infestation of diseases and pests.</li> <li>• Favourable geoclimatic conditions and possibility of natural generation.</li> <li>• Immediate cash flow for poor from allo bark collection.</li> <li>• Skill to manufacture allo thread.</li> <li>• Widely available in the wild.</li> <li>• Income generation opportunities for women.</li> <li>• Allo has medicinal value and is used by local healers for treating gastritis, joint pain, headaches, tuberculosis, and asthma (Subedee et al., 2018).</li> </ul>	<ul style="list-style-type: none"> <li>• Market of allo thread is low compared to that of coarse fibre; thread making needs more effort.</li> <li>• The production of allo fibre at local level is not cost effective.</li> <li>• Existing technologies are simple but time consuming and tedious, need improved technology to process fibre from dried bark.</li> <li>• Inadequate quality control.</li> <li>• Inconsistent quality of thread makes it hard to meet international standards and compete with products in big cities.</li> <li>• Allo based enterprises are hard physical work.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• All forms of allo including dried barks, coarse fibres, threads and clothes have local (Darchula), national and international markets.</li> <li>• Possibility of value addition within the country.</li> <li>• Increasing use of allo in carpet industries.</li> <li>• Interest of various organizations in allo promotion.</li> <li>• New technologies are being researched by various organizations in each of allo processing.</li> <li>• Plenty of scope to manufacture high quality products (finer threads).</li> <li>• Good livelihood options for women and disadvantages groups as there is traditional knowledge and even landless can take part</li> </ul>	<ul style="list-style-type: none"> <li>• Dependent on import of chemical dyes from India.</li> <li>• Excessive use of caustic soda might lead to health problems and environmental degradation.</li> <li>• Possibility deforestation due to increased demand for fuel wood to process allo.</li> </ul>

Source: Authors/Shrestha et al 2015

## Making a difference

Analysis of actors, the existing situation and constraints and opportunities along the value chain guide intervention strategies. Strategies are designed for upgrading products, processes, functions, markets, interfirm relations and business development services to promote competitiveness. Based on the strategies, specific interventions are suggested for allo value chain promotion (Table 5). Interventions may vary according to value chains, context and location and innovative thinking is required to tackle specific constraints and tap opportunities. For Naugad Rural Municipality the following intervention was developed and implemented for the project period between 2015 to 2017.

Table 5: **Upgrading strategies for allo value chain promotion**

Product upgrading	Process upgrading	Function upgrading	Market upgrading	Interfirm upgrading	Necessary BDS strengthening
Production of high quality allo thread and cloth (fine and smooth)	Fibre and thread making processes upgraded with new spinning and weaving machines; production of new diversified products enabled by improved machinery	More men and women processing and thread making	Explore existing and new market in Darchula and Kathmandu	Alliance between collectors for better bargaining power and economies of scale	Entrepreneurship skills
Sustainable harvesting	Use of ash and rocket stoves for improved product quality and efficiency	Women taking up product development and design	Develop brand for Kailash products	Interfirm cooperation with India	Technology transfer (modern weaving and machine)
New product development and design		Enhanced women engagement in weaving using modern weaving machine	Links with national and international markets		Market access and access to finance through CFC



Bhumiraj Allo Processing and Collection Center, Godhani

## Major Interventions

Strengthening local institutions, integrating the private sector, innovative livelihood options, promoting gender and social inclusion, and adopting water- and energy-smart technologies and fostering a transboundary perspective have been some of the adaptive strategies leading to improved and sustainable incomes for producers without challenging environmental integrity.

## Strengthening Local Institutions

Prior to KSLCDI, people worked on allo at the household and individual level. There was no tradition of working in groups, nor did people see allo as an income generating resource. Mr Gaur Singh Dhama, who is currently the chairperson of Bhumiraj Allo Processing and Collection Center in Godhani (BHPCC), was engaged in allo thread making and had employed a few people to work for him in the community prior to KSLCDI in Naugad Rural Municipality. Mr Dhama served as a link for KSLCDI to engage with local communities in value chain development. Bhumi Raj, an individually owned business, was made into a community enterprise to serve the market for better quality new products. A common facility center (CFC) under BHPCC was established in Godhani in 2016. The initiative provided technical and some financial support to establish the community facility center and equip it with hand looms and stitching machines. Interested people joined the group and today there are over 30 members working in the center every day at times that suit them. In a short span of two years, KSLCDI has made a difference for the people of Godhani in terms of secure livelihoods and strengthening local institutions for promotion of the allo value chain. At present, there are 84 members in BHPCC in Godhani. Community members work as per the rules set by the CFC. Monthly meetings are organized to discuss the functioning of the CFC. Meeting minutes are kept as records for follow-up activities. Decisions are based on common understandings. KSLCDI has been able to convert a single-family business into a collective effort through institutionalizing a collection center and developing individual entrepreneurs within the community.

Various capacity development activities were conducted to strengthen local institutions. To understand the need for a local institution, exposure visits of group leaders and key members were organized to Kathmandu to help them understand the need. Training, such as bookkeeping and organization management and leadership development was provided. Enterprise development training and business plan development for the CFC were also supported to help members understand the market and business perspectives (Figure 3).

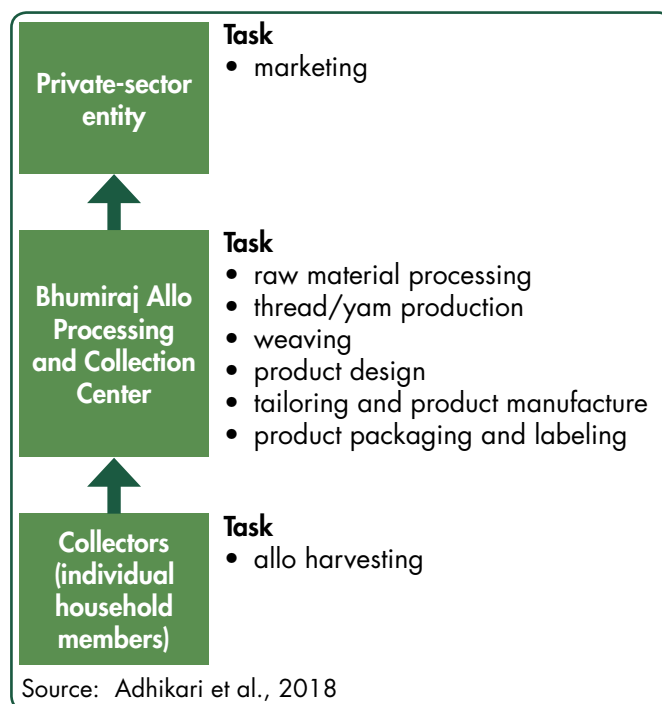
## Private Sector Links and Enterprise Development

The 'right' market ensures the sustainability of products. A study by Rasul (2016) shows how poor marketing facilities in the CFC led farmers to receive low prices for their produce. In KSLCDI, the partners had limited expertise linking the community with the right market. Therefore in 2015, SABAH Nepal, a social business organization, was brought on board to complete the allo value chain developed in Naugad Rural Municipality, Darchula. As a social enterprise, SABAH Nepal's mandate was to create sustainable business models focusing on 'people, planet and profit'. Although a business organization, SABAH did not just look at profit but also focused on social corporate responsibility. However, working in a remote area like Naugad Rural Municipality involved significant overhead costs which were supported through the Kailash Initiative. That is when the partnership began as a win-win for community, SABAH and KSLCDI.

With few people working in allo, there was little incentive to search for markets. The few products made by the villagers were mostly used for personal consumption. A few people, like Mr Gaur Singh Dhami and Mr Narpat Sahu, were engaged in yarn processing. A few elderly women were involved in thread making and even fewer in knitting. Almost none of the allo users had skills for stitching and weaving. They knit simple mufflers, made allo caps and produced small pieces of fabric of low value. Allo was not an income generating resource for them.

The aspect of commercialization and market perspective was lacking. The prime objective of bringing SABAH Nepal on board was to communicate to people the market value of allo, that allo could serve as an important source of income for their communities, and to connect them to the right markets. Their involvement enhanced the capacity of allo users in terms of skill development and improved communication and networking and helped bring income into the community through their buy-back guarantee schemes.

Figure 3: **Governance structure Bhumiraj Allo Processing and Collection Center**



## Social Enterprise and its Importance in the Mountains

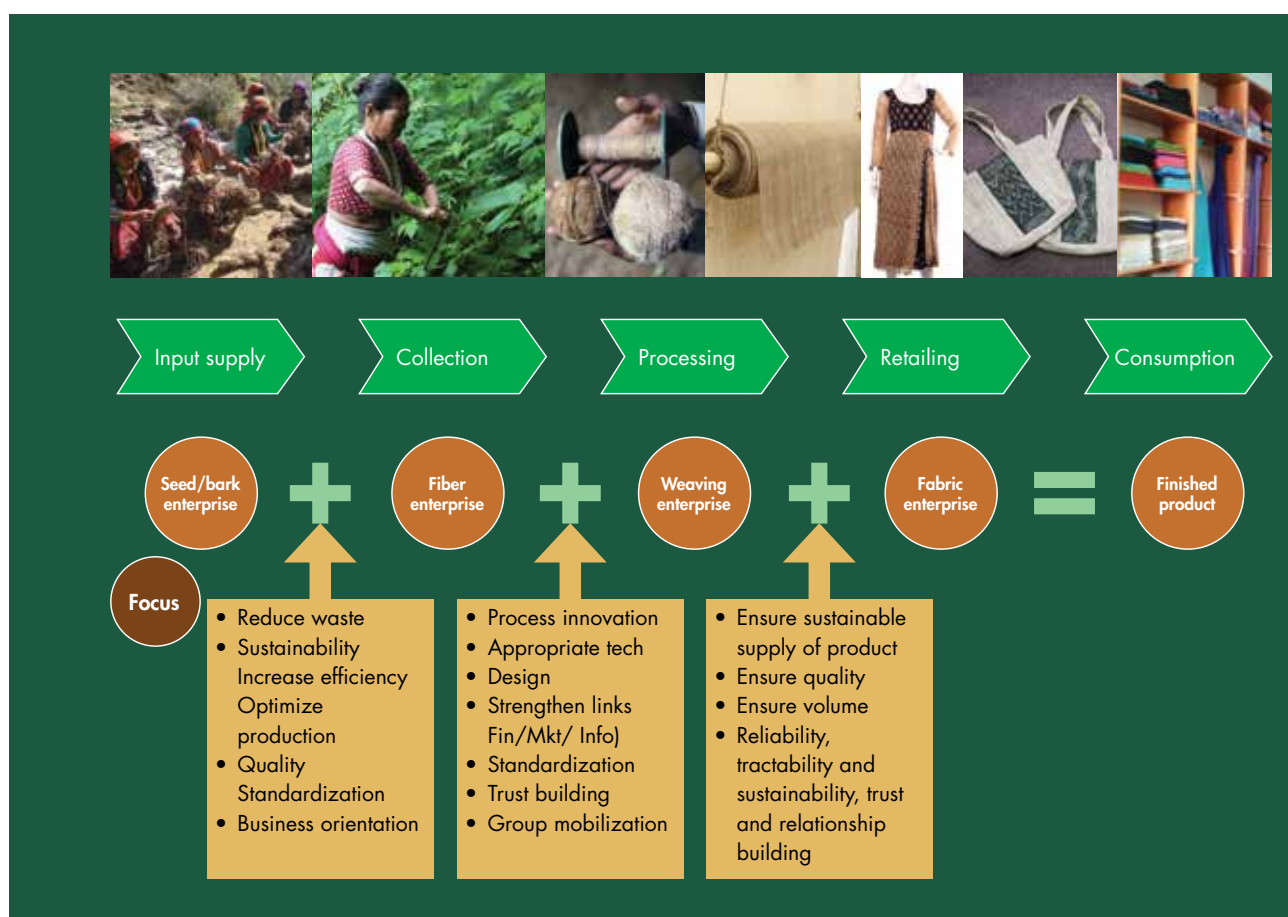
Private enterprises generate commercial interest. This and the business principles they embody help orient the attitudes and mindsets of local communities towards sustainable local business enterprises. In the mountain context, private sector bodies that are committed to social responsibility can deliver success and motivation at larger scales. Within the KSL, SABAH Nepal, a social enterprise, has demonstrated the critical role the private sector can play by developing a successful community based Himalayan nettle value chain. SABAH Nepal's business model engages people living at the bottom of the economic pyramid by allowing them to participate in the allo value chains as producers, consumers and entrepreneurs. The benefits of their enterprise went beyond immediate profits and higher incomes. The connections made fostered: i) market linkage – locally, nationally and internationally; ii) branding and positioning in niche markets; iii) capacity building across value chain nodes; iv) business knowledge; v) entrepreneurship among women; vi) financial provisions; vii) buy back guarantees; and viii) social networking and confidence among women.

Through KSLCDI, SABAH Nepal introduced the concept of sustainable market development in Naugad Rural Municipality. Linking SABAH with community groups helped members understand what quality is required by the market. There were two major agreements with SABAH. One was to add value at the local level and the second was to develop a rural enterprise so the members could understand market dynamics and sell products themselves in any prospective market.

Through active engagement of SABAH, efforts are underway to strengthen the supply chain. Initiatives include identifying leaders and giving them enterprise development and leadership training. Those trained can serve as community mentors for scaling up. The members are differentiated into specific groups (bark collectors, wool makers, thread makers, weavers, tailoring, knitting). Based on their aptitude and capacity, support was provided by the project to set up various enterprises at each node of the chain in close coordination with SABAH staff responsible for strengthening each node with specific skills (Figure 4).

Product development and design, process innovation, business planning and enterprise development, market orientation, and sustainable harvesting are capacity development interventions where SABAH took the lead. Training at each node of the chain for harvesting, making wool without chemicals, weaving yarn, knitting and stitching for new product development, and design has transformed livelihoods. Training was also provided to each member for entrepreneurship, financial literacy and leadership development. This helped the local economy, strengthened the value chain and strengthened the supply chain, creating a win-win situation for community, SABAH and KSLCDI.

Figure 4: Enterprise development at various nodes of the allo value chain



Source: Shrestha et al., 2016

## Adding Value

Several training events by SABAH Nepal and community leaders from Sankhuwasabha to different allo users in Godhani on thread making, stitching, weaving and knitting have developed the skills of the members on a wider scale. The members can now make a variety of allo products including bags, purses, suits, cushion covers, mufflers,

shawls, pot holders and runners. Hundreds of meters of woven fabric are also produced with various designs. Women have benefitted from the training as they can now make something productive and earn money. Other training is in progress for harvesting, thinning, and weaving. Capacity development for farmers to improve their entrepreneurship skills, business planning and cost benefit analysis for better marketability has also been integrated.

Training on allo processing for quality enhancement has also begun in the form of:

- Sustainable harvesting and nursery management and distribution of allo saplings for production in their community forest and private land for sustainable production and management of allo to ensure volume and conservation.
- Soaking bark over night before boiling which enhances quality and saves water and fuel.
- Use of ash instead of caustic soda, which reduces the cost and is organic.
- Improved washing technique so the thread comes out easily and does not get tangled.
- Improved wool drying.
- Innovations such as a hand spinner suitable to produce fine thread.
- Improved weaving and sewing machine for new product development and design.

The initiative has been successful in raising awareness amongst people on the importance of allo, established community user groups working specifically in allo, developed community skills in different sectors through training and capacity building workshops, and institutionalized a community facility center which serves the people of Godhani, especially women considered as the most vulnerable group in every community.

## Gender and Social Inclusion

A total of twelve awareness programmes, training events and exposure visits were organized for allo user groups in Naugad Rural Municipality over a two-year period. Training events focused on sustainable harvesting techniques, processing methods, skill development, and capacity building (Figure 5). The exposure visits to different training outlets in Kathmandu and to national and international trade fairs raised the awareness of allo user group members to the importance of market links and built their capacity in terms of marketing techniques.

KSLCDI focused on engaging women in livelihood activities and looked at areas where women are well equipped and would be interested in pursuing certain skills. Equal participation of women and men was encouraged to develop the sector taking care not to over burden women in the name of inclusion (Figure 6). Most women

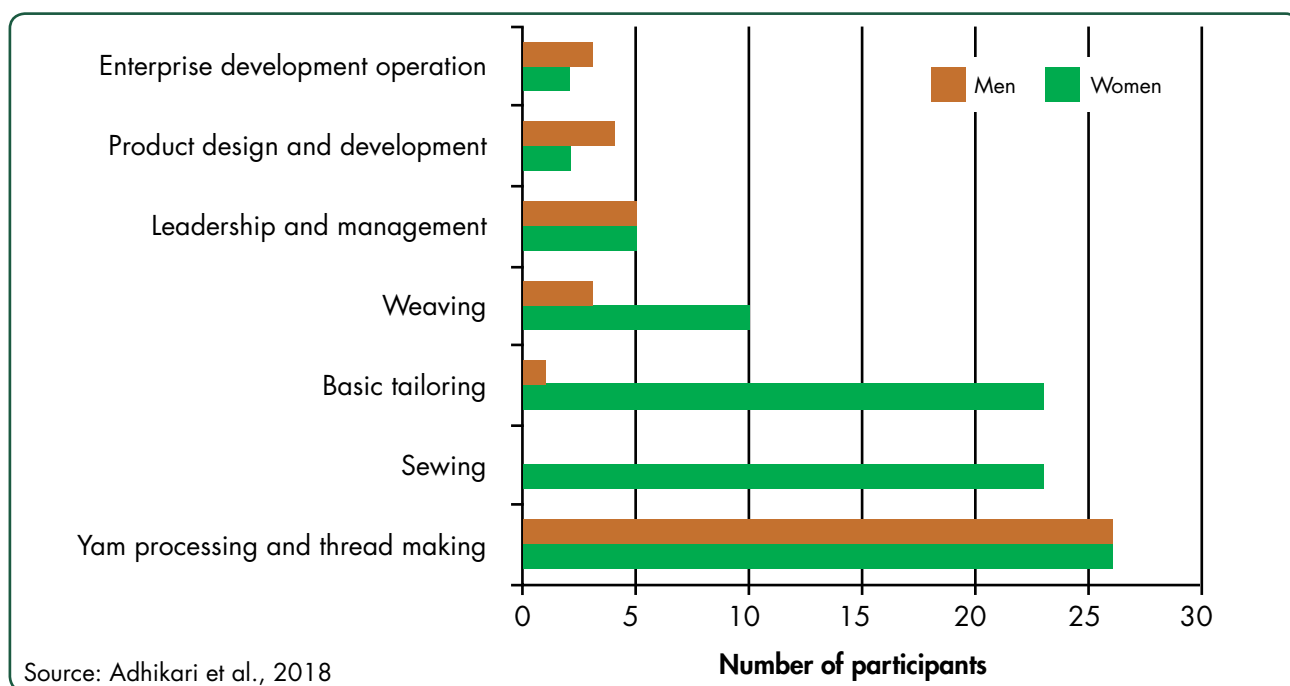
## Bhumiraj Allo Processing and Collection Center

The members of Bhumiraj Allo Processing and Collection Center, Godhani are producing better quality yarn and numerous allo items after they received training from KSLCDI. A community that produced only a few meters of allo fabric is now struggling to fill the demand for allo products. In addition to developing skills, SABAH Nepal has played a lead role in linking CFC members with markets for allo products. The buy-back guarantee scheme introduced by SABAH Nepal has ensured quality products from BHPCC in Godhani. Their products are sold directly in SABAH Nepal outlets and from there to national and international markets. People have been trained in such a way they can identify and reach markets to sell their items.

Figure 5: Enterprise development model of KSLCDI Nepal



Figure 6: Training and skills development of participants



A woman member knitting an allo scarf at the Bhumiraj Allo Processing and Collection Center in Naugad



### Promotion of entrepreneurship among women

KSLCDI has empowered more than 100 allo group members through various capacity building initiatives, helping them with finer thread production, stitching, weaving, and knitting. At present, more than 25 women run their own enterprise and knit allo shawls, coats, and bags that are exported to the USA and Germany. The finer allo thread fetches USD 11/kg in the market. Before the intervention, natural bark was sold for USD 1/kg. The Kailash brand has added value and helped women entrepreneurs position their products locally, regionally, and internationally. The products are promoted as key souvenir items for tourist who visit the sacred landscape. Today, the women are recognized as producers of goods sold under the 'Kailash-Truly Sacred' brand sold at the SABAH outlet in Kathmandu and focusing on the high-end niche customer. This initiative has not only contributed increased incomes but also given confidence, hope, and motivation to many women. More importantly, promoting women's leadership as local champions has helped empower women in the landscape.



members participated in skill building such as stitching, tailoring, and weaving to establish their own enterprises. Women assumed strong leadership roles as portfolio holders in managing the enterprise. Likewise, male members of the CFC were more interested in product design and enterprise development. Mostly women members work on allo at home when they finish their household duties. Work like stitching, weaving, tailoring and yarn processing can be easily done at home. The group also provided exposure visits to India and Nepal for women members and this helped them build networks across borders and with local line agencies to bring about transformative change in livelihoods and women's empowerment.

Naugad Rural Municipality is a typical mountain village inhabited mostly by indigenous groups including Brahmin, Chettri, Dalit, Thakuri, Byansi, Sanyasi, and Saukas. Dalits have been traditionally considered the most marginalized group. Most women from such marginalized groups are involved in household activities that do not earn money. Men either migrate to neighboring countries in search of employment or are involved in day-wage work. Social and cultural norms limit participation of Dalits and women in mainstream development activities. However, there has been increasing acceptance of women and Dalit leadership since the KSLCDI intervention and these groups are now seen as important actors in the value chain. No matter their age, caste, religion or ethnicity, people have received skills and leadership development training and are engaged in producing varieties of allo fibre products. Various training and exposure visits have been helpful in building the capacities of these marginalized people, who work as active members of Bhumiraj Allo Processing and Collection Center. With the exposure they got from the Kailash initiative, people can communicate and discuss their needs. Young entrepreneurs like Narendra Singh Dhimi can now use email, the Internet, and social media to facilitate their communication. An alternative livelihood option has been provided to men and women of this remote mountainous region.

## Greening the Allo Value Chain

A major focus of KLSCDI is to generate knowledge and awareness on how a value chain contributes to the environment at each node of the chain. Adopting water- and energy-smart technologies was therefore a priority and interventions were sensitive to the use of natural resources. The value addition process also considered impact on the environment and the natural habitat to optimize economic and social outcomes within a closed-loop system. The objectives of greening the value chain were to:



Women collecting allo bark in the forest



Women washing allo in the nearby stream in Naugad

- Increase sustainable use of natural resources.
- Maximize material and energy efficiency at each stage of the process.
- Reduce negative environmental impacts as outputs at all points of the chain.
- Link with other products for sustainability (the ‘basket’ approach).

Green value chain development also refers to the promotion of green market opportunities where economic benefits come from renewable resources and the use of natural products is maximized while environmental harm is minimized. Green value chain interventions include skills training in green technologies, training in natural products over chemicals and optimizing the use of natural resources (Table 6).

Before 2014, processing allo plants in Naugad Rural Municipality entailed boiling dried bark in water for 24 hours. This required burning a great deal of firewood and intensive time spent by women collecting wood. Caustic soda was also used to reduce the extraction time of the fiber. However, the wastewater was released into the nearby river and had negative impacts on aquatic life. A project intervention was successful in getting people to switch to ash, which is found in abundance in the kitchen of every household. This intervention helped increase efficiency and saved farmer’s the money it cost to buy caustic soda. It also increased the value of their products because now it could be accurately labeled as a natural product with no chemicals, which increased its market value. Greening the value chain resulted in positive environment and social outcomes and better economic benefits.

Energy efficient tools such as ‘rocket’ stoves<sup>2</sup> were promoted to conserve forests and increase efficiency. The household rocket stove saved time women otherwise spend collecting firewood and reduced cooking time (Table 6), allowing more time to make allo thread.

Table 6: **Energy efficiency through technology improvement**

Improve technology	Fuel consumption	Time consumption
Old stove	240 kg wood per boiling	6 hours per boiling
Modern industrial rocket stove	80 kg wood per boiling	3 hours per boiling

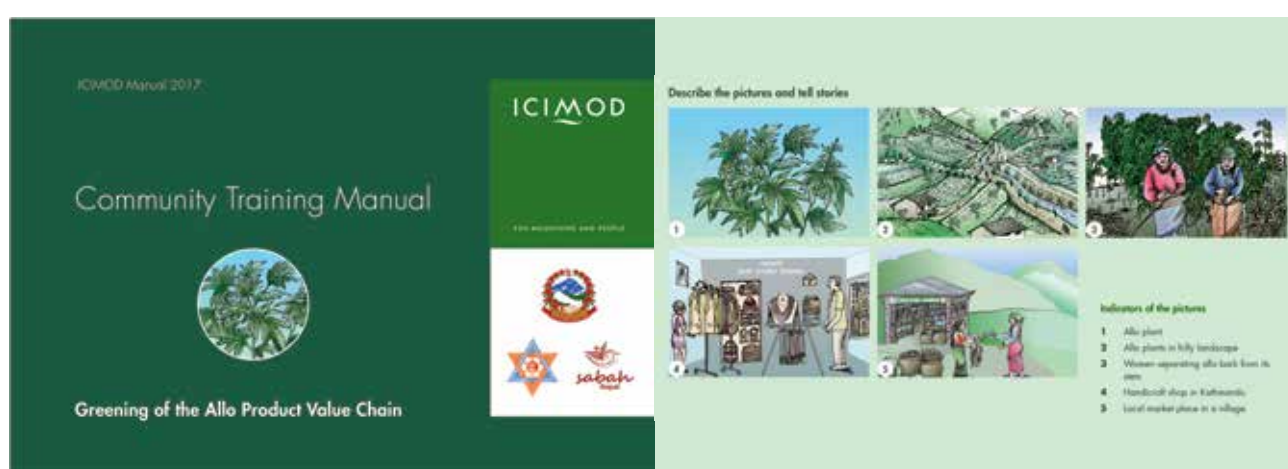
Source: Shrestha (n.d.)

<sup>2</sup> Small metal stoves designed to burn small pieces of wood very efficiently. Cooking is done on top of a short insulated chimney. A skirt around the pot will help hold heat in, increasing the efficiency.

The briquette was another alternative energy technology. Biobriquettes convert agroforestry waste to 'biocoal'<sup>3</sup> which can be used for boiling allo bark. The waste of the allo plant after taking out the fiber can also be used as biocoal. A few farmers started to earn money selling biocoal, which supports greening the value chain and balancing conservation and development.

Various interventions were made by taking into consideration allo conservation so there is no over-exploitation in the area once commercialization and promotion starts. A nursery was established to cultivate allo rather than just collecting it from the forest and sustainable harvesting training was conducted for communities to promote sustainable supply. It was also important to raise awareness the plant was not a weed and slashed while people were collecting grass from the forest.

In order to ensure better communication on greening of the allo value chain, a pictorial manual has been published by the KSLCDI team (ICIMOD, 2017). The main objective behind producing this manual was to help the community understand different dynamics of the value chain process. The manual presents concepts in simple, pictorial forms and can be easily used by community member who cannot read or write.



Community training pictorial manual on greening of the allo product value chain

## Ensuring Sustainability

Through this project, we learned that systematic analysis is essential to balancing conservation and development. It is important to look beyond economic factors and focus on social and environmental impacts, and understand people's needs and their relationships to the natural environment to optimize the use of natural resources and minimize environmental damage. It is therefore important to consider economic, social, cultural, and environmental bottlenecks in the value chain when addressing underlying root causes of inefficiencies. Table 7 summarizes the bottlenecks in terms of economic, social, and environmental aspects and how we addressed them.

## Fostering Transboundary Relations

### The allo value chain as a common approach

KSL's global and regional significance and its transboundary nature call for cross-border cooperation among countries that share the same landscape. All three member countries have endorsed the regional cooperation framework, a guiding instrument for developing and implementing the KSL regional programme. The framework brings partner institutions together under the shared vision of a long-term conservation and development initiative based on regional transboundary cooperation. One approach our partners used was the creation of the allo value chain to foster development of livelihood activities from farm and non-farm sectors while integrating ecosystem management and efficient use of natural resources including water and energy. As part of the same landscape, they share similar opportunities and challenges. The mountains are endowed with a variety of high-value, low-volume products, raw materials such as non-timber forest products and medicinal and aromatic plants suitable for cultivation as temperate and offseason crops.

<sup>3</sup> Biocoal refers to a hydrothermal carbonization process by which a moderate temperature, water-based process converts biomass to a coal-like substance that can be burned as a fuel.

**Table 7: SWOT analysis and major interventions considering environmental, social, and economic aspects**

Issues flagged by the SWOT analysis	Major interventions to address issues
<ul style="list-style-type: none"> <li>• Market and production (economic aspects)</li> <li>• Market for allo thread is low compared to that of coarse fibre; thread making needs more effort</li> <li>• Inadequate quality control; quality of thread is inconsistent and it is hard to meet international requirements while competing with products in big cities</li> <li>• Possibility of high value addition within the country</li> <li>• Income generation opportunities for women</li> <li>• Plenty of scope to manufacturing high quality products (finer threads)</li> </ul>	<ul style="list-style-type: none"> <li>• New product designs to meet market requirements and develop souvenir products and brand them under ‘Kailash- Truly Sacred’</li> <li>• SABAH linked with communities to develop desired products and deliver high-quality, chemical-free products for national and international markets</li> <li>• Capacity building, monitoring quality control, and export of products under the Kailash brand through SABAH</li> <li>• New product development and design for women artisans</li> </ul>
<ul style="list-style-type: none"> <li>• Efficiency and technology (social aspects)</li> <li>• The production of allo fibre at the local level is not cost effective</li> <li>• Existing technologies are simple but time consuming and tedious and there is a need for improved technology to process fibre from dried bark</li> <li>• Allo based enterprises involve tedious work, increasing women’s drudgery</li> <li>• Good livelihood options for women and disadvantaged groups as there is traditional knowledge and even the landless can engage. However, the necessary skills and knowledge not available to them</li> </ul>	<ul style="list-style-type: none"> <li>• New technology was brought to process allo such as spinning, weaving, and sewing machines for better product development at the local level and reduce processing time</li> <li>• Capacity development, leadership training, marketing skills, the establishment of a Common Facility Centre, and the formation of a cooperative initiated for better volume and increased bargaining power</li> <li>• Improved cooking stove was provided to save time in cooking and invest in processing to reduce drudgery for women</li> <li>• Capacity development for sustainable harvesting and processing carried out to bring efficiency to the chain and produce better-quality products for increased income for women and men</li> </ul>
<ul style="list-style-type: none"> <li>• Environmentally friendly products (environmental aspects)</li> <li>• Dependent on imports of chemical dyes from India</li> <li>• Excessive use of caustic soda causing environmental degradation</li> <li>• Might lead to deforestation due to increased demand for fuelwood to process allo</li> </ul>	<ul style="list-style-type: none"> <li>• To address environmental concerns, caustic soda and chemical dyes were replaced with ash and natural dyes to process allo fibre</li> <li>• Rocket stoves introduced for efficient fuel consumption addressing air pollution and its effects on human health</li> <li>• Sustainable harvesting training and nursery development for better regeneration</li> </ul>

However, the primary producers and collectors of these products generally receive a relatively low share of the return due to limited access to markets and credit, insufficient knowledge of market chains, lack of processing facilities, and inadequate quality control. Hence, there is a need to ensure local community participation through value chain development and contribute to increased income for mountain peoples. ICIMOD developed a common framework implemented by partners in each country. Backstopping at the country level was done by focal persons from ICIMOD. Every year, partners met to learn from each other.

### Learning from one another

Exposure visits and training events for value chain promotion were organized between India and Nepal. Participants from India came to Nepal to learn about chiuri oil and its use, its merits and demerits and making new products. From Nepal, farmers went to SEWA India to learn about marketing, product development, collective marketing, and enterprise development. Participants from both countries met to discuss ‘climate proofing’ their value chains and allo was taken as an example. Training for both countries on entrepreneurship development at each node of the value chain was conducted. Various opportunities such as participating in India ICIMOD Week to showcase the Kailash brand jointly and to learn about market opportunities was conducted. Various meetings were held for knowledge sharing and exchange at the farmer level, private sector level and partner level to better understand the value chain and for sectoral development of Kailash products.

### Linking markets across borders

KLSCDI supported partners from India and Nepal to participate in various local and regional exhibitions to showcase products and processes under the Kailash brand. Brochures were distributed to visitors during the exhibitions. Many visitors, including fashion designers and fabric designers from both India and Nepal were impressed with the allo fabric and shared their enthusiasm to incorporate it in their designs. Many asked how to



'Kailash-Truly Sacred' Brand launched at the 13<sup>th</sup> National Handicraft Exhibition, Kathmandu

purchase the product in bulk and exchanged contacts. Local honey, kidney beans and chiuri products such as soap and lip balm were also showcased. Lead farmers from villages with 50% participation of men and women participated in the fairs to showcase technologies and to learn marketing and selling skills. Private sector actors from both countries learned about the demand for various products. SEWA wanted to try all products in Uttarakhand where all resources are available but not harnessed. Similarly, SABAH was keen to learn about value added products from chiuri and packaging chiuri soap. They also looked at products like rajma beans and honey which fetch good prices. Because of the trade fair, SABAH got connected with various national and international buyers. As the demand is high, both SEWA and SABAH can develop products and sell into these markets (Table 7).

### Branding

Many farmers in the Kailash region grow crops, collect herbs or have skills to weave or make various products. They sell to the local market or collectors at a lower price than what they deserve. Because of the difficulty in transporting to the market and their lack of marketing skills, they are not inclined towards producing products on a larger scale. As individual producers they have little bargaining power with traders and they must sell their products at a low price.

Individual producers often face double competition from other traditional artisan products and standardized industrial products, but it is difficult for an individual artisan to gain consumer recognition and customer loyalty. KLSCDI saw the advantage in developing a common brand and collective marketing to build a sustainable market. The major benefits of common branding and collective marketing are listed in Table 8.

### The 'Kailash-Truly Sacred' brand and its business model

Various products have been developed from different pilot sites of KSL Nepal and KSL India. An invitation was accepted by SABAH Nepal under the Kailash Programme to bring all the products of the pilot sites of Nepal under the same umbrella brand. A code of conduct was formulated and discussed amongst the consortium members after which it was finalized. Stakeholders approved the design of the logo for the Kailash brand after which it was displayed on the products. The logo has also been registered and is used as a trademark. All products are tagged with the logo. Bags, calendars and brochures have been made with information about the Kailash brand and

**Table 8: Links with buyers**

Buyer/Institutions	Country	Description
Natalia Ordad	India	A Belgian entrepreneur working in India. She has a shop called 'Hemp House' in Dharmashala, India. She buys various products like allo shawls, pouches and sweaters.
Hansiba Connaught Place New Delhi	India	A popular made-by-women handicrafts shop in Delhi. Various products like kit bags, shawls, ponchos, toiletry bags and napkin holders are sold here.
Revati Organics India Outlets	India	All products under KSL India.
Ragstyle, Osaka	Japan	A handicraft outlet in Japan. Buys allo kit bags, tote bags, allo sun hats and other items.
Anne Lisa	Norway	A handicraft reseller based in Norway. She has placed orders for allo shawls, tote bags, allo thread and placemats.
Norlin Resort	Nepal	Menu cards, bill holders.
SABAH Nepal outlets	Nepal	All products under Kailash brand from Nepal.



**SABAH-Nepal and Revati Essentials joining hands for the joint endorsement of Kailash Brand**

promoted through various means including social media. A code of conduct to use the brand logo was developed and shared with the community.

In May, 2016, KSLCDI, through SABAH Nepal, participated in the 13th National Handicraft Trade Fair in Kathmandu, Nepal. At the event, the initiative launched the 'Kailash-Truly Sacred' brand and promoted all the products of pilot sites of Nepal including allo, nigalo and rittha under the same brand

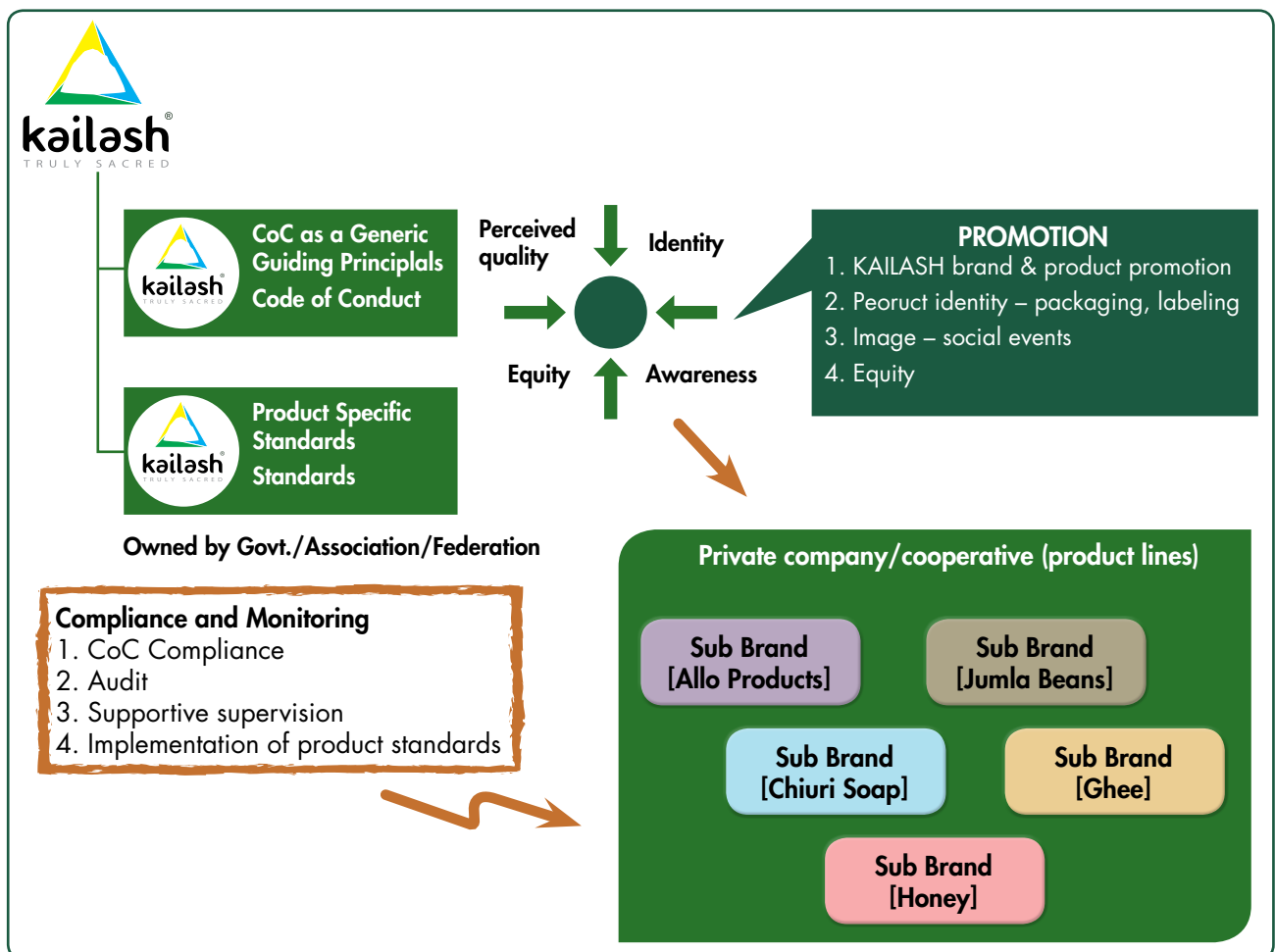
### **The basket approach**

The community in Naugad Rural Municipality is already connected to the market through SABAH Nepal. Given the portfolio of SABAH Nepal – its many involvements in ensuring value addition and marketing of natural resources and food products – the network provides opportunities for adopting a 'basket' approach to building resilience.

Communities have started producing other goods together with allo products, which, as good produced in the same landscape, they would like to market under the same Kailash – Truly Sacred brand. These niche products with high potential from Naugad Rural Municipality are kidney beans (red and white), chiuri (Indian butter tree), honey, ghee and blackeyed peas. Other products include wild oregano, Sichuan pepper, goat and sheep milk, Himalayan maize and its flour, mountain tea, and herbs. Growing Himalayan coffee and making goat cheese are other options. Opening an ethnic cuisine café in Khalanga bazaar for tourists is under consideration.

In August 2016, the concept of common branding was presented to KSLCDI partners from India and China at the KSLCDI annual review and planning meeting. Inputs were received from MoFE, SABAH Nepal and CHEA India suggesting a common understanding on the code of conduct and using the Kailash logo on products generated from the pilot sites in both Nepal and India. The concept of umbrella branding was approved by all the partners and at the 14th National Handicraft Trade Fair held in November, 2016 in Nepal, products from KSL India were displayed under the ‘Kailash-Truly Sacred’ brand name. In Nepal, ‘Kailash-Truly Sacred’ brand has been registered by SABAH Nepal and the products are showcased at the SABAH Nepal outlet in Kathmandu. Likewise, CHEA is in the process of getting a brand registered in India. The business model and how the brand will be promoted and carried forward in Nepal is shown in Figure 7.

Figure 7: **Kailash business model**



## Getting Brand Endorsement

SABAH Nepal, a social business organization, played an important role in creating market links for the communities in Naugad Rural Municipality, Nepal. Likewise, Revati Organic Farms Private Limited works closely with CHEA India on packaging and marketing products from pilot sites in KSL India. To have wider outreach, the two private sector actors were brought together in the same platform at the 14th National Handicraft Trade Fair in Kathmandu, Nepal. This collaboration was established for promoting and scaling out KSL products and the brand in the region. The collaboration was further strengthened by the signing of a MoU between SABAH and Revati Organics to jointly



Endorsing Basket Approach

promote the Kailash brand as a transboundary collaboration between the private sectors in India and Nepal. At present, allo, nigalo, rittha, chiuri, honey, and kidney beans are all sold under the Kailash brand in both countries. The two private sector entities, SABAH Nepal and Revati Organic Farms Private Limited, jointly promoted the brand at the 5th and 6th International Herbal Trade Fair held in Bhopal in 2016 and 2017 respectively.

Since KSLCDI works in three countries, it was important to

identify a connecting thread to bring all the countries together. Through the process of common branding the initiative has taken a step towards fostering transboundary relations in the region.

## A Summary of Major Interventions and Results

Over the past three years various interventions have been carried out to promote the allo value chain. A detailed description of the activities and major achievements for Darchula District is summarized in Tables 9 and 10.

Table 9: Attributes and major benefits for common branding and collective marketing

Attributes	Benefits
Recognition	Working collectively, small producers can benefit from economies of scale and broader brand name recognition. A collective brand and geographical Indications can give farmers instant recognition that helps them compete with large producers. They will acquire a reputation based on common origin. It will also save them from individual registration, advertising campaign and other costs.
Quality control	The many benefits of collective marketing help buyers, processors, distributors, producers, and consumers a from an optimal price-quality ratio, access to volume, guarantees and a steady supply for buyers, quality control and uniformity of products, streamlining of marketing, transportation and promotion costs and is an innovative force for new product development and a tool for regional development.
Fair price	Promote the production and consumption of a range of local products at fair value by linking national and international markets, consumers, and producers through promotional activities and awareness of the Kailash landscape.
Bargaining power	A collective marketing program will help local producers by enabling them to sell their combined output and by acquiring skills to make sure their products is of standard quality. Working as a group they will have greater bargaining power. and there will be no need to worry about marketing their product as it will be done by a marketing institution.
Market access	Local producers can develop a community agriculture business to increase market access for locally produced goods. Local products will gain market access supporting small-scale producers to increase the value of goods they sell.
Acquire new skills	Marketing partners will monitor quality and sort the products. The design inputs and training provided by the marketing partner will be beneficial for their skill enhancement. If needed, they can invest in communal equipment and services which will increase their production efficiency.
Foster cooperation	They will recognize benefits of cooperation and collective marketing. This will educate them to understand how markets work and how they can earn more money by collective action as they develop closer relationships with their fellow producers. This will enable them to organize themselves by adopting a participatory approach and empower local producers.



Table 10: Major interventions timeline

Parameters	Before interventions (2014)	Year 1 (2015)	Year 2 (2016)	Year 3 (2017)
Product Upgrade	Allo bark (8–9 tonnes) sold from Naugad Rural Municipality Naugad Rural Municipality at USD 1/kg. Value addition at local level limited to fibre and some fabric for domestic use. Fibre and thread not up to market standard. Small quantity of thread mostly went to carpet makers fetching USD 5–8/kg.	Focus on allo fibre making with appropriate technology and allo thread making. Quality fibre and medium quality thread production through various trainings and capacity building interventions.	Locally made allo thread provided to local and district enterprises. Ten new products designed and developed for Darchula tourist market and Kathmandu market. Decreased cost of production through process innovation – by bringing new weaving machine, warping machine, and sewing machine, and introducing improved harvesting and washing techniques.	Ten new products designed and developed as per Kathmandu market requirements and building on the traditional knowledge of local communities so as to represent the culture of the Far Western Region in the products. Souvenir products for Darchula market for people travelling to Kailash Mansarovar.
Market upgrade	Market not explored as few were engaged in allo value added product promotion. Products mostly made for local and household consumption.	Link with SABAH Nepal for thread market exploration and promotion of allo products in Kathmandu.	Allo bark market discouraged and thread promoted with market assurance. Brand developed for Kailash product with SABAH Nepal, the brand is collectively owned by CFC and SABAH.	Five major products for SABAH outlet. Brand to be promoted by SABAH. Products will be sold under Kailash brand and ownership transferred to community facility centre, SABAH to monitor and promote the brand in national and international arenas.
Process upgrade	Before Chinese products came to the market, people were processing allo and using various products like nets, ropes, clothing, etc.	Sustainable harvesting training. Improved process introduced for harvesting. Improved thread making process to produce cleaner allo thread. Mechanizing allo thread production using spinning machine per market requirement. Decreased cost of production through process innovation.	New weaving machine provided for better cloth making. New sewing machine and tailoring training for stitching. Reduced women's drudgery with the introduction of rocket stove and spinning machine. These introductions also had positive effects on health and environment.	Together with SABAH, more than 100 allo group members were trained in finer thread production, stitching, weaving, and knitting. The finer thread fetched USD 11/kg. Before the intervention, natural bark was sold at USD 1/kg. The fabric/cloth fetched double the price – from USD 4.5 to USD 10/meter due to its quality, which was improved by the introduction of weaving machines and the facilitation of trainings for weavers. New items are sold as high-value natural products both locally as well as internationally.
Functional upgrade	Mostly farmers were engaged as input suppliers selling bark.	Farmers take up allo weaving and allo thread making with improved technology.	Leadership skills enhanced for taking up new enterprises and running CFC. Marketing skills enhanced for product promotion and branding.	More members in Common Facility Center, CFC selling products to SABAH. Today, more than 25 women are running their own enterprise, making allo shawls, coats, bags etc, which are exported to the USA and Germany. They are also providing support and building capacity of other women in their family and community. Two more common facility centres have been developed by the government upon the initiation of the CFC and community members.

Parameters	Before interventions (2014)	Year 1 (2015)	Year 2 (2016)	Year 3 (2017)
Interfirm links	No coordination between actors No links to markets Existing groups not functional Collective marketing was not foreseen. Very limited buyers for value added product. Mostly bark was sold at individual level	Formation of Bhumiraj Processing and Collection Centre with 75 members in Godhani Naugad Rural Municipality Formation of Shree Katharnath Collection and Processing Center in Sundha Mundha Link initiated with SABAH Nepal Women's groups formed with a few men Collaboration strengthened with Department of Forests, ANCA and SABAH Collaboration strengthened with ANCA and collection centres	Formation of common facility centre and construction of building for the centre Links with SABAH Nepal and Ravati Organics Private limited, India for collaboration and learning Kailash brand formation through SABAH and its promotion in national and international markets Links with small and cottage industries for various training and registration of enterprises	Developed institutional mechanisms for profit sharing between collectors, fibre makers, and thread businesses Basket approach integrated with other products such as beans and ghee and maps included as commercial products sold by CFC Two more CFCs built in Naugad Rural Municipality with the support of Government of Nepal as a scaling up effort Many market players are interested in buying allo products from the CFC and are contacting them for more supply
BDS strengthening	MEDEP supported in introducing allo as enterprise and only Mr. Dhami was running the enterprise Market non-existent for many Very few service providers	Links with Sankhuwasabha women's group to access to better processing and harvesting techniques of allo	Entrepreneurship skills development through stitching, knitting, and weaving training from SABAH Enterprise developed and registered as community facility centre to access other BDS services such as access to finance and markets through SABAH	CFC liaison with other government departments and private sector for input services and market development.  The Government of Nepal together with Small Cottage Industry and the local Gaun Palika, is supporting these groups by providing machines as well as trainings
Fostering transboundary relations	Little cooperation or coordination with bordering districts in India No understanding or exposure in neighbouring markets No transboundary market links	Bringing partners in one platform for promoting value chain approach in both the site in India and Nepal Developing Kailash brand and promoting at trade fairs and engaging partners from India for corporation and replication	Exposure visits to India for allo promotion and strengthening connection with SEWA India for trade cooperation Building relationships and promoting Kailash brand to various stores in India selling natural products Bringing partners together with a common brand and promoting products under same brand in various trade fair sin India and in Nepal	Linking SABAH Nepal and SEWA India to promote common "Kailash-Truly Sacred" brand Private sector partnering with SEWA to learn about allo product diversification and with SABAH to learn about chiuri product diversification Transboundary business collaboration established with private sector entities from India and Nepal – Revati Organics and SABAH Nepal – who came together and signed an MoU to jointly promote the brand

## Challenges

The key challenges faced in developing the allo value chain in Darchula are described in this section. Difficult situations were seen as learning opportunities by the project team.

**Remoteness and social barriers:** The value chain was not created overnight and required long planning and an investment of time and in capacity building in the remote mountain village of Naugad Rural Municipality. Time, effort and resources need to be directed to non-market activities like building confidence and negotiating and mitigating conflict so people can work together. It takes time to understand the culture and group values and norms of disadvantaged people to gradually shape new values and prepare them for market engagement. The outcomes in such a remote place in such a short time will not be visible immediately but these are the interventions that can trigger change in the social and economic life of disadvantaged groups.

The location of the pilot site in the remotest parts of Nepal and India made it difficult to generate outputs easily. The pilot site in Naugad Rural Municipality is not easily accessible due to poor transportation facilities and is mostly inhabited by marginalized groups with no exposure to markets. The language, culture and lifestyle are very different, which made it difficult to communicate with people. Also, the remoteness of the area resulted in higher operation costs. Yartsagumba, a high value cash crop, made it difficult for communities to think of any other alternative which would yield such high income in such a short time. It took many resources to build social capital such as trust and mutual understanding between communities. Having local women as leaders and trainers was also difficult for both men and women to internalize in such remote areas as they did not trust that women can take a leadership role and to work under women in a strong patriarchal society is new to the men.

**Ensuring buy-in from partners:** This project was able to bring together three partners, the government, research institutions, and the community into one platform and work together. However, the lead implementers had mandates focused on regulation (MoFE) and academic research (RECAST). Capacities to deliver market structures and enterprises was limited. Hence, much time was spent on resource identification, feasibility assessments and awareness training. Engagement of a third party, especially a private sector actor as partner, took more time than expected due to delays in obtaining partner endorsements and lengthy procedures. Frequent changes in focal officers in lead implementing agencies also hampered smooth implementation of field activities as it required additional time and effort to understand the background and initial concept.

**Bringing the private sector on board:** Promotion of value chains and enterprise are domains of the private sectors. However, developing partnership with private sector such as SABAH Nepal was relatively slow due to government



An active member of Bhumiraj Allo Processing and Collection Centre



Community people participating in the trade fair

process and also low motivation of private entities to invest in remote areas, where access and markets are major challenge.

**Time and budget issues:** Most projects are time bound and short term with expectations of quick outcomes, which is difficult in the mountains as more time is required for non-market activities before market-related activities can commence. The time available for implementation of the field work was therefore not long enough to deliver the desired outputs especially at a transboundary scale, which takes more time and effort. The distant location and poor transportation system demanded extra spending in building social capital along with economic capital. Nonetheless, the initiative was able to form allo user groups, establish a common facility center, provide several skills and leadership development training events, conduct capacity building exercises, and organize exposure visits. Two private sector entities coming together for the scaling up of business and the promotion of the Kailash brand was a success achieved within a short span of time. However, there is room to strengthen trust and relationships between the community and private sector.

## Conclusion and Way Forward

Developing an allo value chain in Naugad Rural Municipality, Darchula was not an easy venture for the Kailash Programme. However, in four years, the initiative has been able to bring about visible changes in the community. A local natural resource has been converted into an important livelihood resource. Bhumiraj Allo Processing and Collection Center in Godhani has become a means of empowering the community, especially women and marginalized groups and there are now over 100 allo users in Godhani and Sundamunda. In both groups, many women and some men have become entrepreneurs and are registered as a group enterprise and other are members of SABAH. Through the initiative, they have been able to improve their livelihoods with an alternative income generating resource and are trying to be less dependent on yarshagumba, which is less abundant than in the past. The community has been able to use more time for productive work.

The numerous training and capacity building programs have helped them understand the potential for growth in their own community by making products from allo. The intervention focused not just on income generation but also on environmental and social aspects of conservation and development. Today, the community has their own business enterprise and a common facility center where they can come and make value added products. This common center is the first community-owned center developed in Godhani to which people contributed and constructed and over 30 women work there every day. The community is now associated with the 'Kailash-Truly

Sacred' brand and have ownership in the brand which is marketed in Darchula and in national and international high-value niche markets. Bringing a private sector actor like SABAH on board helped the community improve quality by acquiring new technologies, tools and designs and through a buy-back guarantee, which has motivated them to look at this alternative livelihood option in a more long-term and sustainable manner.

The focus of SABAH on making 'natural' products also helped the community focus on the environmental aspects by using ash instead of caustic soda and using rocket stoves for greater efficiency and more time for allo production. Selling in fair-trade markets has been the goal for SABAH as well, so ensuring participation of the community and ensuring their fair share of the profits has been an important part of this intervention. Sustainable harvesting and nurseries have encouraged the community to be more conscious of sustaining their resources. To provide new livelihood options in remote areas takes significant investments in time and effort to develop trust and social cohesiveness among members of the groups. Bringing women into the market means challenging societal barriers and changing mindsets and this was a time-consuming effort. At the partnership level, it is important to design value chain interventions with an open mind towards the private sector to help ensure future sustainability. ICIMOD is trying to connect with Pokhara University to bring such an innovation at the local level. Industrial pressure cookers, and beating and washing machines are being explored in order to mechanize the processing of allo. This technological advancement will solve existing issues of water availability, reduce drudgery, and decrease pressure on the environment by reducing air and water pollution. This will also encourage other areas where allo is available but water is an issue to take up allo processing in an efficient and effective way.

The establishment of the 'Kailash-Truly Sacred' brand was another milestone for the KSLCDI. Today, allo products from Darchula are sold in SABAH-Nepal outlet in Kathmandu. Many other products from the community were also promoted in the process of developing a basket value chain in Naugad Rural Municipality.

The first phase of KSLCDI ended in December, 2017. As a way forward, the following recommendations are offered for strengthening allo-based enterprises as a livelihood strategy in the remote mountain areas of far west Nepal.

Increase investment of Rural Municipality and Api Napa Conservation Area for scaling up and technology transfer of allo and other non-timber forest products.

Best practices from allo interventions in Godhani should be replicated in other Rural Municipalities with lead farmers and resource persons already available locally.

Strengthen engagement of SABAH Nepal and other private sector actors for buy-back guarantee schemes covering a basket of locally available mountain agriculture and non-timber forest products.

Promote integration of environment friendly technologies and methods in the collection and processing of allo and other natural resource-based value chains to ensure sustainable landscape businesses. Introduce technological innovation at each node of the chain by bringing a few machines run by micro hydros – such as washing and beating machine as well as pressure cookers with technical support from Pokhara University.

Increase participation of poor and disadvantaged households for cultivation of allo on the land allocated by Conservation Community Forestry User Groups.

## References

- Adhikari, L., Shrestha, A.J., Dorji, T., Lemke, E. & Subedee, B.R. (2018). Transforming the lives of mountain women through the Himalayan nettle value chain: a case study from Darchula, far west Nepal. *Mountain Research and Development*, Vol 38 No 1
- Gurung, A., Flanigan, H., Ghimeray, A.K., Karki, R., Bista, R. & Gurung, O.M. (2012). Traditional knowledge of processing and use of the Himalayan giant nettle (*Girardinia diversifolia* (Link) Friis) among the Gurungs of Sikles, Nepal. *Ethnobotany Research and Applications*, 10, 167-174. doi: 10.17348/era.10.0.167-174
- ICIMOD (2010). *KSL Regional conservation strategy*. Kathmandu: ICIMOD.
- ICIMOD (2017). *Community Training Manual: greening of allo product value chain*. Kathmandu: ICIMOD.
- Joshi, S.R., Rasul, G., Shrestha, A.J. (2016). *Pro-poor and climate resilient value chain development. Operational Guidelines*. ICIMOD Working Paper 2016/1 Kathmandu: ICIMOD.
- Kollmair, M. (2013). *Study report on Value Chains in the Kailash Landscape Area Assessment and Prioritization*. Kathmandu: ICIMOD
- Radhakrishnan, S.A.P. (2015). Development of fabric from *Girardinia Diversifolia* Stem Fibres and its Blends. *International Journal of Innovative Research in Science, Engineering and Technology*, 4(11). doi: 10.15680/IJRSET.2015.0411023
- Rasul, G., Hussain, A., Sutter, A., Dangol, N. & Sharma, E. (2016) *Towards an integrated approach to nutrition security in the Hindu Kush Himalayan Region*. ICIMOD Working Paper 2016/7 Kathmandu: ICIMOD
- Riisgaard, L., Bolwig, S., Ponte, S., du Toit, A., Halberg, N. & Matose, F. (2010). Integrating poverty and environmental concerns into value-chain analysis: A strategic framework and practical guide. *Dev. Policy Rev.*, 28(2): 195-216.
- Singh, S.C. & Shrestha, R.R. (1989). Observations on ecodemes in *Girardinia Diversifolia* (Link.) Friis, Urticaceae in Nepal. *Pakistan Journal of Botany*, 21(1), 185-190.
- Shrestha, A.J. (n.d.) *Breaking new ground with allo: how the allo value-chain has changed livelihoods and business in far-western Nepal*. Kathmandu: ICIMOD.
- Shrestha, A.J. & Subedee, B.R. (2015). *Sustainable livelihoods in the Kailash sacred landscape: promotion of allo (Himalayan nettle) value chain in Nepal*. Kathmandu: ICIMOD.
- Shrestha, A.J., Baral, S.P., Subedee, B.R., Wallrapp, C. & Amatya, R.M. (2016). *Fabric for a future: women entrepreneurs building better livelihoods through allo production in far-western Nepal*. Kathmandu: ICIMOD.
- Shrestha, A.J. & Adhikari, L. (2018). *Developing rural enterprises in Kailash Sacred Landscape-Nepal: steps and processes*. Kathmandu: ICIMOD.
- Shrestha, R. (1997). Cytological studies in *Girardinia Diversifolia* (Link) Friis. *Pakistan Journal of Botany*, 29(2), 263-269.
- Subedee, B.R., Chaudhary, R.P., Dorji, T. & Shrestha, A.J. (2017a). Indigenous and local knowledge of conservation and sustainable use of Himalayan Giant Nettle (*Girardinia diversifolia* (Link) Friis) in Eastern and Far-Western Regions of Nepal. In M. Karki, R. Hill, W. Alangui, K. Ichikawa, and P. Bridgewater (eds.) *Knowing our lands and resources* 191–98. Paris: United Nations Educational, Scientific and Cultural Organization (UNESCO).
- Subedee, B.R., Chaudhary, R.P. & Shrestha, K.R. (2017b). Use of Rocket stove for firewood savings and carbon emission reductions by the households involved in Allo (*Girardinia diversifolia*) fiber processing at Khar VDC, Darchula District, Nepal. *International Journal of Latest Engineering and Management Research* 2:28–35.
- Subedee, B.R., Chaudhary, R.P., Uprety, Y. & Dorji, T. (2018). Socio-ecological perspectives of Himalayan Giant Nettle (*Girardinia diversifolia* (Link) Friis) in Nepal. *Journal of Natural Fibers*, DOI: 10.1080/15440478.2018.1458684





© ICIMOD 2018

**International Centre for Integrated Mountain Development**

GPO Box 3226, Kathmandu, Nepal

**Tel** +977 1 5275222

**Fax** +977 1 5275238

**Email** [info@icimod.org](mailto:info@icimod.org)

**Web** [www.icimod.org](http://www.icimod.org)

ISBN 978 92 9115 635 1 (online)