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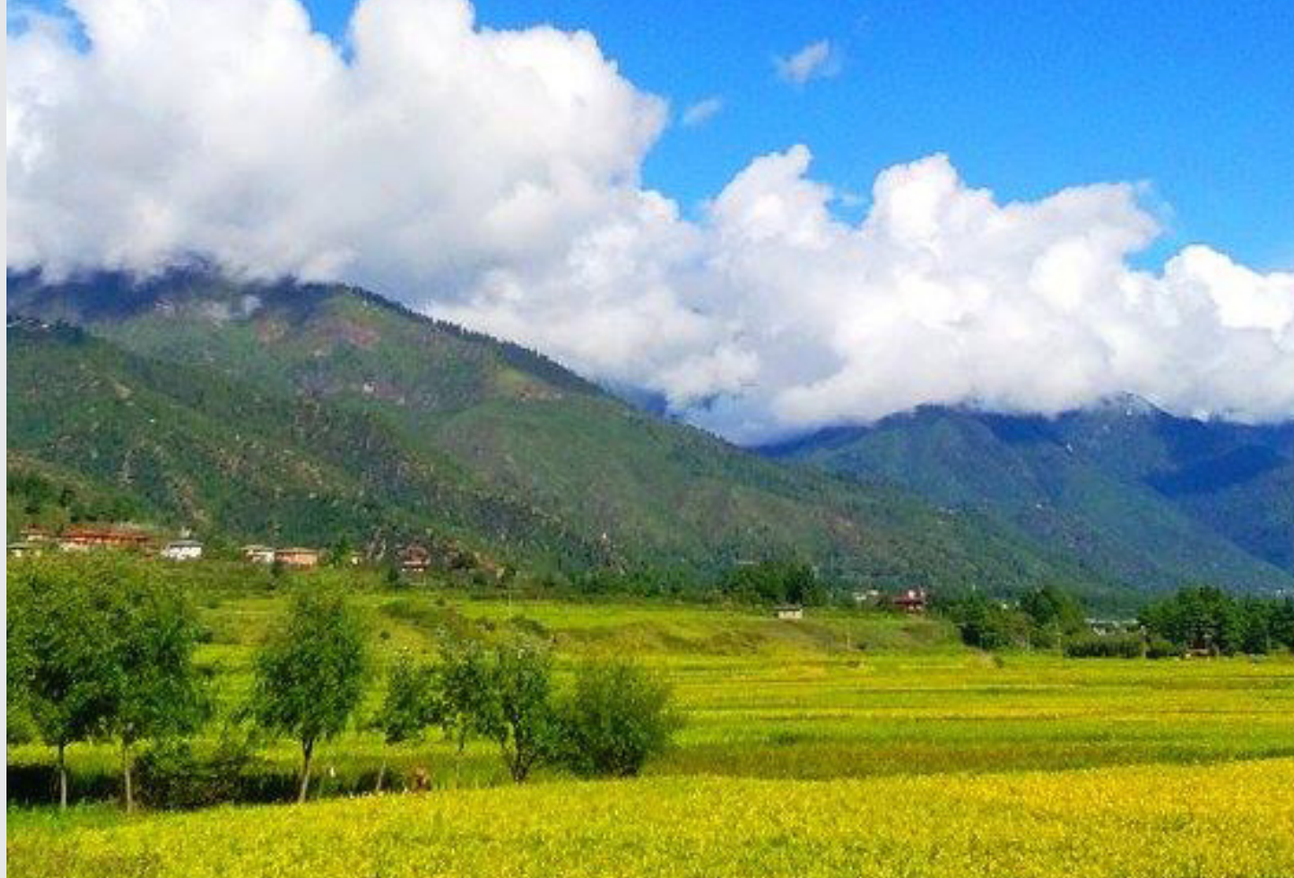
Climate Change Reporting:

Linking climate change stories to government climate change policies and plans



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Background

This publication on ' Linking climate change stories to government climate change policies and plans' is produced under BMF's second round of Climate Change Reporting Grant.

The main objective of CCR Grant is to produce well-researched, in-depth stories on the impact of climate change on vulnerable rural communities of Bhutan.

In the first round of the grant, nine grantees from different media houses were awarded the grant to cover 'the impact of climate change on rural communities'. The grantees traveled across rural parts of Bhutan pursuing various climate change stories.

In this second round of the grant, the same grantees were supported to follow up on their first climate change stories and link their stories to the government's climate change policies, strategies, and plans. BMF completed its second round of the grant within the period of four months from 18 December 2020 till Mid of April 2021.

Nine grant recipients including eight reporters and a mentor produced a total of 18 climate change stories that covers various climate change issues in rural communities of Bhutan and the role of government in these areas and where policy can make the biggest difference in helping the society to manage the risks we face as the climate changes. This will be useful for people engaged in developing and debating public policy, and also that it will provoke others to do their own work and generate new insights which will help us all to make progress in this area.

The Climate Change Reporting Grant is part of BMF's project titled "Linking Climate Change Reporting with Public Policy" supported by Earth Journalism Network.

Growing Mandarin becoming trickier

Sonam Penjor
Published in Bhutan Times on 14 March 2021

Mandarin growers across the country have gradually seen their produce decrease over the years and the once reliable source of cash income has started to trouble farmers with many moving to grow other more reliable crops.

Records with the agriculture ministry show that mandarin production in 2004 was 31,915 metric tons (MT) and it increased to 48,367MT the subsequent year and saw almost an impressive growth to 60,990MT by 2011. But the graph took a downturn since and the production decreased to 42,003 by 2016 and further fell to 28,017MT in 2017 and decreased yet again to 27,529MT in 2019.

The aggregate annual mandarin production over the past 10 years has been 41,077 MT and as of 2017, the fruit was cultivated in a total area of 13,992 acres. Mandarin is grown in 15 districts in Bhutan. As of 2016, five districts of Dagana, Pemagatshel, Samdrup Jongkhar, Sarpang, and Tsirang registered the highest production of more than 6,000MT. Punakha had the lowest production of 150MT followed by 177MT in Trashiyangtse and 189MT in Lhuentse.

The best yield is from Tsirang where one tree gives an average of 85 kilos followed by Samdrup Jongkhar with 62 kilos and Trashigang with 56 kilos. The worst yield was recorded in Punakha where one tree only gave an average of 20 kilos followed by Chukha with 26 kilos and Trongsa with 32 kilos.

Official records show that there are 1,665,797 trees in the country of which 882,807 trees bear fruits. The decreasing production is attributed mainly to minimal management of orchards and low adoption of new technologies. It is compounded by orchards being abandoned and the lack of care also adds to citrus greening, which has a direct negative impact on production.

>> Agriculture minister says the government would consider developing mandarin specific policies if there was public demand for it

Glacial Lakes are Clear and Present Danger

Karma Wangdi
Published in Bhutan Times on March 21, 2021

While the dangers of a potential glacial lake outburst flood are well documented and discussed within policy circles, the country's preparedness continues to be rather weak.

The information flow has improved over the years. A number of early warning stations have been set up. Even hazard zonations were done. But all this is not enough. The overall infrastructure remains unreliable.

On the other hand, the National Center for Hydrology and Meteorology's (NCHM) 2019 reassessment showed that about 17 of the glacial lakes are highly vulnerable to outburst at any time.

"There is a need for constant monitoring because the lakes' morphology and their feeding glaciers are changing constantly," said the officiating director and chief glaciologist Karma Toeb of NCHM.

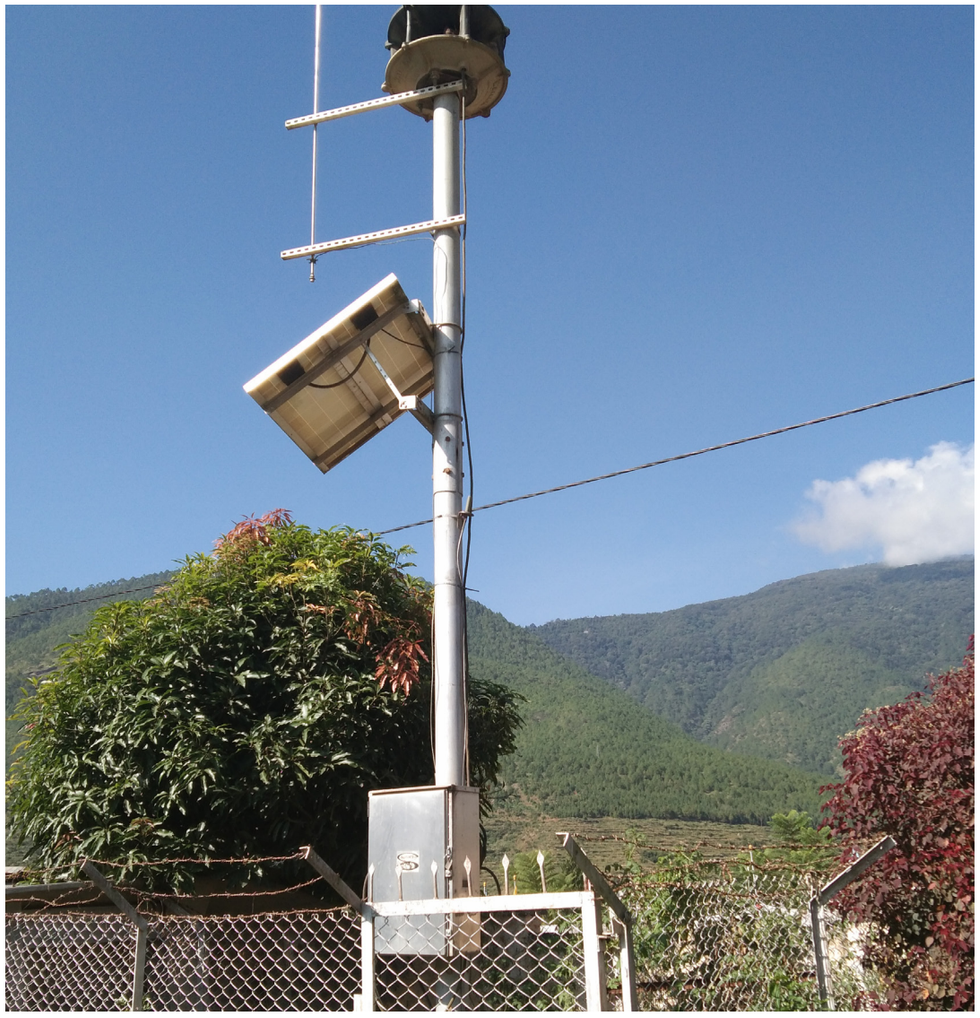
Karma Toeb said it was a daunting task to predict which lake would give way first and when. "The only thing we know is that there is a lot of work that needs to be done to understand the lakes better," he said, adding that of the 17 dangerous lakes, a few have not been verified on the ground due to inaccessibility.

Studies by the Kathmandu-based International Centre for Integrated Mountain Development (ICIMOD, 2016) has indicated that the current coverage of hazard-monitoring infrastructure must be improved by at least an additional 70 new Automatic Weather Station (AWS), 25 Automatic Water Level Station (AWLS), and 8 landslide monitoring devices which contribute to 35 integrated Early Warning System in Bhutan.

Officials of NCHM say the current early warning system (EWS) is almost 10 years old and must be upgraded. They say a complete overhaul of the system would be expensive. The NCHM is seeking the necessary financial assistance from the government.

Hazard Zonations Needs Updating Too

The hazard zonations mapping prepared



>> While the dangers of a potential glacial lake outburst flood are well documented and discussed within policy circles, the country's preparedness continues to be rather weak.

by an Austrian team in collaboration with the geology and mines department in 2008 is still also awaiting revision. Officials say the validity of the 2008 mapping is questionable as most of the flood warning system needs revival upgrading today.

According to the 2008 mapping, the following areas fall in the red zone: from Chhimi_Lhakhang till Lhamoidzingkha, a total of 117 buildings, with 558 people, 28 livestock, 16 monuments, two bridges in the area of 13.21 km2; a cultivated land of 0.42km2 and arid land (barren, open, scrubs) of 1.36 km2 and forest cover of 2.2 km2 and built-up area of 0.11 km2. In the red zone, people's lives are in danger both inside and outside homes and physical structures could be completely damaged.

The following areas fall in the yellow zone: 173 buildings with 1,399 people, 220 livestock, six historical monuments, and six bridges in the area of 5.78 km2; a cultivated land of 1.26 km2, arid land (barren, open and scrubs) of 0.573 km2, forest cover of 1.16 km2 and a built up area of 0.32 km2. In the yellow zone, people are in danger outside their houses, and buildings may suffer damage and possible destruction depending on construction characteristics.

Similarly, the flood hazard map shows the vulnerabilities of settlements along the Chamkhar Chhu basin. The map indicates that the Bathpalathang Airport is located in flood hazard area.

The situation gets even trickier given a mixed adherence to these warning, both by the government and the public. There are no clear regulatory policies on whether to allow constructions alongside the river basin considering the danger of glacial lake outburst flood in the future.

Further, 70 percent of settlement lies alongside river valleys and most of the agricultural activities occur at the hazard zones.

Some work has been done, though. A number of national recovery and reconstruction plans have been devised in the aftermath of recent disasters like 2009 Cyclone Aila. However, due to lack of strategic overview, lack of local technical capacity, and inadequacies in funding for recovery, the implementation of building Bhutan better has been challenging.

"Absence of key disaster and climate-related information is among the main challenges to be solved before risk informed development may occur," said Karma Toeb.

NCHM's chief of water resource service division chief, Tayba Buddha Tamang said, some technical reports are not very reliable to make decisions. "But we do have plans to establish an early warning system along Wang Chhu to monitor dangers from glacial lakes," he said.

Of the 17 potentially dangerous glacial lakes, nine fall under the Pho Chhu sub-basin and two in Mo Chhu sub-basin. Three of them fall under Mangde Chhu sub-basin, two under Chamkhar Chhu sub-basin, and one under Kuri Chhu sub-basin.

"Currently we are concentrating more on Lunana as technical studies and our finding shows that the lakes there are more critical. We monitor the Lunana lakes every year," said Karma Toeb.

Policy support for Pangtse oil production

Choki Wangmo
Published in Kuensel on March 19, 2021

With cheap alternatives flooding the market, the traditional practice of producing oil from Pangtsi shing (Symplocos paniculata) is fast disappearing in recent years.

The tree is widely distributed in Punakha and densely in Petari.

The villagers, however, are interested in large scale commercial plantation but without policy change and government support, the current practice is tedious with low economic returns.

Socio-economic and environmental benefits

Although pangtse shing has many other benefits as medicines, natural dyes, and as a therapy in agriculture, it is popularly used for extraction of oil in Punakha but on a smaller scale.

The major components in the fatty acids of Symplocos paniculata fruit oil are palmitic (32.2 percent), oleic, stearic (104.5 percent), linoleic, (58.5 percent) and linolenic acids (3.17 percent).

The whole fruit contains 36.6 percent oil, of which 79.8 percent is unsaturated fatty acid. The transparency, smell and colour of the oil produced from the seeds are similar to that of ordinary cooking oil such as peanut oil. About 750ml of pangtse makhu is sold at Nu 500 locally.

Pangtse trees are found in Goenshari, Kabji, Chubu, Teowang, and Shenganа-Bjemi gewogs in Punakha. According to the Economic Development Plan of the dzongkhag, every household in these gewogs has around 60 pangtse trees which produce 300 to 700kgs of pangtse oil.

People from Petari said that oil extraction had been practised for more than 25 years. The seeds are harvested during the eighth and ninth month of the Bhutanese calendar. The oil extracted by this traditional method produces two litres a day at the most from 20kg of pangtse seeds engaging three people. The overall cost of production is Nu 1,500.

A conservation biologist, Sonam Wangyel Wang (PhD) said that pangtse oil is organic and highly nutritious that it can compete in the international markets with other high-value oils such as olive. "If done well, this can contribute towards our country's foreign currency earning as well as increase the income of our farmers. The farmers in future can also earn from carbon trading."

He said that commercialization of the oil is possible, particularly at the household level.

However, according to the cost-benefit analysis conducted in Yuwa village in Punakha, the income generated from the traditional extraction is found to be financially unsustainable.

Apart from its household uses, symplocus paniculata has notable ecological uses. It can adapt to different temperature zones and varying soil conditions. The study on its adaptability and potential has found that it can also propagate in "barren, salty, and severe drought soil like degraded land and dry areas".

Differences in geographical, ecological, and socio-economic features of Bhutan make it feasible for the plant to not only grow in dry and degraded areas but also at a commercial scale.

Due to its developed root system with a large active absorption root surface and high tolerance to diseases and insects, this species plays an important role in maintaining ecosystem function and eliminating desertification and erosion.

Policy gaps

Pangtse oil was popular in the past and most sought for. But in a changing industrial atmosphere, rudimentary processing with low output, poor economies of scale, and high cost of energy and time discouraged villagers in Petari. Without an enabling policy and government support, processing has remained fragmented, minuscule and suffers from low yield.

Currently, most of the trees are removed to make way for other cash crops. The RNR statistics do not have published data on the yield of pangtse trees.

Villagers said that the practice of extracting pangtsi makhu was not recognised or a policy implemented. The yield has greatly reduced with the deterioration of previous

practices. The progeny of this species has weakened resulting in slower regeneration and people depend on imported alternatives.

Considering oil consumption habits and imports, there is a market for pangtse oil. The product, however, needs to be made competitive in terms of price and packaging.

The Food and Nutrition Security Policy 2014 acknowledges that domestic production of oils and fats is negligible and more than 90 percent of oils and fats are met through imports. The records have shown an increasing trend in imports.

Decades ago, more than 70 percent of oil and fat imports comprised refined vegetable oils (sunflower and soya-bean) and hydrogenated palm oil (dalda).

According to the Bhutan Trade Statistics 2019, the import of animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes amounted to Nu 1.4 billion.

The import trend could decrease with government support to those interested to take up commercial pangtse oil extraction.

Opportunities and policy recommendations

The government support through commercialisation projects in pangtse makhu production could encourage villagers to maintain the trees that are naturally growing. Initiatives and encouragement from the forest department and artificial regeneration of Symplocos paniculata could also help in reviving the diminishing practice.

Pangtse shing plantation and upgrading oil extraction technology would help increase the production and also create market demand.

Kabesa Gup Tshering Phuentsho said that the forest department funded a pangtse makhu oil expeller each to Shenga-Bjemi, Toewang, and Chubu gewogs to revive the production of pangtse makhu years ago. However, the project failed as the expeller was used to extract mustard oil.

To make it competitive with its substitutes, experts said that there should be interventions by the government to encourage large scale plantation, enhance oil expeller techniques, and train locals in making it a viable economic product.

Senior forestry officer with the Social Forestry and Extension Division, Tshewang, said that the department was exploring pangtse oil production in Kabesa gewog for enterprise development. He said that a farmers' group was formed in Petari last year but they couldn't yet venture into large scale production.

He said that the department recently consulted with the non-wood forest products managing group in the dzongkhag and have plans to upgrade the interim framework. "In the future, the department is expected to carry out a feasibility study about the availability of resources for large scale production and then will explore machines required for production. The study will determine the way forward."

The department, however, did not receive formal applications for large scale production.

National Council's member of the Natural Resources and Environment Committee, Pema Dakpa, said that the government policy supports any kind of oil production within the country.

He said that if the feasibility studies showed prospects of commercialisation, farmers should work with the agriculture extension officer. "The best way forward is to start a pilot project with farmers' group."

In the beginning, he said, it would be difficult to produce a refined oil but with right equipment, refining processes would be easier.

A study recommended that investments in biotechnology and modern technology will help cultivate this species for large scale production and other industrial uses that bring about progressive social change and cultural autonomy.

Pema Dakpa said that focusing on the pangtse oil will reduce pressure on mustard cultivation which requires more farmland. "Since pangtse grows naturally, the land can be used for other purposes like paddy cultivation."

If the trees impact paddy cultivation as claimed by farmers, he said there were ways to maintain and control growth.

Govt. and yak harders pin hopes on a federation

Phub Dem
Published in Kuensel on March 23, 2021

The decline in the number of yak rearing households in Haa, a major yak-herding community, has contributed to worsening economic conditions and it is a national concern. The yak herders comprise less than 5 percent of the country's population.

These communities also serve as informal custodians along the northern border and occupy the country's northernmost belt, mainly in the alpine region.

However, recently many natives of Haa have returned home to warmer valleys, leaving behind the age-old herding practice. They say yak herders today face an uncertain future due to development and climate change, altering the practice, isolating and fragmenting herders and their traditional pastures.

Most herders say policies change with the change in government every five years and this has worsened their troubles.

Although policymakers are aware of the declining trend in yak farming, the community has received nothing much, they say.

Seasoned herders like Ugyen say although the government provided them with tarpaulin, woodstove, milking and churning equipment, little could be used. He said that there was no action plan to retain the declining herders except for some training on product diversification and animal health.

Another herder, Jamtsho, said the herding community had been looking forward to the Highlands Flagship Programme, which they believe was the only programme designed explicitly for yak herders never came.

For now, the formation of a yak federation, with support from the government, seems the only hope for these highlanders.

The yak federation is expected to preserve, promote, and protect yaks and yak herders.

Chief livestock officer with the research and extension division, Tawchu Rabgay, said that the formation of yak federation would represent the herding communities where herders' voice could be heard at the national, regional, and international levels. "The yak federation is ready for registration."

At the moment, there is no policy to address problems faced by the yak herders.

According to some officials, the government prioritised lowland livestock, and highlanders were often neglected.

RNR Research & Development Centre under the Department of Livestock was realigned as National Highland Research and Development Centre only in 2016 to promote the sustainable livelihood of highland communities.

In the past two decades, the number of yak herding families practising transhumant yak rearing – in which herders lead their livestock between mountains in summer and lowland pastures in winter – has plummeted in the Himalayan region.

Programme Director of National Highland Research and Development Centre, Vijay Raika (PhD), said that although transhumant migration was still relevant and essential, the practice was on the decline, leading to ecological, economic, and socio-cultural losses.

He said that it was essential to create awareness and provide an incentive to encourage youth to take up herding as most youths prefer other livelihood options, leading to farm labour shortages and family abandoning the herds.

Like Bhutan, a declining trend in yak farming practices is reported in Nepal and India due to the rural-urban migration of younger pastoralists desiring a better and more comfortable life and better opportunities.

According to the Director-General of ICIMOD, Pema Gyamtsho (PhD), it was essential to encourage and create attractive opportunities for the highlanders to stay in their places.

He said that there was a need to consider the provision of education and health services. "We can have high schools and doctors working there," he said.

Focusing on income diversification, he said that tourism must be promoted with attractive packages and incentives, including tax waivers integrated with livestock farming and herbal products to enable highlanders to create jobs and earn decent incomes.

Highland development programme

The government included the Highlands Flagship Program in the ongoing 12th Plan to deliver targeted interventions to improve the lives of selected highland communities. However, the flagship programme has now become a highland development program.

The government insists that flagship programmes are time-bound, unlike NHDP that will run beyond the 12th Plan.

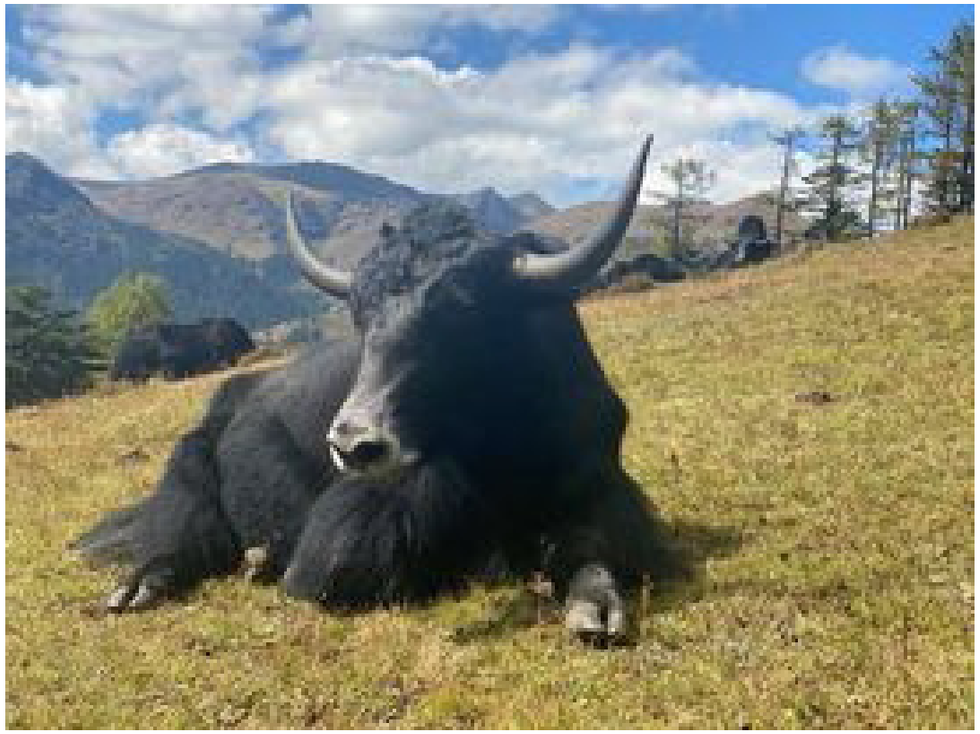
Activities under NHDP were narrowed down and made livestock-based, and the budget for the project was also pared down by more than 60 percent.

According to Vijay Raika, the highlanders were looking for essential supports such as health, education, telecommunication services, and farm roads under the flagship programme.

He said that the highland development programme does not have many provisions to cover local infrastructures, requiring multi-sectoral interventions to provide youths with tangible opportunities so that they stay back to take care of their family herds.

The programme, for now, focuses on genetic improvement, nutritional management through nutritious feed in winter, and disease prevention considering the risk of climate change on yak health.

Some of the programme's adaptive measures and action plans include the construction of temporary sheds in grazing areas for free-range grazing and migratory routes to protect them from adverse weather.



The programme primarily focuses on product diversification, creating a yak product value chain to a target niche market, and developing herders in product diversification.

Lack of policy intervention

According to a study "The future of yak farming in Bhutan: policy measures government should adopt (2016)" by Jigme Wangdi, the decline in yak rearing was associated with limited policy support from the government on yak research and development.

Other issues include labour shortages, high morbidity and mortality of yaks resulting from erratic climate and emerging new diseases, deterioration of the alpine tsamdro (grassland) resulting in a lack of quality pastures, and external encroachment of tsamdro.

The study suggests the government to develop a clear road map for the yak development program and provide adequate resources to give highlanders a well-protected livelihood from yak farming into the future.

Besides, researchers have suggested that the government formulate policies, plans, and projects to support and encourage younger generations to continue with the age-old tradition of yak farming.

According to Pema Gyamtsho, there should be a specific provision to deal with climate change impacts in the highlands. He said climate change impacts were more pronounced at high altitudes, as shown by the vertical change in species and their habitats and threats from glacial lake outburst floods.

As part of mitigation and adaptation plans, he recommended that policymakers consult and engage the highlanders in monitoring climate change impacts. "Highlanders have a better understanding and appreciation of the changes taking place over the years and could provide valuable local knowledge to adapt to climate change," he said.

Rangeland management

Ten highland dzongkhags shared concerns regarding fodder shortage which often lead to low milk production and a higher rate of yak calf mortality, causing economic loss to yak herders.

As fodder shortage, especially during winter, was a challenge facing the highlanders, the NHRD centre has already initiated feed block productions to address feed shortages and nutritional supplementation.

The degradation of rangeland due to poor management is a concern as the traditional management practice of rangeland burning is prohibited.

A rangeland expert, Pema Gyamtsho, said co-management of rangeland for multiple uses such as livestock grazing, wildlife conservation, and watershed protection must

be put in place to address rangeland degradation.

This, he said, should begin by ensuring user rights and tenure security to the local people. "Otherwise, the tragedy of the commons is likely to repeat itself when it comes to high altitude rangelands."

He added that ICIMOD could bring in experiences from across the region to support such an initiative. "ICIMOD is already working with the Watershed Management Division of the Department of Forests and Park Services to revive the dried up or drying springs, and these could be provided with more support."

According to some researchers, retaining mountain pastoralists played a significant role in utilising and protecting the country's considerable alpine rangeland resources. "In the absence of pastoralists, these large areas would remain unoccupied and underutilised. The government has to allocate resources to secure and protect these vast rangeland resources from any external exploitation and encroachment."

Vijay Raika (PhD) said climate change was one of the possible causes of rangeland degradation. He said that the centre was involved in an alpine pasture restoration programme and sustainable yak rate along with controlled grazing.

He said that the absence of a rangeland expert in the county impedes rangeland research which was essential to guide policymakers.

In the meantime, he said that the centre has been creating awareness among highland communities on the importance of protecting rangelands, focussing on measures related to sustainable rangeland management practices.

Springs are drying up, say experts

Bhutan faces a typical dilemma today—that of insufficiency in the land of abundance.

Gopilal Acharya
Published in February 6, 2021

The anecdotal narratives emerging from farming communities around the country are disturbing. They are the narratives of truth that cannot be ignored anymore, especially by policymakers and lawmakers.

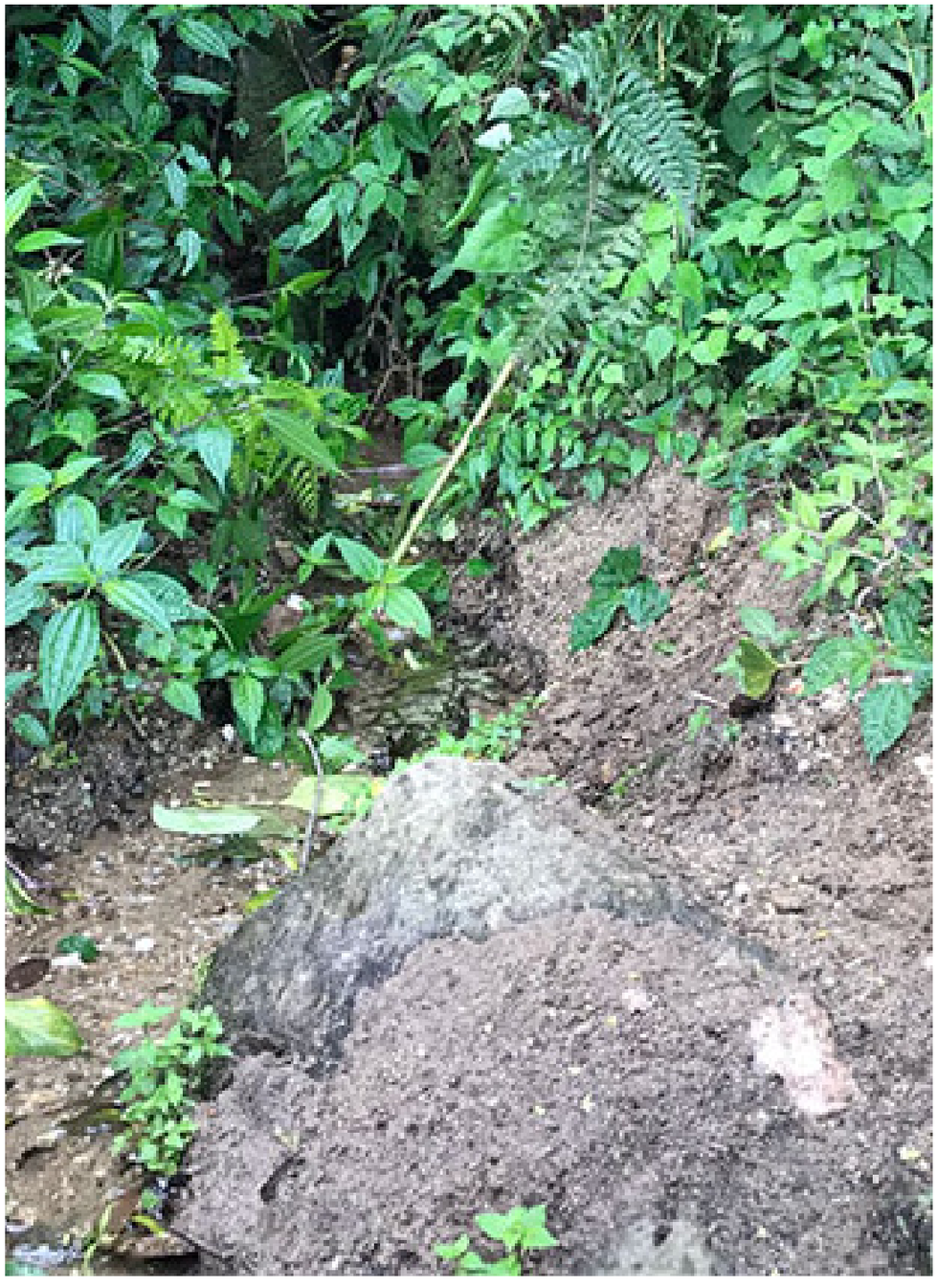
A huge number of traditional water sources, which mainly include springs and streams, are either fast disappearing or are seeing a rapid decline in discharge volume. These mountain springs have fed Bhutanese for generations since they are the primary source of water for rural households in much of the Himalayan region.

Most traditional water sources in Bhutan are rain-fed streams or springs. These streams swell during the monsoon, providing water for paddy cultivation. A single stream could be a source of water for hundreds of households.

Policymakers can no longer turn a blind eye

Many official reports have noted the problem of drying water sources and farmers' struggle with meeting the water demand for both domestic and agricultural purposes. These include reports by the National Environment Commission and field studies by the Ministry of Agriculture and Forests (MoAF), Kathmandu-based International Centre for Integrated Mountain Development, and local governments, among others. Some recurring themes of these reports are drying up of traditional water sources, the impact of farm road construction on water resources, and the need for groundwater studies.

A recent assessment of 6,555 water sources by the agriculture ministry under Strategic Programme for Climate Resilience



>> One of the springs assessed in Trashigang

preparatory project found that about 35% of them (2,317) were in the process of drying, two percent (147) had completely dried up, and the rest remained the same.

The assessment covered 19 of the 20 dzongkhags of Bhutan. The northernmost district of Gasa was left out of the study because the region is already rich in water resources. Of the 19 dzongkhags, Samtse reported the highest number of drying and dried-up water sources, followed by Wangduephodrang and Trashigang dzongkhags. Haa, Trongsa, and Bumthang had the least number of water sources in the process of drying up.

"It was an initial assessment of water sources in the country to gauge the ground realities," an official of MoAF said. "The spring-shed protocol was used to understand the groundwater conditions of the selected sites. It was the first step towards collecting empirical evidences so that informed decisions are made in the water sector."

There have been reports of water sources drying up from Samtse to Tsirang to Mongar to Trashiyangtse. For example, Khamdang in Trashiyangtse district has always been a water-stressed gewog. Some 30 years ago, people of Khamdang scooped water from tiny springs with gourd ladles. Today, after numerous development activities, the area remains as distressed as it was in the past despite sourcing water from the Buyang watershed. And this will not be sustainable in the long run, officials say.

Is climate change the bad guy?

Studies have noted that changing rainfall patterns because of global warming could be contributing to the decline in the discharge volume of natural mountain springs. This is already impacting the agriculture sector, primarily affecting smallholding farmers.

To make the matter more complex for decision-makers, Bhutan lacks historical records of rainfall. There is no comparative data. And up until about a decade ago, hydrological data around the country was recorded manually, in some cases possibly compromising the accuracy of facts and figures.

Increasing variability and unpredictability of rainfall is posing new challenges to farmers. They say rainfall these days lasts for shorter period and people are now switching from the cultivation of more water intensive crops like paddy to less water intensive crops like potatoes, maize, millet, and seasonal vegetables. In some cases, farmers have altogether abandoned paddy cultivation.

In the Punakha study, for example, many respondents blamed the dwindling water availability in the rain-fed streams as one of the factors affecting their production. Some households had resorted to buying irrigation water from upstream villages, while households close to the Punakha river had started pumping river water into paddy fields.

Dire consequences ahead?

Spring shed is an emerging science in the region. Even in developed countries like the US that have extensive repository of scientific data, ground water science remains rather weak. Therefore, experts say the issue is much more complex than what meets the eye. For example, situation in each area is different ecologically.

"Springs and streams are very delicate ecosystem, sensitive to climate change and other anthropogenic activities," said an official. "The key is not to harm the natural landscape, and understand that any activity, especially huge landscape development activities, is bound to have impact on water ecosystem."

In Bhutan, the two big landscape development activities have been the construction of huge hydropower projects and the rampant construction of hundreds of farm roads. These roads cut through fragile slopes, gorges, and running water bodies, and have been built without mapping recharge areas. Experts say these roads could easily disturb the movement and distribution of groundwater.

The science-policy interface is weak in Bhutan. There are a dozen water-related policies and regulations in place. But the science remains weak. There is no enough catchment research, agencies work in silos, and the lack of sectoral collaboration and coordination has become a deep systemic issue.

What experts recommend

While modest work has begun to address the issue, the country still lacks considerable expertise for a nationwide intervention. For example, work has begun at five pilot sites in four districts for spring revival and spring-shed management. In these pilot sites, officials have conducted hydrogeology mapping and set up monitoring systems. The work now will be to decide on the intervention and monitor the progress.

Farmers have to be made aware of small-scale efficient water management practices such as rainwater harvesting, drip irrigation, plastic-lined conservation pond, and water recharge ponds. Rainwater harvesting could be piloted to see its sustainability. There have also been suggestions to explore groundwater potentials through bore wells in southern Bhutan.

The big need of the hour, officials say, is a centralised agency on the water resources management since the current institutional set up is weak with duplication of mandates among numerous agencies. There is also no centralised data repository on water resources and the implementation of water-related policies and regulations have been weak.

"Since every aspect our life hinges on water we need a premier and independent body in the field of water resources," said an official. "With the duplication of mandates among various agencies, many urgent issues related to water are either willfully ignored or overlooked. That's why we need an independent water body.

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Tashi Phuntsho
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ཟ འཛམ་གླིང་གཅིག་འཐུང་དང་ དཔལ་འབྱོར་གོང་འཕེལ་མཁོགས་དགས་སྒེ་ འགྲོ་མི་ལུ་བརྟེན་ གནམ་གཤིས་འཐུང་བགོད་དང་ འབྲེལ་བའི་ དཀའ་ངལ་སྣ་ཚོགས་ཐུང་གཞིན་དུ་ཡོད་མི་དང་ འཐུང་ཉན་ཡོད་མིའི་ གདོང་ལེན་ལུ་ འབྲུག་རྒྱལ་ཁབ་ནང་ ཁྱེམས་ཡིག་དང་ ཐབས་ཐུབ་ དེ་ལས་ འཆར་གཞི་ཚུ་ ལག་ལེན་འཐབ་སྟེ་ཅ་ཡོངས་ལས་ ལེགས་ལམ་ལུ་ཞུགས་ཏེ་ཡོངས་ཨེན་པས།

དེ་ཚོ་ དུས་བརྟེན་བློག་མེ་འཐུལ་ཁང་དང་ བཅོ་སྤུ་ཁང་ ས་གཏེར་དང་རོ་གཏེར་ ས་ཆ་བློར་སྡུད་ རང་བཞིན་གནས་སྟངས་ཀྱི་ ཞིབས་ཏོག་སྡུད་པའི་འཐུས་སྤེ་ གཞུང་ནང་ གཙོ་གཏན་ལས་ལས་འཛིན་ དེ་ལས་ སྤེ་ཅ་སྡེ་གཅིས་ སྡུད་དགོ་པའི་ལས་འཆར་ཡང་ བསྟར་སྤྱོད་འབད་བཞིན་དུ་ཡོད་མི་དེ་ ཨཐར་འཛོལ་བྱེད་མ་ཨིན་པས།

དེ་འབད་ཕྱལས་ དུ་རིས་ནང་པར་ རྒྱལ་ཁབ་ཀྱི་ མི་སྡེ་དཔལ་འཛོར་གོང་འཕེལ་དང་ བཅོ་སྤྱན་ཚུ་ རྒྱ་སྐྱེད་སོང་སྡེ་ཡོདཔ་ དང་ བཞིན་གནས་སྟངས་ལུ་ ཐ་སྤྲོས་སྤྱི་ ལ་ཐག་པར་ ཉམས་སྤྱད་འབད་ཚུགས་ཏེ་ཡོདཔའི་ཁར་ མི་སྡེ་ཡང་ དང་བཞིན་དང་ ཨཐུན་ཏོག་ཏོ་སྤྱི་ གནས་ཡོད་ལེ་ འཐུག་རྒྱལ་ཁབ་ནང་ ཁྱེམས་ཡིག་དང་ ཐབས་བྱུས་ དེ་ལས་ འཆར་གཞི་ཚུ་ ལག་ལེན་འཐབ་སྡེ་ཅ་ཡོངས་ཨེན་པས།

དབྱེ་འཁད་བ་ཅིན་ སོ་ནམ་དང་ནགས་ཚལ་ལྟ་བུ་ཁག་ རྒྱལཁབ་ས་ཁོངས་འཛིན་སྤྱོད་སྡེ་ཚན་ཀྱིས་ འགོ་འདྲེན་ཐེབ་ལས་ ཚོང་སྤྱངས་རྩོད་ཁག་ གཡག་སྤྱི་སྤྱབས་མི་སྡེ་ནང་ རྒྱུ་ཤུལ་ནས་ལྟ་ནས་ཐུབ་ལུ་ སྤྱི་ལུ་ཉམས་སྤྱད་ཀྱི་ སྤྱོད་འཐུལ་ལས་ལག་ལེན་ གཞི་བཙུགས་ཏེ་ཡོདཔ་ དབྱེ་ལྟ་ས་དང་ བཟོ་ཐབས་ཀྱི་ ཁ་ཤས་ཡོད་ཀྱི་ཡིན་ན་ ཁྱེད་རང་ཚོ་ཡང་ ཁྱེད་ཀྱི་ ཆུ་ཁུངས་ཀྱི་ ཆུ་ཚད་ཀྱི་ ཐུན་མོང་ཐབས་ཤིག་ཨིན་པས།

ཐ་ན་ཆུ་ཚད་ཀྱི་ཐུན་མོང་ཐབས་ཤིག་ཨིན་ཏེ་ ཁྱེད་རང་ཚོ་ཡང་ ཆུ་ཚད་ཀྱི་ཐུན་མོང་ཐབས་ཤིག་ཨིན་པས།

ཁྱེད་རང་ཚོ་ཡང་ ཆུ་ཚད་ཀྱི་ཐུན་མོང་ཐབས་ཤིག་ཨིན་པས།

ཁྱེད་རང་ཚོ་ཡང་ ཆུ་ཚད་ཀྱི་ཐུན་མོང་ཐབས་ཤིག་ཨིན་པས།

ཁྱེད་རང་ཚོ་ཡང་ ཆུ་ཚད་ཀྱི་ཐུན་མོང་ཐབས་ཤིག་ཨིན་པས།

ཆུ་ཀ་འཛིན་སྐྱོང་།

ལས་འཆར་དེ་ཡང་ གནམ་གཤིས་འགྱུར་བགྲོད་ལུ་བརྟེན་ ལོ་བསྟར་བཞིན་དུ་ ཆུ་ཀ་སླམ་ནི་དང་ ས་རུད་དང་ ཆུ་རུད་འཐོན་ནི་ མཐའ་འཁོར་གནས་སྟངས་ཉམས་ཉེན་བཀག་ཐོག་ལས་ ཆུ་ཀ་ཚུ་ ཡུན་བརྟན་དང་ ཉེན་སྲུང་དང་ལྡནམ་སྦེ་ བཞག་ཐབས་ལུ་ འགོ་བཙུགས་ནུག།

འདས་པའི་སླན་ཞུའི་ནང་ ནགས་ཚལ་དང་གླིང་ག་ཞབས་ཏོག་ལས་ཁུངས་ལས་ ཆུ་འབབ་ས་ཁོངས་འཛིན་སྐྱོང་སྡེ་ཚན་གྱི་ ནགས་ཚལ་གཙོ་འཛིན་འགོ་དཔོན་ སྤྱི་རྒྱལ་སློབ་མ་གིས་ སླབ་མིའི་ནང་ སྤྱོད་འབྲུས་ལས་འཆར་དེ་ རྒྱལ་ཁབ་ནང་ དཔེ་སྟོན་བཟང་པོ་ཅིག་ལུ་ གྱུར་ཡོདཔ་བཞིན་དུ་ རྫོང་ཁག་གཞན་ ཏྲི་རང་དང་ ཚུཁ་ དེ་ལས་ སྤུ་རོ་ཚུ་གིས་ཡང་ ལྷ་འགོ་བཙུགས་ཏེ་ཡོད་ཟེར་ཨིན་པས།

མོང་སྒར་ཀྱེད་འོག་གི་རྒཔོ་ བསྟན་འཛིན་དབང་ཕྱུག་གིས་ ལས་འཆར་དེ་ལུ་བརྟེན་ གྲོང་གསེབ་མི་སེར་ཚུ་ལུ་ མ་དངུལ་གྱི་ ཁེ་ཕན་དང་ རང་བཞིན་གནས་སྟངས་ ཡུན་བརྟན་སྦེ་ ཉམས་སྲུང་འབད་ནི་ལུ་ ལྷན་ཐབས་བྱུང་སྟེ་ཡོདཔ་ལས་ ལམ་ལུགས་དེ་ རྫོང་ཁག་ ༤ ནང་ཁྲུངམ་གཅིག་མིན་པར་ རྫོང་ཁག་༢༠ ག་རའི་ནང་ གཞི་བཙུགས་འབད་དགོཔ་འདུག་ཟེར་ཨིན་པས།

སོ་ནམ་དང་ནགས་ཚལ་བློན་པོ་ ཡེ་ཤེས་དཔལ་འབྱོར་གྱིས་ སླབ་མིའི་ནང་ རང་བཞིན་གནས་སྟངས་དང་འབྲེལ་བའི་ ལས་སྣ་ག་ར་ རྒྱལ་ཡོངས་མཐའ་འཁོར་གནས་སྟངས་ལྷན་ཚོགས་ཀྱིས་ འཛིན་སྐྱོང་འཐབ་ད་ཡོདཔ་ལས་ སྐྱེ་ལྡན་གནས་སྟངས་ཀྱི་ སྤྱོད་འབྲུས་ལམ་ལུགས་ ལེགས་ཤོམ་སྦེ་བརྩམས་ཏེ་ རྒྱལ་ཡོངས་ནང་ བསྟར་སྤྱོད་འབད་དགོཔ་ག་ནི་ཡང་མེད་ཟེར་ཨིན་པས།

སོ་ནམ་བློན་པོ་གིས་འབདཝ་ཅིན་ རྒྱལ་ཁབ་ནང་ ཆུ་བརྟེན་གློག་མེ་གཞི་བཙུགས་འབད་མི་ལས་ གཞུང་ལུ་ སྤྱོད་འབྲུས་བཏབ་དགོ་མི་དེ་ རང་བཞིན་གནས་སྟངས་མེདཔ་མ་བཏང་པར་ ཉམས་སྲུང་འབད་ནི་དང་ ཉེན་སྲུང་དང་ལྡནམ་སྦེ་ བཞག་ཐབས་ལུ་ཨིན་ཟེར་ཨིན་པས།

དེ་བཟུམ་སྦེ་ མཐའ་འཁོར་གནས་སྟངས་ཀྱི་ ཐོན་སྐྱེད་སྤྱོད་མི་ བཟོ་གྲྭ་འཕྲུལ་ཁང་དང་ ཤིང་དྲ་ཁང་ ས་ཆ་འཛིན་སྐྱོང་ འཁོར་ལམ་དང་ གཡུས་བ་སེལ་ནི་ འབྲུང་ཆུ་བཏོན་ནི་ ས་གཏེར་དང་ ཆུ་འཛིན་སྐྱོང་ རྡོ་བཏོན་ནི་ དེ་ལས་ བཟོ་སྐྲུན་གཞན་གྱི་དོན་ལུ་ཡང་ སྤྱོད་འབྲུས་བཀལ་མི་དེ་ བཅའ་ཁྲིམས་དང་ ཐབས་བྱུས་ཚུ་དང་འཁྲིལ་ཨིན་ཟེར་ བློན་པོ་ཡེ་ཤེས་དཔལ་འབྱོར་གྱིས་ བཤདཔ་ཨིན་པས།

གཡག་སྤྱི་སྐྱང་ལུ་ ཆུའི་སྤྱོད་འབྲུས་བཀལ་མི་དེ་ ཆུ་ཀ་ཉམས་སྲུང་འབད་ནི་དང་ རང་བཞིན་གནས་སྟངས་ ཡུན་བརྟན་སྦེ་བཞག་ཐབས་ལུ་ དམིགས་བསལ་གྱི་ལས་རིམ་ཅིག་ཨིནམ་ད་ གལ་སྲིད་ མི་སྡེ་ཡངཅིན་ གཡུས་སྒོ་ ཁྲོམ་ རྫོང་ཁག་ དེ་ལས་ དྲུང་ཁག་ཅིག་གིས་ ཆུ་ཀ་ཉམས་སྲུང་འབདཝ་ཨིན་ཟེར་ འབྲེལ་ཡོད་དབང་འཛིན་ལུ་ གྲོས་འཆར་བཙུགས་པ་ཅིན་ དེ་འཐོ་ལས་ གོ་སྐབས་སྤྱོད་ཆོག་པ་ཨིན་ཟེར་ བློན་པོ་གིས་ བཤདཔ་ཨིན་པས།

རང་བཞིན་གནས་སྟངས་མར་ཉམས་ འགྱོ་མི་ཚུ་ནང་ ཤིང་འཛུགས་སྐྱོང་དང་ ནགས་ཚལ་གྱི་ ཐོན་སྐྱེད་ཚུ་ ཁྲིམས་འགལ་ཐོག་ ཕྱིར་བཏོན་འབདམ་བཙུག་པར་ ཉེན་སྲུང་འབད་ནི་ ཆུ་ཀའི་མཐའམ་བདའ་སྦེ་ རག་རོ་བསལ་ནི་དང་ ཚལ་མ་བཟྷམ་ནི་ དེ་ལས་ ཆུ་ཀའི་ས་ཁོངས་ནང་ ཉིམར་ནོར་ཚུ་ ཟྭ་ཐ་བར་བདའ་ཚོག་ཏུང་ ཕྱི་ཏུ་བཞག་མ་ཚོགཔ་མ་ཚད་ ཁྱིམ་གྱུང་རེ་གིས་ ནོར་༥ ལས་བཀག་པ་གསོ་མ་ཆོག་པའི་ ལམ་ལུགས་བཟོ་ནུག།

ལས་རིམ་དེ་ཡང་ རྒྱལ་སྤྱི་མཐའ་འཁོར་གནས་སྟངས་ཉམས་སྲུང་མཐུན་རྐྱེན་གྱི་ རྒྱབ་སྐྱོར་ཐོག་ལས་ གཞི་བཙུགས་འབད་ཡོདཔ་ཨིན་པས།

བར་ལམ།

རྒྱལ་ཡོངས་མཐའ་འཁོར་གནས་སྟངས་ཐབས་བྱུས་༢༠༢༠ ཅན་མའི་ སླན་ཞུ་ནང་ འབྲུག་འདི་ གནད་འགག་ཆེ་བའི་ དུས་ཚོད་ནང་ ལྷོད་ཡོདཔ་བཞིན་དུ་ རྒྱལ་ཁབ་གོང་འཕེལ་གྱི་མགྱོགས་ཚད་ ཡར་དྲག་འགྱོ་མི་དང་འཁྲིལ་ མཐའ་འཁོར་གནས་སྟངས་དང་ རི་དྭགས་སེམས་ཅན་ ལམ་སྲོལ་དང་ མི་སྡེ་གོང་འཕེལ་དང་འབྲེལ་བའི་ ཕན་གནོད་ཚུ་གི་ གཙོ་རིམ་བཟོ་དགོཔ་འདུག་ཟེར་བཀོད་ནུག།

རྒྱལ་ཡོངས་མཐའ་འཁོར་གནས་སྟངས་ཐབས་བྱུས་༡༩༩༨ ཅན་མ་གིས་ དཔྱོ་ བདག་འཛིན་འཐབ་བཞིན་དུ་ཡོད་མི་ སྲོལ་ཁྱུན་དང་ བརྩི་མཐོང་ དེ་ལས་ རང་བཞིན་ཐོན་སྐྱེད་ཀྱི་གཞི་རྟེན་ མི་ཉམས་རྒྱུན་སྐྱོང་འབད་དེ་ཡོདཔ་ད་ དཔལ་འབྱོར་གོང་འཕེལ་གཏང་དགོ་པའི་ དགོས་མཁོ་ངོས་འཛིན་འབད་མི་ འབྲུག་གི་ཡར་རྒྱས་ཀྱི་བར་ལམ་ འཐོ་མཐུད་སྦེ་ ལག་ལེན་འཐབ་ནི་ལུ་ གཙོ་བོར་བཏོན་ཏེ་ཡོད་ཟེར་ཨིན་པས།

ཐབས་བྱུས་ནང་ མི་དབང་འབྲུག་རྒྱལ་༤ པ་མཆོག་གི་དགོངས་གཏེར་ གོང་འཕེལ་གྱི་གྲུབ་མཐའ་ རྒྱལ་ཡོངས་དགའ་སྐྱིད་དཔལ་འཛོམས་ཀྱིས་ ས་གཏེར་ལས་ གཞི་རྟེན་གོང་འཕེལ་དང་ བཟོ་སྐྲུན་ཚུན་ མཐའ་འཁོར་གནས་སྟངས་ལུ་ འབྲེམ་ཐོག་ནི་ཚུ་ ཉུང་མཐའི་དང་ འཛིན་སྐྱོང་ལེགས་ཤོམ་སྦེ་ འབད་ཡོདཔའི་ དཔལ་འབྱོར་གྱི་ ལས་སྣ་དང་ སྤོ་ཤིང་ རི་དྭགས་སེམས་ཅན་ ཆུ་ལམ་ དེ་ལས་ ནགས་ཚལ་ཚུ་ ཡུན་བརྟན་འཛིན་སྐྱོང་ངེས་བརྟག་བཟོ་བའི་ སྲིད་བྱུས་དང་ འཆར་གཞི་ ཁྲིམས་ལུགས་ཚུ་ བཟོ་བཀོད་འབད་ནི་དང་ མི་སེར་དང་ རྒྱལ་ཁབ་ལུ་ ལམ་སྟོན་འབད་དེ་འདུག།

ཐབས་བྱུས་དང་འཁྲིལཝ་ད་ ཕྱུགས་སྒྲིགས་འཛིན་སྐྱོང་ངེས་བརྟན་དང་ ས་གཞི་འཐེ་འགྱུར་དང་འབྲེལ་བའི་ དཀའ་ངལ་མར་ཕབ་ཀྱི་ ལྷན་ཐབས་དང་ འབྲེལ་མཐུན་ཐབས་ལམ་ ཀླུང་དང་ ཆུའི་སྤྱུས་ཚད་ ལྟ་རྟོག་སྒྲིང་སྒྲི་བཟོ་ནི་ དེ་ལས་ ཉེན་སྲུང་ལྡན་པའི་ འབྱུང་ཆུ་རོས་ བརྟན་དང་ མཐའ་འཁོར་གནས་སྟངས་ཀྱི་ ཞབས་ཏོག་སྐྱེལ་སྤྲོད་ འཛིན་ཐངས་ཅན་བཟོ་ནི་ནང་ ལྷ་འབད་དགོཔ་ཨིན་པས།

རྒྱལ་ཡོངས་མཐའ་འཁོར་གནས་སྟངས་སྲུང་སྐྱོབ་ཀྱི་བཅའ་ཁྲིམས་༢༠༠༧ ཅན་མ་དང་འབྲེལཝ་ད་ མཐའ་འཁོར་གནས་སྟངས་སྲུང་སྐྱོབ་དང་ རྒྱུན་གནས་ཀྱི་སྤྱོད་འབྲུས་ མཐའ་འཁོར་གནས་སྟངས་དང་མཐུན་པའི་ ནུས་ཤུགས་ཅན་གྱི་ འཕྲུལ་རིག་ནང་འདྲེན་འབད་བའི་ ཁྲལ་མར་ཕབ་དང་ རང་བཞིན་ཐོན་སྐྱེད་ལག་ལེན་གྱི་ཁྲལ་དང་ འབྲུས་བཀལ་མི་ དེ་ལས་ རང་བཞིན་གནས་སྟངས་ཀྱི་ གནས་གོང་དང་ རྒྱུས་འབྲུས་སྤྱོད་ཐངས་ཀྱི་ ཐབས་རིག་ཐབས་ལམ་ཚུ་ གྲངས་སུ་བཀོད་ཐོག་ལས་ དངུལ་འབྲེལ་བར་ལམ་གྱི་ རིམ་སྒྲིག་ཡང་ ངོས་ལེན་འབད་དེ་ཡོདཔ་ཨིན་པས།

དཔལ་འབྱོར་གོང་འཕེལ་སྲིད་བྱུས་༢༠༡༦ ཅན་མའི་ དམིགས་གཏད་དེ་ རྒྱལ་ཡོངས་དགའ་སྐྱིད་དཔལ་འཛོམས་ཀྱི་ གྲུབ་མཐའ་དང་ མི་སྡེ་ཤེས་ཡོན་ལྡན་པའི་ རང་གིས་གློ་གཏད་ཚུགས་པའི་ ལྦོངས་ཅན་གྱི་ དཔལ་འབྱོར་གོང་འཕེལ་གཏང་ནི་འདི་ཨིན་པས།

འབྲུག་གི་ཆུའི་བཅའ་ཡིག་༢༠༡༡ ཅན་མའི་ནང་ གློག་མེ་འཕྲུལ་ཁང་ཚུ་གིས་ ཆུ་ཀའི་ས་ཁོངས་སྲུང་སྐྱོབ་དང་ འཛིན་སྐྱོང་འབད་དགོ་ནི་ལུ་ ལྷན་ཐབས་འབདཔ་ཨིན་པས།

འབྲུག་གི་ཆུའི་བཅའ་ཁྲིམས་༢༠༡༤ ཅན་མའི་ནང་ ཆུ་ལག་ལེན་ ཚོགས་པ་ཚུ་ལུ་ ཁྱིམ་གྱུང་ཚུ་གིས་ ཆུ་ལག་ལེན་གོ་སྐབས་ནང་ བྱ་སྟབས་མ་བདེཝ་རེ་བྱུང་པ་ཅིན་ འཆམ་ཁ་བཟོ་ནི་དང་ ཆུ་འཛིན་ཐངས་ཅན་སྦེ་ ལག་ལེན་འཐབ་ནིའི་ ཐབས་ཤེས་བཏོན་དགོ་པའི་ འགན་དབང་སྤྲོད་དེ་འདུག།

མཐའ་འཁོར་སྲུང་སྐྱོབ་དང་ འབྲེལ་བ་ཡོད་པའི་གནད་དོན་ ས་ཆ་དང་ ཆུ་ ནགས་ཚལ་ ས་གཏེར་ དེ་ལས་ རང་བཞིན་ཐོན་ཁུངས་གཞན་ཚུ་ལུ་ ཁྱབ་དབང་ཡོད་པའི་ བཅའ་ཁྲིམས་དང་ བཅའ་ཡིག་ སྒྲིག་གཞི་ཚུ་ག་ར་ རྒྱལ་ཡོངས་མཐའ་འཁོར་སྲུང་སྐྱོབ་བཅའ་ཁྲིམས་༢༠༠༧ ཅན་མ་དང་ འབྲེལ་ཆགས་ཡོདཔ་སྦེ་ བཟོ་དགོཔ་དང་ བཅའ་ཁྲིམས་འདི་དང་ འབྲེལ་ཆགས་མེདཔ་འི་ ཁྲིམས་དང་ བཅའ་ཡིག་ སྒྲིག་གཞི་ ཁྱབ་བསྒྲགས་ བཀོད་རྒྱ་གཞན་ཚུ་ ཆ་མེད་འགྱོཝ་ཨིན་ཟེར་བཀོད་ནུག།

བཅའ་ཁྲིམས་ནང་ ཆུ་སྤྱོད་ཚོགས་པ་གཞི་བཙུགས་ཏེ་ རང་སོའི་ཆུའི་དགོས་མཁོ་ བཀྲམ་སྤེལ་འབད་ནིའི་དོན་ལུ་ དམིགས་བསལ་ཆུའི་ཀ་མགོ་ཚུ་ ཁེ་ཕན་སྤྱོད་མི་ སྡེ་ཚན་གང་རུང་གིས་ ཆུའི་ཀ་མགོ་ རྒྱུན་སྐྱོང་འཐབ་ནི་དང་ ཆུའི་བཀྲམ་སྤེལ་ འཛིན་སྐྱོང་གི་དོན་ལུ་ ཆུ་སྤྱོད་ཚོགས་པ་ཅིག་ གཞི་བཙུགས་འབད་ཚོག་ཟེར་བཀོད་ནུག།

ཚོགས་པའི་ལྷ་འགན་དེ་ ཆུའི་ཀ་རྒྱུན་སྐྱོང་དང་ གནོད་བཀལ་དང་ སྐྱོན་ཆགས་གཞན་ལས་ སྲུང་སྐྱོབ་འབད་ནི་དང་ རང་སོའི་འཐུས་མི་ཚུ་གིས་ ཆུའི་འཛིན་སྐྱོང་དང་ བཀྲམ་སྤེལ་ཞབས་ཏོག་གི་ ལས་རིགས་ཚུ་ མཉམ་འབྲེལ་དང་ ལྟ་རྟོག་འབད་ནི་དེ་ཡང་ སྤྱོད་མི་ཚུ་ལུ་ བདག་དབང་ཡོད་པའི་ སེམས་ཤུགས་བསྐྱེད་བཅུག་ནི་དང་ ཞབས་ཏོག་དེ་ ཡུན་བརྟན་གནས་ཐབས་གཏང་འཕེལ་བཟོ་དགོཔ་ཨིན་པས།

ཆུའི་ཐོན་ཁུངས་ལས་བྱུང་མི་ མཐའ་འཁོར་ཞབས་ཏོག་གི་དོན་ལུ་ གླ་འཐུས་སྤྲོད་ནིའི་ ལམ་ལུགས་ཡར་དྲག་གཏང་ཐོག་ལས་ ཆུ་ཀའི་ས་ཁོངས་ ཉམས་སྲུང་འབད་ནིའི་ ཟད་འགྲོ་ཚུ་ ཆུ་སྣོད་ལུ་ སྤྱོད་མི་ཚུ་ལུ་ཡང་ བགོ་བཤའ་སྦེ་ཐོག་དགོཔ་ཨིན་པས།

གདོང་ལེན།

འབྲུག་ལུ་ སྤྱོད་འབྲུས་ལམ་ལུགས་གཞི་བཙུགས་འབད་མི་དེ་ ཆུའི་སྲིད་ཁྲིམས་དང་འཁྲིལ་ཨིནམ་ལས་ གནས་སྡུད་ལེགས་ཤོམ་མེད་ནི་དེ་གིས་ གདོང་ལེན་བྱུང་སྟེ་ཡོདཔ་ཨིན་པས།
འཛམ་གླིང་སྤྱི་ཚོགས་གོང་འཕེལ་ལས་རིམ་གྱི་ སླན་ཞུ་དང་འཁྲིལཝ་ད་ འབྲུག་འདི་ གངས་རི་སྐྱེ་ལྡན་གནས་སྟངས་ནང་ ཆགས་ཡོདཔ་ལས་ རྒྱལ་ཁབ་ཆུང་ཀུ་ཨིནམ་ལས་ རང་བཞིན་གནས་སྟངས་ཀྱི་ དཀའ་ངལ་འགྱུར་ཉེན་ཡོདཔ་མ་ཚད་ ཡུན་བརྟན་གོང་འཕེལ་དང་ མིའི་འཚོ་སྐྱོང་ལུ་ གདོང་ལེན་འདུག་ཟེར་ཨིན་པས།
འབྲུག་གི་རང་བཞིན་གནས་སྟངས་དེ་ ཨེ་ཤི་ཡཱན་ལུང་ཕྱོགས་རྒྱལ་ཁབ་ནང་ གཙང་སྦྲ་ལྡན་པའི་རླུངམ་དང་ ཆུ་ དེ་ལས་ ནགས་ཚལ་

ཚུ་ཡོད་རྒྱང་ ཝི་རྩྭ་བས་བརྒྱ་ཚ་ ༢༠ དེ་ཅིག་ འཚོ་བ་སོ་ནམ་ལྷ་བརྟེན་ སྟོད་ནི་དེ་གིས་ ཝི་རྩྭ་བས་ཡར་སེང་དང་ ལྷོད་གསེབ་ལས་ ཁྲོམ་ཁང་གནས་སྤྱི་འོང་ཚེ་ ནང་འགོད་སྐྱེམ་འགོར་ ཤིང་ཚས་དགོས་མཁོ་ བགོད་ཚེ་མང་སུ་ འགོར་ལམ་དང་ བཟོ་སྐྱན་མང་དུགས་ནི་དེ་གིས་ མ་འོངས་པ་ལུ་ རང་བཞིན་གནས་སྐྱངས་ལུ་ ཐེ་ཚོགཱ་ནི་དང་ གནས་གཤིས་འཐུང་བགྱོད་ཀྱིས་ གནོད་པ་མངམ་འཐོན་འོང་ཟེར་ སྐྱན་ཁུ་ ནང་ བགོད་ཡོད་པའི་གནས་ཚུལ།

Lhuentse dzongkhag resolves to fight GLOF and floods

But looks for financial and technical assistance from elsewhere

Sonam Lhendup (Freelancer)
Published in Kuensel on 30 March 2021

The disaster management committee of Lhuentse dzongkhag has decided to conduct an in-depth study and assessment on the potential risk of glacial lake outburst flood (GLOF) to the low-lying areas of the dzongkhag. The decision was taken in a recent committee meeting attended by the dzongdag, gewog leaders, and other committee members.

The dzongkhag has decided to build flood protection walls in Tsikhang, Khoma, Sumpa, and Autsho town.

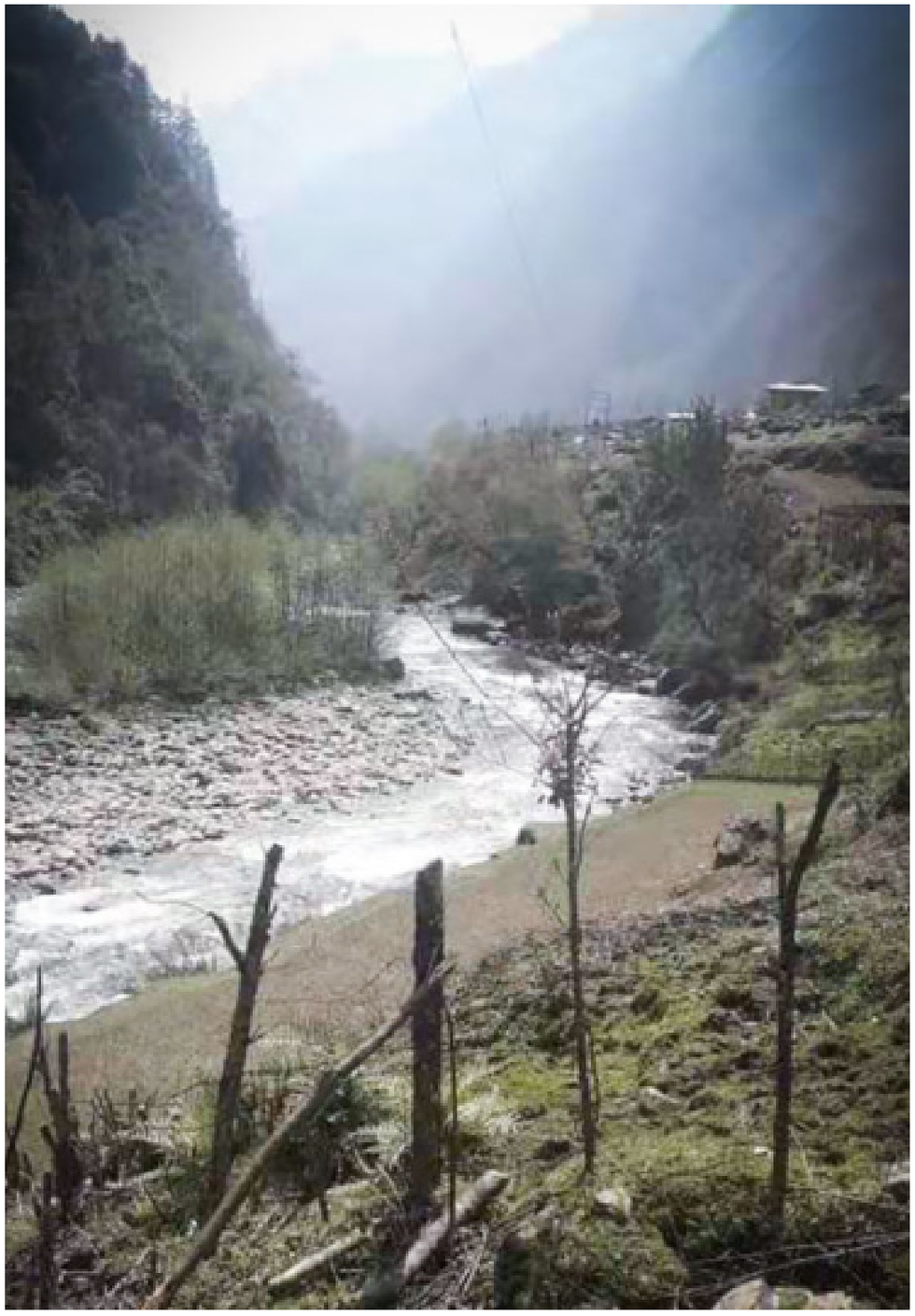
The meeting decided to seek support from the Department of Disaster Management (DDM), the National Centre for Hydrology and Meteorology (NCHM), and the Department of Geology and Mines (DGM) to save Lhuentse from potential threats of GLOF and flash floods.

The dzongkhag will consult relevant agencies and experts to install an early warning system at various locations where threats of lake outburst are real. The dzongkhag has limited capacity to carry out any study on such threats.

The committee chairperson, Dzongdag Jambay Wangchuk, told the meeting that the meeting's sole purpose was to discuss the heightened risks associated with GLOF to low-lying areas of Lhuentse highlighted by this reporter's story. He said the meeting was primarily deliberated on the implementation plan for risk reduction methods and frameworks to respond to GLOF.

Deliberations

The discussion focused on risk assessment and mitigation plans alongside Khomachu and the settlements in the Kurichu basin, particularly Autsho. Autsho has been identified as a high-risk area.



>> Tsang Ngo, a settlement along Khomachu

Dzongkhag Tshogdu (DT) chair and Jarey Gup, Kinzang Minjur, called for an extensive study to assess threats so that the dzongkhag could develop risk mitigation and adaptation mechanisms.

Chief DEO Ugyen Pem proposed that the history of threats and risks to people's lives and infrastructure be studied for mitigation.

Khoma Mangmi Pema Tshering contented that the lake that posed the threat of GLOF is not Terjatse Tsho but Toh Toh Tse Tsho, which is likely to burst at any time. He said relevant agencies must carry out a risk assessment, hazard zonation and vulnerability to GLOF and artificial lakes for any intervention to begin.

Tsenkhar Gup Tsheten Wangdi echoed a similar view calling for flood protection walls and identifying safe places in the event of a natural disaster.

DT chair informed the meeting that Tsatichu artificial lake, which falls under Mongar Dzongkhag, was least likely to burst. Druk Green Power Corporation, in an earlier report, stated that the lake did not pose any threat, but there is no update on the status of the lake.

Tsamang Gup Sonam Dargay said that, although the artificial lake did not pose an imminent threat, it was important to be prepared for any possible danger.

Response from agencies

Lhuentse dzongkhag is planning to seek support for mitigating the twin risks of GLOF and artificial lake outburst from DDM, NCHM and DGM. However, these agencies are not in a position to support the dzongkhag financially. Instead, they suggest an "integrated approach" to disaster response, whereby they provide technical support and the dzongkhag mobilises financial resources.

The chief of the Risk Prevention and Reduction Division from DDM, Thinley Norbu, suggests that the dzongkhag disaster committee prepare a contingency plan for risk reduction and implementation. The department expects to receive an official confirmation from Lhuentse dzongkhag on a systematic approach and a preparedness contingency plan.

Meanwhile, the director of NCHM, Karma Dupchu, said there was no need to install an early warning system for Kurichu as settlements are limited to Autsho, a small community. He added that people could be alerted of an impending disaster even without an early warning system in place as long as they are connected to mobile networks. "Moreover, we have our technicians placed in Sumpa, Autsho and Kurizampa to inform people about floods," he said.

Karma Dupchu said the installation of an early warning system needed to be studied from the cost-benefit point of view because it was challenging to operate it as maintenance is laborious.

However, the chief of Hydrology and Water Resources Services Division of NCHM, Tayba Buddha Tamang, said an early warning system for the Kurichu basin would be definitely activated in the future. "Currently, we're working for Wangchu in Thimphu and Pachu in Paro," he said.

For this to happen, the dzongkhag has to mobilise funds to conduct study and assessment for potentially dangerous glacier lakes as NCHM does not have financial resources.

Chief glaciologist of Cryosphere Service Division of NCHM, Karma Toep, said, "We can provide critical apparatus and technical expertise only if the dzongkhag mobilises financial resources with a systematic approach to conduct an assessment for Terjatse Tsho." He suggests a broad, holistic approach if the early warning system has to be activated in the Kurichu basin.

DGM has no plan to update its study on the stability of Tsatichu artificial lake and risk assessment as there is no proposal to do so from either Lhuentse or Mongar dzongkhags.

The director general of DGM, Choiten Wangchuk, recommends that dzongkhag formally seek technical assistance and expertise if there is a need to conduct a reassessment for Tsatichu artificial lake.

Meanwhile, the coordination among different government agencies to mitigate the threats of GLOF and artificial lake outburst of floods is hinged on financial resources that none of them has.

'Fungus and Beyond - an attempt towards sustainability

Samten Dolkar
BBS, Aired on 31 March 2021

Bhutan started the helicopter service in 2016. Besides responding to national emergencies, it also began catering to the needs of the highlanders. Since then, Lunaps have hired over 700 flights so far. It cost them more than 50,000 ngultrum per flight. Although this rate is already a subsidized amount, it is very uncommon for other locals except for highlanders to hire a flight to their village.

Today, from hiring a helicopter to buying an expensive set of bow and arrow, they have it all. And for some, buying a house in the most expensive city in the country has become a possibility.

Thanks to the most expensive fungus that grows in the wilderness of the Himalayas, the otherwise thriving lifestyle in the harsh adversities of mountains, has begun to evolve at a pace not ever imagined.

But the precious fungus is disappearing, perhaps faster than expected. With every passing year, the news of a poor harvest is becoming more and more common. And they know it won't be long before the prized fungus is completely gone.

Ugyen Penjor said, ''When His Majesty visited Lunana, he always advice us not to rely entirely on cordyceps. His Majesty told us to educate our children and give equal importance to other agricultural activities. We are also told to preserve our age-old tradition of yak rearing. And when we think about that, we also feel that we really can't continue to depend on the fungus in the future".

"Our parents depended entirely on yaks for livelihood. The life was not easy. If in the future, the growth of cordyceps decreases, the highlanders like us will be affected the most. Maybe, we will use our horses for visitors coming to our village for income. The income wouldn't be as good as what we get now", he added.

While people in highlands prepare their children to brace the future in ways they

consider best, they also feel the need for more interventions. Otherwise, they fear that the luxury of being among the indigenous community will become the cause of losses to their future generation.

Other parts of the Himalayan regions like Nepal, India, and Tibet whose communities are highly dependent on the fungus have seen similar economic progress.

In 2019 a study by ICIMOD in three districts of Kailash sacred landscape showed that for some collectors, the Yartsa Gunbu contributes as high as 90 percent of their cash income source. There are other income sources in the high mountains namely agriculture, Livestock, trading, and the outmigration remittances.

While these are the benefits shared among highlanders in the Himalayan countries, consequences have also made its presence alongside. Oftentimes, the disappearance of the fungus has been translated to just a loss of livelihood, but in reality, it is the replication of bigger and more serious predicaments.

Dr. Kesang Wangchuk, Biodiversity Specialist, ICIMOD, Nepal said, "If cordyceps are gone, then we are talking about not one but two organisms, fungus, and moth caterpillar. If the caterpillar is gone, then we are going to have two main important far-reaching consequences. Consequences number one, plants that are dependent on moth pollination will gradually decline".

"The second consequence, the plants that are fed upon by moth and kept under control for so long, these plants are going to increase in proportion and these will have a very bad impact on alpine biodiversity. Now for fungus, by nature, the fungus is a natural decomposer. So if the fungus is gone from the ecosystem, then in the alpine environment, there will be a buildup of litter and plant debris. As such, this will gradually cause acute scarcity of fodder in alpine biodiversity, while also polluting down streams. Therefore, cordyceps need to be protected, at all times", he added.

The International Centre for Integrated Mountain Development, ICIMOD believes Bhutan has one of the best cordyceps harvesting practices. In Bhutan, Laws allow only the residents of high altitude villages who own yaks to harvest cordyceps. On the contrary, other Himalayan countries like Nepal allows every household fromadjoining district to harvest the fungus.

Dr Binaya Pasakhala, Governance and Institutions Analyst, ICIMOD, Nepal said,"The fixed period of Yartsa Gunbu collection or the waste management system that Bhutan has got can be replicated here in Nepal as well. Some of the Rural municipality has already been implementing the fixed period as well. The next thing Nepal can learn from Bhutan is the monitoring system. The third thing is about the auctioning of Yartsa Gunbu which would ensure fair and transparency. While overharvesting has resulted in the disappearance and poor quality of the fungus, the unreliable climatic conditions have also contributed to the same".

He further added "Based on my own experience in the Kailash Sacred Landscape, when I visited the field in 2018 and 2019 those years where you had late snowfall. So when these communities and collectors went to the site in May, the area was largely covered by snow. So when the large area is covered by Snow, definitely the number of harvests available was low. And when the snow melted, in late June, the quality of Yartsa Gunbu was not good".

If the words of experts are to be believed, the yield of cordyceps is dependent on climatic parameters. However, Himalayan countries are challenged with a dearth of reliable data to make assess whether these species are declining, and why.

According to Dorji Khandu, Member, Natural Resources and Environment Committee, there is a need to strengthen research and development because lack of climate information in the high mountains has made it difficult for the researchers to authenticate any findings.

"It is very important that concerned authorities like the department of hydrology and meteorology to install the instrument to read the weather in the cordyceps collections sites. Cordyceps seasons vary every year depending on the weather conditions and climate factors", he said.

Although not many, Bhutan has managed to formulate some rules and regulations on cordyceps. The laws regulate the collection, harvesting, and marketing of precious fungus. But are they enough to make the fungus thrive? The question persists.

Lyonpo Yeshey Penjor, Agriculture Minister said, "Things are seen not very sustainable. One thing I feel we should explore is the possibility of farming it. This is being tried in other countries. Why not we try it also? But then now saying is easy but doing is difficult. So while trying to explore the possibility of farming, we need to have enough resources to research whether firstly we can do farming, secondly whether the farmed cordyceps will be equally good in quality like the one in the wild".

Even with some of the best practices, it has become a challenge for Bhutan to implement the laws. Particularly, monitoring illegal harvesters and invaders from across the border has put the lead agencies in the country in a difficult situation to make monitoring a comprehensive one.

Lyonpo said, "That itself is a challenge for the department of forest to monitor and manage this illegal or the poachers. So we do have guidelines but I think we also need to have some legal provisions to be developed for management of this illegal harvesters. Secondly even for those who are eligible to harvest, I feel that we need to have mechanisms to not to uproot everything and not to actually wipe out everything in one year or two".

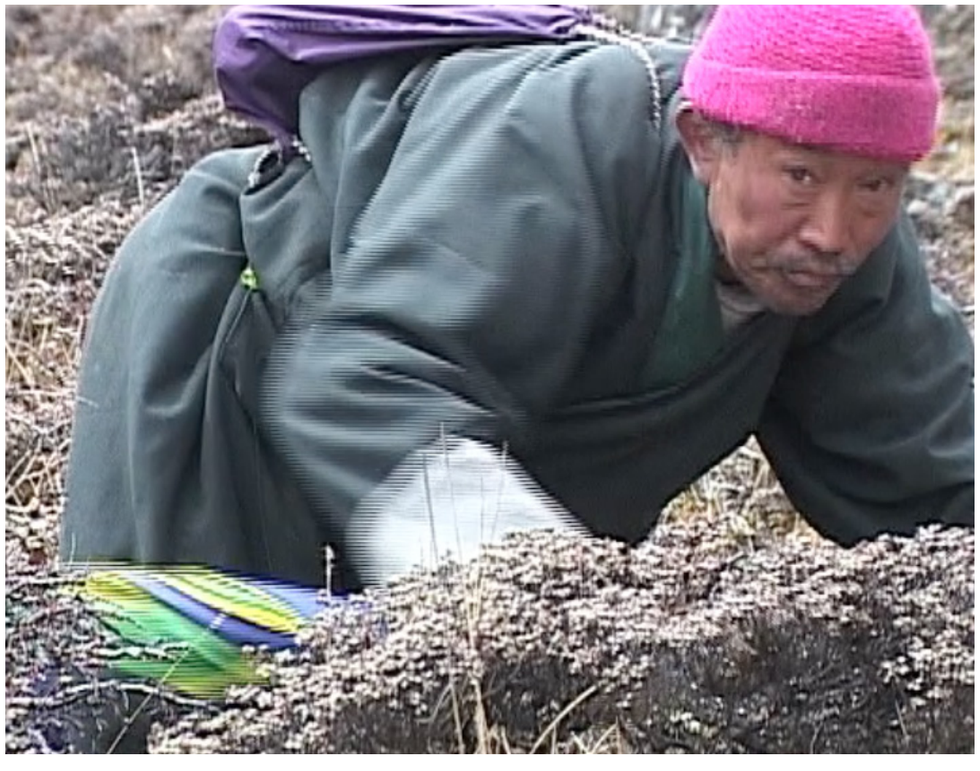
Dorji Khandu added, "We would highly recommend the government to have a proper management and the consistent

monitoring system in place because researchers attributed the reduced growth to the lack of proper management and overharvesting. Although the collection is well regulated, but monitoring is weak. And such lack of monitoring would contribute to overharvesting which would lead to disruption in its ecology of cordyceps".

"Before cordyceps collection was legalized in 2004, highlanders were dependant on yak rearing. The animals were the main source of income. But today, the fungus has overtaken yak rearing as the main source of income. And with the fungus disappearing by the year, this raises a concern about highlander's income sustainability", he said.

According to Agriculture Minister, the government is trying to increase the agricultural opportunities by for example supplying greenhouses for controlled agriculture. Currently the tourism is totally blocked by the pandemic but then in the long run, there is a need to improve tourism facilities in the highland and will become an income resource for the highlanders.

He said, "Similarly, even for electricity and other energy sources, if we can diversify the renewable energy opportunities in the highlands. So that way there will be other some technocratic crafting opportunities for highlanders to generate their income".



Towchu Rabgay, Program Director, Highland Development Program said, "Cordyceps existence should be linked with an ecosystem driven. When we say everything in the mountains coexist together. When there is a decline in the yak population, then there is also a perception that the cordyceps in the highland has drastically been reduced".

In the face of such uncertainties, Bhutan is devising more plans and programs to give highlanders the means to earn a livelihood. The National Highland Development Program looks after such issues. It was identified as a program in the 12th FYP to deliver a holistic set of targeted interventions to improve the livelihoods of highland communities in Bhutan.

" The yak is a very valuable animal. It doesn't exist in all the countries in the world. It is limited to few countries. Therefore, as a highly values animal, and also looking at the number of animals that we have in the country, we should take advantage of this. We should target to low volume, high value products, the niche products for the high-end hotels and also countries who really want to look at the organic products. Therefore, the highlanders have huge opportunities in branding their products" he added.

Dorji Khandu, said, "The legalization of cordyceps have not the only slaughter of yaks but also brought an element of equalities of highland communities. Moreover, it has dispelled the dividing lines between the haves and has not among the people in the highlands. Therefore we would highly recommend the government to give importance to the highland development flagship program. And also we recommend the government to consider providing allowances or incentives for the yak herders to remain in their district".

While debates on the gradual disappearance and quality of the fungi are ongoing, researchers and policymakers are finding ways to protect them. But one thing everyone knows is that the highlanders should be wary of the fact that if not taken care of, it won't be long the much-priced fungus will disappear from the face of the earth.

Mountains – glaciers – waterfall – stream

Water – a fortune fed by mountains and Himalayas, a wealth inplenty in the valleys of Bhutan, the roar just gets bigger by he summer. The wet season fill the gashes of the dry earth, the thirst-ridden soil, quench the long year thirst. But down by the plains and up in the hills, farmers carry worried faces. Rain- falling ritual visual/ empty irrigation channel, dried paddy saplings.

In the Far East, it is time for the farmers to transplant their paddy. Sky remained unforgiving, irrigation channel hungrier than ever. They seek divine intervention. Hopes are high that it will rain the next day. But sadly, it did not.

Likewise, in another part of the country, with very limited water sources, the story is no different.

Water for All

Chayku, BBS
Aired on 1 April 2021

With five major river basins, more than 550 water sources and nearly 200 watersheds across the country, Bhutan is known for abundant water resources. It is through the water that the country generates maximum revenue from the sale of electricity.

But majority of paddy cultivating farmers across the country are dependent on perennial streams, rainfall and natural watersheds to cultivate paddy. So, what could be the story behind the unforgiving fact?

Researches mention that more than 60 percent of the country's population are directly engaged in agriculture. And this means majority of the people are affected by this deficiency. This also directly translates to the low production of food in the country especially rice.

For Bhutan, agriculture is the backbone of the country's economy. And giving equal importance to the development of agriculture, the central government invest huge resources for agricultural infrastructure. Among them, the water flagship programme has been made a priority, recently.

- Gyembo Tshering, Deputy Chairman, Environment and Climate Change Committee, NA said, ' the government has a specific program called the water flagship program wherein the drinking water and irrigation is given as a top priority. Through this flagship program, the government's effort is to provide equitable access to drinking water and water for irrigation'.

Given the topographical difficulties of the country, drawing water into the paddy fields has always remained a challenge. And even amid such difficulties, Bhutan has managed to constrict over 800 irrigation water schemes.

However, some of the irrigation channels have ended into total wastage. And relevant stakeholders denunciate this to various accounts.

Water resources in the country have been under constant scrutiny of unpredictable climate change, melting of glaciers, increasing population and urbanisation, and multi-sectoral coordination among others. Beside, experts believe poor integrated watershed management are the major set-backs.

Developmental activities such as construction of roads and other infrastructure have reportedly damaged lots of water catchment areas in the country.

And despite number of policies and regulations in place, such concerns have been concurrent in the grassroots level. If such issues are any indication of failures, then it calls for stringent implementation of the laws.

Although everyone can play their individual role in contributing to the global problem, intervention from the lead agencies and stake holders in the country will make a huge difference in the way it affects the grass-root levels.

It has become evident that water source are drying-up. A country with relatively low GDP and still developing, agriculture will continue to be an important part of the people's livelihood. But given the trend that has already set in, where are we headed in term of food production and self-sufficiency still remain big questions.

Rising temperature and change in weather pattern has become a global issue. And although Bhutan has no hand in this global problem, we will remain affected in one way or the other. But knowing this is going to stay, are we doing enough for embracing larger impacts?

Amid such adversities coupled with uncertainties, what we plan and implement will determine what we eat. As much as this issue affect farmers, every individual will be affected. And therefore, to fight the adversity, to act as one and deliver the best become our common goal to achieve.