APPRAISING THE COMPATIBILITY OF COASTAL HOTELS FOR CARBON CONSCIOUS TOURISTS: A FOCUS ON SHARED SPACES OF HOTELS IN GALLE

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Abstract: Due to the intensified global green house gas emissions,specially from the tourism sector has now highlighted the demand for accommodations which have aligned with carbon conscious travel (CCT) preferences. This study therefore embarks on evaluating the compatibility of coastal hostels in Galle, Sri Lanka for the carbon conscious tourists and the commitment of shared spaces in these hotels when it comes to low operational energy. Forming an integrated framework combining carbon management hierarchy (CMH) principles with carbon trading concepts and passive -active architectural strategies, this research develops a three part assessment criterion, which is Tradable Active Additionality (TAA), Tradable Passive Additionality (TPA) and carbon conscious travel/user (CCT/CC-user)behaviour. Selecting six accommodation establishments as case studies for three categories through global customer reviews using qualitative sampling and further by in site observations, interviews , questionnaires and marked through a scorecard. These gathered data represents smaller scale establishments are more prone to passive architectural performances, micro climatic responses and user centralizes energy consumption behaviour. This do make these establishments more suitable for carbon conscious travelers and also specifically sorted by them.While smaller scale establishments perform like that the larger scale chain hotels relies more heavily on active systems and shows potential on TAA but inefficiencies in those systems were also noted. The study concludes as the passive architectural strategies seems to be more effective in lowering operational energy while TAA systems offer an longer term carbon trading (CT) readiness. Even the option of CT is available for the establishments the amount of awareness and use of this programme seems to be low to none. This proposed assessment framework enables a holistic strategical tool to identify,assess, low carbon improvement potential in costal hotels and pave a pathway towards an island with future advancements like CT and low operational energy built environments.

Keywords: *Sustainable Tourism, Carbon Conscious Travel, Carbon Trading, Offsetting, Architecture Strategy*

1. Introduction

The activity called 'travel' is one of the earliest behavioral acts of civilizations, and this happened, as J.P.R.C. et al. (2021) mentions, for religious matter, exploring or as a conquest. Today it may sound as travel, or tourism, which has become a major industry when it comes to the global economy. However, there are some concerns about the contribution of the tourism as an industry towards a sustainable world. The world being very conscious of the carbon footprint due to the global temperature rise and climate change triggered from greenhouse gas (GHG) emissions and various industries are directly or indirectly responsible for the phenomena.

According to UN-Climatic Action, climate change can be introduced as, long term changes of temperature and weather patterns that may happen due to various natural or man made activities (UNCA,2018). Though after 1800 the human activities seem to be the fastest growing contributor when it comes to these activities. Burning fossil fuel do emit major amount of greenhouse gases which ultimately wraps around the earth and the GHG gases like co2 and methane makes the earth temperature rise in abundance. It is stated that the current temperature is 1.2'c higher that what it was back in 1800 and human activities like, agriculture, transport, energy, construction are some of the major contributors (Hausfather, 2024).

According to rariel (2018), the sustainable tourism was defined as sustainable practices which are done in and by the tourism industry which acknowledges the both positive and negative impacts and are trying to minimize the negative and improve the positive impacts. Which emphasizes on the economic, environmental and social impacts and its balance. Sustainable tourism does not seem to be a still subject and adapts, improves and generates its influences day by day with new interventions, novel thinking and global trends for sustainability.

The tourism accounts for 8% impact on total global emissions, 75% of that emissions are transportation related and 55% linked to aviation which makes it a contrasting contributor (Gössling & Peeters, 2015; Lenzen et al., 2018). Therefore the accommodation establishments have now become a major compensatory body for such unavoidable emissions like tourism related aviation, regarding operational energy mitigation via design and management strategies (Agarwal et al., 2024; Keynes, 2024).

As a responsible way of traveling throughout the world, this carbon conscious travel (CCT) seems to be a novel way of

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interpreting the sustainable thinking towards the tourism industry. The responsible travel includes the idea of limiting the carbon footprint of the tourists stay while doing the travel. Therefore, sustainable practicing accommodations, restaurants and hospitality industrial adaptations were done to compensate and create the facilities to attract responsible travelers all around the world (GSTC, 2024).

Moving on to the accommodations, as to the global studies it is clear that hotels have become energy intensive buildings due to the 24hr around the clock performance as a service platform with numerous services for the guests (Filimonau et al., 2011). As Luo et al. (2020) mentions, low carbon tourism goals can be achieved only by shifting towards the renewable energy resources, carbon offsetting, green building architectural practices and finally adoption of bio climatic strategies. As Widera (2015) mentions, bio climatic architecture is an approach to integrate the building to the local climate and reduce energy consumption through architectural passive designs and material input.

As the global spotlight for this sustainable accommodations are very much given, in Sri Lanka such momentum is not widely seen. Specially, such documentations are more limited to urban hotel practices, more centered around Colombo (Abeydeera & Karunasena, 2019). Which leaves a gap in understanding the operational energy use, low carbon architectural strategies, carbon management in such tourist hot-spots like southern coastal belt, like Galle. In these establishments carbon performances in shared spaces which energy demand is noted as high due to human input, ventilation, lighting and cooling requirements (Benson, 2013). Therefore the gap becomes clear by highlighting the availability of the case studies and cause for the research.

Addressing this gap makes the sustainable practices in hotels evolve into more wider and deep state, where low carbon practices, operational energy manipulation and even carbon trading concepts. This notion can be further strengthened by combining the passive architectural strategies, energy efficient technologies and renewable energy integration in to these establishments while investing on concepts like carbon markets, credits which aligned with clean development mechanism/CDM (UNFCCC, 2024). In this research the chosen establishments are not just evaluated as designs or operations but more as carbon management hierarchy, where mitigation precedes offsetting and passive,active architectural strategies that works alongside carbon trading principles.

The research aims to uncover the compatibility in these coastal hotels with carbon conscious travelers and evaluates the mitigation strategies that the shared spaces have already taken and could've taken in order to lower the operational energy. The modern involvements with the CCT trends with these hotels are also evaluated such even introducing assessment concepts such as Tradable Active and Passive Additionalities (TAA/TPA) which are merged with carbon trading eligibility criteria, so that the expansion goes beyond from just evaluating the performance to future market investments.

2. Literature review

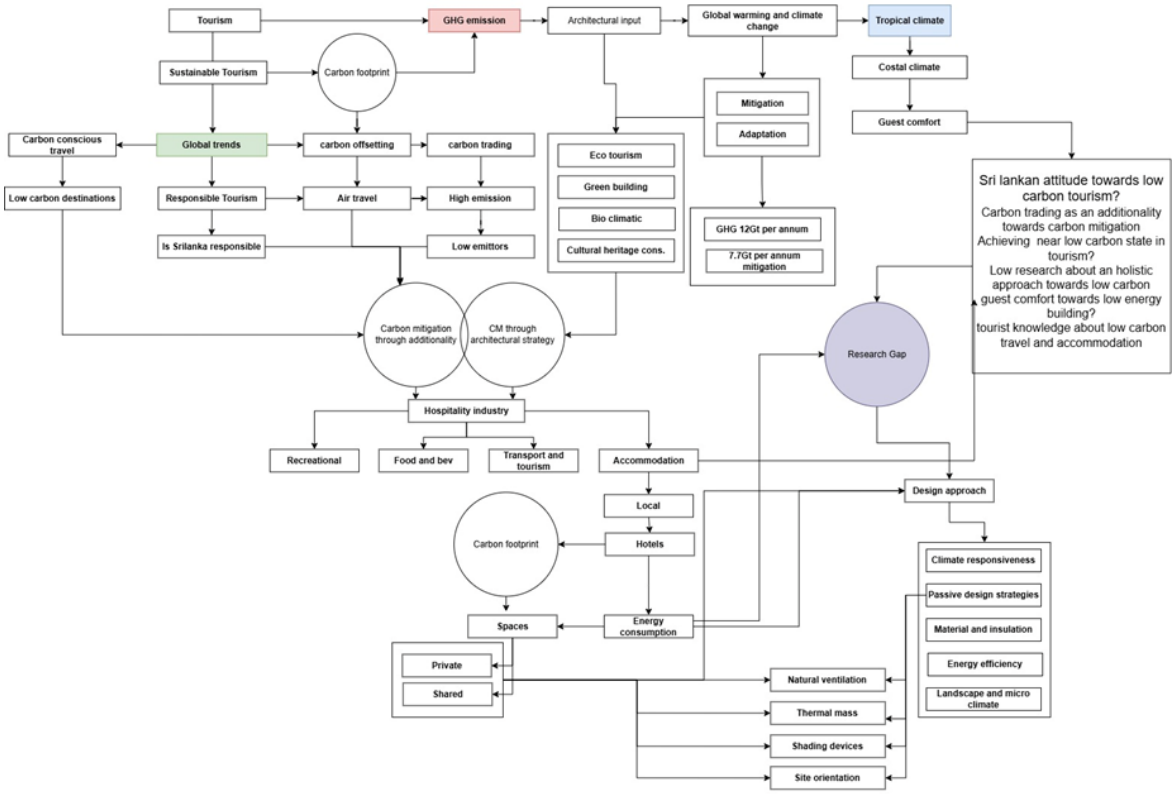

Figure 1: Research gap mapping *(Source: Author)*

As to the research gap it is very clear how the hospitality industry is with the gap for research data regarding sustainable approach and approach to design interventions as extended proposals of carbon trading initiatives. Accommodation as a facilitator in the tourism industry, globally faces the challenge of carbon mitigation and adaptive methodologies for lesser carbon emission from accommodation buildings and operational energy usage.

This chapter further explains the theoretical foundations that were introduced in the chapter one, examining how Carbon Management Hierarchies and carbon conscious travel interconnects within low carbon tourism. While the global stage adopts responsible travel practices day by day, the hospitality sector specially the the accommodation can be highlighted as critical yet underutilized domain for carbon mitigation(Lenzen et al.,2018; WTO & ITF, 2019). Due to the air travel being a major emitter in the industry accommodation sector seems to be a sector with much potential to maximize the mitigation ability and counter the carbon exchange, therefore this chapter explains such theoretical adaptations further with regarding to the hotel buildings and shared spaces.

2.1. CARBON MANAGEMENT HIERARCHY (CMH) TOWARDS DE CARBONIZING TOURISM

According to Horgan and his carbon management hierarchy which seems to be very similar to waste management hierarchy which prioritizes the, reduce, reuse and recycle this unique hierarchy addresses a framework of avoiding to compensation stage. This is very suitable framework for systematic stage cooperation towards a mitigation role (Mazhar et al., 2024).

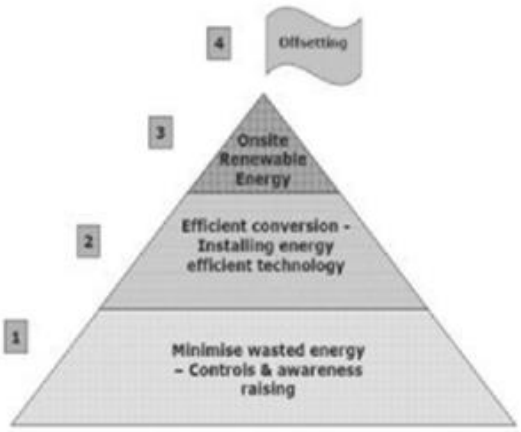

Figure 2: Horgan's carbon M. hierarchy
(Source: A review and case study of strategic carbon management in UK higher education sector (2011))

It is clear that when it comes to the mitigation methods, according to the hierarchy minimizing wasted energy and installing energy efficient systems, as to NJ Green Building Manual (2013) such like is using high performance HVAC systems, efficient glazing or automated control units, seems to come beforehand the offsetting, which should be considered as a last resort. Therefore, while using carbon offsetting as a financially valued system for co-existing with other high emitters and mitigating an unavoidable emission the study could cater on avoidable emission mitigation through efficient building technologies and adaptations (Mazhar et al., 2024; WWF, 2020).

Therefore it is clear that this hierarchy is critical for tourism accommodations for its pathway towards low carbon efforts.

2.2. CARBON OFFSETTING

As to the Lenzen et al. (2018) this system supports activities such generates verified emission reduction sinks such as reforestation and it can be mentioned as a counter measure for emissions done by various entities with human conduct. Therefore, it can be mentioned as a method created by countries or other entities to balance out their emissions to reach to a carbon neutral state to achieve their climate goals. These offsets are measured in metric tons of carbon equivalent (tco2e). Though these offsets are measured, it still need value to make it sell able. Due to that carbon credit amount for each ton were accumulated and carbon markets used for trading. This ability to offset is possibly seen in built environments due to the availability to design, in that scenario these accommodations do present a valuable potential for far growth and adapt this system by widening the horizons.

2.3. CARBON TRADING (CT) AND CARBON MARKETS (CM)

According to the World Tourism Organization (UNWTO) & International Transport Forum (2019) carbon trading means a market-based exchange format to reduce the GHG emission. Therefore companies, corporations get to emit a certain amount of GHGs for a price that will be invested to emission mitigate programs. Though this is the economical interface of the term, the conceptual ideology runs much deeper. The ideology of mitigation by one way or another seems to be the core.

According to European Commission (2023) Carbon market is a method created to achieve climate targets and to implement climate actions via creating a platform for credit buy and sell, after creating a carbon pricing strategy for carbon emissions.

This market scenario is more of an economical solution for climate change by creating value for capped emissions. There are two carbon markets,

1. Compliance markets - Using the cap-and-trade methods, this market gets under a regulatory body giving access to extra credits after keeping the emission under the mandated amount. All the participants are obliged to maintain a certain margin when it comes to emissions and credit exchange. Most cooperates are invested in this method due to large bodies of assets and high growth of the market.

2. Voluntary carbon markets - This market participants are not under any obligations to any authority. These parties are allowed to achieve their own set targets such like net zero or carbon neutral states by offsetting on their own accords (UNFCCC, 2015; European Commission, 2023).

2.3.1 Carbon trading criteria

With regards to the emission trading systems and carbon offset markets there can be seen several principles driving and guiding the carbon trading programs making these more tangible, accountable, climate responsive and giving reliable data for analysis, and these principles are as, Cap and trade, additionality, prevention of leakage and transparency (UNFCCC, 2015).

These principles are later used in this research in order to develop the holistic framework, specially the tradable addionalities, TAA and TPA.

2.4. ONSITE RENEWABLE ENERGY INTEGRATION (REI) AND EFFICIENT CONVERSION (EC) OR ENERGY EFFICIENT TECHNOLOGY

Moving to the next steps in the hierarchy, interventions that directly links to TAA development could be found. An one as follows is the shift to renewable energy sources on site. In this sector, there is not much to shortlist but to implement that renewable energy such as solar power, wind power, Geo thermal and bio mass energy utilizing like sources (NJ Green Building Manual, 2024).

Next is the efficient conversion, the output or controlling the main emissions of a system. Basically, the input output scenario matters in every system and therefore the system being efficient is very important. In current scenario building itself can be identified as the system and the input energy and output ratio is important, input being the energy consumption of the building system and output being the GHG emission through operational scenarios. By making the building itself efficient, the emission can be mitigated. Mentioned above, shifting to renewable energy sources can also be named as a reduce tactic but efficient system implications can be the extended step (NJ Green building Manual, 2024).

2.5.AVOID WASTED ENERGY (AWE)

This is at the top most in hierarchy of the carbon management. According to Mazhar et al. (2011) Horgan's hierarchy was important when it comes to the managing Specially avoidance being the first step in mitigating carbon. This basically can be identified in two methods in applicability,

1.Altering operational energy- active and passive
2.Conscious use.

When it comes to altering operational energy, active systems are discussed in earlier steps for renewable energy shift and efficiency in systems. The passive ways to alter operational energy is very important due to the ability it process to a low BAU baseline. As for altering operational energy heavily relies on methods of operations and amount of energy consumed and released, conscious use is mostly about the user. It's about how conscious are the people around buildings and systems. (Wang et al., 2023).

2.5.1. Architectural passive design strategies for operational energy mitigation

While operational energy seems to surpass the embodies energy within a building life cycle, trying to mitigate the operational energy seems to be more sensible and to do that, passive architecture strategies are very important. These principles are also the basis of TPA framework. According to Chandra et al. (2024) passive designs reduces the need for external energy like fossil fuels, therefore less operational energy Business As Usual (BAU) scenario. These passive design strategies mainly use four cornerstones such as,

1.Climate analysis and comfort
2.Passive heating

3.Passive cooling
4.Day lighting. (SERC, 2016).

And bio climatic retrofitting enhances the environments through micro climatic improvements, suchlike, building orientation, window to wall ratio (WWR), thermal mass insulation, shading devices and daylight optimization (Rajapaksha et al., 2015).

2.5.2. Carbon conscious travel (CCT)-use and human behaviour
According to the paper, low carbon travel behaviour in daily residences and tourism, the low carbon travel behaviour (LTB) is being explored and it mentions that, integration of the theory of planned behaviour (TPB) and attitude behaviour context (ABC) can promote the sustainable traveling (Wang et al., 2023).

In theory of planned behaviour (TPB) it mentions that intention has three factors for influence,

1.Attitude (LTA) - positive or negative evaluation of low carbon travel
2.Subjective norms (LTSN) -social pressure and influence to adapt LTB
3.Perceived behaviour control (LTPB) - perceived ease or difficulty performing.

According to the study TPB predicts that all LTS, LTSN and LTPB all influence the LTB for daily traveler's behavioral intention (LTI) and actual behaviour (LTB) but for tourism destinations, only LTA put the influence significantly (Wang et al., 2023). And also, ABC predicts that in tourism scenario, contextual/situational factors like, costs, policies. Cultural values have the influence over choosing or not choosing LTB.

2.6.THE COMBINED ACT OF CT, CMH AND CCT
The CCT is like an adhesive which strengthens the utilization of active and passive strategies in a user central scenario. Which inspires the development of an assessment model, which is the key part of this research. Therefore by connecting all the above mentioned factors, a holistic framework that governs an assessment model is created, by introducing key figures like, TAA and TPA with the adhesiveness of CCT which paves a solid future with newer opportunities that are directly linked with CT and such oriented markets in globe. This will grant an array of opportunities, specially oriented around the built environments, in this scenario, 'tourist accommodations in Galle'. This framework allows to assess the hotels in various aspects regarding architectural interventions and tourist psychology.

3. Holistic approach of frameworks

Here aims to create a interconnecting web, with CT, CMH and CCT. This holistic framework will be in aid to create a criterion for assessing the case studies and attempt to analyse the current facade of Sri Lankan approach towards the sustainable tourism. The framework is created to represent a united column that develops and connects the characteristics of each key concept and connect them with mutually respected links to work as a combined unit of assessment tool.

3.1. CREATING A TRADABLE ACTIVE ADDITIONALITY (TAA)
This is an initiative for introducing an active carbon mitigation technology which can also be included into an offset program by being correctly measurable and being an additionality for a business as usual (BAU) scenario. In these strategies the above-mentioned renewable energy shift is addressed through commencing active mitigation system additionalities into the existing BAU modules. As mentioned in a sustainable and efficient building strategy literature, it could be found that renewable energy shifts like, Photovoltaic (PV) systems introducing to roof tops and roofing, especially ones like building integrated photovoltaic (BIPV) systems which not only works as envelops or materials to roofs and surface facades but also generates energy (Ma et al., 2023). While this additionality is something arbitrary it can be considered as alien to BAU scenario which gives it the necessary value to be a project applicable to CDM criteria and offsetting credit market. Which also can be included into a hybrid system with both offsetting and passive scenario building, which also being addressed as 'integrative' approach in literature (Ma et al., 2023).

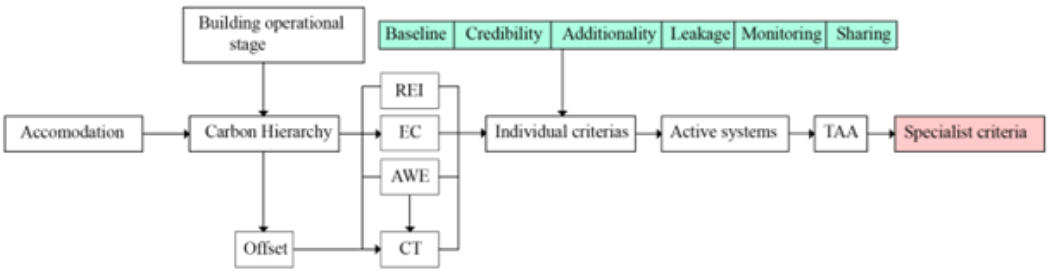

Figure 3: Framework for TAA (*Source: Author*)

3.2. CREATING A TRADABLE PASSIVE ADDITIONALITY (TPA)

This initiative is to integrate the carbon trading aspect into passive building designs, considering the passive additionality as a clear addition for a BAU scenario rendering a transparent, credible, leakage proofed system after careful monitoring and sharing the carbon mitigation benefits with all the stakeholders. Currently passive design strategies considered as long term investments for carbon mitigation (Ma et al., 2023).

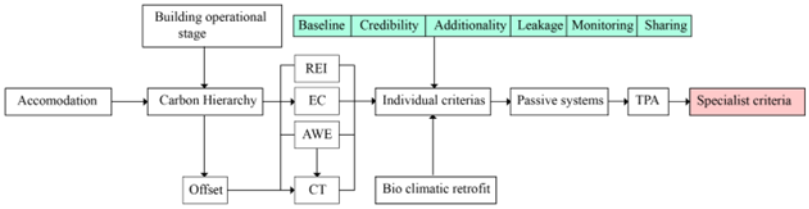

Figure 4: Framework for TPA (*Source: Author*)

3.3. CCT INSPIRED TAA AND TPA

Under the responsible tourism, CCT can be identified as a harbinger towards low carbon tourism and therefore inspiring TAA and TPA initiatives for a net zero (operational energy) accommodation. Then it is clear that these TAA and TPA initiatives should be connected with CCT as a framework, CCT being a main driving factor for low carbon tourism and net zero (operational energy) buildings (NZ(OE)B) completes the tasks after adapting TAA, TPA modern initiatives as solutions.

3.3.1. CC user framework towards NZ(OE)B initiatives

Carbon conscious traveling does not seem to be existing alone as for the findings of Wang. It seems to be relying on three major criteria which are, Attitude of the users (LTA), subjective norms from social elements like, beliefs (LTSN) and Perceived behaviour control (LTPB). Though all these three criteria have the 'user' as a common fact who actually decides how conscious the traveling and using energy is. Therefor though a framework the user attempt for being responsible in traveling reveals the need for low carbon travel and low carbon accommodation.

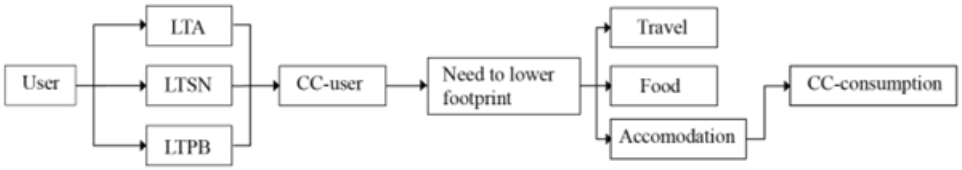

Figure 5:CC consumption framework (*Source: Author*)

3.4. HOLISTIC FRAMEWORK DESIGN

The holistic system was created by infusing, carbon management hierarchy, carbon trading principles and carbon conscious use and behaviour. The frameworks work as harbinger for assessment criteria and consists with three major parts mentioned in chapter three, TPA,TAA and CCT. The criteria created by these three forces are in active strategies and passive strategies. All the active and passive strategies were discussed in literature where the connection architecture and retrofitting adaptations.

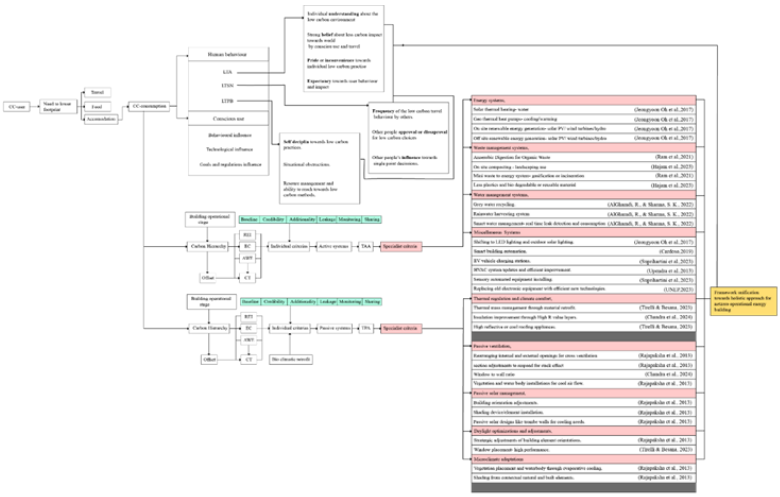

Figure 6: Holistic framework (*Source: Author*)

4. Research methodology

Even the criteria is done, the test cannot be done without forming several steps to follow to gain a clarity in overall methodology. In that case from case study selection, there are three steps taken regarding the methodology.

1. Case study selection criteria development
2. Data gathering methodology
3. Data analysis methodology

Considering the overall nature of the research a qualitative approach is taken towards data collection and regarding the case study collection a selective mechanism is used after observing the people opinion or review towards each case study as an option of a selection within many establishments. Therefore, that human opinion is valued asset when it comes to case study selection.

4.1 CASESTUDY SELECTION CRITERIA DEVELOPMENT

The dissertation is built upon the tourist industry in Sri Lanka, it is important in inquiring about the attraction aspect and accommodation aspect due to these two factors being major elements in research. Therefore, Galle district is very famous for its' scenic beaches and historical background. Not only that, The SLTDA published annual reports since 2019 repeatedly claims that Galle is the district next to Colombo that offers accommodations rather than any other district.

The case study macro site being chosen due to the major opinion of foreign tourists and several establishments were chosen due to checking the reviews from reservation sites.

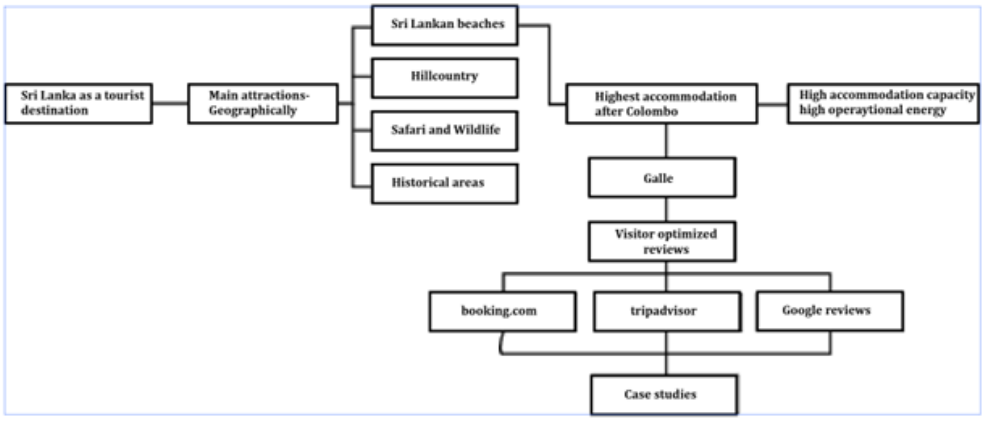

Figure 7: systematic approach (*Source: Author*)

As mentioned in the graph, several sites like, booking.com, tripadvisor, Travelmyth and google reviews were used to choose around 12 hotels and later focused onto six hotels as the case studies. As for the nature of the study choosing a specific hotel category is not a balanced approach and therefore the tourist review counts were chosen as a measurement to select the case studies. And while selecting, a careful demarcation and selection were issued by dividing the hotels into three review classes,

C1- Under 500 reviews
C2- In-between 500 - 1000
C3- More than 1000 reviews

Selected case studies, the review counts are noted on 12/28/2024 - 4.09PM Local time.

Trip advisor was used for review count due to being the most used platform for Sri Lankan hotel bookings and reviews, while booking.com is not as used and google reviews being contrast on local reviews.

C1 - 1. Huma Terra Eco Lodge - 55 guest reviews - TripAdvisor
2.KK Beach - 322 guest reviews TA
C2 - 1. Taprobane Waves - 501 - TA
2.Kahanda Kanda - 752 - TA
C3 - 1. Araliya Beach Resort and Spa - 1501 - TA
2.Radisson Blu - 2472 -TA

4.2 DATA GATHERING METHODOLOGY
As for the data collecting, there are few final outcomes that decide which data collection methods are the best to achieve the above-mentioned outcome. Therefore,

1. Data about carbon conscious travel and use in foreign tourists.
2. Building energy use data - outcome, energy intensive or not.
3. Building architectural adaptation data for TAA and TPA.

Then following these several data collection methods were used to get the much as possible accurate data for the final assessment process.

For, 1- Developed questionnaires and informal interviews with foreign tourists and hotel management.
2 - Gathering and analysing electricity bills and usage throughout a selected time period or photographic study in an unavailable data scenario for energy intensive uses in the premises.
3 - Through observations and informal interviews with hotel management by the author as an undergraduate professional (Architect).

4.3 DATA ANALYSIS METHODOLOGY
As the data were collected from the questionnaires, open ended interviews and observations, an assessment criterion should be represented in a analytical way for the data to be filled and the subjects assessed and analysed. In order to do that a systematic scorecard is introduced to analyse all the data.

Regarding the scorecard the LEED criteria and weighting system was adapted in assigning scores to the criteria and further improved the strength of the assessment method.

The holistic scorecard can be divided into three major categories,

1. TAA - part 1 and 2
2. TPA
3. CCT, CCU and guest behaviour.

At the end a grading could be revised as,

- 76-125- Progressing sustainable efforts
- 26-75 - Attempted sustainable efforts
- 0-25 - Poor sustainable efforts.

5. Case study findings

As for the case studies a sample case study can be discussed. The review includes the TPA , TAA and CC applications of the hotel according to scorecards.

Table 1: Wholistic comparison (*Source: Author)*

Criteria	Class one		Class two		Class three	
	Huma Terra	KK Beach	Kahandakanda	Taproban Waves	Araliya Beach	Raddison blu
TAA- 1	8	6	8	8	8	6
TAA- 2	8	4	12	8	20	16
TPA	24	14	24	12	8	14
CC	18	8	22	8	6	8
AS	0	0	8	4	0	4
Total points	58	32	74	40	42	48

The case studies are then compared at the end, with each class and overall giving an idea about how the TAA, TPA applications have been utilized in these hotels and recommendations in order to achieve a sustainable environment are discussed.

Thaprobane waves beach resort, C2 class-2.

Situated in Unawatuna, a major tourist attraction point in Galle. This establishment houses foreigners and locals too. As an accomplished establishment, the travelmyth has certified as one of the 10% in the world with the best pool. Trip advisor

also had certified the hotel in excellence since 2019.The hotel's shared spaces, Restaurant, Pool, Front lobby, Lobby, Gym, Kid's play area, Room access hallways.

5.1 FINDINGS RELATED TO TAA APPLICABILITY

According to the score card, 8/20 and 08/32 seems to both initial points taken to tradable active systems criteria. The hotel could be seen integrated with partial renewable energy methods, which is photovoltaic panels above roof. However this system seems to be not scaled properly and therefore covers the energy demand partially. However this introduction to renewable energy is highly valid due to in literature renewable energy introduction is a major requirement in TAA under CDM/VCM frameworks. Mechanical cooling is also one of the major methods of comfort gain but under utilized central A/C units and overestimation of split units have created more energy waste which hinders the renewable offset as NJ Green Building Manual (2024) highlights the importance of efficiency. Major suggestions for efficient air conditioning system and smart automation to minimize waste. Creating baseline to measure the offset and enroll the establishment into the carbon markets.

5.2 FINDINGS RELATED TO TPA APPLICABILITY

This hotel can be considered as with low but some passive architectural strategies taken towards the comfort of the shared spaces. As mentioned in scorecards, 12/40 which is a low amount considering all the passive criteria. The scorecard is made to identify passive and additional strategies but regarding the initial orientation and the linking of lobby spaces with air canal with cross ventilation can be considered as a plus point. Use of material can be very limited and only typical building materials are used. Reflective materials are not used much and by using high R value material as retrofitting they might be able to reduce the heat loads. Very low use of shading devices and high daylight exposure which builds heat inside certain spaces like the restaurant, due to the use of typical glazing. The Room passageways are open and with shading devices, which also can be a passive way of implementing strategies.

Microclimate utilization is also very low, specially the use of ventilation. This makes the findings are not designed early on when it comes to the architectural input and mostly forcefully embedded as plaster solutions. As Rajapaksha et al. (2015) mentions, the utilization of micro climate is very important for operational energy mitigation, but this establishment has not done adequate for report.

5.3 FINDINGS RELATED TO CC TRAVEL AND USER BEHAVIOUR.,

The user has been identified as not regarding 'sustainability' as a requirement while booking the hotel as their accommodation stop for the tour. Specially, considering the advertisement of sustainable amenities and amount of depicting as a sustainability practising accommodation is very low, initially the foreigners who book the hotel are also seem to be not prioritising the sustainability while they choose their stay, the questionnaire results showed 8/10 respondents have not prioritized sustainability as a criterion for selection. That could be changed with the initial approach to the publicity of the practices and also from the upholding and practices of the hotel management and staff.

6. Conclusion

The study examines how coastal accomodations in Galle, Sri Lanka by analysing data gathered from few selected establishments which are assessed according to the framework developed specially to identify current states of the shared spaces and how the architrecture in buit environment have responded to the operational energy practices and allisgns with the carbon conscious tourists expectations. In order to do that the assessment frame work covered a wide range of practices connected with carbon management hierarchy, carbon trading ,passive and active architectural strategies and finally the carbon conscious travel behaviour, which created the holistic framework of TAA,TPA and CCT.

The findings as sampled in Thaprobane waves exhibits, a somewhat considerable potential for a low carbon accommodation, which is backed by currently established passive architectural responses to ventilate the shared spaces and active ways to introduce the renewable energy through solar panel integration. Which is currently starting to be what a CCT expects in a accommodation such like that.

The analysis confirms the smaller and mid scaled establishments hold a immediate potential for embracing passive strategies by simpler building forms, low occupancy density and more adaptable spatial configurations that most larger establishments fall harder to integrate as retrofitting. While these larger hotels seems to be relying more heavily on active systems. The research highlights the untapped potential in TPA and TAA in Sri Lankan context, aligning architectural strategies could be blended with carbon market mechanisms, but currently within the studied hotels non have showed engagement with the trading capabilities and even necessary knowledge about the concept. The overall study confirms that Lanka's coastal hotels do show potential in early stages of adapting the demands of carbon conscious travel. Taprobane waves as analysed in the sample shows the same capacity. Specially the CC user driven facilities were much highlighted in order to achieve the expected environments.

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