



INCEPTION REPORT

Project

**Building Innovation For Nepal's Tourism Sector
By Adopting Renewable Energy And Energy
Efficient Business Models**

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Executive Summary

This inception study was conducted as part of initiating the [Tourovation Hub](#) project. The study explored the challenges and opportunities for Nepali tourism enterprises in adopting innovative renewable energy (RE) and energy efficient (EE) solutions and business models to deliver resilient enterprises.

Tourism is one of Nepal's largest industries. It is the country's major source of revenue and foreign exchange. Some of the current challenges for the sector lie in the areas of sustainable innovation, natural resource conservation, infrastructure, road and air transport, and publicity. As the number of tourists and subsequently the demand on tourism-related infrastructure grows, the management of destinations becomes a vital issue to sustain both the local economy and the overall ecosystem.

The COVID-19 pandemic has exposed the long-term vulnerability of Nepali tourism business, especially the micro, small and medium enterprises (MSMEs), to face the challenges related to climate shocks, lack of infrastructure, environmental degradation, and resource conservation. The impact of the virus is being felt throughout the Nepali tourism ecosystem, and reopening and rebuilding key tourist destinations will require a joined-up approach.

It was observed from the findings and analyses of the interview data that Nepali tourism enterprises have the potential to integrate RE–EE solutions by transforming or integrating strategies and solutions into the design of a business's value proposition and strategic orientation, and by delivering through the value network. In this regard, there is unanimous agreement that the tourism sector is now ready for RE–EE solutions.

One of the key benefits from these solutions would be in the form of reduction in energy costs in the long term. In such a scenario, public–private partnerships are going to be fundamental in mainstreaming RE promotion and adoption through innovative business models. As such, in addition to tackling the COVID crisis, overall, there is a need for innovation in the business models of tourism enterprises so that they become resilient – meaning, that they are able to absorb, adapt, and transform.

The key areas where collective initiatives are necessary from both tourism and RE stakeholders to support resilient tourism enterprises are: policy; perception and understanding; financing; and building capacity and capability. There is a clear and definite need for integration of RE–EE solutions into tourism enterprises as it is cost effective, helps with marketing and publicity for both sectors, and builds resilience.

Acknowledgements

This study would not have been possible without the relentless support of and frequent knowledge exchange sessions with the Tourovation Hub partners – the International Centre for Integrated Mountain Development (ICIMOD) and SELCO Foundation. In particular, we are grateful to the REEECH (Renewable Energy and Energy Efficiency Capability for the Hindu Kush Himalaya) team at ICIMOD – comprising Anu Kumari Lama, Nanki Kaur, and Mewang Gyeltshen – for its guidance and inputs into the inception study design and incubation report, as well as for its links with the stakeholders. We also extend our heartfelt gratitude to the SELCO team – comprising Shripathi Hadigal and Deepak John – for its continuous help in reviewing the questionnaires and report.

Further, we received invaluable insights, advice, and recommendations from an expert group of stakeholders in the tourism and renewable energy sectors of Nepal. We are appreciative of the time and expertise that individuals as well as the representatives of the following organizations shared with us through in-depth interviews:

Stakeholders

- [Alternative Energy Promotion Centre \(AEPC\)](#) – Renewable Energy for Rural Livelihood (RERL) Programme
- [Deutsche Gesellschaft für Internationale Zusammenarbeit \(GIZ\)](#)
- [Nepal Energy Foundation \(NEF\)](#)
- [Nepal Renewable Energy Programme \(NREP\)](#)
- [Renewable World](#)
- [Centre for Environment and Sustainable Tourism Development](#)
- [National Cooperative Federation of Nepal \(NCF\)](#)
- [National Trust for Nature Conservation \(NTNC\)](#)
- [Nepal Tourism Board \(NTB\)](#)
- [Business Oxygen](#)
- [Nabil Investment Banking Limited](#)
- [NMB Bank](#)

Enterprises

- [Exodus Trek and Expeditions \(now Footloose In The Himalaya Pvt Ltd\)](#)
- [Original Organic Farm House Kapan](#)
- [High Altitude Dreams](#)
- [Socialtours](#)
- [3 Sisters Adventures Trekking](#)
- [Wilderness Explorer Himalaya Travels and Trekking](#)
- [Clean and Green Nepal](#)
- [Gham Power](#)
- [Saral Urja Nepal](#)
- [Smart Paani](#)

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I. Background

Problem statement

Tourism is one of Nepal's largest industries and a major source of its revenue and foreign exchange. It generated NPR 240 billion and supported 1 million jobs last year.¹ However, the industry is currently facing some grave challenges in the areas of sustainable innovation, natural resource conservation, infrastructure, road and air transport, and publicity. As the number of tourists and subsequently the demand on tourism-related infrastructure grows, the management of destinations becomes a vital issue to sustain both the local economy and the ecosystem at large. There are risks of resource exploitation, loss of authenticity, gentrification, and environmental degradation caused by consumer demands. The challenges are even more pronounced in a country like Nepal with its limited resources and capacity to manage diverse and often difficult landscapes.

More recently, the unprecedented nature of the COVID-19 pandemic has come with dire consequences for Nepal's tourism sector. According to a recent World Bank report (2020), the country's "growth is expected to decelerate to 2.8 percent in fiscal year 2020 reflecting headwinds to agricultural growth, and a significant reduction in remittances and tourism, and broader disruptions from the pandemic". Moreover, tourism entrepreneurs estimate that the sector could lose NPR 40 billion to the crisis, while Hotel Association Nepal (HAN) anticipates job losses for 1.1 million workers.²

There is an unsaid demand for a significant shift in the way tourism enterprises in Nepal are conceived and operated. This includes rethinking the value proposition and strategic orientation of tourism enterprises in terms of the environment and society. This means designing and developing sustainable business models that are based on innovative low-carbon emission solutions, eco-efficient approaches, climate-resilient initiatives, cost reduction, and creation of green jobs. In this context, renewable energy (RE) and energy efficient (EE) innovations that include multi-stakeholder views and collaborations, along with business support services, have a vital role to play.

Objective of the study

As part of initiating the Tourovation Hub project, an inception study was carried out. The research question to guide this study, and the purpose and expected outcome of the project are:

Research question

How can Nepali tourism enterprises adopt RE–EE solutions and approaches to become resilient – i.e., absorb, adapt and/or transform (AAT) its value proposition and strategic orientation?

Project purpose

Assess sustainable business models within the tourism sector to understand the scope and scale of RE–EE-assisted resilient enterprise development in Nepal.

¹ <http://www.aidiaasia.org/research-article/covid-19-impacting-nepal-s-tourist-based-economy>

² <https://english.onlinekhabar.com/nepal-tourism-board-begins-survey-to-assess-covid-19-crisis-impact.html>

Project outcome

The co-design and co-development of sustainable business models for Nepal's tourism enterprises by adopting RE–EE approaches and solutions. This involves taking onboard multi-stakeholder views and forging collaborations. The participation of public and private stakeholders from the tourism and RE–EE sectors will be crucial in providing support and advice, thereby ensuring the sustainability of the Tourovation Hub project. In this regard, Nepal Communitere, an open and inclusive innovation hub, is conducting key informant interviews (KIIS) with multiple stakeholders from tourism and RE–EE sectors representing government, industry and entrepreneurs.

Methodology

To address the above-mentioned research question, a twofold review of secondary (academic and grey) literature was carried out which focused on:

- conceptual framework – concepts such as “value proposition”, “sustainable business model”, and “resilient enterprise” were explored to outline the guiding principles of the project. Since the idea of “resilient enterprise” had already been defined for the project, the emphasis was on unpacking the definitions of “value proposition” and “sustainable business model”.
- sector overview – this was about generating a brief understanding about the tourism and RE –EE sectors in Nepal, along with identifying the needs, gaps, and opportunities for alignment between the two sectors.

The primary data collection and analysis was carried out through 24 KIIs based on semi-structured questionnaires (Annex 1) with four stakeholder groups – tourism enterprises, RE–EE enterprises, tourism sector stakeholders, and RE–EE sector stakeholders (Annex 2). These conversations assisted in comprehending the business models that currently exist in the tourism sector in Nepal and also in zeroing in on the challenges and opportunities for the sector to adopt RE–EE solutions and approaches.

II. Conceptual Framework

At the core of an efficient business model is the concept of generating value, where value is conceived as a set of benefits derived by a stakeholder from an exchange. The literature (Chesbrough and Rosenbloom 2002; Richardson 2008; Zott and Amit 2012) introduces the terminology of “value proposition” to describe the product/service offering that a company makes to its customers and other stakeholders for which it receives payment and is set to gain a profit. Business models are usually perceived from a value-creation perspective that focuses on satisfying customer needs, economic targets, compliance, and regulatory or legislative requirements. But in terms of sustainability and resilience, this focus is too narrow and so there arises the need for a more holistic view of value that integrates environmental, social, and economic goals towards addressing issues like consumer behaviour, climate change, resource limitations, economic stability, and the growing public pressure for socially responsible business.

In this context, the value proposition of a resilient enterprise can be conceived as “environmental” when it covers areas such as the sustainable use of natural resources, biodiversity conservation, and safe absorption and recycling of waste and pollution, while also having the provision of additional ecological services such as climate regulation. The “social” aspect is concerned with issues such as labour standards, human rights, community relations, welfare, culture, poverty alleviation, and equality. And the “economic” factor is about measures of financial profitability, risk management, and the long-term economic viability or continuity of business. A holistic view of the value proposition requires an active consideration of all the stakeholders³ who are influenced or who can directly or indirectly influence the activities of an enterprise. This is critical to developing sustainable business models that deliver resilient enterprises.

The Tourovation Hub project defines a resilient enterprise as “one that has the ability to absorb, adapt and/or transform (AAT)⁴ its value proposition in response to climate shocks. For instance, when exposed to frequent and/or high magnitude climate shocks, a resilient tourism enterprise is one that is able to maintain, improve or fundamentally change its economic value proposition alongside its social and environmental value proposition.” It further states that “an enterprise’s strategic orientation shapes its ability to absorb, adapt and transform its value proposition in response to climate shocks. Three domains of strategic orientation that influence the ability of enterprises to address climate resilience in their operations are entrepreneurial (value driven by entrepreneurship), market (value in response to market demands) and management capacity (values, capabilities and operating structures).”

A sustainable business model that delivers resilience aligns the interests of all the stakeholder groups and explicitly considers the environment and society as key stakeholders. Lüdeke-Freund (2010) defines a “sustainable business model” as “a business model that creates competitive advantage

³ The key stakeholders that are often discussed include suppliers and partners, the society, the environment, customers, and investors and shareholders, as well as governments, international organizations, NGOs (both international and local), and the media.

⁴ Absorb: a system’s ability to maintain its original structure or functioning by absorbing infrequent and low-magnitude risks, either by anticipating or responding to a shock. Adapt: a system’s ability to make small adjustments to its existing risk-management strategies by improving its original structure or functioning in anticipation of future risks. Transform: a system’s ability to fundamentally change its structure or functioning and adopt new strategies in order to move beyond vulnerability thresholds. (Béné et al. 2014)

through superior customer value and contributes to a sustainable development of the company and society". Sustainable business models seek to go beyond generating economic value primarily for customers and shareholders; they also try to create social, environmental, and economic value for a broader set of stakeholders in the value network. As such, a sustainable business model entails a holistic value logic that encompasses economic, environmental, and social goals while aligning with the interests of all stakeholder groups.

A tool frequently used in assessing business models, in this case sustainable business models, is the business model canvas (BMC). This canvas seeks to develop a more generic framework with broad applicability across all industry sectors by utilizing standardized vocabulary and semantics (Osterwalder and Pigneur 2010). The canvas is made up of nine building blocks (Annex 3) – value proposition, customer segments, channels, customer relationships, key resources, key activities, key partnerships, cost structure, and revenue streams. The present study, while using the BMC in analysing the tourism and RE–EE enterprises in Nepal, extended the value proposition component to include social, environmental, and economic goals.

Another tool that is used in conjunction with the BMC, and which is adapted from it, is the lean business canvas (LBC)⁵. The LBC, although it has similar components (problem, solution, key metrics, unfair advantage, unique value proposition, cost structure, and revenue streams), is targeted more at entrepreneurs.

⁵ <https://canvanizer.com/new/lean-canvas>

III. Tourism Sector Overview

Tourism is one of the world's largest and most rapidly expanding industries. According to the World Travel and Tourism Council's report of 2020, the industry experienced a 3.5 per cent growth in 2019, outpacing the global economy's growth of 2.5 per cent for the ninth consecutive year, while contributing to 10.3 per cent of the global economy's GDP. Tourism can and has led to the management of resources in a manner that fulfils economic and social needs while maintaining cultural integrity, essential ecological processes, and biological diversity. People's curiosity about the world and their need for recreation, relaxation, religion, business, and adventure, amongst others, have increased the demand for travel. This, in turn, helps countries, especially the less developed ones, to generate employment, income, and foreign currency, thereby bolstering overall economic growth.

Nepal has a relatively short history in modern tourism. While the country did open its doors to the world in 1951, it was only in the 1970s that its popularity soared due to adventure tourism, which paved the way for today's modern tourism development (Brown et al. 1995). Tourism has contributed to improving the living standards of Nepalis both in short and long terms. In the fiscal year 2016/17, the tourism sector contributed to 7.9 percent of the GDP and this is expected to increase by 4.3 percent by 2027. The government has been focusing on tourism as one of its key mechanisms to recover the losses incurred in the 2015 earthquake, and for longer term economic development. This has created new and more demands for goods and services, both in a negative and positive manner.

Tourism in Nepal is primarily nature based. It is mostly concentrated in remote and ecologically sensitive mountain landscapes, which are also home to some of the most popular protected areas (PAs) such as the Annapurna Conservation Area, Royal Chitwan National Park, and Sagarmatha National Park. This has exerted new pressures on limited resources; the environment has been subjected to degradation due to waste management problems and deforestation; there's also carrying capacity issues and those related to the exploitation of local resources. Likewise, the scarcity of arable land for agriculture, climate shocks involving irregular weather and natural disasters (droughts and floods), lack of infrastructure for energy access, and problems in drinking water supply, and road and air transport have made it difficult for the communities living in the mountainous areas to have alternative sources of income. In this context, as asserted by W. Adams (2001), "[n]ature preservation is important to sustainable development ... as a source of the impulse to balance human need and human claims".

Meanwhile, the COVID-19 pandemic has had significant impacts (in terms of revenues and employment) on the tourism sector since foreign and domestic tourism is almost on hold because of the restrictions on international and national travel. "Tourism entrepreneurs have asked the government to provide them with a 50% waiver in taxes due to the slowdown in the tourism business. They have also been seeking the authority to deduct the salary of their staff and as a relief have asked for at least 50% financial support from the social security fund (SSF)," reports the news portal, myRepublica (2020).

The pandemic struck while regions like Annapurna, Everest, Langtang, and Upper Mustang were witnessing a multitude of tourism activities based on their natural resources. "I have lost all my business for the time being due to COVID-19. I have no income and still have expenses, so I have had to downsize and keep minimum staff," says Karma L. Sherpa, the Managing Director of Footloose In The Himalaya, previously known as Exodus Trek and Expeditions (pers. comm. 2020). Karma Sherpa's family has been in the trekking business in these areas for 40 years. He has now diversified his business to start a bakery in order to generate revenue and retain his staff.

According to Lucky Karki Chhetri, the founder of 3 Sisters Adventures Trekking, “We need to do a lot of [thinking] about tourism as visitors and customers will not be coming for almost one year. Other countries have started to do in-country travel. We need to do our work and plan accordingly.” (pers. comm. 2020) As this statement hints, there is a need for tourism enterprises, particularly the MSMEs, to explore innovative solutions and business opportunities; they have to deliver resilience by designing and developing sustainable value propositions and business models that have the ability to absorb, adapt, and transform. The pandemic is a wake-up call and many of the stakeholders in this sector assert that the enterprises and associated partners need to focus on innovation and resilience for the longevity and sustainability of tourism in Nepal.

IV. Renewable Energy Sector Overview

Nepal's major sources of energy are biomass (firewood, agricultural products, animal dung), hydropower, petroleum products and coal. It, however, has no oil, gas, or coal reserves. In the fiscal year 2018/19, Nepal's fossil fuel imports went just over NPR 214 billion, which was a 25 percent increase over last year's, reports The Kathmandu Post (2019). However, despite an increase in domestic electricity generation, the energy imports have been on the rise, which demonstrates a spike in Nepal's energy requirement. Furthermore, while almost 90 per cent of the country's urban population has access to energy, that figure dips to less than 30 per cent in the case of the rural areas (Banerjee et al. 2011). The majority of the rural populace meet their energy needs by burning biomass under traditional stoves and by using petroleum imports. This latter practice has had an adverse impact on the country's environment and economy.

In Nepal, the principal sources of RE are mini and micro hydropower, solar and wind energy, and various forms of biomass and biogas. "Nepal aims to achieve universal access to clean, reliable and affordable renewable energy solutions by 2030. It is expected to reduce dependence on traditional and imported energy by increasing access to renewable energy," reports *The Himalayan Times* (2017). However, the local governments which are the authorized agencies for providing RE-EE services, lack technical knowledge, institutional capacity, delivery mechanism, effective policies and systems, as well as proper training. "The lack of infrastructure to deliver electricity from generation plants to load centres has been a significant bottleneck," says the Asian Development Bank's 2017 report on Nepal's energy sector. Although this is a challenge for the general energy sector, the RE-EE sector too is facing this issue of infrastructural shortcomings.

While the energy sector has been widely commercialized, the populations on the margins of society are unaware of the financing opportunities the RE-EE sector can provide. So, in addition to large-scale RE-EE projects with foreign investment, smaller projects need to be developed through public-private partnerships that local banks and financial institutions can support with appropriate financial solutions; such schemes can be better accessed by the rural communities.

Although Nepal is known for its richness in RE-EE resources, around 85 per cent of its energy consumption is met by traditional biomass energy; in fact, around 28 per cent of its households do not have access to electricity (Government of Nepal 2016). Dilli Ghimire, the Managing Director of Nepal Energy Foundation (NEF), informs that "more than 70% of people still rely on traditional biomass fuel for cooking ... and almost 20,000 people die because of unclean energy." (pers. comm. 2020)

In order to improve the living standards of those living in the mountains and rural areas, access to energy is of utmost importance. However, as there are areas in Nepal where the national grid has not reached due to cost and geographic constraints or may not reach in the future, setting up off-grid RE-EE mechanisms for electricity access is crucial. Therefore, RE-EE solutions need to be developed for both short and long terms to accommodate the energy needs of the rural communities. Moreover, subsidies and credit facilities specifically targeted at the marginalized communities are necessary so that they are not burdened by the capital-intensive RE-EE systems and can access clean energy.

The growing demand for energy in Nepal, coupled with the high costs involved in importing energy, particularly when the country has an abundance of RE-EE resources, suggests the need for the private sector to design and develop innovative solutions and resilient business models which are able to address the energy gap and challenges related to climate shocks and lack of infrastructure; such solutions and models will also reduce negative impacts on the environment and society.

V. Tourism and Renewable Energy

Energy access is vital for the tourism industry. However, the industry is still dominated by fossil-fuel use which increases the vulnerability of the mountainous regions to adverse environmental impacts. Adoption of RE–EE technologies can assist in reducing air and water pollution and in creating employment opportunities; overall, these technologies can reinforce Nepal’s position as a sustainable tourism destination and one that can draw ever more tourists.

According to Jiwan Kumar Mallik, the Solar Power Expert at the Renewable Energy for Rural Livelihood (RERL) programme, “The solutions for RE were initiated for tourism but this broadened out as the private sector looked for business potential” (pers. comm. 2020). The private sector was at first hesitant to replicate business models related to RE due to the risk of the national grid taking over the mini-grid solution, and the lack of skilled personnel to operate and maintain the systems; there were also capacity building and financing issues. Mallik says that now Nepal does have the know-how in RE–EE technologies and the need of the moment is to allocate the appropriate technology depending on the requirements and availability of resources (solar, water, biomass) in the targeted areas. This then is one of the biggest challenges in adopting RE–EE solutions in Nepal’s tourism sector.

Another challenge concerns energy demand assessment. For example, in key trekking regions such as Solukhumbu district, the energy demand in lodges and homestays is usually in the mornings for showering (geysers) and cooking (stoves, microwaves), which, according to Mallik, is still not being fully met by the micro hydro systems there; this illustrates why energy demand assessments have to be made for different areas.

In this context, ICIMOD’s issue paper on *Renewable energy and resilient enterprise development in the Hindu Kush Himalaya* highlights the benefits of tourism enterprises adopting RE–EE solutions. The paper mentions that “entrepreneurs found the use of solar energy cheaper as compared to grid electricity (85%) and were positively influenced by its environmental benefits such as generation of less pollution and wastage (83%). Entrepreneurs also reported greater safety and ease in using solar energy (42%) while a majority (85%) found it more economical due to lower manpower costs involved.”

All in all, the adoption of RE–EE solutions is highly conducive for Nepal’s tourism enterprises given the benefits they will bring along by way of: reduction in energy costs; sharing of benefits; conservation of resources; and prevention of environmental degradation. These technologies will also strengthen the resilience capacity of communities.

VI. Key Informant Interview Findings

The interviews with the four stakeholder groups were conducted with the objective to explore and understand the existing business models in Nepal's tourism sector and to identify the challenges and opportunities in the sector when it comes to adopting innovative RE-EE solutions in businesses so as to deliver resilient enterprises.

The stakeholder groups are tourism enterprises, RE-EE enterprises, tourism sector stakeholders, and RE sector stakeholders. Among these, the sectoral stakeholders include the government, business associations, banks and financial institutions, and freelance consultants. These specific stakeholder groups were picked because they were the best suited to provide an overview of the current scenario of Nepal's tourism and RE-EE enterprises.

Tourism enterprises

According to Siddhartha Bajra Bajracharya, the Executive Director of the National Trust for Nature Conservation (NTNC), "It's a very hard time for tourism enterprises [because of the pandemic]. For the first time, there are ZERO tourists in the prime season and they [the enterprises] have not been able to make money." (pers. comm. August 2020) Giving a broader picture of Nepal's tourism landscape, Bajracharya says that most of the enterprises are dependent on foreign tourists and that these enterprises have their own networks that help them build a customer base which is also strengthened by referrals. It came across from the interviews that all the enterprises and the broader sector are in a state of frustration. They are now finding it difficult to pay rents and staff salaries, not to mention dealing with other expenses. The interviews also shed light on company values. Most of the enterprises seemed to give priority to the following values: providing quality service; respecting the staff and customers; and creating a transparent and responsible system to operate their businesses. The following types of business models were reviewed in this study:

Table 1: Current business models of some Nepali tourism enterprises

Enterprise	Business Model (BM)	BM Components
Socialtours	Business-to-Consumer (B2C) Strategic orientation: entrepreneurial, market and management capacity	<p>Problem: We have been selling the same tourism packages for ages. There have been no creative packages and quality engagement with the tourists. We have not been able to reach out to the local people.</p> <p>Customer segments: English-speaking tourists from Australia, USA and Europe.</p> <p>Value proposition: Offbeat and conscious tour packages; influencing the lives of both locals and tourists; creative tourism packages.</p> <p>Channels: Our own network, social media and website; referrals.</p> <p>Key partners: Local people and other stakeholders (hotel and transport agencies).</p> <p>Key activities: Tour packages, promoting relationships with the local people.</p> <p>Costs: Rent and staff salaries.</p> <p>Revenue streams: Tour packages. (However, currently, there's no revenue.)</p>

Enterprise	Business Model (BM)	BM Components
Original Organic Farm House Kapan	Business-to-Consumer (B2C) and Business-to-Business (B2B) Strategic orientation: entrepreneurial, market and management capacity	<p>Problem: We have been practising traditional and old ways of farming. However, we rely on the huge import of vegetables from India. These vegetables are slow poison because of the chemical and fertilizer content in them; these chemicals and fertilizers are used to make the vegetables grow faster and to give them good shape, size, and colour.</p> <p>Customer segments: Local residents; the vegetable market at Naxal; and our restaurant.</p> <p>Value proposition: Affordable, fresh, and organic food and vegetables; pioneer in the organic farm sector; and our organic agro-tourism initiative, exemplified by a night-stay farm and restaurant, is a unique concept.</p> <p>Channels: Word of mouth; friends; and families.</p> <p>Key partners: Seed producers and the Naxal vegetable market.</p>
		<p>Key activities: Producing seeds; farming; looking after the farm and restaurant; selling locally produced goods; and construction and maintenance.</p> <p>Costs: Rent (it has been increasing every year); salaries; and the spending on construction and maintenance.</p> <p>Revenue streams: The business is now being sustained by the reserve money that we had.</p>
Wilderness Explorer Himalaya Travels and Trekking Private Ltd	Business-to-Consumer (B2C) Strategic orientation: entrepreneurial and management capacity	<p>Problem: The tour companies are not being able to engage the local communities in tourism activities. There is a disconnect between the local communities and nature, and we have been trying to bridge this gap.</p> <p>Customer segments: Foreign and domestic tourists.</p> <p>Value proposition: Owing to our experience of working with ACAP (Annapurna Conservation Area Project) and WWF (World Wide Fund for Nature), we have deep knowledge about nature, natural activities, and local communities.</p> <p>Channels: Our own networks and referrals.</p> <p>Key partners: Our networks; local communities; tourism stakeholders; and ACAP staff.</p> <p>Key activities: Developing tourism packages and preparing strategic VDC (Village Development Committee) and municipality tourism development plans.</p> <p>Costs: Since now we are working only part-time, not much administrative costs are involved.</p> <p>Revenue streams: Tourism packages and consultations. (However, there's no revenue now.)</p>

Enterprise	Business Model (BM)	BM Components
High Altitude Dreams	Business-to-Consumer (B2C) Strategic orientation: entrepreneurial and management capacity	<p>Problem: The number of companies dedicated to safe and quality service in expeditions are very low. Due to the stiff competition, several malpractices take place in this business. (The Sherpa people have expeditions in their blood and we are channelling it in the right way by creating jobs for them.)</p> <p>Customer segments: International tourists, mostly from Europe.</p> <p>Value proposition: Customer safety and quality service are the main priorities.</p> <p>Channels: Referrals; website; and our own network.</p> <p>Key partners: Gear and equipment suppliers; guides; technicians; hotels and lodges; porters; and part-time staff.</p> <p>Key activities: Expeditions to Everest, Cho-Oyu, and Ama Dablam; and trekking at Island and Mera peaks.</p> <p>Costs: Rent; staff salaries; wages to part-time staff and guides; and expenses involving equipment and gear, store, office, etc.</p> <p>Revenue streams: Expeditions and trekking, but since November 2019, there has been no transaction due to COVID</p>
Exodus Trek and Expeditions (now Footloose In The Himalaya Pvt Ltd)	Business-to-Business (B2B) and small family-run business Strategic orientation: entrepreneurial and management capacity	<p>Problem: There is no responsible trekking company that employs the poorer lot in society, trains them, and motivates them to earn money during the trekking season so that they can take their earnings home and educate their children.</p> <p>Customer segments: Two main foreign agents.</p> <p>Value proposition: 40 years of experience in providing memorable trekking and mountaineering experiences.</p>
		<p>Channels: Our network and website; referrals.</p> <p>Key partners: Guides; hotels and lodges; transporters; equipment and gear suppliers; and government.</p> <p>Key activities: Trekking; cycling; rafting; tours and peak climbing in Nepal, India, and Tibet.</p> <p>Costs: Office and admin costs; and salaries.</p> <p>Revenue streams: Tours and expeditions, but all business has been lost due to COVID-19.</p>

Enterprise	Business Model (BM)	BM Components
3 Sisters Adventures Trekking	Business-to-Consumer (B2C) and social enterprise Strategic orientation: entrepreneurial, market and management capacity	Problem: Male guides misbehaving with female tourists as there were no female guides. Customer segments: 1000 regular customers who visit every year. Value proposition: Female-led and -founded NGO with female trekking guides has given us a comparative advantage; we train and develop female guides; and we are an academically sound organization with training manuals and curricula. Channels: Referrals and word of mouth; and marketing via our website and network.
		Key partners: Guides; training centres; NGOs; hotels; equipment and gear suppliers; and different vendors. Key activities: Trekking and tour packages; training female guides in rock and ice climbing; and curriculum and manual development.
		Costs: Rent; administrative expenses; guest house maintenance; staff salaries; repair and maintenance; wages to part-time staff and guides; buying gears for guides; and the expenses involved in marketing and branding, as well as in communication. Revenue streams: Trekking and tours in Nepal, Tibet, India, and Bhutan; guest house; paragliding; sightseeing; and rafting. However, there have been no tourists and no transactions since November 2019.

From the interview data, it becomes clear that entrepreneurial orientation and management capacity are closely connected in the case of most of the enterprises. The majority of the tourism entrepreneurs are inclined towards creating a climate-resilient value proposition through their values, experiences, and knowledge given the vulnerability of tourism activities to climate shocks (extreme weather, natural disasters). The entrepreneurs stated that their aim is to create economic, social, and environmental value through their products and services. In this regard, Original Organic Farm Kapan is an enterprise that is seen to integrate all the three domains of strategic orientation mentioned earlier. The enterprise is creating value in response to the rise in conscious consumption of food to improve well-being, while being aware of the food supply network, and the impact on the environment and society.

For some of the above enterprises, scaling up their businesses does not mean a significant injection of investment and/or massive expansion; instead, it can be in the form of a certain percentage of increase in sales, adding staff members, and expanding the customer base. Scaling up can also involve lateral growth. In present-day tourism, this is perceived as the way forward, where enterprises come up with new ideas, unique and innovative tours and packages, and promote sustainability to attract tourists. For instance, in the case of Socialtours, it has been creating innovative activities rather than selling the standard tourism products and services to draw quality tourists.

Coming back to Original Organic Farm House Kapan and its innovative practices, its founder, Sangam Sherpa, says his business has grown both financially and physically, and he is now looking to relocate his farm to a bigger space. He says he is now set to follow the franchise business model and is already in the final stage of setting up franchises in Pokhara metropolis and Syangja district. However, representatives of a couple of travel and expedition enterprises said that for the next two to three years, they would not be in a position to scale up since their priority has now shifted to mere survival. The KIs also revealed that in the wake of the pandemic, many tourism enterprises would now be focusing on quality and niche over quantity and volume. Let's now discuss what's called the "cooperative business model".

Cooperative business model

The cooperative business model is member based wherein both products and services are provided to the members. There are criteria for qualifying as a cooperative member. Cooperatives focus on the welfare of their members. The cooperatives that are working in the tourism sector have put in place various programmes and have launched awareness campaigns to improve their institutional capacity. Aligning with the Sustainable Development Goals (SDGs), a cooperative model intervenes at the community level.

The financing of cooperatives is done by the members themselves – through membership fees and other sources. And, while the members benefit from the profit that they receive from the funds collected, the cooperatives themselves are not-for-profit organizations. The bonuses or revenues generated from an enterprise are distributed amongst the members. Moreover, since cooperative businesses are not individual but social enterprises, the benefits go to both the members and the community at large. Subsidized loans are provided when projects are being implemented through member groups.

At the National Cooperative Federation of Nepal (NCF), the members have a share capital where they receive benefits on the basis of the shares that they possess at the end of a year and then are entitled to the revenue. There is also a separate fund for corporate social responsibility (CSR), which comes from the profit. Also, under the principle of "Concern for Community", CSR initiatives take place beyond the members' mandate. Some of these funds also get allocated for training and education, which again benefit the members.

Thus, all things put together, the time seems ripe for a tourism cooperative. "If we establish a tourism cooperative, the members will benefit from the revenue that is generated. In the previous year, we [NCF] worked with the government in the tourism sector. Even though there are various projects, we have not formally operated as a tourism cooperative," says Suresh Thapa, the International Relations and Programme Officer at the NCF.

In the tourism sector, the NCF is focusing on promoting homestays. It is also involved in a national-level interaction programme where all the stakeholders, including cooperative members from the rural areas and cooperative leaders and managers, are brought together on a single platform. The thinking behind these interactions is to attain the objective of institutional capacity development. While there are other programmes too under this initiative, for the moment it is restricted to interactions due to the pandemic. The other programmes involve: climate change; achieving SDGs; interactions on RE, biogas, improved cooking stoves, and micro hydro promotion; afforestation; and organic farming. These programmes are to be carried out only through the cooperatives or their members. Policy formulation is also a priority for the cooperatives; for this, they have been holding national- and regional-level dialogues with the stakeholders.

Renewable energy enterprises

The interviews with the representatives of RE–EE enterprises gave an insight into their business models of creating value based on market demands (strategic orientation), coupled with an enterprise's management capacity (values, capabilities, and decision-making process), to address the issue of not only RE–EE solutions but also of access to water. Moreover, these enterprises are responding to the market demand for climate-resilient products and services. Enterprises like Gham Power and Saral Urja Nepal provide their systems to the users and the users pay them on an instalment basis. Besides, towards the end of a lease period, the systems are sold to the users themselves if they are interested in acquiring them.

All along, these RE–EE enterprises need to have a cordial relationship with their suppliers as they are dependent on them. However, getting supplies on time has been a huge challenge because of the bottlenecks at the customs and clearance ports. The customer base of these ventures is rather wide-ranging, comprising households in emerging cities, rural farmers, corporate clients (hospitals, hotels, cinema halls), and tourism stakeholders. In the interviews, the obvious point was made that all these enterprises wanted to expand their market and customer base. It was also proposed that they would like to compete with the Nepal Electricity Authority (NEA) by supplying electricity at a lower price; moreover, they talked about wanting to develop an alternative source of energy besides hydropower. The following types of business models were reviewed in this study:

Table 2: Current business models of some Nepali RE–EE enterprises

Enterprise	Business Model (BM)	BM Components
Gham Power	Business-to-Consumer (B2C) and Business-to-Business (B2B)	<p>Problem: The biggest problem was power cuts and that was where we came into play.</p> <p>Customer segments: Corporate clients; rural micro entrepreneurs; and farmers.</p> <p>Value proposition: Solar power with financing and advice/suggestions.</p> <p>Channels: Marketing and sales through our website, articles and social media.</p> <p>Key partners: Microfinance institutions, suppliers of solar panel equipment and technical experts.</p> <p>Key activities: Installing smart metre, solar grids, and solar pumps, providing commercial and industrial solutions, microfinance, and expert suggestions and feedback.</p> <p>Costs: Office rent; miscellaneous expenses; staff (30) salaries; part-time staff wages; transportation; and communication.</p> <p>Revenue streams: Supply of solar micro grids, solar pumps, and rooftop solar panels; corporate houses; hotels; rural farmers; and entrepreneurs. (We have to work hard to break even.)</p>

Enterprise	Business Model (BM)	BM Components
Saral Urja Nepal	Business-to-Consumer (B2C) and Business-to-Business (B2B)	<p>Problem: Installing the solar power system entails a huge upfront costs and most companies are driven by short term benefits.</p> <p>Customer segments: Rural and urban consumers; and corporate houses.</p> <p>Value proposition: Providing affordable, reliable, and sustainable energy solutions to all Nepalis.</p> <p>Channels: Referrals; websites; social media; and seminars and meetings.</p> <p>Key partners: Government; energy end users; communities; and financial institutions.</p> <p>Key activities: Providing on-grid, off-grid, and advisory solutions; and launching campaigns.</p> <p>Costs: Salaries for 13 team members; office expenses; and a few other expenses.</p> <p>Revenue streams: Different projects; on-grid and off-grid solutions; supply of micro grids and solar water pumps; and hotels and resorts. (However, there's no revenue as of now and we are surviving via our reserves.)</p>
Clean and Green Nepal	Donor funding and bidding for project assignments with government agencies and INGOs.	<p>Problem: Rural Nepal has some of the poorest households with no food security; in these areas, the health situation is also worrying; then there are issues like deforestation and climate change.</p> <p>Customer segments: Rural areas for household biogas; large biogas plants for organizations; and enterprise development for farmers and entrepreneurs.</p> <p>Value proposition: Quality products and services.</p> <p>Channels: Government agencies; INGOs; and donors.</p> <p>Key partners: AEPC; WWF; biogas companies; SNV Nepal; SNV Ethiopia; and banks and other financial institutions.</p> <p>Key activities: Installing of household and large-size biogas plants; rainwater harvesting; slurry management; and enterprise development.</p> <p>Costs: Salaries; rent; office and admin expenses; and miscellaneous expenditure.</p> <p>Revenue streams: Different projects. (But now our revenue is almost nil. However, we recently won a project and that will help us to revive our cash flow.)</p>

Enterprise	Business Model (BM)	BM Components
Smart Paani	Social enterprise	<p>Problem: There's a massive water crisis, with a huge gap in demand and supply; while rainwater harvesting is taking place despite the hesitance in adopting it, there's no water filtration; water recycling and treatment are also challenges.</p> <p>Customer segments: General public; schools; restaurants; hotels; banks; and non-profits and other organizations.</p> <p>Channels: Website; seminars; development partner's network and meetings with them; articles; and referrals.</p> <p>Key partners: Splash; Simavi; Nepal WASH Alliance: Water, Sanitation and Hygiene Resource Centre Network Nepal; RAIN; Aidenvironment; Aqua-Aero WaterSystems BV; NGOs; development organizations; and suppliers of equipment for water treatment/recycling, filtration, and rainwater harvesting.</p> <p>Key activities: Rainwater harvesting and filtration; waste-water treatment and recycling; Distribution of Tripti Water Filter, RainCap, and Filter Plus Model; water filtration, recycling, and treatment; and drinking water filtration solutions. (We also have a franchise.)</p> <p>Costs: Staff salaries; transportation; administrative overheads; rent; and miscellaneous expenses.</p>

Tourism sector stakeholders

The biggest challenge faced by the tourism industry is that there is no coordination between the tourism stakeholders such as Hotel Association Nepal (HAN), Trekking Agency Association Nepal (TAAN), Lodge Associations, Homestay Association, and Transport. Since each organization looks after its own and perceives the other as competition, no collaborations take place among them.

According to Bajracharya of the NTNC, "Recent research tells us that on an average one tourist only spends USD 39 a day. We need to be very focused so that they spend USD 100 a day. We need to improve hotel accommodation, foods, facilities, etc. But the biggest constraint is that we have provincial-, central-, and local-level governments. There are many authorities now." (pers. comm. 2020) As a result, planning and implementing events and projects require permission from different levels of authority; this adds to the work and results in wastage of time.

Bajracharya also talked about the hotel industry and pointed out some of its flaws. He said, "We need to train the hoteliers in many ways and focus on low-volume but high-value activities. We have practices where the lodge management/association fixes the rate of the rooms, which then does not motivate the individual lodge/hotel." (pers. comm. 2020) This lack of motivation or incentive would, for example, lead to tardy room maintenance, which, in turn, would make the overall establishment less appealing. On another note, to make its image more alluring, the tourism enterprises in the country may have to think about changing certain labels – for instance, "destination tours/packages" could be called "journey" or "vacation" packages.

Given the pandemic circumstances, the general pattern of tourism is also set for an obvious change wherein safety, sanitation, and hygiene will have crucial roles to play. In this context, interestingly, it's likely that more people may visit countries like Nepal because of its fewer tourists. So, to make the most out of the situation, the tourism entrepreneurs ought to focus on spheres like ecotourism, wellness, yoga, adventure, and trekking. Meanwhile, travel businesses are planning to go digital with their bookings and payments in order to minimize physical contact. All said, for tourism in the country, while the next couple of years are going to be difficult, the sector is expected to experience a boom after three or four years.

As for the activities of the Nepal Tourism Board (NTB), a semi-governmental body, its Senior Director, Hikmat Singh Ayer, had this to say: "We support [the] tourism stakeholders by doing Business-to-Business [transactions] via Himalayan Travel Mart. We also do FAM [familiarization] trips, work with the local-level government and community to promote and market local and new tourism destinations. Skill-enhancement training to members of HAN and updating them about the market is what we are doing right now through webinars engaging all the tourism stakeholders. We are supporting them to cope with the pandemic situation and to reopen businesses." (pers. comm. 2020)

However, in terms of integrating RE–EE solutions into tourism enterprises and activities, it was observed that there is only talk but little action. Moreover, it is not seen as a priority in Nepal; instead, it's more of a status symbol. As such, establishments like hotels, lodges, and teahouses are not really interested in RE and being energy efficient. Obviously, this mindset has to change for the two sectors to benefit from each other. Bikash Chandra Bhandari, the Head of Investment Banking at Nabil Investment Banking Limited, says that in the case of promoting RE–EE solutions in tourism, while there are a few big projects dealing with it, they require substantial "time for execution and evaluation"; there are also multiple stakeholders involved in these projects and the risks are various. "Instead of this," he suggests, "we need to do smaller projects in quantity, where we will require less time for execution, evaluation, and [where there will be] fewer stakeholders and risks." (pers. comm. 2020)

As for the role of banking and financial institutions in Nepal's tourism and RE sectors, they have been supporting the enterprises to pivot their businesses – for example, in turning resorts into wellness centres and in adopting rental models like Airbnb. They have also been providing loans and services such as equity structuring and restructuring to tourism and RE–EE enterprises. Meanwhile, in the wake of the pandemic, a directive from Nepal's central bank has made provisions for loan extension and lower interest rates to the tourism sector as it has been hit the hardest. Also, other remedial measures such as subsidized loans and new financing models for tourism stakeholders for the next two to three years are being put in place to help them revive their business and to motivate them to create packages and tours for domestic tourism. Likewise, the banking and financial institutions are providing loans and offering equities to start-ups as they have been struggling with cash flow and working capital.

Renewable energy stakeholders

The field of tourism holds great potential for RE–EE interventions, especially in a country like Nepal. In Nepal's mountainous parts which see high tourist footfall, these interventions can help deal with natural disasters, extreme weather, and varied sources of pollution; they can also enable resource conservation. It was gathered from the interviews that a significant amount of energy cost goes towards cooking and heating fuel sources due to the particular topography and animal-based (mules, yaks, horses) transportation.

In order to avoid this practice, Ghimire of the NEF says there's a need for policies that back the use of biomass-based clean energy. He believes that doing so will not only create sustainable and cost-efficient energy sources but also open up job opportunities. The other alternatives that could be relied upon are biogas, solar energy through mini grids, and micro/mini hydro systems.

Since there are areas in the country where the national grid has not reached or may not reach in the future, experts recommend the setting up of off-grid RE for electricity access. However, as pointed out by Binod P. Shrestha, the Deputy Chief Technical Advisor at GIZ, there are no clear-cut governmental policies, acts or regulations promoting RE–EE ventures (pers. comm. 2020). He also says that in the country's new constitutional set-up, there's a lack of clarity about the roles and responsibilities of local and provincial governments, while for the integration and implementation of RE–EE solutions, all levels of government ought to be on the same page. Ghimire adds, "Many policies were made but the challenge is in the execution process. Rather than focusing on the number of energy access [sources] that the local governments can provide, the focus should be towards the number of local authorities that should be brought to readiness to address any type of energy problems." (pers. comm. 2020)

Moreover, since the local authorities have limited knowledge and skills to allocate the resources required for RE–EE solutions, organizations like the non-profit NEF can facilitate with guidance, trained staff, technical experts, and an updated system which will help the authorities to adapt to the existing policies and operate successfully.

Another challenging area within RE policy is subsidy. Shrestha of GIZ states that policies based on subsidy were more relevant two decades ago and that while the weaker segment of society still needs it, free riders have been taking advantage of it. So, rather than only focusing on the subsidy approach, the emphasis ought to be on innovative policies that can promote the commercial approach. As regards GIZ's role in providing RE–EE solutions, it already has a model policy (involving mechanisms, tools, etc.) in place which has been adopted by some of Nepal's local governments; this is currently in the power devolution and transition phase.

In these pandemic-ridden times, while RE-related enterprises will be affected in the short term, things are expected to be different in the long run; for example, as migrant workers are returning and looking for opportunities, RE-based enterprises could be one their business choices. This aligns with the recommendations of experts to promote and register ownership of RE–EE enterprises and systems among rural communities by legalizing the process instead of it being informal and voluntary.

VII. Discussion and Conclusion

The pandemic has thrown light on the long-term vulnerability of Nepali tourism enterprises, particularly the MSMEs, to face challenges such as climate shocks, lack of infrastructure, environmental degradation, and resource conservation. Since the pandemic's impact is being felt all through the Nepali tourism ecosystem, reopening and rebuilding key tourist destinations will require a collaborative approach.

Business models

It was observed from the findings and analysis of the data from the tourism enterprises that the types of business models that currently exist can integrate RE–EE solutions if they either completely transform or integrate the strategies and solutions into the design of the value proposition and strategic orientation, and then deliver through the value network.

Despite COVID-19, RE–EE businesses and stakeholders are positive about the growth of business. All the interviewees unanimously agreed that the tourism sector is potentially a lucrative market for RE–EE solutions and approaches. One of the key benefits for the tourism enterprises from these solutions is the reduction in energy costs in the long term. However, due to the pandemic, the enterprises and stakeholders are feeling demotivated and frustrated, especially as their businesses were halted when they were looking forward to the mega tourism event of Visit Nepal 2020. But even without this crisis, overall, there is a need for innovation in the business models of tourism enterprises; more specifically, they need to be resilient wherein they are able to absorb, adapt, and transform. Like in the case of Socialtours, a “social tourism” outfit founded by Raj Gyawali; it offers novel and diverse packages such as Lunch with Nuns, cooking classes, local market walks, Bhaktapur on Wheels, and Breakfast on Everest.

Figure 1 presents examples of business models that may deliver resilient tourism enterprises which have the ability to absorb, adapt, and transform. Sustainable business model archetypes, say Bocken et al. (2014), are “groupings of mechanisms and solutions that may contribute to building up the business model for sustainability”; here, the factor of “resilience” could also be added. These archetypes are fashioned to assist entrepreneurs in reconceiving and transforming their businesses into innovative and sustainable value propositions, while also making them resilient. The archetypes have the potential to embed environmental, social, and economic values in business purposes and processes, increase the ambition of innovations, accelerate their introduction, and reduce the risks in implementation by providing practical examples.

In order to mainstream RE promotion and adoption, public–private partnerships involving project financing and innovative business models are going to be fundamental, says Douglas Hinrichs, the Team Leader of the Nepal Renewable Energy Programme (NREP). He particularly laid emphasis on project financing, saying that it holds benefits for both the RE and tourism sectors. According to the US Commercial Law Development Programme, “project financing is a non-recourse loan structure for capital intensive infrastructure projects, with the project’s assets, rights, and interests held as collateral and project’s cash flow used for repayment”. This tends to alleviate the need to provide physical collateral to banks and is of further benefit to the project developer as upfront capital is not required.

Figure 1: Sustainable business model archetypes

TECHNOLOGICAL			SOCIAL			ORGANISATIONAL	
Maximise material and energy efficiency	Create value from waste	Substitute with renewables and natural processes	Deliver functionality rather than ownership	Adopt a stewardship role	Encourage sufficiency	Repurpose for society / environment	Develop scale up solutions
Low carbon manufacturing	Circular economy closed loop	Move from non-renewable to renewable energy source	Product-oriented PSS- maintenance, extended warranty	Biodiversity protection	Consumer/ User education - educational models - communication and awareness	Not for profit	Collaborative approaches (sourcing, production, lobbying)
Lean manufacturing	cradle-2 Cradle	Solar and wind power based energy innovations	Use oriented PSS-Rental, lease, shared	Consumer care - promote consumers health and well-being	Demand management (including cap & trade)	Hybrid businesses, Social enterprise (for profit)	Incubators and Entrepreneur support models
Additive manufacturing	Reuse, recycle, re-manufacture	Zero emissions initiative	Result-oriented PSS- Pay per use	Ethical trade (fair trade)	Slow fashion	Alternative ownership' cooperative mutual, (farmers) collectives	Licensing, Franchising
Low carbon solutions	Take back management	Blue Economy	Private Finance Initiative (PFI)	Choice editing by retailers	Product longevity	Social and biodiversity regeneration initiatives	Open Innovation (Platforms)
De-materialisation (of products/ packaging)	Use excess capacity	Biomimicry	Design, Build, Finance, Operate (DBFO)	Radical transparency about environmental / societal impacts	Premium branding/ limited availability	Base of pyramid solutions	Crowd sourcing / funding
Increased functionality (to reduce total number of products required)	Sharing assets (shared ownership and collaborative consumption)	The Natural step	Chemical Management Services (CMS)	Resource stewardship	Frugal business	Localisation	"Patient / slow capital" collaborations
	Extended product responsibility	Green chemistry			Responsible product distribution/ promotion	Home based, flexible working	

RE enterprises like Saral Urja and Gham Power have a similar model. Saral Urja designs and installs its system and leases it to the customer for 15 years, after which they sell it to the customer itself if the latter wants it. Saral Urja's power charge is a rupee less than that of the NEA's. Likewise, Gham Power designs, installs, and finances systems via microfinancing/banks (in some cases, it finances the systems on an instalment basis).

This financing model could help project developers of RE-EE solutions take the onus of installing, operating, and managing the systems so that the tourism enterprises can focus on their core operations. This implies that the tourism enterprises do not need to be trained in operating and maintaining the systems, thereby they can keep their costs down, for example, in the case of the solar or hydro systems that require different sets of skills and know-how, the provider will operate and maintain them, the enterprises do not have to spend on hiring or training personnel.

The study also looked at the ABC (Anchor-Business-Community) model, which is a private sector-led off-grid energy supply model. Shedding light on it, Mallik of the RERL programme stated, "An anchor could be telecom towers, petrol stations, retail chains located near a rural community ... [which are]

able to provide predictable daytime load ... Business customers are local commercial establishments such as retail shops, carpentry shops, irrigation systems, schools, clinics, etc. for whom electricity is a critical input for improving productivity. Community customers are primarily households that have a low and variable energy demand ... [which] can be served by different types of energy solutions (rechargeable lamps and batteries, solar home systems, and micro-grids, among others)."

With regard to the ABC model for tourism, Mallik cited a speculative example – of a lodge in Lomanthang (Mustang district) which could be considered an anchor. The lodge could use 50 percent of the electricity and the remaining could be used by the businesses in the area, such as groceries, mills, and mineral water bottling plants; all of them would be sharing the monthly tariff of, say, NPR 2000. But they might consume only 20–30 percent of the electricity, so the remaining 20 per cent could be used by the community (households), who would pay a monthly tariff of about NPR 100/150. So here, the anchor, the lodge at Lomanthang, becomes a big source of revenue, followed by businesses, and then the community.

The interviews and discussions on RE–EE and tourism business models reflected different strategic orientations (entrepreneurial, market demands, and management capacity), which aims to deliver resilience through innovations in the value proposition (social, environmental and economic).

Ecosystem challenges and opportunities: Tourism and RE

On tourism and its links with energy, Baburam Paudel, the Senior Technical Project Manager at the UK charity, Renewable World, spoke about tourism being one of the major consumers of energy. He pointed out that tourists are happy to pay more for quality services and that they prefer travelling to places with access to clean energy. He stated that hospitality segments like facilities, logistics, utilities, and housekeeping stand to gain considerably by adopting RE–EE solutions. Referring to COVID-19, Paudel said it has underscored the need to move towards resilience where RE plays a key role. He identified the intervention areas for RE as those related to lighting, cooking, turning waste into energy for thermal and electrical power, and the use of biofuels – biomass and biogas.

Hinrichs of NREP called for more information sharing between the stakeholders of RE–EE and tourism enterprises so that the feasibility (demand) aspect is understood by both sides. He said that there is a clear and definite need for integration of RE–EE solutions into tourism enterprises as it is not only cost effective but also builds resilience; moreover, it is a good aid in marketing and publicity for both sides. But for that to happen, Hinrichs underlined a holistic approach wherein there is coordination between the government, RE–EE enterprises, tourism businesses, and other stakeholders.

Ram Chandra Sedai, the founder, President, and Executive Director of the Centre for Environment and Sustainable Tourism Development, urged for revising the policy on subsidies. He said, "Alternative energy subsidies need to be reframed and the policy should be revised. We need to learn from Bhutan and think in a detailed way to come up with a list of activities such as what do the tourists do when they land at the airport? How do they reach the hotel and the travel destination – mode of transport? Does the hotel use RE solutions?" (pers. comm. 2020)

The following are the key areas where collective initiatives from both tourism and RE stakeholders will be necessary to support tourism enterprises in adopting RE–EE solutions and approaches.

Policy

Policies focusing on both the tourism industry and other sectors closely linked to it will lead to sustainable tourism development. The energy dimension is crucial in this respect. The adoption of RE–EE solutions in both energy production and consumption is necessary for the development of tourism in the mountainous and rural regions. The policy on RE subsidies needs to be properly designed, implemented, and monitored so that it is targeted at impoverished and disadvantaged communities. There ought to be alignment between the policies of the tourism sector, the larger industry, and the RE–EE enterprises, particularly on the matter of cooperatives; this would help the cooperatives to enhance their visibility and ability to operate in mountainous and rural regions. Due priority should also be given to strengthen domestic tourism, especially in these pandemic times when foreign tourists are few and far between. The 2010/11 Nepal Living Standards Survey recorded 2.5 million domestic tourists. Indeed, as myRepublica (2020) reported, 50 per cent of the local businesses are supported by domestic tourism.

Perception and understanding

One of the key constraints in the adoption of RE–EE solutions is the confusion in understanding the purpose of RE production and its uses – is it meant only for lighting or is it a vehicle for overall economic development? Some of the experts highlighted this lack of clarity, and this is despite the awareness campaigns that have been carried out. Another aspect that warrants a close study is demand and the nature of it. For example, in the case of the solar mini grid (similar in function to what the national grid serves in Kathmandu), it has to be first assessed as to what it is being used for – whether to operate stone crushers, milling machines, shops, carpentry establishments, etc. Many of the experts asserted the importance of carrying out demand assessments; it is only then a decision can be taken about which RE source (solar, water) and system works best for an area.

Financing

It's financing that's one of the tougher challenges for RE–EE enterprises. "Rather than the technical side, the implementation part, especially the financing, is where we see most of our challenges in the RE sector. When working to set up solar mini grids and mini hydro systems, we are also concerned about its sustainability. How do we sustain it? is a big question, which we ponder upon most of the time," says Mallik (pers. comm. 2020). In such a situation, investments in the form of equity as well as tax benefits for early adopters are some of the ways of financing RE adoption within the tourism sector.

Moreover, introducing new financing and investment tools such as green financing alternatives via municipal and tourism bonds to engage the local communities can encourage entrepreneurship and ownership. But, while substantial research has been done in financing, there is a need yet to engage international experts to help understand issues that banks are unsure of. As regards small and medium-sized enterprises (SMEs), they should also be supported through public–private partnerships, not just the large projects, says Ritu Pradhan Malla, the Senior Investment Manager at Business Oxygen, a private equity fund. She says there needs to be access to information, guidance, and support to the stakeholders and SMEs working on RE–EE solutions so as to help them cater to the market. There should also be, she says, effective government policies on foreign direct investment, an enabling environment, as well as proper rules and regulations and incentives to promote the RE industry. Malla also spoke about the importance of strengthening domestic tourism.

Building capacity and capability

It was observed from the interviews with the stakeholders that the ownership of the RE–EE technologies is rather limited in the rural communities. Despite officials carrying out training stints after handing over the systems, the rural communities have lacked the competence and the enthusiasm to operate them. There have also been cases where the trained villagers migrated for work and thus there was no one to operate and maintain the RE systems.

As mentioned earlier, a way forward for ensuring the operation and maintenance of RE–EE solutions and systems could be through the establishment of RE–EE businesses by local entrepreneurs in the rural communities with financial support from banks, other financial institutions, and private investors; the provision of tax benefits could also be an encouraging factor. Such a scheme of things will not only ensure proper functioning of the RE systems but will also be a source of income. Besides, this will enable the local tourism enterprises to have direct access to these solutions and systems. Finally, for tourism enterprises to successfully adopt and integrate RE–EE perspectives and solutions, capacity building within the enterprises, along with interventions in processes/operations through technical support from experts, is especially necessary.

Limitations of the study

- Inability to conduct interviews in person given the COVID situation
- Non-availability of the relevant individuals
- Poor internet connectivity; limited technical know-how of online platforms

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Annexes

Annex 1: Questionnaires

Tourism enterprise

1. Please tell me briefly about your business. How long have you been in the tourism sector? What motivates you to be in this sector?
2. What is your business model – as regards to problem, value proposition, products/services, partners, customer segments, resources, partners/suppliers, delivery channels, etc.? Does it deliver scale? Do you engage women and youth? Please walk me through it.
3. What are the positive and negative impacts of your business on the tourism sector?
4. What are the top three challenges that you are facing as a tourism enterprise? What is the impact of the COVID lockdown on your business?
5. How are you managing your cash flow/revenue streams?
6. What are your existing energy needs and sources?
7. What are the challenges related to the current RE–EE solutions? If you were to adopt RE–EE solutions, are there solutions available that cater to the needs of your business? In your opinion, will these solutions and approaches be scalable/replicable?
8. Would adopting RE–EE solutions generate positive social and environmental impact? What are the challenges? If yes, please explain how you would go about implementing such solutions and/or strategies. If not, why?
9. How would you pivot/redesign/diversify your business model to deliver a sustainable business – in terms of value proposition, customers, channels, partners, revenue streams, etc.
10. Are you receiving support from stakeholders such as the government, associations, and banking and financial institutions for your business? If yes, what kind of support and opportunities are you receiving? If not, what are you seeking to keep your business afloat?
11. As part of your vision/goal, what impact do you want to create by way of reducing carbon footprint, creating jobs, and in terms of access and affordability?
12. How do you see this sector two years from now; would you advise entrepreneurs to come into this sector?

RE enterprise

1. Please tell me briefly about your business. How long have you been in the RE sector? What motivates you to be in it?
2. What is your business model – as regards to problem, value proposition, products/services, partners, customer segments, resources, partners/suppliers, delivery channels etc.? Does it deliver scale? Do you engage women and youth? Please walk me through it.
3. What is the USP of your products/processes? How is it different from the competitors in the market?

4. What are the top three challenges that you are facing in your business (in terms of scaling up, supply and demand, markets , financing, etc.)? What is the impact of the COVID lockdown on your business?
5. How are you managing your cash flow/revenue streams?
6. What sectors and geographies do you provide your products and services to? What were the reasons for focusing on these sectors?
7. Do you see tourism as a potential market? If so, how do you foresee entering this sector, and what are the solutions and approaches that you will have? If not, why?
8. In your opinion, what are the gaps for tourism enterprises in adopting RE–EE solutions? How would this adoption impact the tourism sector?
9. Are you thinking of redesigning/pivoting/diversifying your business model given these challenges?
10. Are you receiving support from stakeholders such as the government, associations, and banking and financial institutions for your business? If yes, what kind of support and opportunities are you receiving? If not, what are you seeking to keep your business afloat?
11. How do you see this sector two years from now; would you advise entrepreneurs to come into this sector?

Tourism sector stakeholders

1. Please tell me briefly about your organization. What are the areas of work you are currently focusing on?
2. What is the role of your organization in developing the tourism sector?
3. What are the top three challenges that you are facing right now? What, in your perspective, is the impact of COVID-19 on the entrepreneurial ecosystem?
4. What kind of support are you providing tourism enterprises? Where do you see the gaps? Please elaborate with examples.
5. What are the challenges in promoting RE–EE solutions among tourism enterprises and stakeholders?
6. What kind of support do you think tourism enterprises require for promoting and adopting strategies/programmes related to RE –EE solutions and approaches?
7. How can the existing policies be adapted and/or new policies created for promoting RE–EE solutions in tourism?
8. What are the opportunities for public–private partnerships to support RE-based projects?
9. How do you see this sector two years from now; would you advise entrepreneurs to come into this sector?
10. Any final thoughts?

RE sector stakeholders

1. Please tell me briefly about your organization/project. What are the areas of work you are currently focusing on?
2. What sectors and geographies do you provide your products and services to? What were the reasons for focusing on these sectors?
3. What are the top three challenges in the promotion and adoption of RE–EE solutions that your organization is facing?
4. What, in your perspective, is the impact of the COVID-19 lockdown on the RE sector, particularly the MSMEs?
5. How can the existing policies be adapted and/or new policies created for promoting RE–EE solutions?
6. Do you see tourism as a potential market for RE–EE solutions? If yes, please elaborate. If not, why?
7. What kind of support do you think tourism enterprises require to adopt RE–EE solutions and business models? Please identify and elaborate on three immediate areas of support.
8. What, in your opinion, is necessary for the RE sector to be able to support tourism enterprises – in terms of policies, financing, building capacity, etc.?
9. Any final thoughts?

Banking and financial institutions

– (questions embedded in the sectoral stakeholder questionnaires above)

1. What are the opportunities for public–private partnerships to support RE-based projects?
2. What is the role of banks/institutions in financing the development of this sector in the country?

Annex 2: Interviews

Tourism enterprise	Type	Interviewee
Socialtours	Private company	Raj Gyawali, Founder
Original Organic Farm House Kapan	Private company	Sangam Sherpa, Founder
Wilderness Explorer Himalaya Travels and Trekking Pvt Ltd	Private company	Krishna Gurung, Co-founder
High Altitude Dreams	Private company	Bikram Thapa Magar, General Manager
Exodus Trek and Expeditions (now Footloose In The Himalaya Pvt Ltd)	Private company	Karma L. Sherpa, Managing Director
3 Sisters Adventures Trekking	Private company	Lucky Karki Chhetri, Founder

RE enterprise	Type	Interviewee
Gham Power	Private company	Anjal Niraula, CEO
Saral Urja Nepal	Private company	Bishal Thapa, Managing Director
Smart Paani	Social enterprise	Anisha Karn, COO
Clean and Green Nepal	Private company	Bishwa Raj Karki, Managing Director

Tourism sector stakeholders	Type	Interviewee
National Cooperative Federation of Nepal	Federation	Suresh Thapa, International Relations and Programme Officer
Centre for Environment and Sustainable Tourism Development	Non-governmental organization	Ram Chandra Sedai, Founder, President, Executive Director
Social Entrepreneur, IT Expert and Cultural Activist	Individual	Sagun Dhakhwa
Freelance Trekking and Tour Guide	Individual	Malika Shrestha
Nepal Tourism Board	Semi-governmental body	Hikmat Singh Ayer, Senior Director, Tourism Products and Resource Development
National Trust for Nature Conservation	Semi-governmental body	Siddhartha Bajra Bajracharya, Executive Director

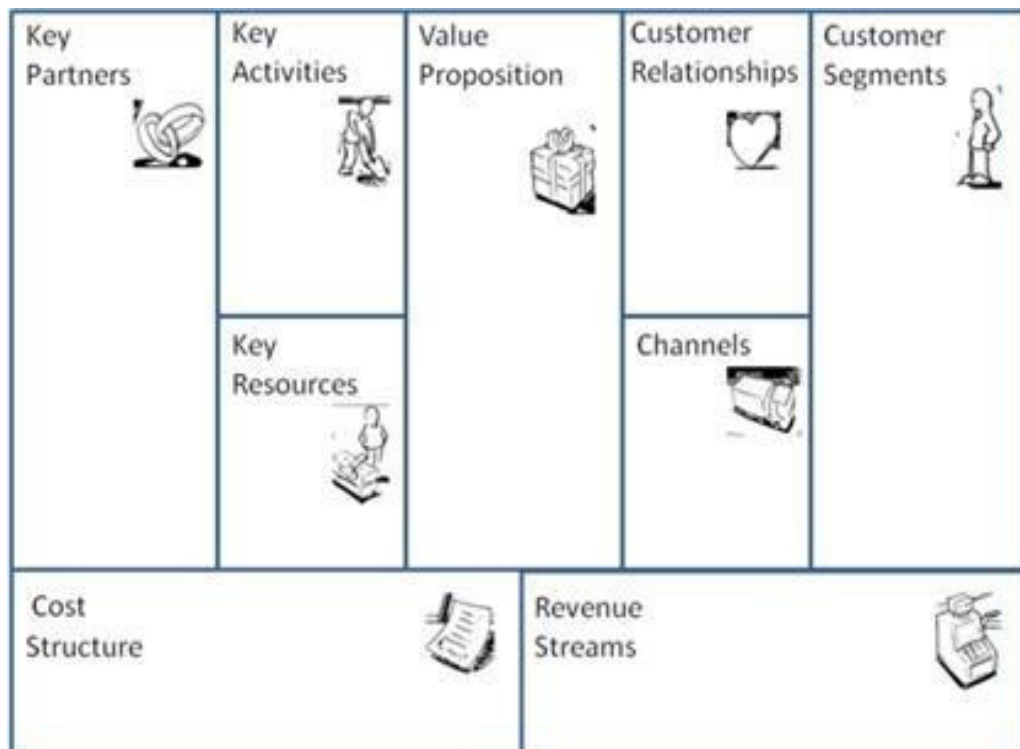
RE sector stakeholders	Type	Interviewee
Renewable Energy for Rural Livelihood programme, Alternative Energy Promotion Centre	Governmental institution	Jiwan Kumar Mallik, Solar Power Expert
Nepal Energy Foundation	Foundation	Dilli Ghimire, Managing Director
Renewable World	UK charity	Baburam Paudel, Senior Technical Project Manager
GIZ	Development partner	Binod P. Shrestha, Deputy Chief Technical Advisor,
Nepal Renewable Energy Programme	Development partner and a governmental institute programme	Douglas Hinrichs, Team Leader

Banks and Financial Institutions	Type	Interviewee
Business Oxygen	Private equity fund	Ritu Pradhan Malla
Nabil Investment Banking Limited	Bank	Bikash Chandra Bhandari
NMB Bank	Bank	Dinesh Dulal

Annex 3: Business Model Canvas (BMC)

Nine components of BMC:

- value proposition – describes the bundle of products and services that create value for a specific customer segment (with social, environmental, and economic goals)
- customer segments – defines the different groups of people or organizations an enterprise aims to reach and serve
- channels – describes how a company communicates with and reaches its customer segments to deliver a value proposition
- customer relationships – describes the types of relationships a company establishes with specific customer segments
- revenue streams – represents the cash a company generates from each customer segment (costs must be subtracted from revenues to create earnings)
- key resources – describes the most important assets required to make a business model work
- key activities – describes the most important things a company must do to make its business model work
- key partnerships – describes the network of suppliers and partners that makes the business model work
- cost structure – describes all the costs incurred to operate a business model



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