

Using Circular Economics Strategies to Manage Tourism on Remote Islands: A SMART Approach

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Circular economics theory offers destination managers of remote islands a solution-oriented approach to environmental sustainability. This paper examines the practical benefits of this theory that will support the development of a circular economy regarding sustainable island tourism (SIT). The aim of this paper is to inform discussions regarding the feasibility of applying a practice theory that emphasises changes in the behaviours across three segments, visitors, residents, and enterprises using SMART technologies. To achieve this objective, a SMART indicator system (SIS) was used to identify current practices that would support a circular economy (CE). The key innovation of this study is the creation of a proposed framework that may inform best practices for SIT in the future. The findings highlight the potential opportunity of evidenced-based planning to deliver a circular economy strategy (CES) for remote islands in the future. These insights can potentially impact the way that local authorities and destination managers approach the planning of tourism for six islands along the west coast of Ireland.

Keywords: circular economy, SMART indicator system, sustainable island tourism, proposed framework

Background

The application of tourism indicator systems in Ireland has been extremely limited (McLoughlin, 2016). To fill this gap in knowledge this study, utilising a tourism indicator system, allowed the researcher from the Atlantic Technology University (ATU) to collaborate with island communities, tourism stakeholders, Údaras na Gaeltachta, Fáilte Ireland, destination managers, and local authorities, to better inform the sustainable management of island tourism destinations. The main aim of this aspect of the study was to focus on circular economics by examining current practices and identifying the further application of the theories regarding destination management and planning.

Furthermore, as the study's framework was designed to be an easy-to-use indicator system for collecting data, remote island destinations can use the data over time to conduct longitudinal analysis and monitor the practical benefit of this circular economic strategy year on year, while also allowing for comparison with other

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remote island studies (Rodríguez Martín, Martín, Salinas Fernández, & Aguilera, 2018).

Introduction

This paper reveals the benefits of implementing a circular economic strategy (CES) when collecting baseline data across six islands off the west coast of Ireland (Inis Mór, Inis Meán, Inis Oírr, Inisbofin, Arranmore, Tory Island). The main objective of this study was to identify insights that would become of practical benefit to remote island communities. Based on the rural location of islands, there is a need to implement strategies that will support sustainable island tourism (SIT) (Ghisellini, Cialani, & Ulgiati, 2016). The concept is of great interest as it is viewed as a key operation when implementing sustainable development (Ghisellini et al., 2016; Murray, Skene, & Haynes, 2017). When examining sustainable practices for tourism, the green economy and green growth are key concepts that are presented (Lieder & Rashid, 2016). This concept has so much acceptance that it needs to be employed by a variety of stakeholders (Ellen MacArthur Foundation, 2014). Moreover, the majority of CES are based on the alternative use of existing products to add value that may become of practical benefit in a longer lifecycle (McArthur Foundation, 2017).

The main aim of this study is to highlight the benefits using indicator systems to shed light on the potential opportunities available to remote island communities through the implementation of a CES specific to SIT. The application of these key concepts will contribute to achieving the aims and objectives of a green economy and clean production while mitigating the impact of tourism on remote islands. In view of this, the present study aims to establish the relationship between SIT and the practice of circular economics. To achieve this objective, a systematic literature review will examine and define the concepts of circular economics and the practical benefits that this may have for SIT. Furthermore, based on the adaptation of a SMART indicator system (SIS) used to collect baseline data across six islands, this study will present a proposed framework (CES) that may become of practical benefit to all stakeholders responsible for planning and developing tourism on remote islands.

Literature

When examining the key concepts presented in this study, it was necessary to perform a systematic review of the literature. This approach generated a large amount of data that was used to sort, arrange, and inform the CES created to meet the aim of this study. For this reason, it was decided to investigate articles in three key areas: the definition of circular economics (CE), the implementation of CE practices and theories, and the use of SMART indicator systems to collect baseline data in support of SIT. As expected, this analysis uncovered potential gaps in the literature that led to the development of this study's framework.

Defining Circular Economics

The concept of CE emerged in the 1970s based on lean production and the use of the natural cycle model (Sauvé Bernard, & Sloan, 2016). Moreover, understanding this concept broadens the definition of CE (Ghisellini et al., 2016; Murray et al., 2017). A circular economy is often described as a strategy or model that minimises waste and maximises resources (Andrews, 2015). CE aims to achieve maximum efficiency using finite resources that will gradually transition to renewable resources (Brennan, Tennant, & Blomsma, 2015). The concept also allows for the recovery of the materials and products at the end of their useful life (King & Pearlman, 2009; Brennan et al., 2015; Ghisellini et al., 2016). A CE model is based on sustainability without reducing the possibility of a business or destination (Kelman, 2018). The aims of CES are to provide a paradigm shift of the

linear approach of take-make-dispose (Pratt, 2015; Stahel, 2006)

CE has three main principles: minimisation of waste and pollution, extension of the useful life of products and materials, and regeneration of natural systems (Hultman & Corvellec, 2012). Moreover, it aims to rebuild all available types of capital, including financial, human, social, and natural (King et al., 2006; Brennan et al., 2015; Ghisellini et al., 2016). A CE describes a regenerative economic system (Brennan et al., 2015). Figure 1 outlines the fundamentals of CE.

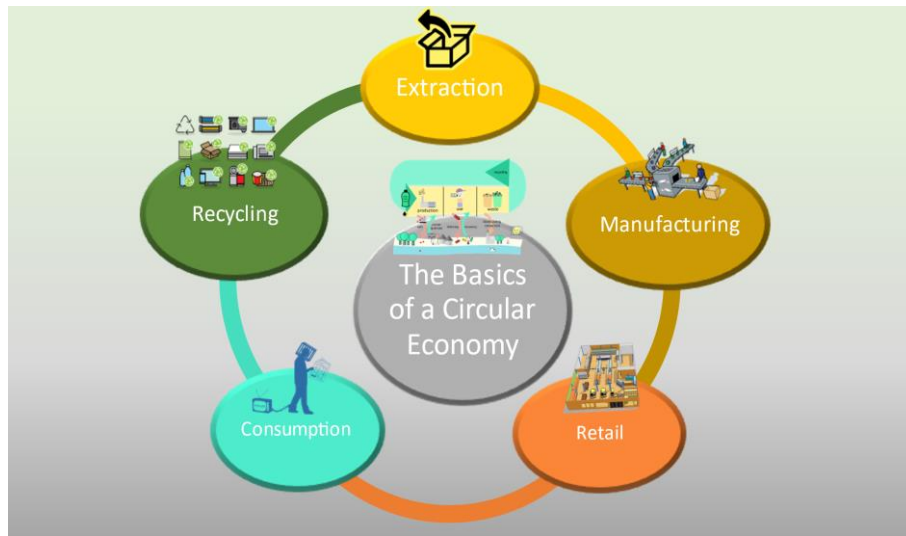


Figure 1. Defining the basics of CE.

The key components of CE (outlined above) are linked to sustainable development. This micro-system approach usually focuses on products, individual enterprises, and what needs to happen to support the frequency of their circularity while also examining consumption behaviours (Kennedy, Cuddihy, & Yan, 2007). The World Commission of Environment and Development (WCED) has recommended CE as a guiding principle for development to improve environmental quality, economic prosperity, and social equity (Corvellec & Hultman, 2012). Economic prosperity is a key consideration of SIT (Torres-Delgado & Saarinen, 2015); the aims of planning and development must be met without compromising specific environmental and social factors of a destination (Butler, 2024). In sum, a CES is based on business models which aim to replace the disposable aspect of production (Farbotko, 2010). The main objective is to achieve sustainable development, which includes creating environmental quality, economic prosperity, and social equity to become of practical benefit to destination planning (Lacy & Rutqvist, 2015). However, CE is limited in its application and often neglects social equity in order to mitigate the environmental impact of any business model such as tourism (Frenken & Schor, 2017). Nonetheless, the promotion of visitor responsibility is crucial to clearly define CE regarding SIT and the monitoring of consumption activities at a specific destination (Lieder & Rashid, 2016).

Nevertheless, CE theory by its definition is an important tool in the mitigation of tourism environmental problems (Rodríguez Martín et al., 2018; Neves & Marques, 2022). The linear economic system that drives the economics of tourism dynamics produces a high level of activities and mobilities that require monitoring (Sassanelli, Rosa, Rocca, & Terzi 2019; Neves & Marques, 2022). CE theory would by its definition add structure and function through the measuring and monitoring of the tourism ecosystem (Roodman, 2009). The broadening of CE theories and their practical application may create transparency regarding the use of evidenced-based data

to support the planning and development of SIT in the future (Seroka-Stolka & Ociepa-Kubicka, 2019).

The Implementation of CE Practices and Theories for Destination Management

The implementation of CE practices and theories offers guidance to policymakers, enterprises, local authorities, and destination managers (Neves & Marques, 2022). Based on the interactive nature of tourism, the industry has touchpoints within the key value chain that require the flow of materials and assignment of significant resources to manage a destination such as a remote island (Sassanelli et al., 2019). Integrating the principles of CE allows for a strategic approach that will minimise the environmental factors such as waste and pollution as well as CO₂ emissions (UNWTO, 2023). The advancement of a tourism value chain in remote island destinations depends on the embracing of sustainable pathways that lead to the use of an evidenced-based approach by identifying key indicators that when monitored can inform best practices (Frenken & Schor, 2017). CES can lead to a more competitive approach for businesses through innovation, diversification, and improved income streams (UNWTO, 2023). These practices will support environmental, social, and governance (ESG) policies (Neves & Marques, 2022). The opportunities created by CE will enhance sustainable development impacts of remote islands (Cheer & Peel, 2011; Cole & Brown, 2015; Kerr, 2005; Scheyvens & Momsen, 2008).

The virtuous interaction of CE among destination managers, local business, and governing bodies will support the creation of new jobs and more inclusive local value chains, thus becoming a sustainable strategy for remote islands (Cole & Brown, 2015). These practices will also create opportunities for island visitors to leave a positive footprint through behaviour change that may lead to the improvement of the local ecosystem of remote islands (Prince, 2017; Torres-Delgado & Saarinen, 2015; Cheer & Peel, 2011; Cole & Brown, 2015; Kerr, 2005; Scheyvens & Momsen, 2008).

The implementation of a CE framework for remote islands will support planning and development in several key areas such as reductions in the use of plastics and their reuse, the reduction of food waste, and the monitoring of visitor mobilities to minimise the carbon footprint (UNWTO, 2023). Figure 2 outlines the practical benefits of CES for remote islands.

The main aim of any CE Framework is to explore stakeholder partnerships and cross-industry coalitions to explore innovative circular business models for remote islands (UNWTO, 2023). This approach will lead to the implementation of a more sustainable environmental, social, and economic development strategy (Cheer, Cole, Reeves, & Kato, 2017). This CE strategy would support policy-making through the use of evidenced-based planning as outlined in Figure 2. This can only happen when stakeholders embrace concepts such as deep cooperation, value co-creation, destination carrying capacity, system optimisation, and visitor mobilities (Cheer & Peel, 2011; Cole & Brown, 2015; Kerr, 2005; Scheyvens & Momsen, 2008). The planning of sustainable island tourism (SIT) needs to be regenerative by using natural resources available to destination managers, enterprises, and island residents (Prince, 2017; Torres-Delgado & Saarinen, 2015). The implementation of CE frameworks will support SIT by maximising all available resources through methods that will reuse and redistribute existing materials as part of an overall destination management strategy (Sharma et al., 2021). This approach creates an innovative and balanced paradigm for SIT (Wang & Hagedoorn, 2014).

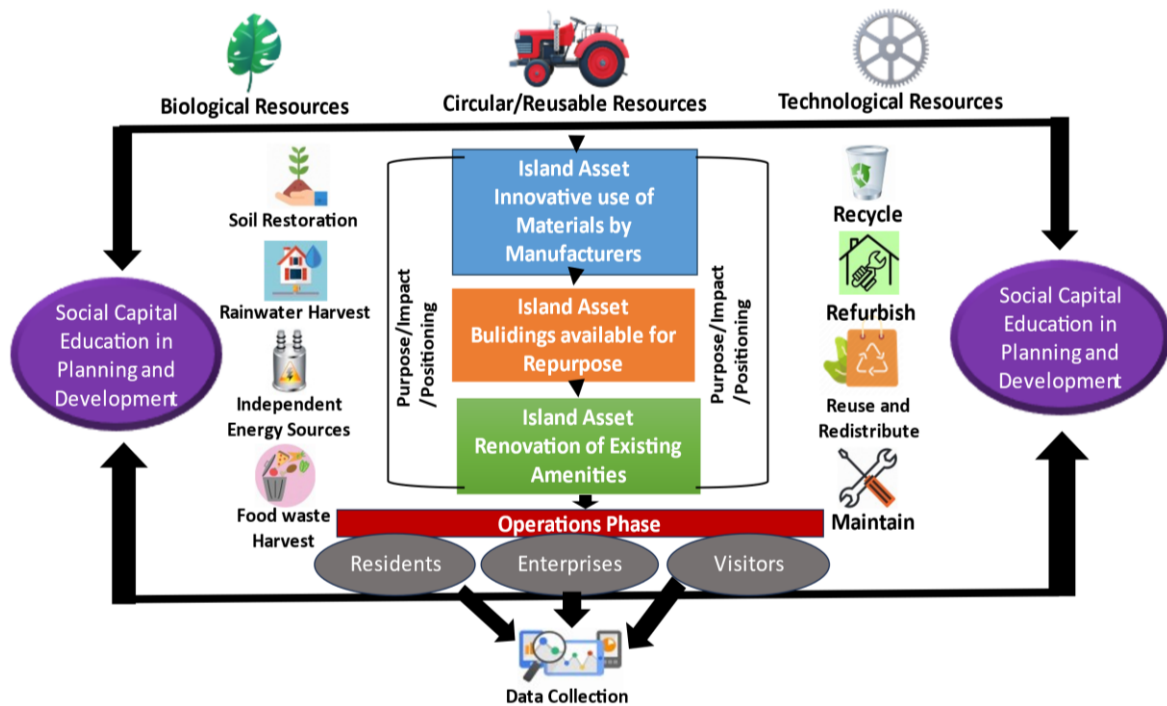


Figure 2. Adapted CES for remote islands (Prince, 2017).

The advantages of CES for SIT is to support an evidenced-based strategy by identifying key indicators that will highlight areas of improvement for each destination (Allgood & Mc Namara, 2017). When planning for SIT, it is important to outline core indicators that are relevant to a specific destination (OECD, 2023). The implementation of CE practices and theories has the potential to create a mix of quantitative indicators that will have managerial implications for SIT (Cheer et al., 2018). Using the principles of CE to improve SIT will increase the relevance of the indicators used to measure, monitor, and implement frameworks that can be of practical benefit for planning and development on these remote islands. Table 1 outlines key considerations that can be examined by using a CE framework.

Table 1

Combining CE and Tourism Indicators to Measure the Impact of Tourism on Small Islands

	Energy Use	Water use	Other Resource use	Monitor Waste	Monitor change
Accommodation:					
• Buildings	++	++	++++	+	++
• Operations	+++	+++		+++	+++
Restaurants/bars:					
• Buildings	++	++	+	++	+
• Operations	+	+	++	+++	+++
Transport: International, national and Regional	+	+	+	+	++
Transport: Origin - Destination	+++	+	+	+	+++
Activities: Events/Attractions/ Festivals	+	++	+++	+++	+
Island services (Visitor Mobilities)	+	+	+	+	+

These key considerations of CE can benefit remote islands as each factor can be measured and monitored using indicators (UNTWO, 2023). Some Irish enterprises have already implemented a CE framework to assist with the planning and development of tourism in Ireland (Conaghan, Mc Loughlin, & Hanrahan, 2015). In 2013, Hotel Doolin began to harvest their own rain water. They grow their own vegetables and herbs onsite. Irish hotels have begun to reduce the use of plastics, and become more energy efficient by installing wood burners and composting systems (F álte Ireland, 2023). Irish textile producers have been using plastic as part of a more sustainable approach to cotton fabric production (Rediscovery Centre, 2023). Social enterprises such as Foodcloud reduce food waste by redistributing unused products to charities dealing with those struggling with poverty (Foodcloud, 2023).

The use of CE to create sustainable practices is specific to a destination but the gap in knowledge regarding these practices and strategy implementation is concerning (UNWTO, 2023). The use of CE as part of a destination management strategy will support the measuring and monitoring of key activities such as food waste while also shedding light on innovation and sustainable transformations in tourism (Ridderstaat, Croes, & Nijkamp, 2018). The main aim of a CE strategy is suggesting a development framework rather than a final solution (UNWTO, 2023). The key concepts and theories of CE are rooted in the analysis of sustainable practices that may support the maximisation of a destination's resources (Cheer, Milano, & Novelli, 2019). The restorative concept of CE is based on the principle of renewable energy and extending resources through a variety of practices such as recycling (Sharma et al., 2021). This use of value chains can provide technical solutions when maximising a destination's resources output (Shakeela & Weaver, 2018). Production and consumption in tourism are inseparable; island visitors create their holiday experience by interacting with residents, enterprises, heritage sites, and a wide range of activities available in each destination (Pratt, 2015). Moreover, this highlights the need to use indicators to measure and monitor these behaviours on economic, environmental, and social aspects of destination management (Lasso & Dahles, 2018).

The Benefits of Using Indicator Systems to Support a CE Strategy

There are many benefits to using indicator systems to support a CE strategy (Barcoe & Hanrahan, 2024). WTO (2019) defines indicator systems as quantitative tools, designed to assist managers in making decisions using baseline data. Hanrahan (2008) notes that indicators help to evaluate the sustainability of a destination by identifying the key factors of change, their evolution and potential threats.

Measuring and monitoring of tourism is based on self-assessment, observations, data collection and analysis by the destinations themselves but there are no set minimum values. Indicator systems are based on core indicators and optional indicators, across four categories (McLoughlin & Hanrahan, 2019): destination management, social and cultural impact, economic value, and environmental impact. Kelman (2018) outlines seven steps in relation to the implementation of any given indicator system as illustrated by Figure 3 (below).

As illustrated in Figure 3 there are seven key steps in relation to the implementation of an indicator system (EC, 2016). Torres-Delgado and Saarinen (2015) note that these steps are adaptable to the needs of the destination. This provides a simple framework for understanding tourist practices, and how or why they evolve (Saarinen & Gill, 2018). The information glean from tourism indicators can highlight key destination needs that may be fulfilled by the implementation of a CES (Prince, 2017). The development of indicators is fundamental to both the research and practices of sustainable tourism (WTO, 2019). If the methods for measuring and monitoring the

impact of tourism practices are largely statistical, it must be recognised that, while indicators of tourism provide key insights, the practical use of the information gleaned may be of practical benefit to the implementation of a CES for remote islands (Pratt, 2015).



Figure 3. EC (2016) seven steps of an indicator system (King & Pearlman, 2009).

Consequently, when considering remote islands as sustainable destinations, there is cause for critical debate regarding the implementation of indicator systems and the key considerations such as destination management relating to measuring and monitoring the impact of tourism (Cheer & Peel, 2011; Cole & Brown, 2015; Kerr, 2005; Scheyvens & Momsen, 2008). The benefits of implementing a CES using the evidenced-based data may maximize resources consumption and minimize waste production for remote island destinations (Torres-Delgado & Saarinen, 2015).

The need to develop indicator systems to measure and monitor tourism on remote islands requires systematic collection and analysis of empirical data, while tracking and assessing the sustainability of tourism are essential (Prince, 2017; Torres-Delgado & Saarinen, 2015; Cheer & Peel, 2011; Cole & Brown, 2015; Kerr, 2005; Scheyvens & Momsen, 2008). Moreover, these sustainable indicator systems have become essential as one way that destinations can measure and monitor tourism expansion, linking them with the basic concepts of CE (Barcoe & Hanrahan, 2024). This information can be used to monitor business activities and highlight the impact of tourism on local residents (Cheer & Peel, 2011; Cole & Brown, 2015; Kerr, 2005; Scheyvens & Momsen, 2008).

Combining the use of indicators and a CES is not intangible as a wide range of factors can be analysed to better inform the type of specific CE practices that may benefit island residents and enterprises (Kelman, 2018; Torres-Delgado & Saarinen, 2015). For example, the identification of Airbnb ownership on an island can lead to the implementation of better practices regarding food waste and water usage (Figuerola & Rotarou, 2016). Nevertheless, this data can also provide further insights regarding the visitor experience (WTO, 2019). Sustainable island tourism (SIT) is about refocusing and adapting economic, social, and human resources to limit the impact of high numbers of visitors on any destination (World Travel and Tourism Council, 2019).

The economic benefits that can be accrued from SIT have led to the expansion of business-related activities and the state pursuit of employment strategies within the sector (King & Pearlman, 2009). There are three broad concerns regarding sustainable tourism on islands when devising a strategy to measure and monitor the impact of tourism (Cheer et al., 2019). They are social equity, economic efficiency, and ecological sustainability (Chandler & Pugh, 2018). The UNEP/UNWTO defines sustainable tourism using the triple bottom line of economic, socio-cultural, and environmental aspects of sustainability (Cheer & Peel, 2011; Cole & Brown, 2015; Sharpley, 2009;

Scheyvens & Momsen, 2008). An implementation of a CES will support the reduction in waste across the economic, social, and environmental aspects of destination planning (Neves & Marques, 2022). There is much discussion about ecological, socio-cultural, and economic goals of islands and how these can be achieved (Jenkins & Schroder, 2011).

For the purpose of this paper, it is important to address the issues surrounding SIT, in particular the tools and techniques that are available for planning tourism on remote islands. A key aim is to implement a CES based on the data gathered from using indicator systems. Measuring and monitoring sustainable tourism planning for remote islands focuses on achieving the triple bottom line (Schwartz, 1999). Sustainability has become a key consideration regarding destination management and the development strategies for SIT. In analysing the literature, it became apparent that the application of CE to support SIT is limited. This is due to the lack of local trust in these practices and theories (Shakeela & Weaver, 2018). Existing research does not comprehensively explore the use of indicator systems to support a CES when planning and developing SIT. This gap creates the opportunity for this study to break new ground while examining the application of the principles and theories of CE while using empirical data to develop a framework that may become of practical benefit to those responsible for planning tourism on remote islands.

Methodology

In accordance with the aims of the study, three key segments were identified (visitors, residents, enterprises) and surveyed. The main focus of this study is to provide insight into the potential benefits of utilising a CES to support SIT. The paradigms that methodologically inform this study are varied given the wide range of complexities involved in destination planning (Ali, 2009). Literature covering the implementation of sustainability indicators in Ireland is sparse (McLoughlin & Hanrahan, 2019; Hanrahan, 2008). Moreover, this study breaks ground with the use of a digitized/SMART indicator system that uses Internet Communication Technologies (ICTs) to support data collection methods as suggested by Janowski (2015). The model used has managerial implications for governmental policies, local authorities, and those responsible for destination planning for remote islands. This model is presented as a recommendation. It is not a decreed solution, as it is based on the aims and purpose of this study. The model presents a more robust framework that combines the use of an online survey instrument (Typeform) and 43 indicators that are specific to the measuring and monitoring of tourism on the six islands along the west coast of Ireland. Figure 4 outlines the framework used by the researchers with a view to sorting, arranging, and categorizing the information obtained through data analysis.

The model in this instance highlights how the SIS supplements the measuring and monitoring process with visitor, resident, and enterprise inputs and evaluations. The workable insights provided by this framework increase awareness of key economic, social, and environmental indicators. This approach will best inform a CES for SIT through acknowledgement of the needs based on information gleaned from each of the three data segments examined. The interactivity that occurs through stakeholder engagement allows the destination manager or green team plan for tourism based on the needs of each individual island. The influence that a CES could yet have on SIT is laid out in the foundations of this resource-based model as it highlights key needs and requirements for tourism planning on an individual basis.

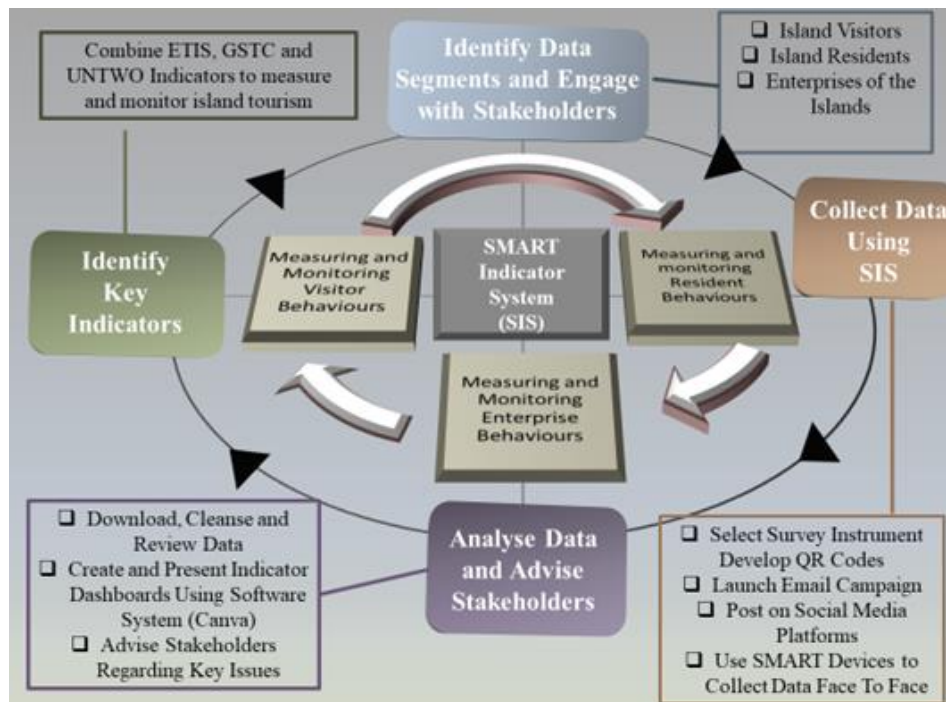


Figure 4. Research framework used for the purpose of study (Barcoe & Hanrahan, 2024).

The initial process of creating an SIS to measure and monitor tourism on each island began with assessing previous models and identifying indicators that may have been over-looked in the past. This revision of the European Tourism Indicator System (ETIS) recommended by The Global Sustainable Tourism Council (GSTC) analysis provides beneficial data for planning and management considerations unique to each island. The benefits of using a SMART approach allowed the researchers to obtain a large amount of data from all three data sets. Figure 5 is an example of the SMART poster used to launch the research.



Figure 5. Initial approach to implementing SIS (Barcoe & Hanrahan, 2024).

By scanning the QR code on the poster the visitor, residents, and enterprise segments were given the opportunity to access the quantitative survey. Typeform was used to gather the data and Nvivo was used to sort, arrange, and identify key considerations regarding the proposed framework of the study. This was further supported by the use of digital devices such as mobile phones and tablets to record the data during face-to-face interactions with each research segment.

Each aspect of the SIS has its own function as part of this CES. The information gleaned from the SIS identified the age, interests, and purchase behaviour of the visitors, the sustainable practices of the residents, and barriers to enterprise for the SMEs on the islands. The survey relating to the residents and enterprises generated workable insights, which can lead to the improvement of CE on each island moving forward. This CES highlighted the benefits of implementing an SIS when measuring and monitoring the impact of tourism on remote islands. For example, the level of carbon emitted by visitors when travelling to the island and other key indicators were calculated, thus informing the specific needs of each island regarding a CES.

Findings

The analysis of the empirical findings from the qualitative surveys with respondents across the three segments revealed a willingness to understand the practical benefits of a CES for SIT. For instance, residents identified the need for rain water harvesting and the mitigation of traffic congestion in specific areas of the islands. The key finding is that the integration of a CES specific to each island would link sustainable practices with drivers of business success. Using this approach will obtain relevant data to mitigate the impact of tourism on remote islands by identifying significant CE practices such as the recycling or reduction of plastic-use across all three segments. Respondents identified the reconceptualization of such initiatives coupled with adapting planning and development strategies to meet these needs would lead to an improved tourism product. Figure 6 highlights the key elements of CE that were identified by the respondents of the study.

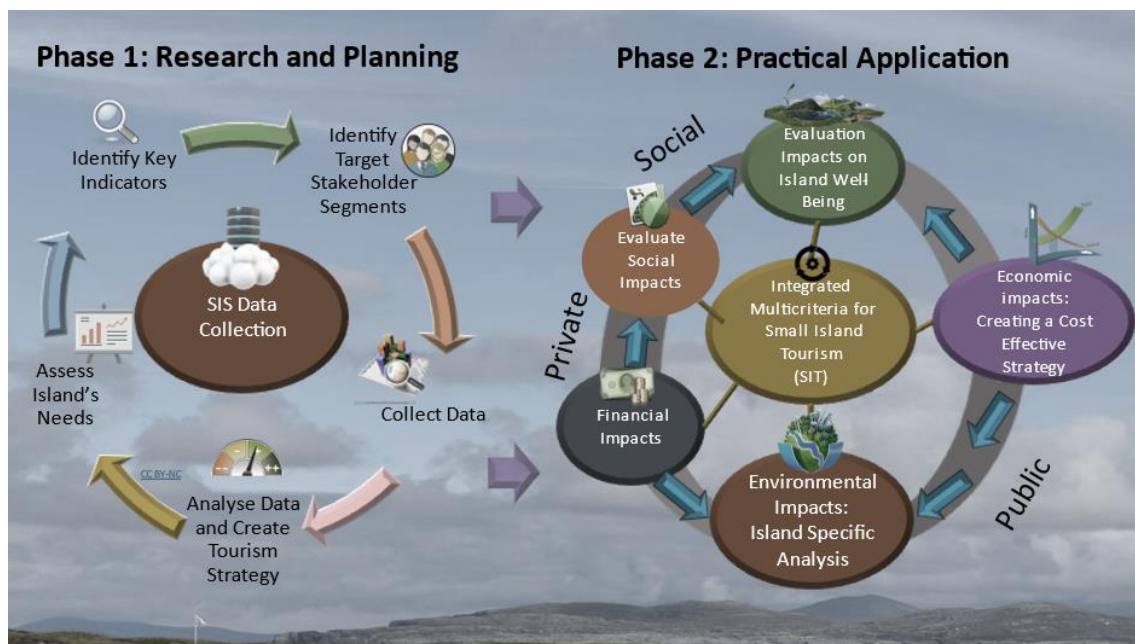


Figure 6. Proposed SIS and CE framework for sustainable island tourism (SIT).

Common elements also indicated that a revision of road planning would maximise a key resource that would improve the overall island experience across all three segments. In fact, implementing a CES would allow for improved governance of each island and remove barriers to enterprise for SMEs. Thus, the application of a CES was viewed as a potential avenue to gaining new visitors through reducing overall cost of production. Based on the information gathered, Figure 6 is a proposed framework that combines the use of SIS and CES to support the planning and development of sustainable island tourism (SIT).

Figure 6 explains the change that occurs when the SIS is used to augment and support an CES (*on the right*) supplementing (feeding) the strategy using key qualitative data obtained from three stakeholder segments. These inputs and evaluations become workable insights that will increase product differentiation through acknowledgement of the specific needs of each island as revealed in information gleaned from the SIS (*Phase 1*) of the research and planning. This framework will allow the tourism provider to observe resource consumption, evaluate needs, and implement a CES that will become of practical benefit for SIT. This makes both product development and destination management a far more cost-effective proposition for all island managers, residents, and enterprises.

This particular model also analyses the environmental impact of tourism for the purpose of (a) understanding the needs of each island and (b) identifying non-productive activities that assist in the measuring and monitoring of tourism on remote islands. The model is dominated by the complementary interactivity of the two concurrent approaches that ultimately influence the /SIT development. Nonetheless, this framework varies in usage from previous CE models and indicator systems as it focuses on the specific needs of SIT. This adaptation considers the flexible aspect of both indicator systems and CE. This model outlines the use of an SIS to increase growth in productivity while measuring and monitoring the impact and development of SIT on each island. Figure 7 highlights the key process of this model.



Figure 7. CES/SIT proposed framework three-step process.

It has been found that the most effective approach to SIT is the use of a simple three-step process described as a CE/SIT. This CES provides “lead” measurements that link with overall impact of tourism on remote islands. In fact, the stages involved in implementing a SIT/CES measurement and monitoring approach can influence the reconceptualization of how island enterprises can identify key initiatives such as cost-effective business

opportunities and the actions of an ongoing performance evaluation for SIT. The findings here reveal that traditional sustainable tourism has been viewed as time-consuming by authors such as Cheer and Peel, 2011 but, with this proposed framework, there is a maximisation of limited resources to assist with the implementation of SIT. While indicator systems differ in size and breadth of activities analysed, this framework highlights both common and relevant factors regarding SIT and CE that support the assessment of tourism performance and impact on remote islands. The destination manager must assess automated results delivered by the SIS that provide actionable insights, leading to managerial implications. Understanding adoption and usage of this proposed framework removes existing barriers to SIT, visitor experience, resident satisfaction and highlights clear business benefits for remote island enterprises.

The proposed framework integrates key considerations of CE and capabilities of SMART technologies using indicators to measure and monitor tourism to benefit the strategic objectives of SIT. This is achieved by focusing the scale of analysis to 43 actionable indicators that have been found to measure and monitor the impact of tourism on remote islands. This cost-effective method analyses metrics of environmental impact of tourism, visitor satisfaction, and barriers to enterprise. This model is presented not as an ultimate solution but as a recommendation based on evidence obtained from both primary and secondary sources. This suggested framework incorporates a range of indicators relevant to CE and the implementation of SIT in Ireland. The premise of this model is that an island manager could, and should, manage, measure, and monitor the impact of tourism on each island. By identifying these activities associated with both CE and SIT, island managers will be better able to conceptualize and implement this framework leading to destination development and investment return in the future.

Conclusion

The development of this proposed framework has managerial implications in relation to the further growth and development of sustainable tourism for remote islands. The findings of this study have revealed that CE practices and theories can be adapted and implemented to provide practical benefit for SIT. This paper combines the use of SMART technologies, tourism indicators, and CE practices to propose a growth strategy for six islands along the west coast of Ireland. This model integrates these three considerations to provide opportunities for measuring and monitoring the impact of tourism while also maximising both internal and external resources of remote islands. The premise of the model is to focus on the development of a CES in support of SIT. This model is built on the empirical insights. The success of this strategy is driven by the combination of SMART technology, indicators, and CE practices to support the development of tourism for remote islands in the Irish tourism sector.

The findings of this paper identified several avenues by which the combination of SIS and CES can benefit SIT. Given the coming of CE and sustainable tourism practices, this proposed framework is now applicable to Irish tourism, where such practices would support the planning and development of remote islands. This outlines transferrable resources between the tourism planning authority and the island managers.

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