

Journal of  
**Tourism & Adventure**

---

**Exploring Circularity: A Review to Assess the Opportunities and Challenges to Close Loop in Nepali Tourism Industry**

**Chandramani Aryal**

Department of Environmental Science, Tri-Chandra Multiple Campus, Kathmandu  
aryal.mani@gmail.com

---

**Article**

Received 9 July 2020

Revised 4 August 2020

Accepted 10 August 2020

---

**Abstract**

*Tourism is one of the important sectors in Nepali economy and gains high priority from the government sector as well owing to its contribution in the economic, social and environmental front. Despite these benefits, the tourism sector comes with negative externalities, providing rationality for shift towards a more sustainable approach. Despite this, the circular economy is yet to gain recognition, both at the academic and industrial level in Nepal. Thus, this article aims to fulfill that gap by introducing the concept of circular economy, application of circular economy to the tourism industry and barriers for their implementation in Nepal. In different parts of the world, transition towards circular economy, which integrates the concepts of restorative economy, sharing economy and service economy, from the linear one have been identified as an approach for sustainable economic development. Innovation and application of the 4R principles have been identified as the key to the shift towards the circular economy. Innovation implies the use of new, innovative and more durable products, innovation in the production process and innovative organizational process. Innovation of business models, reduction of the resources used, reuse of the old products thereby reducing the demand for the new ones and recycling of waste products generated are some of the*

**Keywords**

*Circular economy, innovation, reduce, resources conservation, tourism*

---

**Corresponding Editor**

Ramesh Raj Kunwar  
kunwar.dr@gmail.com

---

Copyright © 2020 Author

Published by: Janapriya Multiple Campus (JMC), Pokhara, Tribhuvan University, Nepal

ISSN 2645-8683

*strategies of the circular economy that are applicable to the tourism industry. As Nepali tourism sectors are largely based on take-use-dispose form, they are unsustainable. Circular economy can address the problem associated with the tourism sector thereby making the sector sustainable. But, adaptation of circular tourism is hindered mainly by financial and knowledge constraints. The study is expected to introduce and initiate academic discourse about circular tourism in Nepal.*

## **Introduction**

Climate change, loss of biological integrity, disruption in biogeochemical cycle, depletion of freshwater resources, ozone layer depletion, land use change, acidification of ocean and introduction of novel entities into the atmosphere are problems mainly caused due to exceedance of natural planetary boundaries by economic activities, i.e. production, distribution and consumption of goods and services (Tonelli & Cristoni, 2019). The consequences of these changes are not limited to environmental impacts, rather they pose questions on the existence of humanity itself. Moreover, as the resources are limited and mostly of non-renewable nature, the economic system will be greatly impacted by the linear approach of the 'Produce-use-dispose model'. Thus, there is a need to make changes in approach in the exploitation of raw materials from the nature, process involved in the production of goods and services, utilization of the goods and services thus produced and management of residues and unutilized goods at the end. Additionally, there is a need to make convergence between the environmental protection, social equity and economic development to ensure sustainable development (Pattanaro & Gente, 2017).

Environmental impacts of the economic activities have been realized in the past and efforts have been made to address that. Modern environmental movements were thought to be in the peak in the late 1960s and early 1970s particularly after the publication of Silent spring (Kroll, 2001). Gradual progress of the concerns led to the development of the concept which aims to establish synergies between social, economic and environmental concerns in a holistic manner, which is termed as sustainable development (Blewitt, 2008). Additionally, the concept of a green economy was endorsed by UNEP as a low carbon, resources efficient and socially inclusive economic model which results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (Fedrigo-Fazio & Brink, 2012). Both sustainable development and green economy are reported to be vague things and lack conceptual clarity (Pesqueux, 2009; Turok & Borel-Saladin, 2013). Also, the concept of sustainable development has claimed to be 'malleable' to those who were already benefiting from business as usual scenario (Higgins-Desbiolles, 2018). Those benefiting from the business as usual scenario are just rebranding their activities in the name of sustainable development and continuing their usual activities without significant change in their environmental

impact. Thus, circular economy has been identified as the approach to provide an operational framework and paradigm for sustainable development (Ávila-Gutiérrez et al., 2019; Corona et al., 2019).

Tourism has been identified as one of the drivers of Sustainable development (World Tourism Organization & United Nations Development Programme, 2018). Travel and tourism is one of the largest economic sectors in the world contributing roughly 10.4% of the global gross domestic product (GDP) and creating 313 million or 9.9% of global jobs in the year 2017 (WTTC, 2018). The impact of the tourism sector would be much greater if the indirect impacts are accounted for. But, these benefits of tourism are also usually associated with some form of negative externalities. Tourism sector was found to be responsible for nearly 8% of the global Greenhouse Gas (GHGs) Emission in 2013 and was reported to increase by a significant rate during the assessment period (Lenzen et al., 2018). Furthermore, the tourism industry has resulted in environmental consequences witnessed through the resources depletion, loss of biodiversity and dislocation of local people in some areas (Soan et al., 2009).

Sustainable tourism is analogous to the concept of sustainable development applied to the tourism industry but, in most cases it is misinterpreted as an approach of sustaining tourism (Higgins-Desbiolles, 2018). Sustainable tourism should be interpreted as a form of tourism which operates within the economic, social and environmental limits of a particular system and helps to strengthen these pillars of sustainable development. Sustainable tourism is the balanced trade off of social, economic and environmental interest while conducting tourism activities (Janusz & Bajdor, 2013). This implies that, tourism activities which fosters environment conservation, promotes social well-being and where benefits are shared in equitable manner are sustainable tourism. In other words, structural management of the mobility perspectives which involves recreation and leisure for social cohesion, inclusivity and wellbeing and works as the facilitators of education, cross-cultural engagement, ecological appreciation and spiritual development should be understood as sustainable tourism (Higgins-Desbiolles, 2018). But, as most of the tourism activities are currently framed under the framework of linear economy, negative externalities of the sector are being expanded (Girard & Nocca, 2017) making the tourism sector unsustainable. There is a need to adopt circular tourism to make the sector more sustainable.

Transition from the linear to the circular economy requires the overhaul change in all aspects of the economy including product itself, production process and organizational process (Frodermann, 2018). This implies that we need complete understanding of the subject. But, the discussion on the aspects of circular economy in Nepal is in primitive stages with most focus on the aspects of solid waste management. In September, 2019 a dialogue was organized by Nepal Economic

Forum to discuss the ways to mainstream circular economy into the economy of Nepal (NEF, 2019). The program has emphasized to initiate the circular economy in Nepal through adaptation of the 3R (Reduce, Reuse and Recycle) principle at the beginning and recommended to explore additional opportunities for closing the loop (NEF, 2019). Though circular economies are applicable to various aspects of the economy, the program solely discussed the aspects of solid waste management. It is essential to create awareness for adaptation of the circularity in the business (NEF, 2019) and motivate them to adopt the innovative business model (Parajuly, 2019). Some innovative business models such as Doko recyclers (<https://dokorecyclers.com/>), blue waste to value (<https://bw2v.com/>) and Tootle (<https://tootle.today/>) are running. But, circularity in the business approach of these firms are yet to be explored. Airbnb (<https://www.airbnb.com/>) which has been known as a model of collaborative economy and shares the characteristics of circular economy are in operation in the hospitality sector. But the circular economy is completely new to the Nepali tourism sector. Along with this, though volume of literature relating circular economy to tourism are increasing rapidly particularly within China and European Union (Michelini et al., 2017; Pattanaro & Gente, 2017), how the topic can be applicable to the tourism industries of developing countries like Nepal are largely limited.

In this article, reviews of the literature have been used as an approach to fill the knowledge gap in the aspect of circular economy in tourism literature of Nepal. The discussion will start with the conceptualization of circular economy. This will be followed by the status of tourism in Nepal highlighting the linear approach embedded in that and problem associated with this linear approach. Introductory note, conceptualization of the circular economy in the tourism sector, applicability and barriers to circular economy in tourism has been discussed in the forthcoming part. The article ends with the implications of circular economy to make the tourism sector more sustainable. As the implementation of the circular economy in case of Nepal is almost non-existence or informal with the information on circular economy in the hospitality sector in Nepal are unavailable, literature from other parts of the world have been reviewed. The article will explore the possible opportunities and challenges for implementation of circular economy in Nepali tourism industry to make it more sustainable.

## **Review and discussion**

### **Circular economy**

Circular economy is defined as the economic system that replace 'end-of-life' approach with reducing, alternatively reusing, recycling and recovering materials in production, consumption and distribution of product and services with the aim

to accomplish sustainable development, through creating environmental quality, economic prosperity and social equity and by maintaining intergenerational equity (Kirchherr et al., 2017). Linear approach in production of goods and services are the major cause of the environmental problems and social problems. Circular economy refers to the use of natural resources and environmental capacity in an environmentally friendly way considering the limitations of the earth resources (Zhang & Tian, 2014). In a circular economy, the processes such as extraction of raw materials, production and consumption and management of the residues thus generated are changed by renovation of the overall process to reconcile social, economic and environmental concerns. Circular economy helps to reduce the demand for the virgin raw materials and energy input and even when virgin raw materials are extracted from nature they are predominantly or to the possible extent are renewable from the productive ecosystems (Korhonen et al., 2018). Though some form of investments in infrastructures and policy measures are essential to adopt the circular economy, the adaptation is still attractive. A study has estimated that the adaptation of circular economy can help the countries to increase their workforce by 4% and reduce the waste produced alongside their contribution in reduction of Carbon dioxide reduction by up to 70% (Stahel, 2016).

Circular economy encompasses the properties of collaborative economy, restorative economy and service economy (Frodermann, 2018). In a circular economy, we try to utilize underutilized assets to extract economic benefits, which is the feature of collaborative economy or sharing economy which is also termed as peer economy (Petropoulos, 2017). Sharing of the resources helps to reduce the demand for the resources and ultimately decreases pressure in the source (Vargas-Sánchez, 2019). As in the case of the service economy, in the circular economy, the consumption pattern of the consumers gets shifted from buying products to own and use them, to buying services (Frodermann, 2018). Furthermore, the resources that are used in circular economy are mostly based on renewable resources which include both renewable energy and renewable and non-toxic resources (Sørensen et al., 2019). As in restorative economy, refuse, reuse, rethink, reduce, recycle etc. are used to ensure the uses of the resources are made in the best possible way to maintain harmony with nature. Nature is important from the perspectives of the welfare economy as they perform four basic functions: amenity function, source of the raw materials, sink for the residuals and serves as a life support system (Andersen, 2007). The strategies used in the circular economy reduce the pressure on the source of raw materials and waste accumulated in nature and maintains the life support intact. A restorative or regenerative economic system requires the redefinition of the relationship between business and natural system which results in restoration instead of degradation of the natural system by imitating the efficient practice of nature (Frodermann, 2018).

Transition towards Circular economy or any other forms of sustainable economy requires innovation (Table 1), a process of realizing and creating new values for customers (Ritzén & Ölundh, 2017). Many of the initiatives and strategies practiced under the circular economy are not novel. But, circular economy provides a framework in which societies can create cross sectoral policy to support different initiatives to move away from the linear and extractive models to a more sustainable mode of production and consumption by identifying and closing the gap in the circle (Jurgilevich et al., 2016). The innovation made helps to design the products and services by considering the future and mostly make the use of the regenerative resources. For this, different technological applications are made in the different aspects of business. Once the product is made, they are preserved and utilized to maximize their utility through collaboration and creation of joint value. Furthermore, business models are renovated to use waste products as resources.

**Table 1: Different types of innovation to move towards circular economy (Frodermann, 2018)**

<b>Innovation Type</b>	<b>Circular Economy Approach</b>
Product Innovation (Changes the product)	Circular supplies (e.g. creation of products which are fully circulatable) Resource recovery (e.g. creation of new products to use left- overs from the production line) Remanufacturing (e.g. implementation of new products which can be built from reusable parts of original products)
Process Innovation (Changes the process)	Circular supplies (e.g. use of renewable energy for the production line)
Organizational Innovation (Changes or adds a business model)	Sharing platform (e.g. enable customers to extend the use of their products) Product as a service (e.g. sell access to the product, internalize the lifecycle management) Product life extension (e.g. gather used products and resell them if possible, repair broken products)

### **Circular tourism: Circular economy of tourism**

Tourism is a catalyst of the global economy, still there are negative consequences associated with tourism mainly rooted on the linear approach adopted by the sector highlighting the need to shift towards circular tourism (Rodríguez et al., 2020). Transition of the tourism activities to align them with the credentials of the circular economy can be found elsewhere and most of the efforts have given emphasis to

waste management and energy efficiency (Pattanaro & Gente, 2017). Besides these, changes in there are opportunities to change accommodation practices, buildings and construction work and materials used inside buildings and accommodation services (Cornejo-Ortega & Dagostino, 2020). The transition towards circular tourism is possible when the guests and staff of tourism industries become aware about the essence of the behavioral changes to be made. To attain circular economy in tourism sector, there are three building blocks, leadership with purpose, a focused strategy and collaboration for education and innovation, supported by number of key tactics identified through destination benchmarking and best sharing practice (*Sustainable Destination Management : The Road to a Circular Economy*, 2017).

Proper management of the waste and waste water produced, increasing efficiency in the use of natural resources including energy and increasing the resiliency (Table 2) is necessary to manage sustainability in the tourism and hospitality sector (Jones & Wynn, 2019).

**Table 2: Strategies within the circular economy that are applicable to tourism and hospitality sector (Rodríguez-Antón & Alonso-Almeida, 2019)**

Strategies	Examples
Reduction	<ul style="list-style-type: none"> <li>• Basic Initiative: Reduction on energy, water and plastics use and CO<sub>2</sub> emission through the change in operation and maintenance</li> <li>• Special initiatives: reduce food waste, inorganic fertilizers and pesticides use, and enhance sustainable mobility and healthy issues</li> </ul>
Reuse	<ul style="list-style-type: none"> <li>• Reuse strategies are focused on two aspects:               <ol style="list-style-type: none"> <li>1. utilities: energy and water and</li> <li>2. furniture, small appliances and amenities</li> </ol> </li> </ul> <p>Reuse of the old machines such as coffee machines Preparation of the bedding materials from recycled products Treating and reusing the waste water Promotion of the use of renewable energy resources</p>
Recycling	Materials such as pillows and other can be made using the recycled products.
Redesign, replace and rethink	<ul style="list-style-type: none"> <li>• These are less applicable to tourism sector. But, interior design can be changed to reduce energy and water demands</li> <li>• Some of the equipment which relies on non-renewable energy can be replaced with the one that depends on renewable source.</li> <li>• Behavioral changes in the tourist and staff are also essential.</li> </ul>

## **Tourism in Nepal**

Nepal has high geographic and cultural variation. In the short span of nearly 200 Km, the altitude variation of Nepal ranges from 62 m to 8848 m resulting in variation in climatic and associated ecological zone and cultural zone, offering diversifying products to the tourism industry. Mountaineering is one of the major attractions of Nepal, as it is home to eight mountains with elevation in excess of 8000 m. Additionally, Nepal is home to 118 ecosystem types, 212 species of mammals, 886 species of birds (accounting nearly 10% of total birds in the world), 650 species of butterflies (accounting 3.72% of world's butterflies) and 12 of global 867 ecoregions along with 125 ethnic groups and 92 languages (GoN/MoFSC, 2014). Most of the ethnic groups have their own cultural practices. Furthermore, there are ten UNESCO world heritage sites in Nepal which includes eight cultural heritage sites and two natural heritage sites. These all help Nepal to offer a multitude of unique attractions for tourists. In the fiscal year 2017/18, Nepal was able to earn 67.09 billion foreign currency which is 2.2% of the total GDP of the country (GoN/MoF, 2019). Tourism in Nepal is known to play a substantial role in poverty alleviation (den Braber et al., 2018).

### **Tourism associated problems in Nepal**

Tourism does not always bring positive benefits to the economy and society. Social, economic and environmental problems often are received as the negative externalities while conducting tourism activities. The negative impacts are more pronounced on environmental fronts. Increasing the dependency on fossil fuel, emergence of the solid waste management problems and other forms of pollution often grow gradually with tourism activities and are evident in Nepal as well. In the Annapurna Conservation area, the problems of solid waste management is increasing with an increase in the number of tourists in the region (Magditsch & Moore, 2011). Plastics have been the problem of the majority of the tourist destinations. Tourism development in rural mountains of Nepal are over reliant on fossil fuels leading to the enhanced level of Greenhouse gas emission (Nepal et al., 2019). In Everest region, the amount of Polycyclic Aromatic Hydrocarbon with high molecular weight (HMW-PAH), which are mainly originated from anthropogenic combustion, were found to be increase by 48% in 2012 compared to 2008 indicating the impact of tourism in the air quality of the region (Guzzella et al., 2016).

### **Transition to circular tourism in Nepal: How?**

We have limited information about the problem associated with linear approach in tourism in Nepal. Innovation is essential to deal with these sorts of problems which can be applied at three levels i.e. product innovation, process innovation and organizational innovation are applicable to the tourism industry (Rodríguez-Antón & Alonso-Almeida, 2019) in Nepal. While selecting and using the products, choosing

the durable products which can be used for a longer time or that are made with the recyclable products should be selected. Process innovation involves change in the way the resources are used, (Florido et al., 2019). Organizational innovation involves the change in approach of carrying out business and searching for new markets. In the age of digital technology, using the approach of peer to peer business models such as that used by Airbnb can be beneficial both from the business and sustainability perspectives (Midgett et al., 2017). Furthermore, the approaches such as reduce, reuse and recycle can be part of organizational innovation.

### Reduction

Water and energy used in the hospitality sector can be reduced by making some interventions. Traditional houses in Nepal were reported to be climate friendly as they were more warmer in winter while cooler than modern houses in summer (Kandel, 2019). Even in modern houses, the use of passive heating systems was found to reduce the energy demand by about 20% (Kandel, 2019). As the contribution of the sharing economy in the tourism industry especially through Airbnb is growing gradually in the country (Kunwar, 2020), the use of traditional buildings for housing and use of passive heating and cooling systems can take those economics towards circular paths. Even the accommodations provided by hotels can take advantage from this approach. Further, replacing the existing technology with the more efficient one, the benefits can be enhanced further. On the basis of the study done on seven five star hotels and one four star hotels of Kathmandu valley, a study have suggest instead of sticking to the business as usual scenario, if efficiency in in lighting, cooking and air conditioning is increased and if diesel generator are replaced, in 2025 those hotels can save 101 thousand GigaJoule of energy can be saved (Table 3) (Timilsina et al., 2015) thereby reducing the service generation cost and increasing the profitability.

Table 3: Amount of energy that can be saved in 2025 by increasing efficiency in eight (five and four) star hotels of Kathmandu valley compared to business as usual scenario (Source: (Timilsina et al., 2015))

Sector	Saving
Efficient Lighting	695 Thousand Kilo Watt hour (kWh)of Electricity
Efficient Cooking	66.3 Thousand Giga Joule (GJ) of energy
Improved Air Conditioner	2366 thousand kWh of electricity
Diesel Generator Replacement	14 thousand GJ of energy in 2025
<b>Total</b>	<b>101 Thousand GJ</b>

The potential application of circular approach is not limited to reduction in energy use. Hotels generate a significant fraction of municipal solid waste in Nepal.

These wastes can be managed using the principle of 4R principles. A large fraction of the waste can be reduced by making staff and tourists about the waste reduction behavior.

### **Reuse**

Waste water generated in the tourism sector can be used to irrigate the farms nearby thereby reducing the wastages of water. Even in hotels, the water can be purified and used for other purposes. Plastic pet bottles and other instruments can be used to make wall gardens for decoration purposes. These are the general examples; case specific analysis can be done to determine reuse potential.

### **Recycling**

By recycling the waste generated in the tourism sector we can make other products. For example we can use anaerobic digestion to generate energy from waste. In a study done at Dhulikhel area, on an average, 10 Kg/day waste is generated from each hotels in the study area and from 1 Kg of waste, 13.2 Liter of biogas can be generated by reducing the particle size before digestion (Aryal et al., 2017).

### **Redesign and replace**

How redesign of the buildings to incorporate passive heating and cooling systems can reduce energy demand has been discussed in the reduction section. Along with that, replacing the less efficient devices and equipment with the more efficient one can generate benefits. Replacement would be practically useful in the context of tourism transportation. Replacing the fossil fuel dependent transportation mode with alternative one is identified as a necessary condition (Manniche et al., 2017). Railways would be more obvious options in many countries as they emit significantly low greenhouse gases per capita compared to other modes of transport (Girard & Nocca, 2020), which is not practical for now in Nepal at present scenario. But there is a high potentiality to shift towards electric vehicles. In Lumbini area, which is a birthplace of Lord Buddha and one of the major tourist destination, with the help of Asian Development Bank (ADB), solar energy powered electric vehicles were designed and piloted by a project called Pedicab whose motive is to replace traditional rickshaw with modern electric passenger cart is being operated (Chaudhary, 2017). The sustainability of the project is yet to be explored, though this is itself a radical stride towards sustainable tourism in the area. Another project that too was supported by ADB is under operation at Lumbini area which aims to introduce electric powered vehicles for sustainable transportation within Lumbini area and integrate the issue of transportation within the Greater Lumbini Master plan and could inspire adaptation of electric vehicles in other parts of the country (Tamaki, 2017). To move towards a circular economy, the options are not limited to purchasing of the new vehicles. Rather, we can redesign the existing vehicles to

convert them into electric power vehicles. This will surely help to make the mobility sector stride towards circular tourism. Even the promotion of bicycle tourism could be options for certain areas like Kathmandu, Pokhara and many areas of lowland Nepal. Furthermore, in-situ production of goods and services in tourist destinations would serve the cause (Girard & Nocca, 2020).

### **Pathways for transition to circular tourism in Nepal**

As the discourse of the circular economy in Nepal is in a very primitive stage, academics should make a contribution in exploring its potential in the tourism industry in Nepal. This should be followed by the initiation by the tourism industry that should identify the potentiality in their business to make transition and offer products and services. Tourism industry should use digital technologies and should be used to trade the services and products. In addition to this, all the personnel involved in tourism should be empowered in aspects of circular tourism so that psychological and behavioral changes are essential to ease transition toward circularity and adoption of circular tourism.

### **Potential drivers for circular tourism**

Due to COVID-19 Nepali tourism industry has been significantly affected (Nepal, 2020). The income sources are halted while the job opportunities are greatly reduced. For the revival of tourism it will take time while for taking momentum, additional time would be necessary. In this regard, many will seek to increase the brand image while significantly reducing the cost associated. The transition towards circular tourism could serve this dual purpose. Circular tourism is a realistic choice to increase the comprehensive competitiveness of the tourism industry (Zhang & Tian, 2014). Despite huge potential, the tourism activities in Nepal are concentrated to few destinations while other parts of the country are highly unexplored primarily due to lack of the tourism infrastructures and services. Due to the covid-19 pandemic, majority of Nepali youth who have been to foreign countries have returned home after losing their job. Agriculture has been identified as an important sector to provide employment opportunities. But, this could be more viable if we can integrate tourism and agricultural practices. Agrotourism in which tourism and agricultural practices are integrated can result in rural development through increased income to the farmers opening avenues of employment opportunities can help in transition towards circular tourism in rural parts (Zhu et al., 2013). Agricultural practices can provide the resources required by the tourism industry while tourism could provide market and employment opportunity. In the tourism industry of developing countries like Nepal, revenue leakages resulting from the need to import goods and services (Nepal et al., 2019) which could be addressed by adopting circular tourism. In a post pandemic scenario social distancing could be still a norm of tourism meaning we

cannot let a crowd of tourists gather to few destinations. Agrotourism could serve the purpose of diversification (Bhatta, 2020). In such a scenario, transformation of the agricultural practices to incorporate sustainable tourism within the system can be best achieved by aligning the activities with circular economy.

### **Barriers for circular tourism**

The transition from the linear approach to circular tourism is not that straightforward. For the transition, the existing system should be properly studied to identify the interventions that are essential to close the loop. But, in case of Nepal, we have limited understanding in the academic circle about the materials used, the source of those materials and their sustainable replacement. This lack of proper understanding about the circular economy also acts as the important barrier for implementation (Rizos et al., 2015). Research on the aspects of circular tourism in Nepal is almost non-existent. Additionally the government and other stakeholders are yet to realize the need of transition towards circular tourism, which means there are neither policies to drive towards circular tourism nor the understanding essential for that. In addition to this, adaptation of circular tourism approach requires investment. But, even in developed countries, finance has been identified as a key barrier especially for the small and medium enterprises, for the development and implementation of innovative products under circular economy (Rizos et al., 2015).

### **Way forward**

Economic transitions, industrial relationships and knowledge sharing interconnect three major layers of stakeholders in the tourism network. The first core layer consists of tourism attraction enterprises and tourists, second layers consists of service providers ranging from the travel manager to the helpers and retailers of tourist commodities while the third layer is support layer consisting of government, academic and educational institutions and other related industries (Han, Xinming, Zheng, 2009). Transition to circular tourism requires efforts from all these three layers. More quantitative and qualitative research in the field of circular tourism are essential. Besides these, the government should take a lead in the transition by proper policy guidance (Florido et al., 2019). At present, the achievements of governments are mostly measured using Gross Domestic Product (GDP) which cannot incorporate the issues such as welfare, shift towards more robust indicators such as Green GDP could serve the purpose (Zhijun & Nailing, 2007). Adaptation of circular tourism has the potential to create additional job opportunities while reducing the pressure on the natural environment. Despite these benefits, the practicality of the circular economy approach should be tested before investing by using SWOT (Strength-Weakness-Opportunities-Threats) approach and Strategic Environmental Assessment (SEA) (Winans et al., 2017). Once the transition is made, regular monitoring of the sub-

system of tourism from the perspectives of energy, water, waste and natural capital management, resilience perspectives are essential to ensure the activities performed align with the circular economic credentials (Jones & Wynn, 2019).

### **Conclusion**

Nepali tourism economy is predominated by the linear approach and it needs a transition towards a more sustainable approach. There is potential to make a transition of the tourism sector. Proper management of the waste through 4R concepts, water and energy use management and reduction in emission of CO<sub>2</sub> are some of the priority areas for intervention. But, these transitions are hindered by lack of comprehensive study on the hospitality sector from circular tourism perspectives, lack of awareness in the related stakeholders about the circular tourism perspectives. Additionally, there could be some forms of financial hindrance. If we overcome these challenges and make transition to a circular economy in the tourism industry i.e. circular tourism has potential to develop comprehensive competitiveness of the Nepali tourism industry besides helping to reconcile environmental, social and economic perspectives in tourism and support in achieving sustainable development goals. For Nepal, in the post pandemic era, agro led rural tourism with circular economy credentials' embedded within them can be a tool to tackle the economic crisis originated due to pandemic. For that, the government should take lead in the matter, through development of the proper guidelines and policies and by providing the financial and other support for the tourism actors' especially small and medium enterprises to shift their business model. Furthermore, after implementation of the circular economy model, they should be monitored regularly by developing proper sets of indicators.

### **Acknowledgements**

The article is the result of the cooperation and direct and indirect support from different people and organizations. I would like to express my sincere gratitude to all those who inspired me in drafting this article. Professor Ramesh Kunwar sir was inspired to explore this topic which was completely new to me. I am indebted to him. Dipak Khadka's contribution especially in accessing the publication is worth appreciating. Furthermore, I would like to express my gratitude to Prakash Chandra Aryal and all the members of the Environment Protection and Study Center (ENPROSC).

### **References**

- Andersen, M. S. (2007). *An introductory note on the environmental economics of the circular economy*. 133–140. <https://doi.org/10.1007/s11625-006-0013-6>
- Aryal, N., Khatiwada, N. R., & Ghimire, A. (2017). Energy Recovery Potential of Kitchen Waste Generated from Hotels. *Global Waste Management*, 403–410.

- Ávila-Gutiérrez, M. J., Martín-Gómez, A., Aguayo-González, F., & Córdoba-Roldán, A. (2019). Standardization framework for sustainability from circular economy 4.0. *Sustainability (Switzerland)*, *11*(22). <https://doi.org/10.3390/su11226490>
- Bhatta, K. (2020). What is Agritourism in Nepal? *Journal of Tourism and Hospitality Education*, *10*, 170–178. <https://doi.org/10.3126/jthe.v10i0.28766>
- Blewitt, J. (2008). *Understanding Sustainable Development*. London: Earthscan
- Chaudhary, S. (2017). *The Pedicab Project Is Giving Nepal's Rickshaws a Modern Update* · Global Voices. Global Voices. <https://globalvoices.org/2017/06/01/the-pedicab-project-is-giving-nepals-rickshaws-a-modern-update/>
- Cornejo-Ortega, J. L., & Dagostino, R. M. C. (2020). The tourism sector in puerto vallarta: An approximation from the circular economy. *Sustainability (Switzerland)*, *12*(11). <https://doi.org/10.3390/su12114442>
- Corona, B., Shen, L., Reike, D., Rosales Carreón, J., & Worrell, E. (2019). Towards sustainable development through the circular economy—A review and critical assessment on current circularity metrics. *Resources, Conservation and Recycling*, *151*(May), 104498. <https://doi.org/10.1016/j.resconrec.2019.104498>
- den Braber, B., Evans, K. L., & Oldekop, J. A. (2018). Impact of protected areas on poverty, extreme poverty, and inequality in Nepal. *Conservation Letters*, *11*(6), e12576. <https://doi.org/10.1111/conl.12576>
- Fedrigò-Fazio, D., & Brink, P. ten. (2012). *Briefing Green Economy: What Do We Mean by Green Economy?* United Nations Environment Programme and European Union.
- Florido, C., Jacob, M., & Payeras, M. (2019). How to Carry out the Transition towards a More Circular Tourist Activity in the Hotel Sector. The Role of Innovation. *Administrative Sciences*, *9*(2), 47. <https://doi.org/10.3390/admsci9020047>
- Frodermann, L. (2018). *Exploratory Study on Circular Economy Approaches: A Comparative Analysis of Theory and Practice*.
- Girard, L. F., & Nocca, F. (2017). From linear to circular tourism. *Aestimum*, *70*(December 2017), 51–74. <https://doi.org/10.13128/Aestimum-21081>
- Girard, L. F., & Nocca, F. (2020). From linear to circular tourism. *Aestimum*, *70*, 51–74. <https://doi.org/10.13128/Aestimum-21081>
- GoN/MoF. (2019). *Economic Survey 2075/76 (Nepali)*., Government of Nepal, Ministry of Finance, Kathmandu, Nepal
- GoN/MoFSC. (2014). *Nepal National Biodiversity Strategy and Action Plan 2014-2020*. Government of Nepal/ Ministry of Forests and Soil Conservation, Kathmandu, Nepal
- Guzzella, L., Salerno, F., Freppaz, M., Roscioli, C., Pisanello, F., & Poma, G. (2016).

- POP and PAH contamination in the southern slopes of Mt. Everest (Himalaya, Nepal): Long-range atmospheric transport, glacier shrinkage, or local impact of tourism? *Science of the Total Environment*, 544, 382–390. <https://doi.org/10.1016/j.scitotenv.2015.11.118>
- Han, Xinming, Zheng, X. (2009). Coupling mechanism of the tourism industrial networkbased on circular economy. *Asian Agricultural Research*, 1(5), 28–31. [https://ageconsearch.umn.edu/record/53590/files/han\\_xinmin.pdf](https://ageconsearch.umn.edu/record/53590/files/han_xinmin.pdf)
- Higgins-Desbiolles, F. (2018). Sustainable tourism: Sustaining tourism or something more? *Tourism Management Perspectives*, 25(November), 157–160. <https://doi.org/10.1016/j.tmp.2017.11.017>
- Janusz, G. K., & Bajdor, P. (2013). Towards to Sustainable Tourism Framework , Activities and Dimensions. *Procedia Economics and Finance*, 6(13), 523–529. [https://doi.org/10.1016/S2212-5671\(13\)00170-6](https://doi.org/10.1016/S2212-5671(13)00170-6)
- Jones, P., & Wynn, M. G. (2019). The circular economy, natural capital and resilience in tourism and hospitality. *International Journal of Contemporary Hospitality Management*, 31(6), 2544–2563. <https://doi.org/10.1108/IJCHM-05-2018-0370>
- Jurgilevich, A., Birge, T., Kentala-lehtonen, J., Korhonen-kurki, K., Pietikäinen, J., Saikku, L., & Schösler, H. (2016). *Transition towards Circular Economy in the Food System*. <https://doi.org/10.3390/su8010069>
- Kandel, J. (2019). *An Approach Towards Energy Efficient Buildings for Sub-tropical Climate of Nepal*, Bachelor Thesis, Metropolia University of Applied Science.
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). *Conceptualizing the circular economy : An analysis of 114 definitions*. 127(April), 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Kroll, G. (2001). The “Silent Springs” of Rachel Carson: Mass media and the origins of modern environmentalism. *Public Understanding of Science*, 10(4), 403–420. <https://doi.org/10.1088/0963-6625/10/4/304>
- Kunwar, R. R. (2020). Airbnb: Understanding the Concept, Recognizing the Values. *Journal of Tourism and Hospitality Education*, 10, 132–169. <https://doi.org/10.3126/jthe.v10i0.28764>
- Lenzen, M., Sun, Y. Y., Faturay, F., Ting, Y. P., Geschke, A., & Malik, A. (2018). The carbon footprint of global tourism. *Nature Climate Change*, 8(6), 522–528. <https://doi.org/10.1038/s41558-018-0141-x>
- Magditsch, D., & Moore, P. (2011). Solid Waste Pollution and the Environmental Awareness of Trekkers in the Annapurna Conservation Area, Nepal. *Himalayan Journal of Development and Democracy*, 6(1), 42–50.

- Manniche, J., Larsen, K. T., Broegaard, R. B., & Holland, E. (2017). Destination: A circular tourism economy. In *Centre for Regional and Tourism Research, Denmark Jesper* (Issue April 2020).
- Michellini, G., Moraes, R. N., Cunha, R. N., Costa, J. M. H., & Aldo, R. (2017). From linear to circular economy : PSS conducting the transition. *Procedia CIRP*, 64, 2–6. <https://doi.org/10.1016/j.procir.2017.03.012>
- Midgett, C., Bendickson, J. S., Muldoon, J., & Solomon, S. J. (2017). The sharing economy and sustainability: A case for AirBnB. *Small Business Institute® Journal*, 13(2), 57–59.
- NEF. (2019). Mainstreaming Circular Economy in Nepal. In *Himalayan Circular Economy Forum (HiCEF) Dialogue*, Nepal Economic Forum, Kathmandu Nepal.
- Nepal, R., Indra al Irsyad, M., & Nepal, S. K. (2019). Tourist arrivals, energy consumption and pollutant emissions in a developing economy–implications for sustainable tourism. *Tourism Management*, 72(December), 145–154. <https://doi.org/10.1016/j.tourman.2018.08.025>
- Nepal, S. K. (2020). Travel and tourism after COVID-19 – business as usual or opportunity to reset? *Tourism Geographies*, 0(0), 1–5. <https://doi.org/10.1080/14616688.2020.1760926>
- Parajuly, K. (2019). Circular Economy and Waste Management in Nepal. *International Youth Conference on Science, Technology and Innovation*, 270–272.
- Pattanaro, G., & Gente, V. (2017). Circular economy and new ways of doing business in the tourism sector. *European Journal of Service Management*, 21, 45–50. <https://doi.org/10.18276/ejsm.2017.21-06>
- Pesqueux, Y. (2009). Sustainable development: a vague and ambiguous “theory.” *Society and Business Review*, 4(3), 231–245. <https://doi.org/10.1108/17465680910994227>
- Petropoulos, G. (2017). *An economic review of the collaborative economy*.
- Ritzén, S., & Ölundh, G. (2017). Barriers to the Circular Economy – integration of perspectives and domains. *Procedia CIRP*, 64, 7–12. <https://doi.org/10.1016/j.procir.2017.03.005>
- Rizos, V., Behrens, A., Kafyeke, T., Hirschnitz-garbers, M., Ioannou, A., & September, N. (2015). *The Circular Economy : Barriers and Opportunities for SMEs*. 412.
- Rodríguez-Antón, & Alonso-Almeida. (2019). The Circular Economy Strategy in Hospitality: A Multicase Approach. *Sustainability*, 11(20), 5665. <https://doi.org/10.3390/su11205665>
- Rodríguez, C., Florido, C., & Jacob, M. (2020). Circular economy contributions to the tourism sector: A critical literature review. *Sustainability (Switzerland)*, 12(11), 1–27. <https://doi.org/10.3390/su12114338>

- Soan, P., Legrand, W., & Chen, J. (2009). *Sustainability in the Hospitality Industry*. Elsevier Inc.
- Stahel, W. R. (2016). *Circular economy*. 6–9.
- Sustainable Destination Management : The Road to a Circular Economy*. (2017). <http://www.oneplanetnetwork.org/sites/default/files/gdsi-the-road-to-a-circular-economy-whitepaper.pdf>
- Tamaki, K. (2017). *Solar energy to power electric vehicles in Lumbini, Nepal*. Asian Development Blog. <https://blogs.adb.org/blog/solar-energy-power-electric-vehicles-lumbini-nepal>
- Timilsina, S. R., Bhattarai, R. N., & Pandit, B. (2015). Energy Demand Analysis of Five & Four Star Hotels in Kathmandu Valley. *Proceedings of IOE Graduate Conference*, 273–280. <https://doi.org/10.1377/hlthaff.2013.0625>
- Tonelli, M., & Cristoni, N. (2019). *Strategic Management and the Circular Economy*.
- Turok, I., & Borel-Saladin, J. (2013). Promises and pitfalls of the green economy. In *World Social Science Report 2013: Changing Global Environments* (pp. 289–294). <https://doi.org/10.1787/9789264203419-46-en>
- Vargas-Sánchez, A. (2019). The new face of the tourism industry under a circular economy. *Journal of Tourism Futures*. <https://doi.org/10.1108/JTF-08-2019-0077>
- Winans, K., Kendall, A., & Deng, H. (2017). The history and current applications of the circular economy concept. *Renewable and Sustainable Energy Reviews*, 68(August 2016), 825–833. <https://doi.org/10.1016/j.rser.2016.09.123>
- World Tourism Organization, & United Nations Development Programme. (2018). Tourism and the Sustainable Development Goals – Journey to 2030. In *Tourism and the Sustainable Development Goals – Journey to 2030*. UNWTO. <https://doi.org/10.18111/9789284419401>
- WTTC. (2018). *Travel & Tourism Economic Impact 2018 World*.
- Zhang, Y., & Tian, L. (2014). The Sustainable Development of Circular Economy under the Perspective of Ecological Tourism. *Advanced Materials Research*, 1010–1012, 2090–2093. <https://doi.org/10.4028/www.scientific.net/AMR.1010-1012.2090>
- Zhijun, F., & Nailing, Æ. Y. (2007). Putting a circular economy into practice in China. *Sustainability Science*, 2, 95–101. <https://doi.org/10.1007/s11625-006-0018-1>
- Zhu, Z., Li, M., & Ma, C. H. (2013). Explore and analyse development model of eco-agricultural tourism based on circular economy. *Advanced Materials Research*, 807–809, 902–905. <https://doi.org/10.4028/www.scientific.net/AMR.807-809.902>