

Feature Article

Circular economy principles and small island tourism: Guam's initiatives to transform from linear tourism to circular tourism

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1. Introduction

Over the last several years, the tourism and travel industry has been recognized as one of the fastest-growing industries in the world. According to the United Nations World Tourism Organization (UNWTO), international tourist arrivals grew by 5 % in 2018 to 1.4 billion, the industry generated US\$ 1.7 trillion in export earnings and the UNWTO forecasts international tourist arrivals to reach 1.8 billion by 2030.⁽¹⁾ Due to the size and scope of the tourism industry, tourism is now an important source of revenue for many countries, both large and small. Among small countries, small island states manifest some unique characteristics. Various studies have identified typical advantages and disadvantages of small island economies.⁽²⁾ On the positive side, small island states are generally endowed with natural beauty such as sun, sea, sand, and cliff and promoting a tourism industry is a viable strategy for economic growth in small island economies. The tourism sector in many developing (and least developed) countries is one of the principal sources, and in some countries the main source, of foreign exchange earnings; quite often, it is the most viable and sustainable economic development option, with positive impacts on reducing poverty levels.⁽³⁾ For this study, small island economies are defined as island states with less than one million inhabitants and less than 2,000 square miles (or 5,000 km²) in area. There are close to fifty small island economies in the world.

Because of the dependence on tourism in these small island economies, it is in the interest of the tourism sector to play a significant role in delivering sustainable solutions for the island's residents, the environment which is the very thing that attracts tourists, and the development of the island's economy. In every destination, tourism has the capability to contribute to the 17 sustainable development goals (SDGs) set by the United Nations General Assembly in 2015 and intended to be achieved by the year 2030; specifically, tourism has been included as targets in Goals 8, 12 and 14, which cover the areas of Decent Work & Economic Growth (8), Responsible Production and Consumption (12), and Life Below Water (14).⁽⁴⁾

2. Linear tourism versus circular tourism

With tourism continuing to grow internationally, the industry can be considered an important engine for development, producing many positive impacts, from the trade sector to employment. At the same time, it can produce many negative impacts because of the damage it can cause to the environment, through pollution, the use of limited natural resources, heritage degradation, etc. In the field of tourism, the hospitality sector has typically been considered a great generator of risks to the environmental sustainability of tourist destinations due to waste generation and use of limited resources, especially in small island destinations where annual tourist arrivals can be many times greater than the resident population. Thus, practices in the hospitality sector should be configured according to sustainability principles.

Because the traditional form of the tourism economy is configured according to the model of the linear economy (take-make-waste), destinations experience the resulting damage to the environment as mentioned above. When tourists arrive at a destination, whether it is domestic or international, in most cases they already have made a considerable carbon footprint from their mode of transportation. Transport-related emissions from tourism are expected to account for 5.3 % of all man-made CO₂ emissions by 2030, up from 5 % in 2016.⁽⁵⁾ This carbon footprint will not disappear no matter how small the negative effects on the environment inflicted by their activities during their stay at the destination, so at the very outset, the travel portion of tourism consumption and production challenges the environmental sustainability of tourism. However, the circular economy model can minimize the negative effects of tourism consumption and contribute to making tourism more sustainable. (See Figure 1)

The circular model is based on the principle that in nature nothing is "waste," and everything can become a "resource" and can be used to operationalize sustainable development principles. It stresses the importance of closing loops and is more efficient and productive than the traditional linear economy. A circular economy involves more than just pursuing

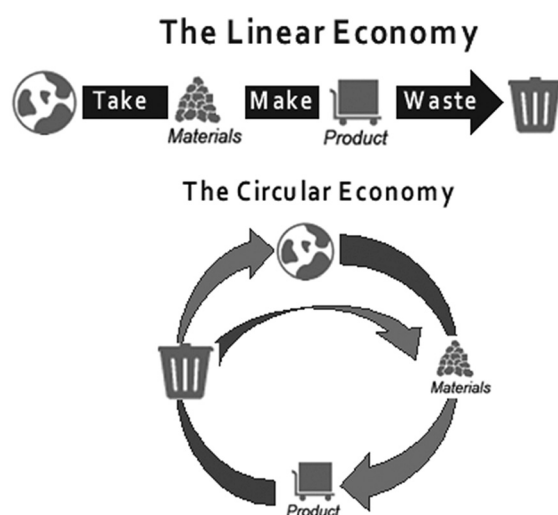


Figure 1: Alternative model of the circular economy

Source: Loizidou, M. (2016)⁽⁷⁾

waste prevention and waste reduction. It aims at technological, organizational, and social innovation throughout the value chain in order to ‘design out’ waste from the beginning.⁽⁶⁾

The circular economy is still just an imaginary concept, challenging the dominant linear economic system and a system transition perspective is required to fully understand the circular economy. Circular economy principles are presently applied mainly at the level of individual organizations and certain restricted areas of economic and human activity but not at the full-scale level of entire economies and social systems. The circular economy can be considered a truly radical and disruptive innovation because of its departure from the long-established linear model.

The tourism industry has the capacity to link economic, social, cultural and environmental dimensions of sustainability and to contribute to their mutual improvement,⁽⁸⁾ but the tourism sector has not been given much attention as a possible context for circular economy initiatives and analyses. Tourism is an economic activity that strictly depends on the presence of environments, cultures, and communities and thus puts tourism as a critical contributor to social, cultural and environmental impacts. Therefore, the traditional linear model of the tourism economy, or linear tourism, can be transformed into a circular model that embraces circular tourism. Circular tourism is defined as a model able to create a virtuous circle producing “goods and services without wasting the limited resources of the planet that are the raw materials, water and energy,” that is limiting impact on the environment, and in which actors of tourism (traveler, host, tour operator, supplier) adopt an eco-friendly and responsible approach.⁽⁹⁾

3. Methodology

This paper provides a brief case study of Guam as a small island tourist destination and efforts by the island’s stakeholders, both in and outside of the industry, to incorporate circular

economy principles. Because the tourism industry is the primary economic driver for the island, uses a vast amount of the island’s resources, and produces more waste than the island’s residents, other small island destinations like Guam that rely primarily on tourism revenues for economic development may benefit from lessons learned from this case. This paper uses the case study method to share Guam’s recent experience in the area of sustainable economic growth through circular economy principles. Field studies, literature research, and interviews were conducted with key personnel associated with circular economy efforts in the private and public sectors, including the government of Guam, the University of Guam, Guam Community College, non-profit organizations, and private businesses. This paper draws on documentary review and historical narratives of the development of circular economy principles for Guam’s tourism industry for it to develop from linear tourism to circular tourism. Findings and a discussion including lessons learned will follow.

This case study is intended to demonstrate the theorized and conceptualized components of the circular economy model, and thus provide empirical evidence regarding circular economy solutions for small and medium-sized enterprises (SMEs) in tourism. The case includes examples that may provide insight on how a tourism enterprise can get started with the first, small circular economy steps, as well as information that provide the impetus to aim towards in a longer-term transition process, possibly leading to circular tourism in a destination.

4. Case study

Guam, an unincorporated territory of the United States, is the largest and most populous island in the western Pacific region of Micronesia with an estimated population of 170,000. It is located in the northwest Pacific Ocean approximately 6,100 kilometers west of Hawaii, 2,400 kilometers south of Japan and 3,020 kilometers southeast of South Korea. Guam’s economy is



Figure 2: Proximity of Guam along major airline routes

primarily supported by tourism, along with military and government spending. In the fiscal year 2019, Guam received 1.63 million visitors, marking it as the best fiscal year to date for the island's tourism industry.⁽¹⁰⁾ Visitors from South Korea made up 45 % of fiscal 2019 visitors, and 41 % were from Japan. The remaining visitors arrived from the U.S., Taiwan, the Philippines, China, and other areas. (See Figure 2)

Guam's tourism industry is the island's single largest industry. It generates \$1.75 billion annually and the industry employs over 21,000 island residents or 31 % of non-federal employment.⁽¹¹⁾ Guam's economy is very similar to that of many other small island economies that heavily depend on the tourism industry to generate revenue for the island's public services. Guam meets 90 % of the island community's needs through imported goods and uses a landfill as its primary waste management strategy, though available space on the island is a finite resource.

Because of the island's dependence on imports and current waste management practices, the cultivation of a circular economy makes sense for Guam and other small island communities. Pursuing the implementation of circular economy business models can achieve great strides in making an island more green and sustainable and with tourism as the single largest industry, applying circular economy principles to businesses either directly or indirectly involved in tourism, or circular tourism can lead to the long-term sustainability of the industry. For Guam, some examples of circular economy initiatives that have been explored include, converting green waste into compost, turning agricultural waste into new marketable products, processing food waste into animal feed, aquaponics, and harnessing renewable energy (sun, wind, and ocean).

5. Initiatives to date

The circular economy concepts initially began to be widely discussed with Guam residents after the Director of the University of Guam's Center for Island Sustainability (CIS), Dr. Austin Shelton, began reviewing the concepts with university administrators in 2016. Following these discussions, repre-

sentatives from the University of Guam's Center for Island Sustainability reached out to establish a relationship with Arizona State University's Julie Ann Wrigley Global Institute of Sustainability (<https://sustainability.asu.edu/>) in 2018 and the university was subsequently invited to join the Global Consortium for Sustainability Outcomes (www.sustainabilityoutcomes.org). However, even before the radical, disruptive, and transformative circular economy concepts were considered, certain initiatives had already been pursued by various groups in Guam to address pressing issues in the sustainable growth of Guam's fragile economy that was so dependent on tourism and the importation of goods. These initiatives, in the order of introduction to the community, are as follows: (1) Think. Support. Buy. Local Guam; (2) One Village One Product; and (3) Local First Guam.

5.1 Think. support. buy. local Guam (buy local)

Introduced in 2011 by Guam's Chamber of Commerce and the University of Guam's Pacific Center for Economic Initiatives, this initiative aimed to modify island residents' purchasing behavior by having consumers shift 10 % of their annual spending budget from non-local businesses (mostly online purchases) to local businesses with the goal of building a stronger local economy.⁽¹²⁾ The focus was on changing buying habits and uniting local customers and local small businesses through creative educational campaigns, with the aim of minimizing leakage, developing a local workforce, and improving the quality of life through local revenue circulation via the multiplier effect.

5.2 One village one product

The island's initiative started in 2013 by a team from the University of Guam, which gathered data to develop an inventory of agricultural clusters by each of Guam's nineteen villages and using this information to encourage the creation of value-added products by village residents. The team, comprised of members from the School of Business and Public Administration, later introduced the One-Village-One-Product

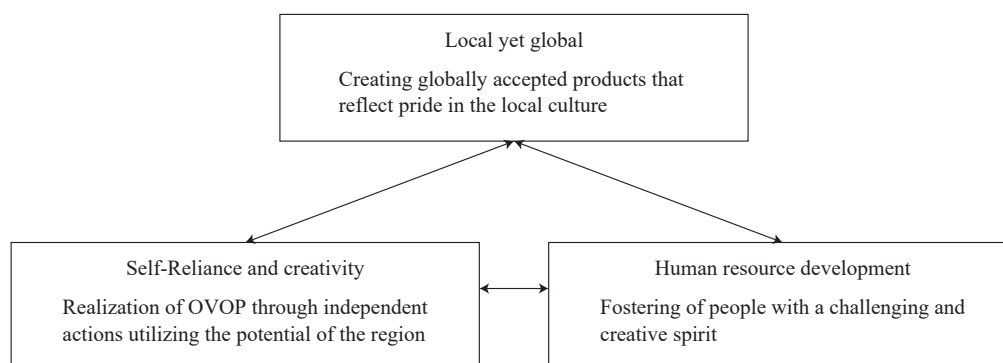


Figure 3: Basic principles of one village one product (OVOP)

Source: International OVOP Exchange Committee Office.

(OVOP) strategy through the linking of village agriculture and heritage tourism in 2015.⁽¹³⁾ The OVOP initiative, which originated in Japan and has been adopted globally, was implemented so that residents may benefit economically from the tourism industry by building up linkages with suppliers of goods and services for commercial activities involving signature products from each village.⁽¹⁴⁾ The OVOP initiative is relatively simple and easy to understand, making it attractive for policymakers and community members. OVOP involves three guiding principles as shown in Figure 3. The guiding principles are: (1) Local yet global—Creating globally accepted products that reflect pride in the local culture; (2) Self-reliance and Creativity—Realization of OVOP through independent actions utilizing the potential of the region; (3) Human Resource Development—Fostering of people with a challenging and creative spirit.⁽¹⁵⁾

5.3 Local first Guam

As a follow-up to the Buy Local initiative, Local First Guam was a web-based directory developed to help island residents identify locally based business, giving the “local” designation to those headquartered on the island. The site was introduced in 2015 with the idea to allow customers to search keywords for things that they may want to buy on the island and then have the website to display all the local businesses that provide these products. With company headquarters located in Guam, all tax revenue from business operations would be collected by the government of Guam, thereby limiting leakage and increasing the circulation of revenue with locally linked businesses and consumers.⁽¹⁶⁾

Other initiatives falling under the wide scope of the Buy Local and OVOP strategies were also introduced during the period 2011 through 2019 including the Downtown Hagatna Revitalization Survey (2012), Guam Unique Merchandise and Art (GUMA) (a local business incubator) in 2013, and the development of the Center for Innovation and Entrepreneurship (2016).

5.4 Circular economy education and circular tourism

With the introduction of the abovementioned initiatives, the

stage had been set to begin the process of educating island residents about the circular economy and incorporating concepts from the circular economy to transform Guam’s linear tourism to circular tourism. According to CIS Director Shelton, challenges still remain with few residents knowing much about the circular economy, the need to find willing partners to find innovative ways to do business that is economically and socially beneficial and to show success so that others will follow (A. Shelton, personal communication, January 15, 2020). What has been proposed is a three-pronged approach involving: (1) The development of a strategy to expand circular economy education to reach the island’s stakeholders; (2) Growth in the development of a business incubator; and (3) The creation of a maker space to allow for a shared venue to produce locally made value-added products.

To address the need for circular economy education, the first-ever Island Circular Economy Industry Workshop for small-business owners, entrepreneurs, and intrapreneurs led by two sustainable development experts from Arizona State University held in 2019. This served as an introduction to the island’s entrepreneur community to explore sustainable circular economy solutions to Guam’s heavy reliance on imports and the island’s substantial production of waste. In addition to offering workshops to the public, university students have also been tasked with developing business plans using circular economy concepts. A faculty committee redesigned the University of Guam’s School of Business and Public Administration (SBPA) Entrepreneur Capstone Course in 2019 to incorporate an island sustainability and circularity focus. The redesigned course is interdisciplinary and inclusive of STEM students. Capstone teams have been taught to use systems-thinking to find leverage points in economic supply chains, close leakages, and develop profitable business plans for the private sector or zero-net-loss strategies for government investment into solutions for island challenges. To address circular tourism concepts, the university’s Tourism, Policy, Planning, and Development course now includes projects which have groups propose new policies, plans, and development that support circular tourism efforts.

Education efforts have been extended to reach government officials and now Guam's governor and lieutenant governor have pledged their commitment to build a more sustainable island through the utilization of cross-sector partnerships to meet all 17 of the U.N.'s sustainable development goals, which many islands are doing as part of the Local2030 Islands Network.⁽¹⁷⁾ A new group called the Guam Green Growth Working Group launched efforts can be aligned and focused to result in deliverable outcomes to meet the goals of the sustainability agenda.

In order to address employment and skills development needs as well as to minimize leakage from import reliance, the University of Guam's Center for Island Sustainability has taken the lead and is working with the Guam Economic Development Authority and the Guam Unique Merchandise & Art (GUMA) business incubator to stimulate new island circular economy industries. An initial seed grant of \$10,000 was awarded to the Center for Island Sustainability to start familiarizing the community with the benefits of transitioning to a circular economy. The grant was made possible through a partnership among the University of Guam, Arizona State University, and Hawaii's Kamehameha Schools, all members of the Global Consortium for Sustainability Outcomes and have led to activities that have been designed to support training sessions, workshops, and business incubation to stimulate new circular economy industries and improve island sustainability.

In addition to the promotion of entrepreneurial activities with business incubation workshops, the creation of a maker space is critical in order for small industries with limited resources to get started with entrepreneurial activities. The maker space in Guam is not yet a reality, but efforts are underway to develop one from an already-identified site. With the support of the Guam Economic Development Authority, programs like GUMA, and a maker space where entrepreneurs can share ideas and facilities leading to the production of a circular economy product in place, residents will be given a greater chance for establishing a successful business, like Green Banana Paper.

Green Banana Paper is an example of a model project to promote circular economy concepts in small islands like Guam and others in Micronesia. The company has taken an approach similar to that of OVOP, using locally available resources, the community's creativity, and skills development of village residents to produce quality value-added products. Started in 2016 in the Micronesian island of Kosrae, the company sustainably manufactures world-class vegan products from agricultural banana waste in Kosrae after two years of research. The entrepreneur who started the company, American Matt Simpson, decided to start a company making paper from the fibers of the banana tree—one of Kosrae's only abundant resources besides fish. Green Banana Paper debuted its products in 2016 on the Kickstarter website and at the Festival of Pacific Arts held on Guam. The company produces a variety of products, including wallets made of glue and sustainable paper. (See Figure 4) The money earned goes towards hiring and training employees and buying production tools, such as sewing machines.⁽¹⁸⁾



Figure 4: Green Banana Paper products
Source: greenbananapaper.com.

The CIS team is exploring the development of GUMA incubated products similar to Green Banana Paper, utilizing the Guam Economic Development Authority's Guam Product Seal, which allows the product to be designated as a "Made in Guam" merchandise. The Guam Product Seal may be used only for products manufactured in Guam and the product must result from a substantial transformation of the materials used in the creation of the product, for which a minimum of fifty percent (50 %) of the value of the product has been added in Guam.⁽¹⁹⁾ Guam shows tremendous potential to infuse circular economy principles in workshops to produce more local products for the tourism industry, with plastics and bamboo showing great opportunities in this arena. With Guam's hospitality businesses using many plates, cups, glasses, cutlery, and interior decorations, the energy and material content used in the production of these, as well as the after-use life of these are relevant to consider in circular economy thinking.

Because tourists are as an ideal market for food products that contain specific local or regional qualities, the development of value-added food products using local agricultural products that are distinctive in the region can offer great potential for revenue generation as seen in Guam with the growth of restaurants and food trucks selling local dishes. The successful innovation and growth in regional food products can be reflected in many restaurants, including hotel restaurants, where local produce and local foods are presented as signature meals, and thus part of differentiating the tourism product. By providing such products, certain restaurants may pursue business models as in other tourism destinations that offer tourists local food products that have special local taste qualities, that are locally grown, produced and treated, and that leave a minimal ecological footprint.⁽²⁰⁾

The circular economy principles and practices mentioned above are applied mainly at the level of individual organizations and certain restricted areas of economic and human activity, such as the tourism districts, and not at the full-scale level of entire economies and social systems. To be a truly circular business model, there must be more than a single firm involved

and the business must interact with external actors, primarily through the supply chain to ensure the closing of the circular loop. Therefore, the implementation of circular economy solutions requires a larger transition system perspective, which involves fully understanding the economic and social dynamics engaged in the process.

6. Discussion/lessons learned

While still in the earlier stages of introducing circular economy concepts to the island community, some successes have come in the form of activities and events to create a greater awareness of sustainable development issues in growing the island's economy. With tourism being the major revenue contributor to the island, a focus on how to make the industry more circular can be viewed as a very effective way to disseminate information about the importance of circular economy principles for a small island destination. There are three major lessons learned thus far from this case: (1) Barriers exist but circular economy interest is growing; (2) Thinking with a circular perspective may lead to new business opportunities, and (3) A combination of top-down and bottom-up approach may be required to make progress in the shift to circular tourism.

One of the greatest challenges for Guam in pursuing actions to make its tourism industry more circular appears to be institutional and non-institutional barriers, similar to those found in other locations. For example, regulations against food surplus distribution, the regulation regarding waste separation and handling, infrastructure, geographical challenges, and institutional regulations. Like any other system, the linear economy is based on strong economic, political and social interests. These include job and income structures and consumption cultures, which we can expect will limit the diffusion of circular economy principles. Despite these barriers, it appears that circular economy is an area of growing interest to island residents, and consumer awareness of sustainable practices from Guam's major source markets continues to grow, as seen with educational tourists visiting Guam seeking educational activities linked to the UN's Sustainable Development Goals. With increasing consumer awareness of sustainable practices, Guam's tourism facilities may also benefit from the introduction of international certification schemes that are not yet in place, such as Green Globe, to help consumers identify tourism establishments that follow sustainable practices so they can better choose where to spend their money. However, even with consumer interest, legislation and other forms of top-down support may be required.

For example, the Micronesian island of Palau has been at the forefront in the region for advocating conservation and sustainable practices in tourism, with the government taking the lead in these efforts. Palau created the first shark sanctuary in 2001 in its national waters, in 2015 it opened the Palau National Marine Sanctuary—one of the largest fully-protected, no-take zones in the world, and in 2017, it was announced that all visitors to the country would be required to sign a statement of commitment to environmentally-responsible behavior

during their stay.⁽²¹⁾ While these are not directly linked to circular economy initiatives, we can see how top-down support can speed up progress. In the People's Republic of China, the introduction of CE principles and solutions has been basically a top-down process,⁽²²⁾ while the innovation processes are realized through bottom-up initiatives, driven by individual private companies in cooperation with their suppliers and customers, and targeted specific opportunities connected to particular activities and situations. Transitioning to a circular economy encourages business model innovation, and in the long run, thinking with a circular perspective may lead to new business opportunities. However, existing policies based on linear economy principles must also be changed and implemented if many innovative business models are to be able to compete with existing linear ones, or they might lose some or all of their benefits when they grow in scale.

Based on interviews with tourism and community stakeholders in Guam, for the shift to circular tourism to become a reality, the consensus is that there must be a combination approach of a top-down, government-driven, as well as a bottom-up, small business-driven approach. Top-down may be necessary to gain hotel and guest compliance while the disruptive circular economy concepts take time to be fully understood and appreciated. There will be a need for low-cost, readily available solutions for the initial steps. Hence, the introduction of the circular economy will not depend on the diffusion of a supply of ready-made universal solutions. Instead, it will be dependent on the ideas and initiatives of business owners, managers, skilled staff, etc., that have practical knowledge about specific opportunities and needs. Support will have to come from bottom-up encouragement from peers supplemented by widespread educational outreach to help community members to accept circular economy principles as the social norm.

7. Conclusion

This paper presented a brief overview of circular economy concepts, how these concepts are relevant to small island tourist destinations, and reviewed steps being taken on the island of Guam to cultivate a circular economy business model for the tourism industry or circular tourism. Some of the earlier economic initiatives that were introduced to Guam experienced prior to the arrival of discussions about the circular economy were also presented as they provided a foundation for a more radical change in conceptualizing how an economy can transition from the traditional linear to a more sustainable circular economy. Using Guam as a case for a small island tourism destination, the paper also posited that focusing on shifting to a circular tourism model can be a catalyst for a more comprehensive shift to a circular economy, due to the importance of tourism in the economy of small islands like Guam.

Although Guam is still in the early stages of introducing circular economy principals to island residents, there have been some accomplishments to date, such as the offering of workshops and support from government, as well as some chal-

allenges, linked to the understanding that the implementation of circular economy solutions require more than just individual organizations' commitments, but also a larger transition system perspective that involves many external players to close the circular economy loop.

Finally, Guam's current three-pronged strategy of educating the public about circular tourism concepts, working with business incubators, and establishing a maker space appears to be a sound strategy to move the island closer to a circular economy that is fully engaged in circular tourism. Lessons learned thus far are: (1) Barriers exist but circular economy interest is growing; (2) Thinking with a circular perspective may lead to new business opportunities, and (3) A combination of top-down and bottom-up approach may be required to make progress in the shift to circular tourism.

In order to progress to circular tourism on a large scale in Guam, an adequate legislation framework and regulation on investment will most likely be necessary. This will require further research by experts with adequate data to ensure that changes affecting the shift to circular economy principles do not result in negative impacts in the tourism sector. Achieving circular tourism will be a continuous process requiring constant monitoring of impacts, but the successful implementation of circular economy principles can result in a vibrant tourism economy that meets important sustainable development goals. With nearly two million tourists, changing travel trends in source markets, and the drive to increase visitor arrivals over the coming years, it may be an opportune time for Guam's tourism stakeholders to consider rebranding Guam as a circular tourism destination where visitors can experience during their stay that as in nature nothing is "waste," and everything can become a "resource."

Note

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