SALGUEIRO, T. B. (1987). Os transportes no desenvolvimento das cidades portuguesas. Dossiê: A cidade em Portugal: onde se vive. Povos e Culturas, Lisboa, 2, 113-144.

SPIEGELBERG, H. (1971) The phenomenological movement. A historical introduction. Martinus Nijhoff /The Hague, Netherlands, v. 1 and 2.

SOUZA, L. A. A. de. (1995). Considerações sobre o plano Koeler. 150 anos da Colonização Alemã em Petrópolis. Instituto Histórico de Petrópolis (IHP), Petrópolis, Rio de Janeiro.

SOUZA, V. C. B.; GOLDENFUM, J. A. (2001). Trincheiras de infiltração como elemento de controle do escoamento superficial: um estudo experimental. In: TUCCI, C. E. M e MARQUES, D. M. L. da Motta (org.) Avaliação e controle da drenagem Urbana. Ed. Universidade / UFRGS / ABRH, Porto Alegre

WITTGENSTEIN, L. (1988). Investigaciones filosóficas. UNAN-Crítica-Grijalbo, Barcelona.

ID 1747 | INVESTIGATING THE ROLE OF RESILIENCE THEORY IN ASSESSING SUSTAINABILITY OF COASTAL TOURISM DESTINATIONS: THE CASE STUDY OF NEW ZEALAND

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1 INTRODUCTION

The connection between resilience theories and human intervention methods such as coastal management and tourism activities was and remains to be an interest of many researchers in local and international scales. The interest of researchers arises from the growing environmental threats to coastal areas and the importance of tourism in the local and global economies. Their work has focused in two main directions. One direction has focused on measuring ways to decrease the negative effects of tourism on ecological systems. The second direction has been to investigate better ways of incorporating tourism activities within coastal management plans and increasing tourism's contribution to coastal resilience rather than focusing only on reducing its impact on the environment.

Harvey (2006) highlighted that there is a major knowledge gap in the study of the ability of coastal megacities and small communities in the Asia-Pacific region regarding adaptation to changes. He recommends that giving more focus towards developing planning systems, assessment methods, and coastal management techniques could fill such a gap. Pisano (2014) highlighted the need to incorporate the resilience concept when dealing with our vulnerable systems including coastal areas.

Luthe and Wyss (2014) highlighted the knowledge gap in the study of the relationship between tourism governance and resilience and emphasised that resilience has an explanatory power to clarify ways that tourism activities could adapt and even transform under various pressures. Luthe and Wyss (2014) also highlighted how tourism systems could be approached as interrelated Socio-Economic-Ecological Systems (SEES) and that developing resilience in such systems would increase their capacity to deal with stresses while maintaining the stability of a tourism-related economy and at the same time ensuring the diversity needed for innovation and future development. They discussed how current assessments of functional tourism networks complement resilience understanding and how tourism systems could adapt with both slow and prompt change processes. In the New Zealand context, there is a knowledge gap regarding assessing the resilience of coastal tourism destinations. The attention has been given to evaluating the socio-economic and environmental impacts of tourism in coastal destinations in relationship to climate change.

Blackett et al. (2010) have focused on coastal communities' efforts in adapting to climate change effects, using Coromandel Peninsula as a case study of NZ coastal tourism destinations. Other researchers such as Becken et al. (2010) have analysed the activity in itself from an economic viewpoint and through visitor forecasting. In their studies, they investigated the effects of marine farming and fishing on the destinations, as well as using surveys to determine weather and climate effects on tourism, by tourist satisfaction.

Despite these valuable studies and the importance of this topic both in international and national levels, these researchers highlighted the existing knowledge gap and the lack of studies on an integrated assessment and locally developed resilience indicators that assess coastal tourism destinations and their ability to achieve sustainable outcomes, specifically in the New Zealand context. This research goal makes it clear that there is a need for research that makes a connection between resilience theory and multi-dimensional activities such as tourism especially when located in complex systems such as coastal areas.

For the reasons above, this paper investigates the ability of socio-ecological resilience analysis to assess coastal tourism destinations, and how these destinations could achieve sustainable outcomes. This paper is based on the findings from a doctoral research undertook a preliminary assessment using three NZ case studies and uses them to test the proposed mechanism for assessing coastal tourism destinations. Drawing from the research goal, as shown in Figure 1, there is a complex triangular relationship between the three main components of research, coastal tourism activities, socio-ecological resilience, and planning practice within New Zealand as the research case study.

There are three linkages between these research components; one is the linkage between socio-ecological resilience and coastal tourism activities, which is described by the indicators assessing coastal tourism destinations. The second linkage is the connection between tourism activities and the NZ planning practice, which helps in understanding the current situation of tourism activities, measuring their resilience, and perceiving their future trends. The last linkage is coastal management with its different techniques, which represents the intersection area between socio-ecological resilience theory and NZ planning practice Coastal management techniques help in identifying challenges facing tourism destinations and methods for dealing with these challenges.

Figure 1 – Paper Scope

Therefore, through the course of this paper, these components will be discussed starting with clarifying the relationship between resilience and sustainability followed by explanation of the New Zealand context and responsibilities of different agencies in managing coastal areas.

This is followed by explaining the research methodology that this paper is based on, and then the main discussion of results extracted from the data analysis and fieldwork.

2 SUSTAINABLE DEVELOPMENT (SD) AND RESILIENCE

For a successful assessment of complex systems such as coastal destinations, the relationship between sustainability and resilience and the difference between these two concepts needs to be identified. The resilience concept has a variety of definitions. Some researchers have debated the definition of this concept and its vagueness.

Olsson et al. (2015) were one group of researchers who emphasised the notion of resilience and found connections between the different definitions. Table 1 shows Olsson et al. (2015) understanding of previous resilience definitions by different scholars. They categorised them into definitions with a descriptive attribute indicating a neutrality character of resilience versus other definitions with a prescriptive attribute where resilience is considered as a "good" outcome.

Meanings	Attributes	
	Descriptive— neutral (N)	Prescriptive— good (G)
Bounce back (BB)	BB-N	BB-G
	Holling, (1973) Resilience and stability of ecological systems	Perrings (1998). Introduction: Resilience and sustainable development
Bounce back and transform (BB-T)	BB-T-N	BB-T-G
	Walker *et al.* (2006). A handful of heuristics and some propositions for understanding resilience in socio-ecological systems.	Folke *et al.* (2010). Resilience thinking: integrating resilience, adaptability, and transformability

Table 1 - Typology of resilience definitions in ecology and social-ecological systems from Olsson et al. (2015)

Strunz (2012) and Derissen et al. (2011) attempted to clarify the difference between the concepts of SD and resilience by considering sustainability and SD as a normative target, a goal, and the desired status, while resilience is an analysis concept that deals with change.

Cote and Nightingale (2013) explained the variation between the two concepts by stating that conventional human-environment analyses emphasise the maximisation of sustainable outputs and increase the capacity of institutions to manage "undesired" change and return to an initial stable state. Fath et al. (2015) also maintained that the goal of sustainability is for systems to persist in delivering their function over an infinite time horizon. Based on this definition, resilience is a tool to achieve sustainability; resilience aims to maintain a system's ability to recover from disturbances and continue delivering its services.

In relation to this research, the complexity in coastal areas is reflected in the relationship between SD and resilience, with examples of overlap in some aspects. For example, environmental sustainability has a direct connection with integrated coastal management, when the coastal area is managed in an integrated framework; this improves the process of managing the area, which will have a positive effect on the environmental sustainability of the area, and could help in enhancing the resilience of socio-ecological systems.

However, some areas do not necessarily relate directly to each other, such as the relationship between the economic sustainability of tourism activities and the resilience of a socio-ecological system. For example, the tourism activity in the area could be economically sustainable with a continuous and rapid increase of tourists while the ecological systems specifically (and coastal resources in general) face continuous degradation that negatively affects resilience. This degradation could be caused by many factors, including excessive use by tourists, the absence of an adaptive management framework, and lack of conservation projects. Whether the factors are generic or case study specific is discussed later in this paper.

Ultimately, there is a difference between resilience and sustainability. For example, a system could be resilient to different changes and adapt without any change in its characteristics. However, this system may not be sustainable on its own. It is evident, therefore, that there is a significant difference between SD as a target, and resilience and transformational change as approaches to explain the system status now and in the future. This difference is significant in this research as it uses indicators and resilience assessment to evaluate the sustainability of an area.

Therefore, according to the discussion in this section, sustainability as a concept as described by (WCED, 1987), Clifton (2010), Cote and Nightingale (2013) and Fath et al. (2015) is a desired status. This status

aims to create a balance between the environmental, social, and economic needs of communities in the present and preserve resources for the future. However, sustainability in itself is not a tool, and it does generate its tools.

In the other hand, resilience as a concept means as described by Walker et al. (2004), Brand and Jax (2007) as the system ability to maintain performing its functions and reorganise itself after any disturbances. Therefore, it is dealing with adaptability to change and dealing with different thresholds and pressures either internal or external. Resilience concept is a practical tool used to assess different complex systems. The resilience assessment process aims towards explaining the status of the systems and their ability to deal with changes with consideration to the potential outcomes.

The above discussion emphasised the need to understand the concept of resilience with its different definitions and its relationship with sustainable development. It critiques the current reformist approach used to deal with development and points out that the challenges faced in achieving sustainable development, along with the increasing complexity of our socio-ecological systems, are all factors that support the need to use other approaches. The transformational approach that is based on the eco-centric paradigm states that social systems are part of nature and there is no separation between social and ecological worlds, and consider the characteristics of both worlds.

This approach aligns with the concept of socio-ecological/ evolutionary resilience where a system tries to avoid disturbance, but if it occurs, the system adapts to it and if necessary transforms to a more desired status. Where socio-ecological resilience under a transformational approach is a way to understand the complexity of socio-ecological systems and facilitate the assessment process of the systems as combined, interconnected entities.

It is dynamic enough to deal with changes that could eventually lead to a sustainable outcome rather than narrowing the understanding of resilience as a return to equilibrium after a shock regardless of whether that equilibrium is desirable.

Therefore, the discussion established the differences between the terms sustainable and resilient. On the one hand, SD is normative, a target which systems should reach. To achieve such a target, organisations/ stakeholders/ planners should define the indicators that measure achievement of such a “desirable” status, as well as the measures needed to manage the complex systems in such a manner that they attain that status. On the other hand, resilience is a tool that allows researchers to achieve the following tasks. Firstly, it leads to an understanding of the complexity of these systems. Secondly, it leads to interaction with a change in a manner that allows innovation and creativity. Thirdly, it identifies the crisis/ disturbances that occur in a system, and the system ability to transform crisis into opportunities for transformation and eventually for the achievement of a more desirable status.

A system could be resilient against shocks/ changes, but that does not mean it is a sustainable system. For example, dictatorships could be resilient systems, but that is not to say that they are sustainable. Systems may survive shocks, but they might not be able to maintain a balance between the current needs of the society and the preservation of resources for future generations’ needs, which is the core of SD. However, the systems do not stand-alone or exist in a vacuum; rather, they are firmly affected by other systems. Therefore, the concept of panarchy was also discussed, where cross-scale relationships between different systems were reviewed and explained, to be used later in this research to explain the changes happening in the case studies. The following section will describe the New Zealand context and its hierarchy.

3 THE NEW ZEALAND CONTEXT

New Zealand as the research case study is a South Pacific country that comprises an archipelago of 33 islands, with two main islands, the North Island or “Te Ika-a-Māui,” and the South Island or “Te Waipounamu,” with a total population of 4,242,048 residents according to the latest statistics (Statistics NZ, 2013). About 85-90% of the urbanised New Zealand communities are located within 10 km of a coastal area (Ministry for the Environment, 2009). Environmentally, New Zealand has New Zealand has around 18, 218 km of coastline, and the world’s sixth largest marine area at 4, 400, 000 km2. Due to the importance of the coastal environment, it needs to be clearly defined. However, the NZ legislative system

does not provide a definition of it. The Planning Tribunal stated, “What constitutes the coastal environment will vary from place to place and according to the position from which a place is viewed, where there are hills behind the coast, it will generally extend up to the dominant ridge behind the coast” (Brake and Peart, 2013).

Policy 1 of the NZCPS emphasises on the same perspective, stating that “recognise that the extent and characteristics of the coastal environment vary from region to region and locality to locality; and the issues that arise may have different effects in different localities”(DOC, 2010, P. 11). The same policy also explains the extent and characteristics of the coastal environment, which include the coastal marine area and the islands within it. The explanation extends to areas where coastal processes occur and those at risk from coastal hazards, coastal vegetation, and habitat of indigenous coastal species, and elements of the natural landscape (DOC, 2010, P. 11). The coastal environment also includes the items of historical heritage in the coastal marine area, inter-related coastal marine and terrestrial systems, and factors of infrastructure that have modified the coastal environment (DOC, 2010, P. 11).

The RMA (1991, Part 1) also defined the coastal marine area, as “The foreshore, seabed, and coastal water, and the air space above the water - (a) of which the seaward boundary is the outer limits of the territorial sea, (b) of which the landward boundary is the line of mean high water springs, except that where that line crosses a river” (Section 2).

The importance of reviewing these definitions of coastal environment is that to assess coastal tourism destinations, the boundaries of the coast need to be clarified according to the NZ context along with understanding the NZ legislative system regulating the coastal marine area and any development occurring inside it. The legislative system depends on a hierarchy of statutes covering different levels as shown in Figure 2. This hierarchy starts with the Resource Management Act 1991 as the main statute regulating the use and development of all resources including the coastal areas at the national level.

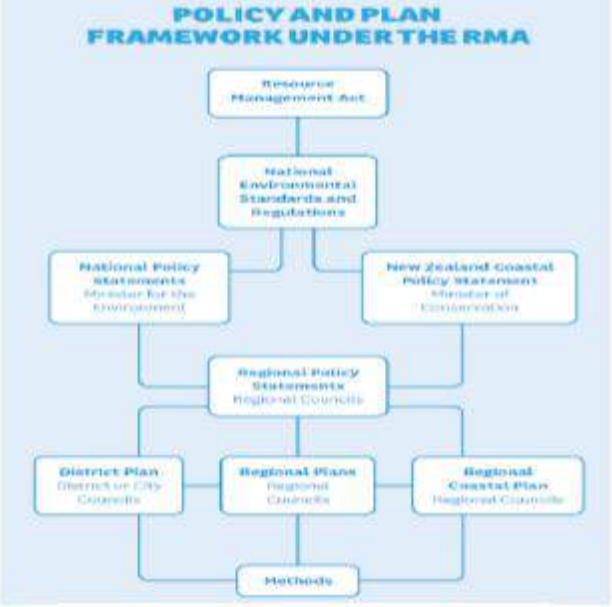

Figure 2: Policies and plans regulating coastal area under RMA. Source: ECAN (2013)

Under the RMA come the national environmental standards and the National Policy Statements including the New Zealand Coastal Policy Statement (NZCPS), which are also statutory documents at the national level. The regional policy statements are the next level of documents at the regional level, and they must achieve the purpose of the RMA as stated in (Part 5, Section 59), and that includes complying with the national policy statements including NZCPS.

Then the hierarchy continues to the next level through regional plans which as stated in the RMA (1991, Part 5, Section 63) should achieve the purpose of the act. The aim of the regional coastal plans as indicated in Section 63 of the RMA is to assist the regional plans in conjunction with the Minster of Conservation. Then comes the district plans that need to give effect to all the higher acts and national

policies and assist territorial authorities to carry out their functions as stated in RMA (1991, Part 5, Section 73).

3.1 AGENCIES' ROLES IN NEW ZEALAND COASTAL MANAGEMENT

After explaining the New Zeland legislative structure, it is important to account for the role of different agencies in managing the coastal areas to clarify an overlap of responsibilities and the power to make decisions regarding preservation of coastal resources or permitting development/ activities. The role of every agency is controlled by its statutory power and responsibilities in the coastal marine area. The responsibility of managing coastal areas spreads between different agencies. Starting with the central government level represented by Minister of Conservation, and the Ministry for the Environment, followed by the regional authorities and then the local/ territorial authorities under the RMA as explained in Figure 3.

In addition, the role of iwi trusts and local community representatives play a role in managing certain parts of the coastal areas, without excluding the Department of Conservation (DOC) role and their responsibilities in their estate land and marine reserves under the RMA and the Conservation Act.

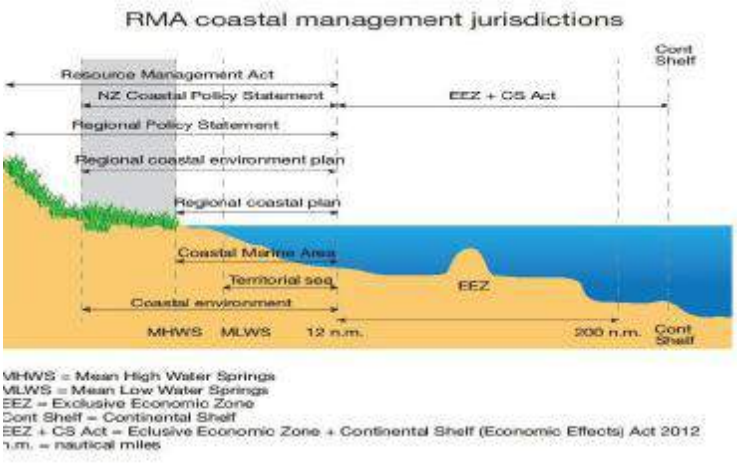

Figure 3: RMA coastal management jurisdictions (DOC, 2013)

The roles and responsibilities of each authority in the New Zealand system is explained through Table 2, as mentioned earlier the roles are defined through the RMA, the Local Government Act, and the Conservation Act.

	Authority	Their role in manging the coastal areas
Central Government	Minister of Conservation	Under section 28 of the RMA for preparing and monitoring the implementation and effect of NZCPS, also approving regional coastal plans and regional coastal plan changes.
	Department of Conservation (DOC)	Protecting the environment in Crown land designated as DOC estate land and marine reserves, and maintaining biodiversity, while conserving the local key species generally. DOC works closely with the Minister and carries out a number of tasks under the RMA such as preparing NZCPS, approving regional coastal plans in cooperation with regional authorities (DOC, 2016)
	Ministry For the Environment (MfE)	MfE does not have an actual management power over the coastal marine areas, but it focuses on cooperation with regional and local authorities in the coastal areas. It is responsible for producing national policy statements except NZCPS, national state of the environment reports and national standards using regional and local data that could help the decision makers take actions to solve any emerging problems and help in preventing any potential threats (Brake and Peart, 2013)..

Table 2: The roles and responsibilities of different NZ authorities under the RMA and LGA (Central government level)

Authority		Their role in manging the coastal areas
Regional Scale	Regional councils	Operative side of the government, implementing the RMA and NZCPS, and their role is further explained in the Local Government Act 2002. The regional councils role is set out in section 30 of the RMA, which include among many creating regional policy statements and regional coastal plans and giving directions/ creating cooperation with the local councils regarding issuing resources constents, implementation of these policies and plans in their areas. Also, they possess power over the marine areas, and have the authority to give permits to activities and resource consents to development projects such as within waterways. They should also cooperate with DOC in the case of marine reserves without overlaying powers over DOC estate land or coast (Brake and Peart, 2013, p. 22).
	UNITARY authorities	According to RMA (1991) and LGA (2002), the unitary authority combines both the roles of regional and territorial authorities under one umbrella. As an example the Marlborough District Council (2003) have the Unitary authority power in Marlborough Sounds "Under the Resource Management Act 1991 it therefore has an obligation to prepare a Regional Policy Statement, a Coastal Plan, a District Plan and such other Regional Plans as are necessary" (p. 1-1). This give it the ability to avoid any fragmentation of power between different authorities as in the double tier model in other places in NZ (regional-district).
Local Scale	Territorial authorities (City and district councils)	Their functions are set out in section 31 of the RMA, which include among many preparation of the district plans and monitoring their implementation, working to achieve the RMA objectives, NZCPS goals, and regional plans/ policies regarding the coastal areas (Brake and Peart, 2013, p. 22). Also, they are responsible to give resource constents for activties in the coast and solving coastal issues at a local scale on the land (landward side).
	Local Community representatives	They do not have statutory power to affect decisions, but through the public consultation process granted under the RMA, these representatives can have a say/ express community voice(s) regarding some of the decisions related to coastal development and preserve the environment for the community interest.
	Maori (iwi) organisations	The RMA specified their responsibilities in the management of coastal areas. Their responsibilities among many include prepare iwi management plans addressing coastal issues from their iwi interests, and preserve cultural heritage. However, the RMA does not specify the contents of these plans and gives the councils the option to consider these plans when making decisions regarding the coastal areas. Therefore the plans do not carry statutory power, unless it is a part of a regional coastal plan as a part of a co-governance procedure (Brake and Peart, 2013, P. 23). The iwi orgainstions may have a joint management agreement with local authorities either under the RMA and the Treaty settlements or in voluntary non-statutory basis. Also, under the Marine and Coastal Area Act 2011, groups that have customary marine titles (access and ownership) can produce planning documents to set out objectives and issues. The decision makers must consider these documents.

Table 3: The roles and responsibilities of different NZ authorities under the RMA and LGA (Regional & Local levls)

4 METHODOLOGY

The research methodology should be based on a clear process. This process as explained by De Vaus (2002) consists of a cycle of steps, which aim to test the existing theory using deductive reasoning. According to De Vaus, the process starts by defining the theory to be tested, leading to deriving a set of conceptual propositions about the theory. These propositions are then converted into testable indicators that determine the appropriate methods of data collection and analysis. This data gathering and analysis leads to the formation of distinct results, which in turn give rise to theory construction using inductive reasoning. The analysis and results are then discussed, leading to the formation of a new theory or the modification of the existing one. Figure 4 displays De Vaus's (2002) steps with the blue boxes illustrating their application in the current study. The steps begin with a definition of resilience theory, followed by the construction of the propositions and a test of whether or not resilience theory can analyse the social and ecological systems in New Zealand coastal tourism destinations. These propositions are then converted into a set of initial indicators derived from the literature, and the data collection methods are determined. Then the relevant data about tourism and socio-ecological resilience in the case study areas are collected to explain the existing situation. Finally, after analysing the data using panarchy and adaptive cycle principles, the results are used either to confirm the usage of resilience theory as an assessment tool for such complex systems or to show the problems of using this theory in the context of New Zealand coastal tourism destinations.

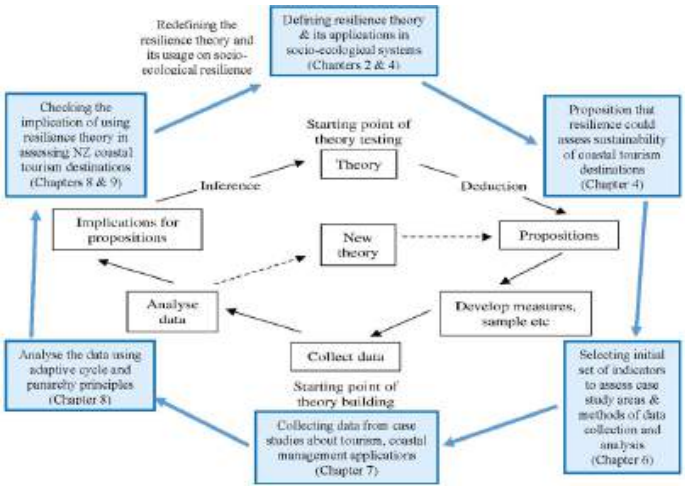

Figure 4: The logic of the research process and its application to the research goal. Adopted from De Vaus (2002)

To reflect the nature of socio-ecological systems in complex structures such as coastal tourism destinations as explained earlier, the methods of data collection and analysis need to be a mix of qualitative and quantitative ones. The underlying definition of mixed method research is triangulation between quantitative and qualitative methods covering the scale of the case study areas. Triangulation, as defined by Creswell and Miller (2000) as “a validity procedure where researchers look for convergence among multiple and different sources of information to form themes or categories in a study” (p. 126). Glenn (2009) stressed the advantage of triangulation as a tool to increase the credibility of results, as it also reduces the potential biases that could exist in a single source or from investigator’s bias.

According to Glenn, the researcher examines data across various sources, as this will reduce any bias either from the researcher or from a data source (e.g., results being influenced by a certain document) and will increase credibility because of the convergence of evidence from different resources. A hypothetical example of this triangulation would be if the intervention process, the opinion of different key players are all subjective and could have some bias to enlarge or critique the role of their organisation in protecting the coastal environment and enriching the tourism activity.

However, the existence of detailed plans produced by governmental authorities to protect the coastal environment and results from indicators about implementation of these plans, give a clear direction about the actual size of human intervention that each of these authorities have in the case study area.

The data collected was analysed in terms of the research questions. The analytical methods were based on the triangulation of qualitative and quantitative methods, as shown in Figure 5. The qualitative methods depended on the content analysis of statutory/ non-statutory documents. The concept and hypothesis coding techniques, were used to analyse interviews, and based on the responses, the status of the case studies was investigated. In addition, the main issues from the point of view of the main personalities managing the coastal areas were identified. For the most part, the coding process was undertaken manually, with some inputs from the Nvivo software package to help with the theoretical coding and to draw relationships between policies stated in the statutory documents and projects in practice.

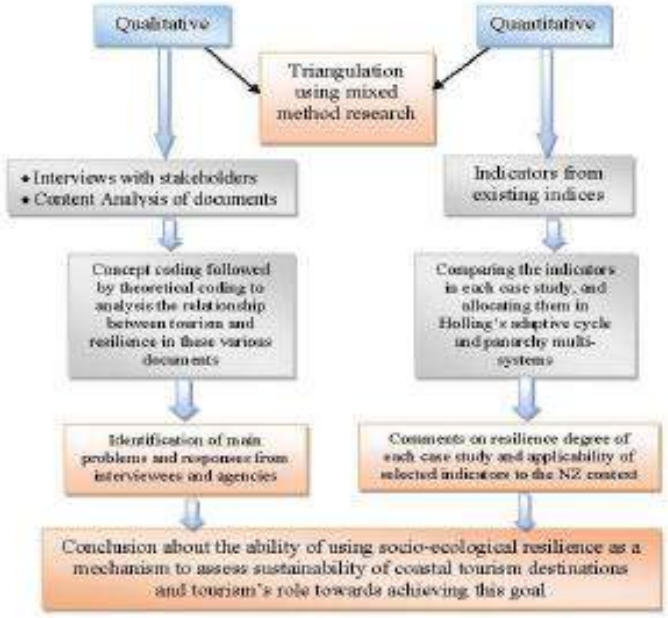

Figure 5: Paper Methodology

In terms of implementation, depending on the indicators that were developed based on the collection of related national and international indices, the preview of the current situation in the selected locations was conducted using observation methods, along with results from indicator assessment supported by conclusions extracted from the interviews and documents analysis.

All formed an integrated database of resilience status of the study areas, which included the existing and potential future coastal tourism activities in New Zealand. All these methods led to an identification of the problems and issues in the case study areas and were used to assess the resilience stage of each case study within the adaptive cycle and through the panarchy concept.

5 DISCUSSION OF RESULTS

This paper goal was to investigate whether and how socio-ecological resilience analysis can be used to assess the sustainability of coastal tourism destinations in the New Zealand context. The answer to this question started with clarifying the relationship between resilience and sustainability as discussed in section 2. Establishing that socio-ecological resilience in coastal areas means “the capacity and potential of a coastal system to absorb disturbance and still maintain its function, structure, and identity and feedback mechanisms.”

Resilience as an analysis tool describes the status of different systems and explains the internal relationship between complex systems through models such as panarchy. It also can monitor different socio-ecological systems over a period by examining changes/thresholds and indicate the future direction of these systems using metaphors such as Holling’s adaptive cycle. In contrast, sustainable development is a desired status that complex systems such as coastal tourism destinations aim towards achieving.

Following the course of this paper, it can be concluded that the preferred output is to have socio-ecological systems in the coastal tourism areas that are resilient against thresholds and disturbance. However, the final output should be pushing these systems to reach a sustainable status. Therefore, if there is a reorganisation in these systems after experiencing a disturbance, it should be a change/ opportunity that contributes towards sustainable outcomes for these systems.

The investigation was based on a preliminary assessment model compromising of two parts. One part was based on resilience theory using Holling’s adaptive cycle and panarchy model, while the second part was based on tourism models using Butler’s life cycle analysis. These metaphors were used to account for the status of the systems and indicate their future direction/scenarios.

This combined assessment model was tested at an empirical level; through three case studies that cover different types of coastal management in tourism destinations within New Zealand. This was followed by resilience assessment of each study area on defining the system components, factors affecting this system and key players and institutions controlling the coastal tourism destinations.

This preliminary resilience assessment finalised by positioning each case study at certain stages within within Holling's adaptive cycle and Butler's tourism life cycles using data from initial indicators and other data analysis methods. This positioning of the case studies was accompanied with an explanation about each stage's characteristics and the future scenarios for these case studies based on the study findings.

For example, following the Christchurch earthquakes in 2010 and 2011 an unpredictable change, tourism was negatively affected in Akaroa with a decline in the number of tourists in the township. These changes included the declaration of the Akaroa Harbour Marine Reserve in 2012 and increased coastal protection of the marine reserve through cooperation between ECAN and DOC.

These changes led to the social and ecological systems in Akaroa entering a stage of self-reorganisation as shown in Figure 6 to cope with the outside pressures. Although this means that the socio-ecological system in Akaroa is resilient, it is not to say this delivers a sustainable outcome.

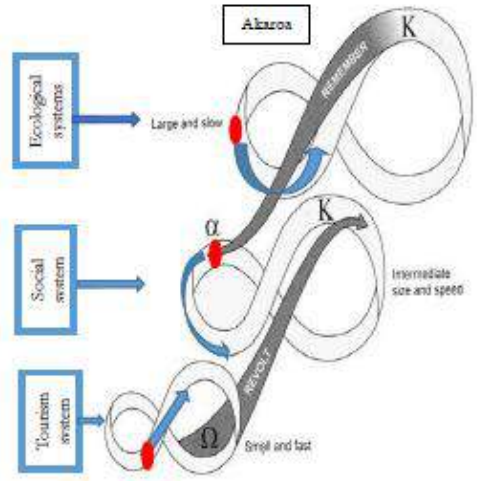

Figure 6 –Results of preliminary assessment of systems in Akaroa shown in panarchy model

Tourism activity in Akaroa has also proved to be resilient by seizing the opportunity to replace Lyttelton as a cruise ship stop, rejuvenating the tourism activity again, and even exploiting the resources. However, these changes have caused pressure on the coastal marine area, which means it could be an unsustainable system in the long term. In Akaroa, the aim is to maximise the economic benefit of the harbour through marine farming and encouraging coastal tourism development and recreational facilities. However, although this proves the resilient character of the socio-ecological system in the area to cope with these changes, it does not ensure that the systems are in or heading towards a sustainable status. The resilience assessment model indicates that the social and ecological systems may be moving into an exploitation phase.

The situation in Whitianga is different, as shown in Figure 7. The increasing tourism activity has resulted in changes in the social system to respond to this growth. However, although the systems appear to be resilient regarding tourism activity, this does not reflect the status of the ecological systems that are neither resilient nor delivering sustainable outcomes.

These results, based on the preliminary resilience investigation, also explain the future direction in which the systems are heading. More exploitation/ growth in tourism activity could cause pressure on the ecological systems and that in itself could initiate a response from the social system to try to adapt to these changes.

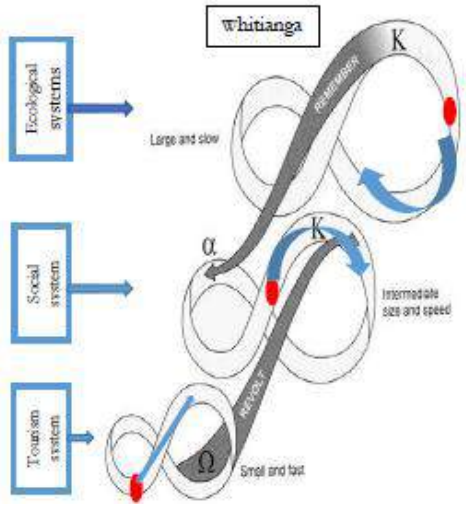

Figure 7: Results of preliminary assessment of systems in Whitianga shown in panarchy model

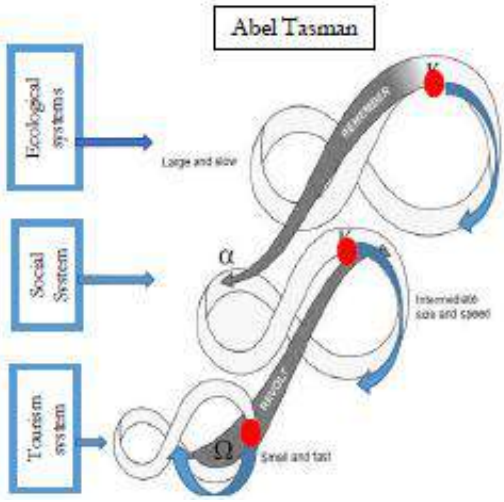

Figure 8: Results of preliminary assessment of systems in Abel Tasman shown in panarchy model

According to the preliminary resilience investigation, the systems in Abel Tasman reflect conservation status in the panarchy model as shown in Figure 8. This status of the system is due to the character of Abel Tasman as a protected area (national park) under strict regulations, with full control of tourism activities and close monitoring from DOC and the unitary authority. However, due to the absence of clear indicators assessing sustainability, it is hard to evaluate the systems' sustainable status.

Also, complicating results is the ambiguity in defining resilience in complex systems, the misuse of resilience theory as a unifying assessment method beyond its potential by many researchers, as well as the complexity and multidimensional nature of tourism.

Furthermore, resilience assessment was limited due to the lack of appropriate definitions of benchmarks, bottom lines, and locally developed indicators to assess these destinations in New Zealand. These factors also showed the absence of empirical measures/ indicators to assess the effects of tourism on the coastal areas in New Zealand. The analysis of the regional plans and regional coastal plans showed the absence of critical resilience thinking in the New Zealand governance process. Overall, policies are moving towards the preservation of the status of the coastal areas and their ecological systems based on an engineering resilience approach, rather than enhancing their quality based on an ecological resilience approach.

Moreover, these plans do not define whether the systems are heading towards a sustainable status. The main focus of these plans is not to improve the outcomes (except some scattered efforts by DOC, and NGOs to improve the status of ecosystems such as in the case of Abel Tasman), but rather to keep the systems functioning in their current status after any disturbance, regardless if this original status is desirable/ sustainable or not. The same situation is evident in the district plans, where the regulations and coastal defence mechanisms are moving towards hard engineering solutions – such as hard concrete sea walls and other precautions – to protect coastal development against natural hazards. The adoption of soft engineering solutions, such as regeneration of wetlands and conserving sand dunes, is still not considered the norm when dealing with coastal issues. Arguably, more sustainable ecological measures could sustain coastal development and enhance the resilience of the socio-ecological system at the same time – as has proved effective in cases such as Abel Tasman National Park and parts of Whitianga.

Also, the district plans currently focus on regulating development with controls on land subdivisions and infrastructure. The plans do not promote the use of innovative ideas that control coastal development while considering socio-economic and environmental factors. Therefore, the plans do not connect future development with activities such as tourism, and there is no clear discussion on tourism's role in enriching the local economy, its effects on the coastal areas, and its ability to enhance the resilience of socio-ecological systems in the case study areas.

Moreover, regarding integration between different organisations and plans to achieve sustainable outcomes in these coastal destinations, the research showed the lack of vertical integration between

governmental agencies responsible for the coastal area, especially in the case of connection between regional and district councils. Furthermore, central government agencies such as MfE, play a weak role in contributing to sustainable coastal development. The lack of horizontal integration in the local coastal communities the local iwi, the private sector, and local NGOs, was evident in the case studies of Akaroa, and Whitianga. However, the integration was better in Abel Tasman National Park as a marine protected area.

6 CONCLUSION

To deal with such complex systems, approaches such as socio-ecological resilience are more applicable than other approaches. Socio-ecological resilience aims to recognise the components of these complex systems, understand their internal relationships, and identify the challenges and opportunities facing these systems. The preliminary resilience assessment revealed that tourism activity could have a positive effect on the sustainability of ecological systems through encouraging environmental protection programs. This effect can be seen in the case of Abel Tasman, where tourism pressures generate more conservation efforts to adapt to these changes. A similar practice happens in Whitianga where the need to retain the level of tourism encourages local authorities to protect the beach from coastal erosion to keep it as a popular tourist destination.

However, one of the main factors that could ensure that the positive impacts of tourism are maximised and its negative impacts are minimised is practising forms of tourism that increase the sustainability of the ecological systems. The results of this study showed that although tourism activity is sustainable in certain locations such as in the Abel Tasman case, there is not enough evidence about the spread of this practice among New Zealand coastal tourism destinations due to the following factors:

Firstly, analysis of tourism practice in the three case studies did not fit the criteria of sustainable tourism. Each area's dependency on tourism activity is increasing, with a growing desire to gain economic revenue from recreational activities. Protection of coastal areas is not happening at the same speed, with some out-of-date plans that need reviewing, such as the Waikato Regional Coastal Plan that includes Whitianga, or limitations in the budget to implement permanent coastal protection measures, as in the case of Akaroa.

Secondly, resilience assessment using indicators and positioning of the case studies in Holling's adaptive cycle and tourism life cycle showed that two case areas – Akaroa and Whitianga – are facing different levels of pressure on their coastal areas. There are signs of mass tourism syndrome affecting the nature of these main destinations.

Thirdly, Abel Tasman National Park is protected and managed under the restricted control of DOC in cooperation with the Unitary Authority of Tasman District Council (TDC). Therefore, it is a special case in that it is one of the national parks in New Zealand – a status that few areas can attain.

Therefore, all these gaps at the theoretical and practical level revealed by evaluation of the case studies require decision makers, managers, and researchers to create a clear definition of what is the desired status and what kind of positive outputs coastal areas should reach. When evaluating resilience in a coastal tourism area, it is important to clarify what kind of resilience is being assessed, what kind of systems are the focus of this measurement, what the stages are, and what the goal of that assessment process is.

BIBLIOGRAPHIC REFERENCES

Becken, S., Wilson, J. & Reisinger, A. (2010). Weather, climate and tourism a New Zealand perspective (Land Environment and People research report; no. 20). Christchurch, N.Z.: Lincoln University.

Blackett, P., Smith, E., Rouse, H., Hume, T., Rickard, D., Hume, A., Bell, R., Ramsey, D., Dahm, J., Wishart, P., Singleton, P. and Pickett, V. (2010). How can we engage with coastal communities over adaptation to climate change: A case study in Whitianga on the Coromandel Peninsula. Retrieved from http://www.niwa.co.nz/sites/default/files/import/attachments/blackett-et-al-2010-nzpi.pdf/

Brake, L., & Peart, R. (2013 b). Caring for our coast: An EDS guide to managing coastal development. Auckland, N. Z.: Environmental Defence Society.

Brand, F. S., & Jax, K. (2007). Focusing the meaning(s) of resilience: Resilience as a descriptive concept and a boundary object. Ecology and Society, 12(1):23. Retrieved from http://www.ecologyandsociety.org/vol12/iss1/art23/

Cote, M. J., & Nightingale, A. (2012). Resilience thinking meets social theory: Situating social change in socio-ecological systems (SES) research. Progress in Human Geography, 36(4), 475-489. DOI: 10.1177/0309132511425708

Creswell, J.W. & Miller, D.L. (2000) Determining Validity in Qualitative Inquiry, Theory Into Practice, 39(3), 124-130, DOI: 10.1207/s15430421tip3903_2

Department of Conservation (2010). New Zealand Coastal Policy Statement 2010. Wellington, N. Z.: Policy Group, Dept. of Conservation. Retrieved from http://www.doc.govt.nz/Documents/conservation/marine-and-coastal/coastal-management/nz-coastal-policy-statement-2010.pdf

Department of Conservation (2014). Waikato Conservation Management Strategy 2014-2024. Wellington: DOC. Retrieved from http://www.doc.govt.nz/Documents/about-doc/role/policies-and-plans/waikato-cms/waikato-cms-volume-one.pdf

Derissen, S., Quaas, M.F., & Baumgärtner, S. (2011). The relationship between resilience and sustainability of ecological-economic systems. Ecological Economics, 70(6), 1121-1128. DOI: 10.1016/j.ecolecon.2011.01.003

De Vaus, D.A. (2002).Surveys in Social Research. (5th Edition). Australia: Allen &Unwin press.

Environment Canterbury Regional Council (2013). Canterbury Regional Policy Statement 2013. Retrieved from http://ecan.govt.nz/publications/Plans/canterbury-regional-policy-statement.pdf

Fath, B.D., Dean, C.A., & Katzmair, H. (2015). Navigating the adaptive cycle: An approach to managing the resilience of social systems. Ecology and Society, 20(2), 24. DOI: 10.5751/ES-07467-200224

Glenn A. B. (2009). Document Analysis as a Qualitative Research Method. Qualitative Research Journal. 9 (2) pp. 27 – 40. http://dx.doi.org/10.3316/QRJ0902027

Harvey, N. (2006). Global Change and Integrated Coastal Management, the Asia-Pacific Region: Coastal systems and Continental margins series. Australia: Springer.

Holling, C. S., and Gunderson, L. H. (2002). Resilience and adaptive cycles. Pages 25-62 in L. H. Gunderson and C. S. Holling, (eds). Panarchy: understanding transformations in human and natural systems. Island Press, Washington, D.C., USA.

Local Government Act 2002 Amendment Act 2014. Retrieved from http://www.legislation.govt.nz/act/public/2014/0055/latest/DLM5706806.html

Luthe, T., & Wyss, R. (2014). Assessing and planning resilience in tourism. Tourism Management, 44, 161-163. http://dx.doi.org/10.1016/j.tourman.2014.03.011

Ministry for the Environment (2009b). Coastal land development note. Retrieved from http://www.qp.org.nz/plan-topics/coastal-land-development.php

Olsson, L., Jerneck, A., Thoren, H., Persson, J., & O'Byrne, D. (2015). Why resilience is unappealing to social science: Theoretical and empirical investigations of the scientific use of resilience. Science Advances, 1(4), 1-11. DOI: 10.1126/sciadv.1400217

Pisano, U. (2012). Resilience and sustainable development: Theory of resilience, systems thinking and adaptive governance. European Sustainable Development Network Quarterly report No. 26. Retrieved from http://www.sd-network.eu/quarterly%20reports/report%20files/pdf/2012-September-Resilience_and_Sustainable_Development.pdf

Resource Management Act, No. 69. (1991). Retrieved from http://www.legislation.govt.nz/act/public/1991/0069/latest/whole.html

Statistics New Zealand (2013). Tourism Satellite Account: 2015. Wellington: Statistics New Zealand. Retrieved from http://stats.govt.nz

Strunz, S. (2012). Is conceptual vagueness an asset? Arguments from philosophy of science applied to the concept of resilience. Ecological Economics, 76, 112-118. DOI:10.1016/j.ecolecon.2012.02.012

Walker, B. H., Holling, C. S., Carpenter, S. R. & Kinzig, A. P. (2004). Resilience, adaptability and transformability in social–ecological systems. Ecology and Society 9(2): 5. http://www.ecologyandsociety.org/vol9/iss2/art5

World Commission on Environment and Development (WCED) Bruntland Commission (1987). Our Common Future. Oxford: Oxford University Press.