

Assessment of the Physical Carrying Capacity of the Batanes Group of Islands

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The United Nations World Tourism Organization (UNWTO) has identified carrying capacity to be a crucial part for sustainable tourism destination management.

UNWTO proposes the definition of carrying capacity as the “maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction” (UNEP/MAP/PAP, 1997)

Carrying capacity

The carrying capacity introduces a crucial factor in tourism planning as it is one of the mechanisms for establishing standards for sustainable tourism and destination preservation.



This study assesses the carrying capacity of tourist spots in Batanes Group of Islands with the consideration of the perspectives of the Ivatan as to how they value the sites in Batanes.



This study includes mathematical modeling for evaluating the carrying capacity that was modified after Boullon (1985) within an ArcGIS 10.2 environment and considering physical distance for visitors' comfort. The results integrated with the survey results on the Ivatans' viewpoint will be incorporated in the recommendation for tourism planning for decision makers, stakeholders, tour operators and the local community.

Ivatans' perspective



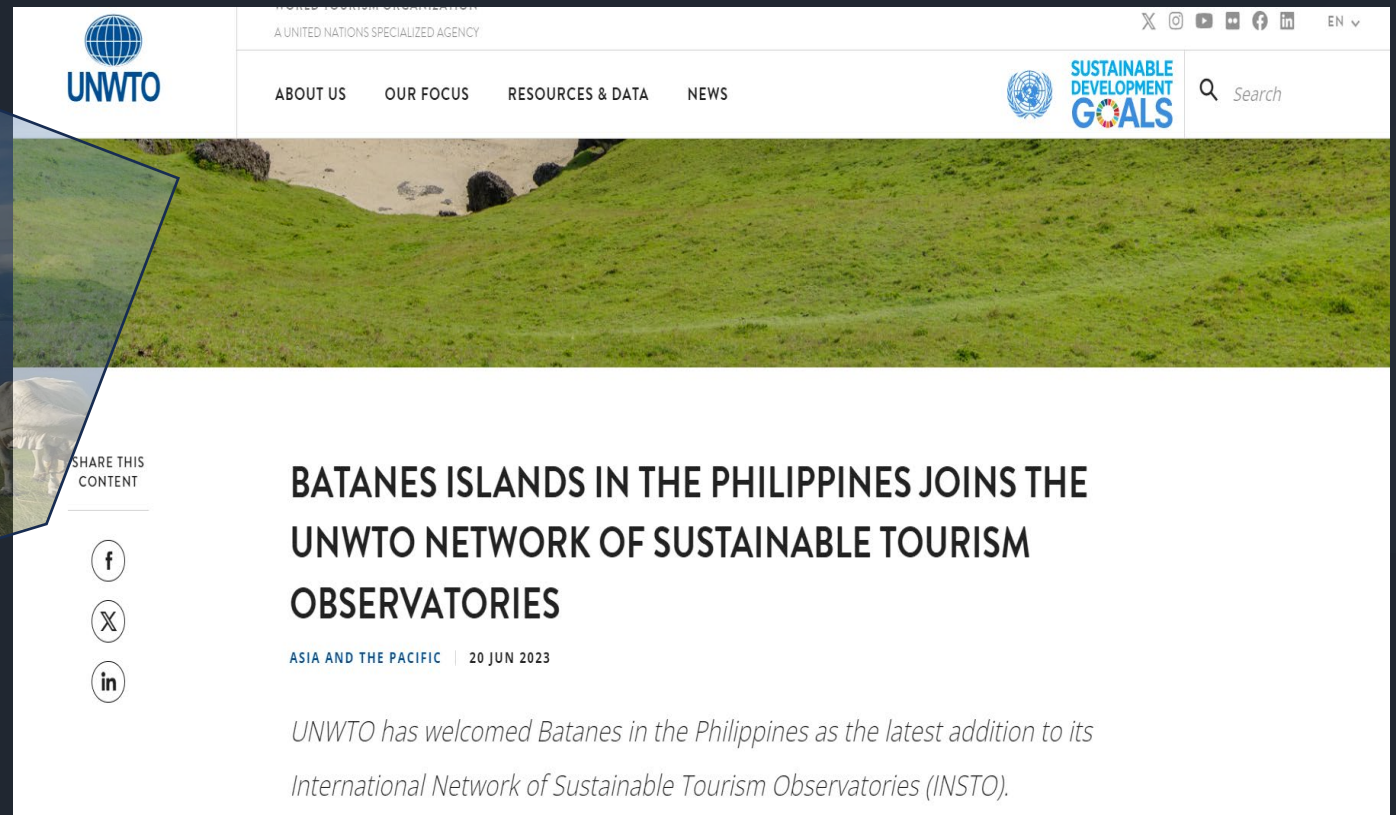
The significance of this study rests upon the imperatives of a policy-based framework that is deeply rooted in a participatory approach at the grass root level.



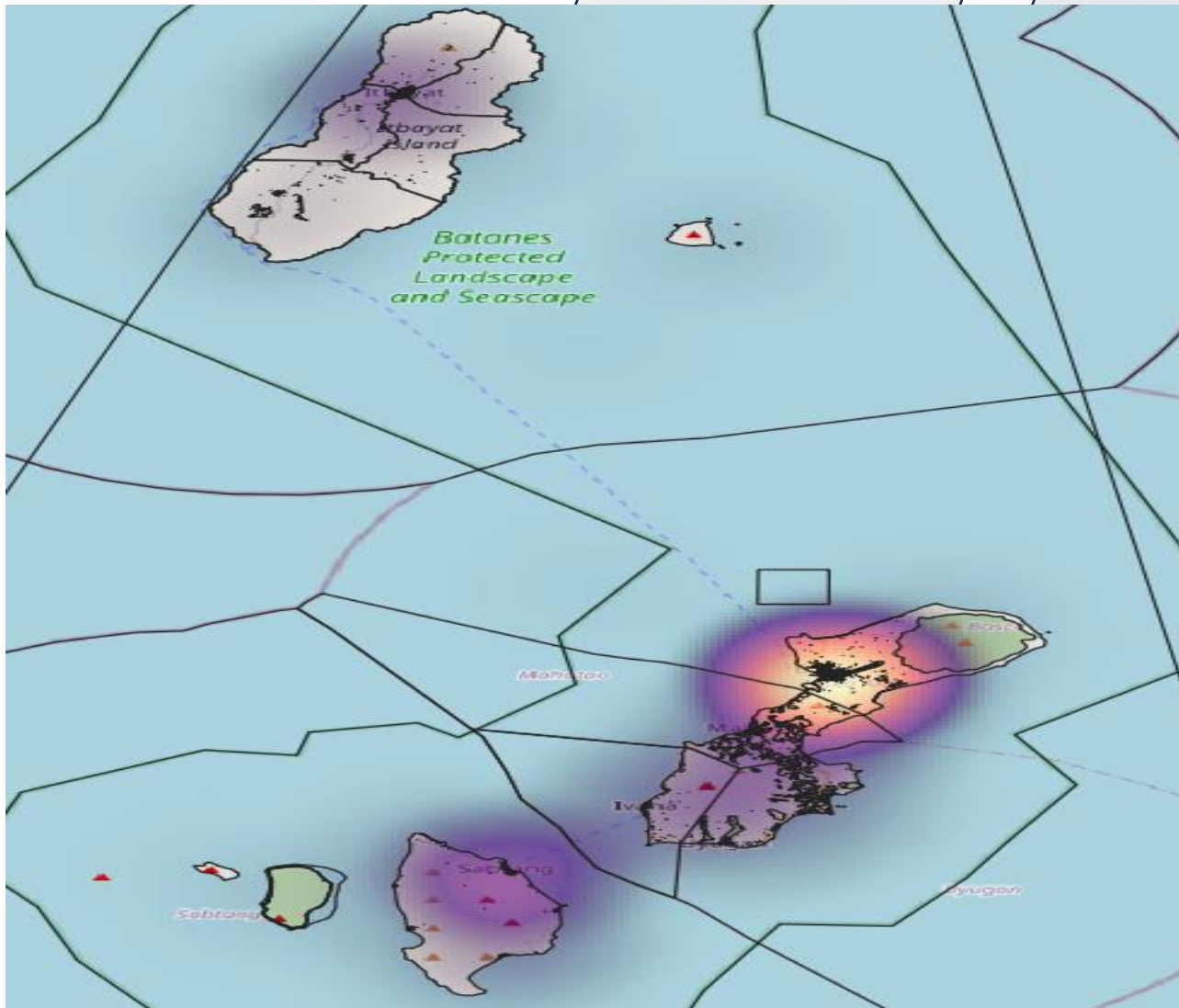
The principal objective was to examine how the Ivatans perceive Batanes as a tourist destination and the impact that current levels of tourism and hospitality are having.



This study is aimed at seeking to examine one of the four key priority issue areas (governance, carrying capacity limits, solid waste management, and resident satisfaction) that must be monitored which were identified by the stakeholders during the needs assessment activity conducted with the technical working group in 2019.



Batanes has just been included in the UNWTO-INSTO Network of Observatories, thus the tourist influx would greatly increase and, consequently, the need for control, planning and management for tourism. It is imperative that the carrying capacity of the tourist sites in Batanes will be determined and would be a valuable basis in addressing/forecasting possible tourism impacts and mitigating it.



Heat map of the 3 main islands of Batanes: Batan, Sabtang, Itbayat: Tourist spots and Accommodations

Clustering via Open Street Map

Philippine Republic Act 8991 known as the Batanes Protected Area Act of 2000:

It must also be noted that Batanes Islands is protected landscape and seascape. Under Philippine Republic Act 8991 known as the Batanes Protected Area Act of 2000: an act to establish the Batanes Group of Islands and islets as a protected area and its peripheral waters as buffer zones, providing for its management and for other purposes.

More noteworthy in Section 7 of the said act, it states that: **SEC. 7. Ancestral Lands and Domains.** - Lands occupied since time immemorial by the Ivatans shall be deemed never to have been public and shall be available for disposition according to the customs and traditions practiced by the occupying claimant under Ivatan customs and traditions as they evolve. In the absence of specific proof to the contrary, such lands shall be presumed to be claimed communally. Such ancestral lands and domains shall be identified, delineated and titled in accordance with the provisions of Republic Act No. 8371, otherwise known as the Indigenous People's Rights Act (IPRA). (Supreme Court E-library, 2001)

2013	5,175+
2014	17,013+
2015	25,382+
2016	27,394+
2017	30,823+
2018	50,207+
2019	45,439+
2020	10,600+ (onset of pandemic)
2021	borders were closed; travel was not permitted
2022	2,504+ (still with travel restrictions)
2023 until March	3382+ (borders are fully open)



**10 YEAR DATA ON THE TOURIST ARRIVALS IN BATANES
(BASCO AIRPORT TOURISM RESOURCE AND INFORMATION
CENTER, 2023)**

Methodology

- The formula for calculating the carrying capacity at the various tourist spots, the rotation coefficient and the total daily visits are modified after Boullon (1985) using the formula below. The area used by visitors is calculated in ArcGIS 10.2, where each area where visitors could remain is mapped as a polygon. The average individual standard is usually defined for each site by evaluating psychological comfort of the visitors based on 1 meter distance per person as per recommendations of DOH. Safety factors such as the terrain, accessibility and land condition were also considered for the boundaries. 8 hours as assumed accessible hours for the site. The following formula (1-2) were used to arrive at the carrying capacity results.
- (1) The adjusted rotation coefficient is calculated as:
 - $$= (\text{accessible area of tourist spot} / \text{Tourist spot with largest accessible area}) \times 8 \text{ hours}$$
 - (2) Basic carrying capacity = area of monument / individual standard
 - (3) Carrying capacity = Basic carrying capacity x Adjusted rotation coefficient

Pilot study results:

- In the pilot survey with **50 respondents** yielded the following results:
- 52% feel delighted to see tourists around their area, however, they also agree that during the peak season of April-July, transportation, food, and resources in general become a problem. In terms of restaurants and accommodation, the majority at 52% and 56% respectively are confident that there are enough for the tourists. They also agree that their local government unit is capable of managing tourist influx, especially during peak season (68%). The same data holds in terms of their confidence that they are prioritized in the resources vis-a-vis the tourists.
- In fact, they are happy to welcome tourists in Batanes as they feel positive about the future of Batanes whenever they see tourists around the area. They would actually want to showcase the following tourist spots: **Vayang Rolling Hills/Marlboro Country, House of Dakay, Nakamaya Burial Site, Sabtang Island, Racuh a Payaman, Valugan Boulder beach, Rapang Cliff, and Mt Iraya.**

Pilot study results:

- The critical points to note are the following: Despite sounding positive on the presence of tourists around the area and the majority are looking forward to peak season, a number of respondents preferred that some tourist spots like **Fountain of youth (Duirá), Mt Iraya, Ijang, Racuh a Payaman, Old Stone Houses, Nakamaya Burial Site, and (marine) Sanctuary should be preserved and should not be opened to the tourists.** One can note that the spots like Nakamaya Burial site and Racuh a Payaman have been mentioned in the earlier question—which tourist spots would they like to showcase, on the contrary though, some would like to have it preserved.
- In addition, a number of respondents at 60% and 40% respectively agree that there should be a limit to the number of tourists per season and there should be a limit to stay dates of tourists. They also agree that there should be a limit to the number of visitors per tourist area (56%) and that they prefer to have fewer visitors all year round (40%).

Main survey results:

- The main survey was done with 1060 respondents across the 3 islands of Batanes. The questionnaire was approved by the stakeholders and data collection commenced in the 2nd quarter of 2022
- A total of 27 questions on the assessment of carrying capacity sought ideas as to where tourists might be taken, the preferred duration of stay and types of tourists the islands should attract, the degree of comfort or discomfort experienced by the presence of tourists, and measures of how well tourism was being measured. Crucial to the survey was the question on which tourist spot/s would the Ivatans want to be preserved. The data were collected from residents of the administrative areas of Itbayat, Sabtang, Basco, and Basco South.
- 1046 who were willing to disclose their location: 174 lived on Itbayat, 386 on Basco, 391 on Basco South, and 95 on Sabtang.
- In **Basco** survey results show that majority of the respondents mentioned that they would like to showcase Racuh-a-payaman or more famously known as Marlboro Hills, Vayang Rolling Hills and the Lighthouses, but would like to preserve the Nakamaya burial sites and House of Dakay. In **Sabatang**, the respondents have the strong response to preserve Chamantad Tinyan Viewpoint, however would like to showcase Morong beach with the lovely Ahaw arch. In **Itbayat**, majority of the respondents would want to showcase Rapang cliff but would want to preserve Mauyen port.
- **Tourism impacts on the locals' access to amenities and benefits**

Age Group	Gender		Total
	Male	Female	
No age provided	2	1	3
14 to 20 years	59	26	85
21 to 25 years	139	85	224
26 to 35 years	150	88	238
36 to 45 years	129	60	189
46 to 55 years	108	34	142

56 to 65 years	76	29	105
66 to 80 years	31	18	49
81 years and more	9	2	11
Total	703	343	1046

I look forward to peak season (April-July)	961	3.85	0.728
To my knowledge, there is proper scheduling of tours amongst local travel agents	961	3.84	0.807
There should be a limit to the number of tourists per season	961	3.76	1.003
I am confident that our local government is capable enough to manage tourist influx	1056	3.72	0.787
I prefer that there should be a limit of visitors per tourist spot	1055	3.65	1.03
There is a scarcity of resources when it is peak season (April-July)	961	3.65	0.882
Tourist numbers are properly managed especially during peak seasons (April-July)	1056	3.62	0.852
Public transportation is a problem during peak season (April-July)	1056	3.58	0.939
There should be a limit to stay dates	960	3.58	1.094
I know that there are enough accommodation/beds supply for the tourists	1055	3.44	0.868

Some tourist spots should be preserved and should not be made accessible	961	3.42	1.019
I know that there are enough restaurants and food supply for the tourists	1056	3.35	0.908
Accommodation/bed supply is not a problem during peak seasons (April-July)	1056	3.34	1.039
I know that I am prioritized in resources even if there are a number of tourists	1055	3.22	0.956
I prefer fewer tourists all year round	1055	3.16	1.194
Food is not a problem during peak seasons (April-July)	1056	3.12	0.986
I feel uncomfortable when I see a lot of tourists in our area	1056	2.87	1.032
I have a preference of demographics (age or sex) who would frequent Batanes	1054	2.57	0.973

Residents' Perception on Carrying Capacity	n	Mean	Std. Dev
Proposed length of stay (in days)	76	5.43	3.356
I am willing to welcome tourists in Batanes	1056	4.27	0.693
I want to showcase the tourist spots in Batanes	1056	4.14	0.818
I feel positive on the future of Batanes when I see a lot of tourists	1056	4.02	1.481
I feel delighted to see tourists around the area near me	1054	3.85	0.74



FIGURE 1: CARRYING CAPACITY PER HOUR: ALAPAD ROCK FORMATION



FIGURE 3: CARRYING CAPACITY PER HOUR: BASCO PLAZA

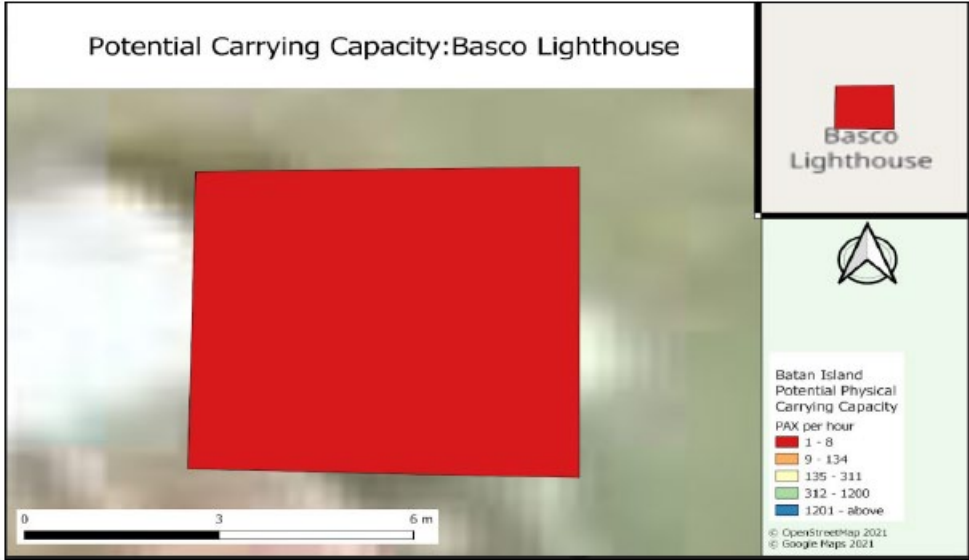


FIGURE 2: CARRYING CAPACITY PER HOUR: BASCO LIGHTHOUSE



FIGURE 4: CARRYING CAPACITY PER HOUR: CHAPPIDAN BOULDER BEACH

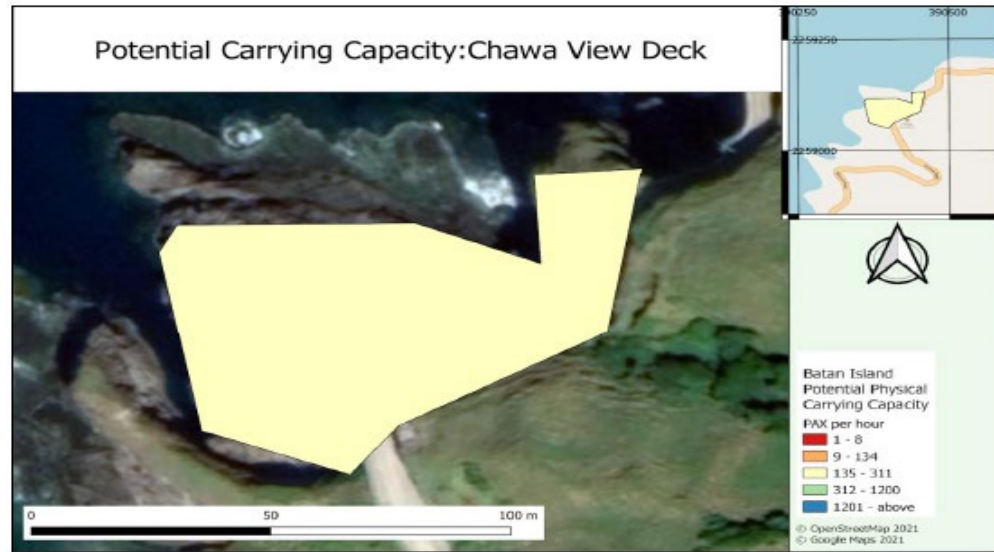


FIGURE 5: CARRYING CAPACITY PER HOUR: CHAWA VIEW DECK



FIGURE 7: CARRYING CAPACITY PER HOUR: HOMORON BLUE LAGOON



FIGURE 6: CARRYING CAPACITY PER HOUR: DIURA FISHING VILLAGE



FIGURE 8: CARRYING CAPACITY PER HOUR: HONESTY COFFEE SHOP



FIGURE 9: CARRYING CAPACITY PER HOUR: HOUSE OF DAKAY



FIGURE 11: JAPANESE TUNNEL



FIGURE 10: CARRYING CAPACITY PER HOUR: IMNAJBU VIEWPOINT

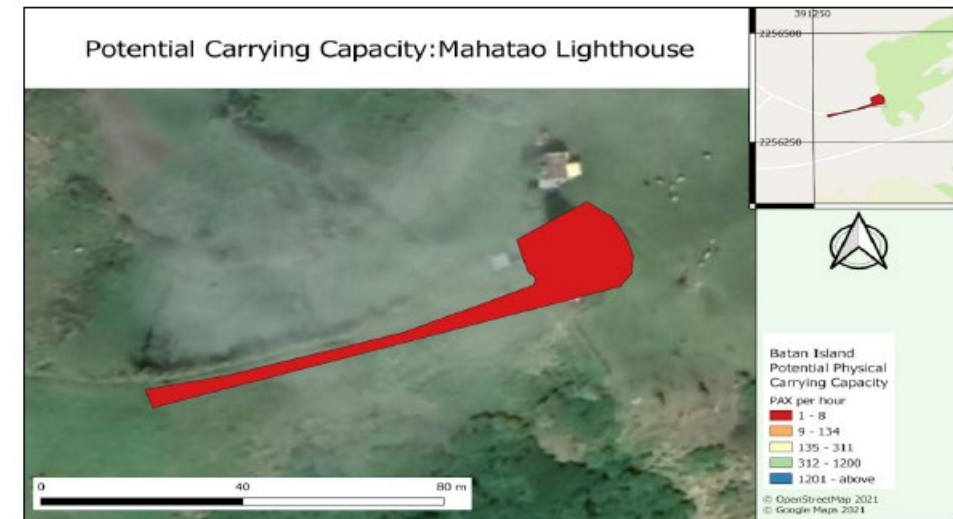


FIGURE 12: CARRYING CAPACITY PER HOUR: MAHATAO LIGHTHOUSE



FIGURE 13: CARRYING CAPACITY PER HOUR: MARLBORO HILLS

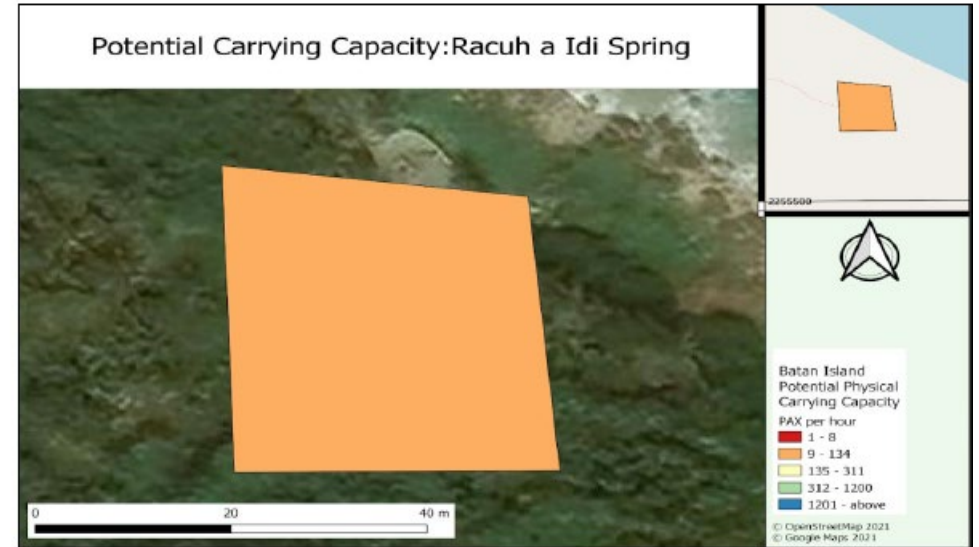


FIGURE 15: CARRYING CAPACITY PER HOUR: RACUH A IDI SPRING

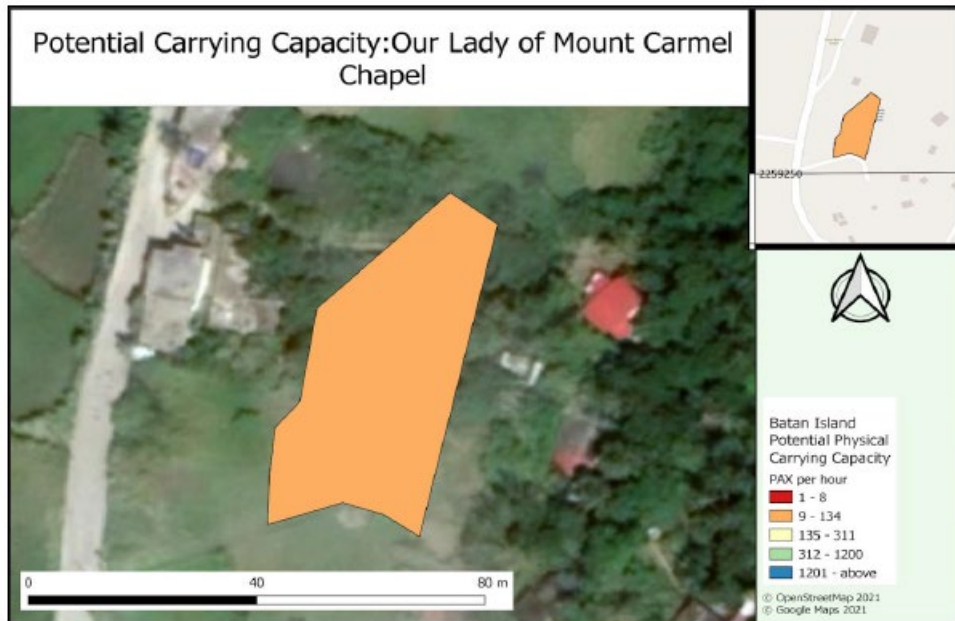


FIGURE 14: CARRYING CAPACITY PER HOUR: OUR LADY OF MOUNT CARMEL CHURCH

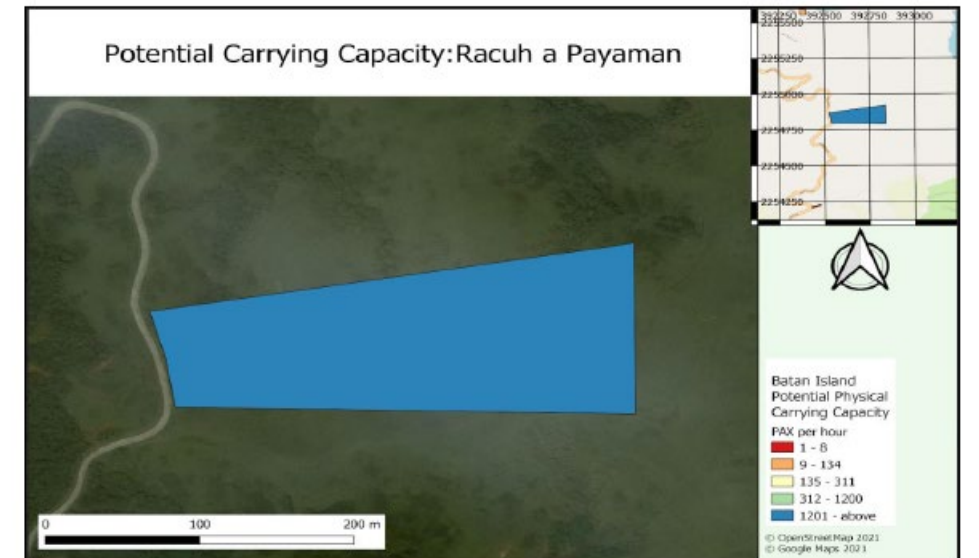


FIGURE 16: CARRYING CAPACITY PER HOUR: RACUH A PAYAMAN



FIGURE 17: CARRYING CAPACITY PER HOUR: VALUGAN BOULDER BEACH



FIGURE 18: CARRYING CAPACITY PER HOUR: MORONG BEACH AHAW NATURAL ARCH FORMATION



FIGURE 19: CARRYING CAPACITY PER HOUR: AREA AROUND THE STONE HOUSES



FIGURE 20: CARRYING CAPACITY PER HOUR: CONSCIENCE CAFE



FIGURE 21: CARRYING CAPACITY PER HOUR: TINYAN VIEWPOINT

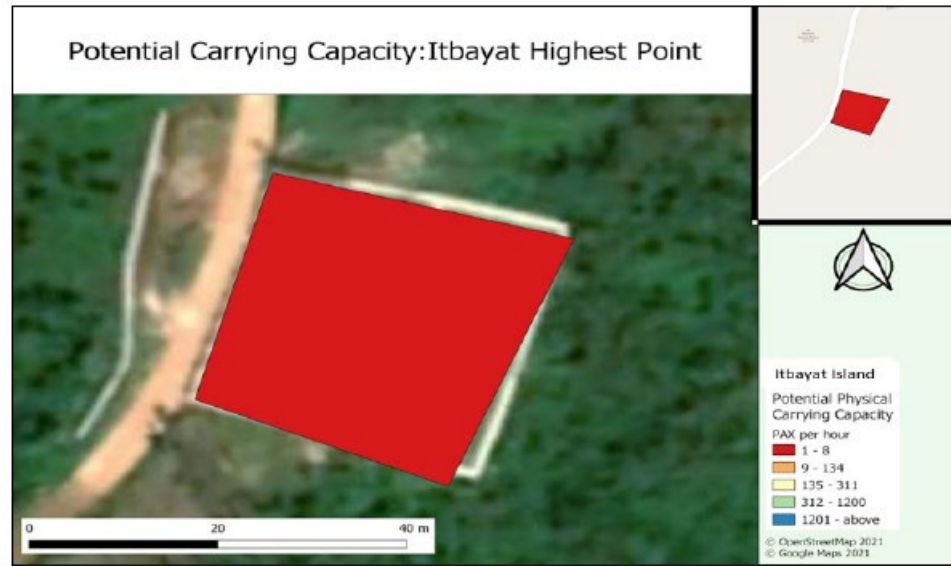


FIGURE 22: CARRYING CAPACITY PER HOUR: ITBAYAT HIGHEST POINT

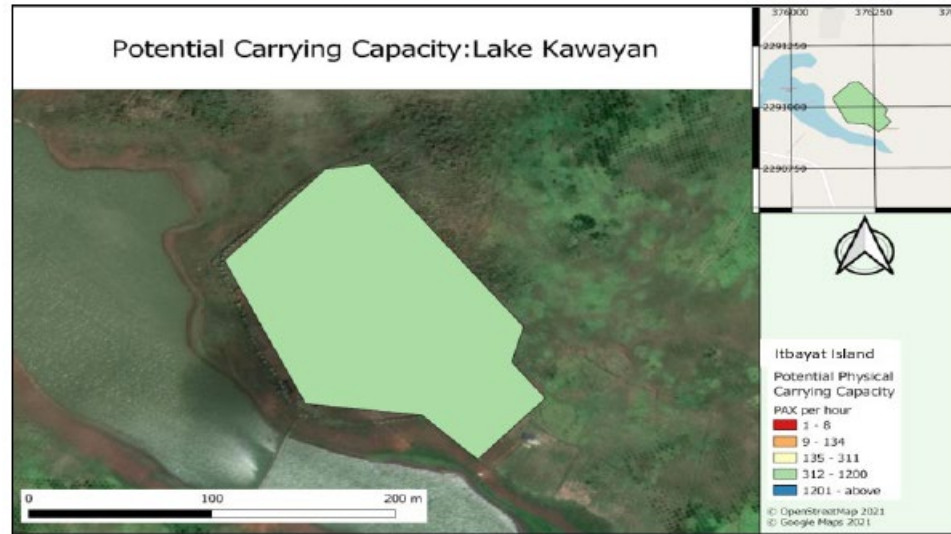


FIGURE 23: CARRYING CAPACITY PER HOUR: LAKE KAWAYAN

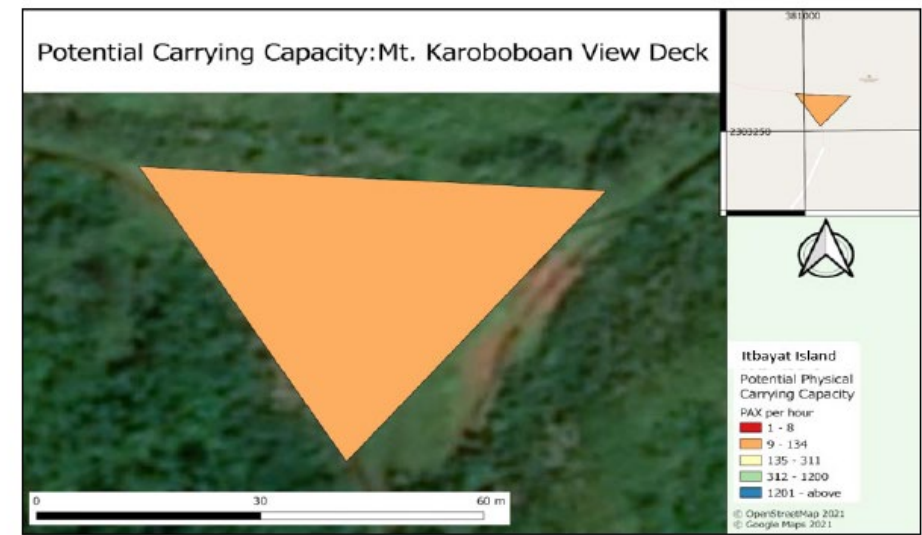


FIGURE 24: CARRYING CAPACITY PER HOUR: MT KAROBOBOAN

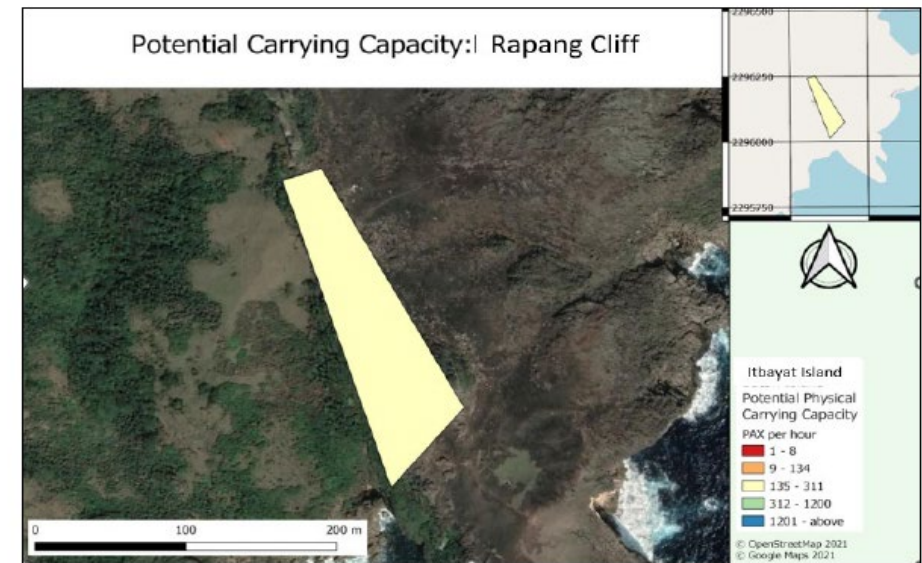
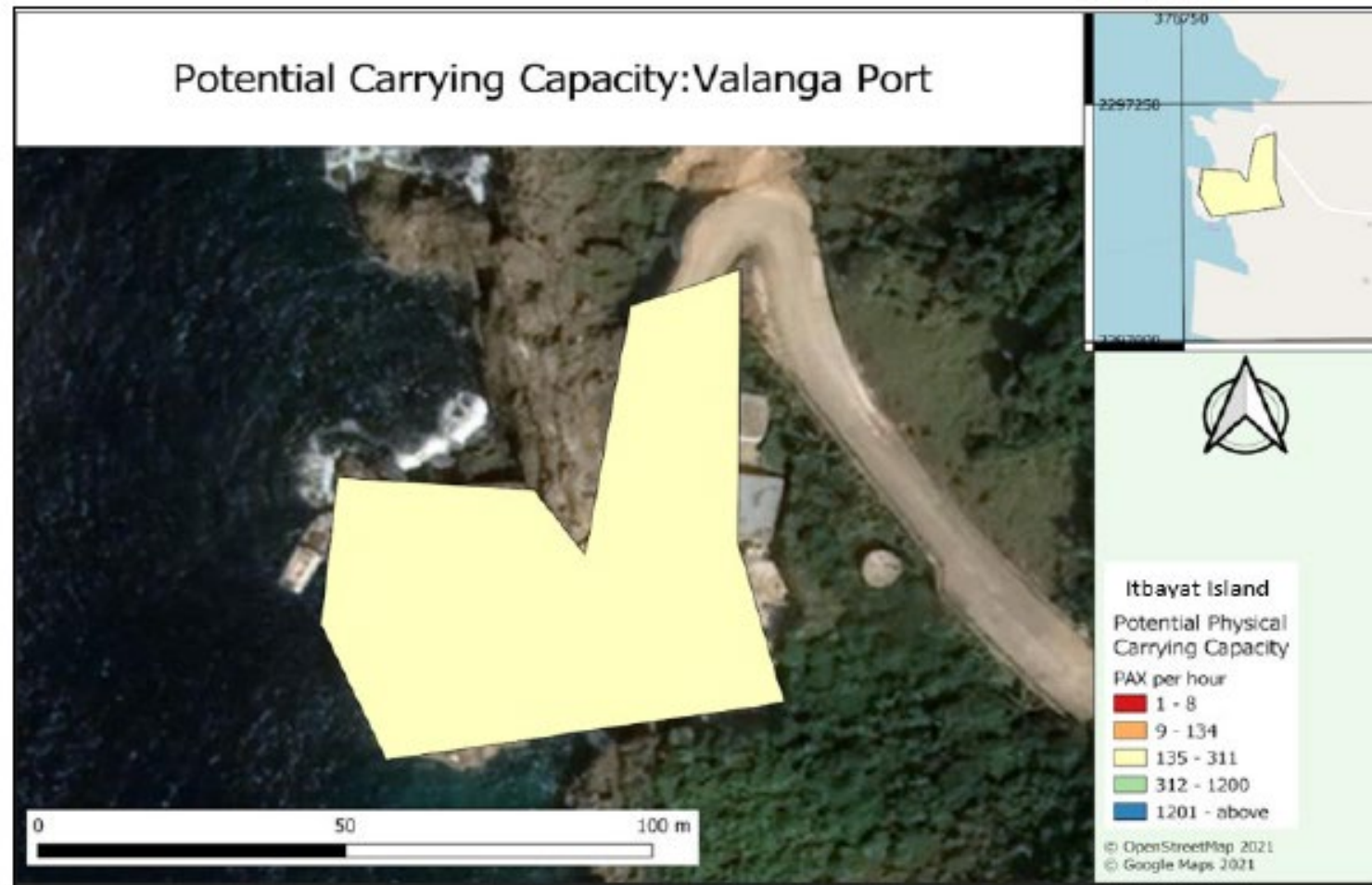


FIGURE 25: CARRYING CAPACITY PER HOUR: RAPANG CLIFF



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Group of Islands

Recommendations in a snapshot: Destination management

- Decongest main tourist areas
- Tourism marketing: Identify, discover new areas. Change the world and re-perspective.
- Focus. invent. Identify the “why”. Not necessarily the “what”

“Sell what you have”

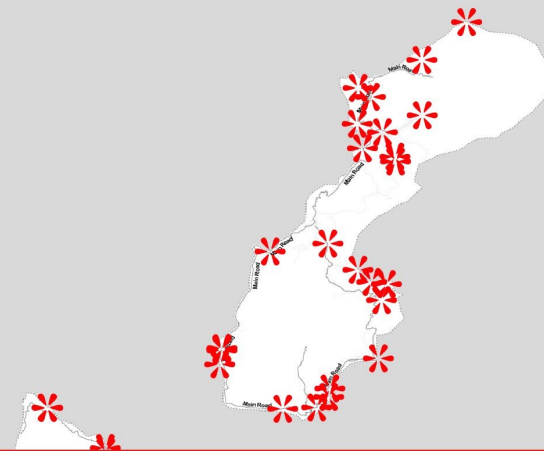
–Dr Rachel Dodds



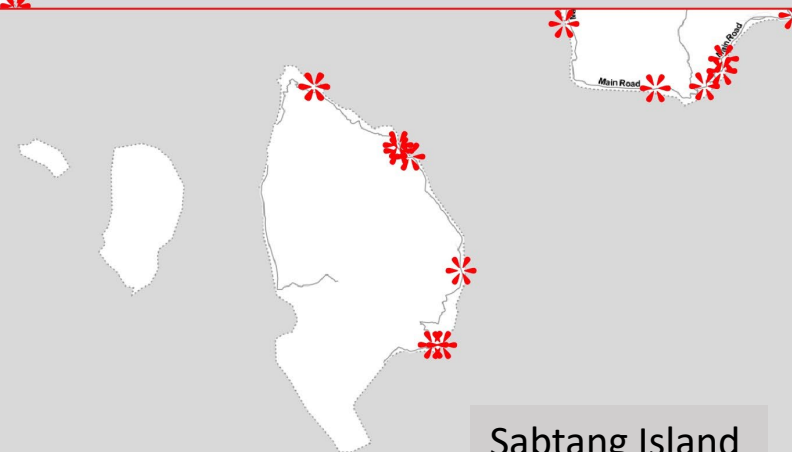
Tourist Attractions in Batanes



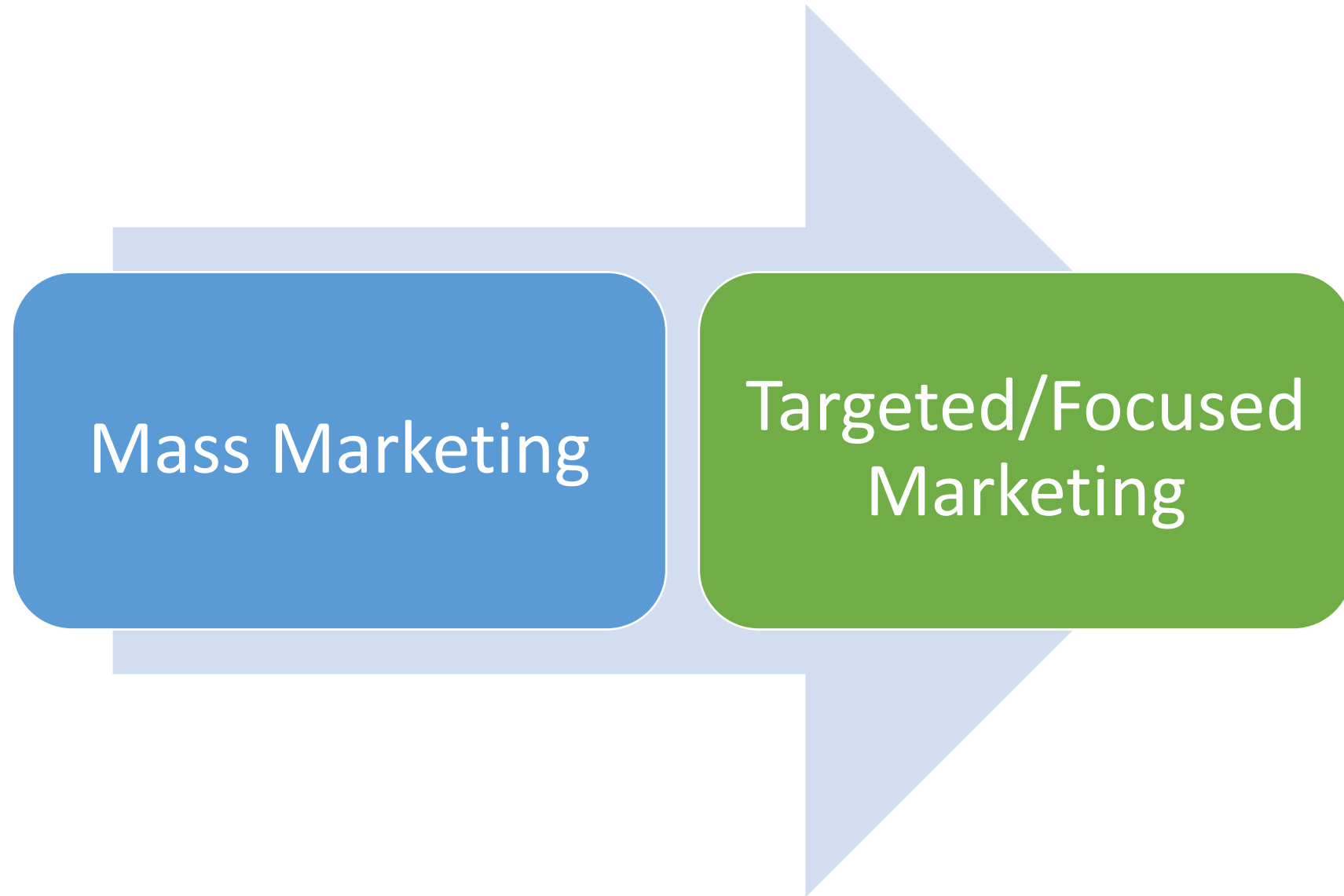
Itbayat Island



Batan Island



Sabatang Island





...which means showing the true picture of what tourists would expect when visiting the area—not a perfect, polished packaged version of the destination. Market what is expected and **target real customers**.

This preserved carabao head could be a highlight or a representation of what one is going to expect in Itbayat. **“Only for the bold”** could be a catchy tagline to attract the more adventurous tourists—this is embracing the fact that Itbayat has its own Unique Selling Points (USP) instead of veering away from these USPs as locals fear that the notion about Itbayat being a perilous place would not attract tourists.

Itbayat: “Experience Itbayat”

The leaning **Tachimus tree** as well could represent the resiliency of the Ivatan people.

Same with the carabao head, it could also be used for tourism marketing as having survived Itbayat adventures as this Tachimus tree despite several strong winds and typhoons will bend but will not break.



Basco

- It could be taken that some of the places that was mentioned that the Ivatans wanted to be preserved would be the Racuh a payaman, because despite being famous and was even dubbed as “Marlboro Country”, locals find it difficult when there a lot of tourists as the grass for their carabaos gets stepped on. If carrying capacity limits would be followed, Racuh a payaman could have 312-1200 people per hour, but understanding the Ivatans’ perspective on wanting to preserve Racuh a payaman, this number would definitely be not balanced. There should just be an area exclusive for the tourists.






Sabtang “Sama-sama sa Sabtang!”

- Sabtang is the smallest of the 3 islands and it has been oftentimes included in the tour mainly because of the famous stonehouses which are located there.
- Ivatans would love to showcase the Morong beach where the famous Ahaw arch is located and has a computed carrying capacity of 135-311 per hour.
- To make the tourists stay longer in Sabtang as well and not just in Batan, there should be more accommodation in this part of the island
- Accommodation is also another issue which came out in the stakeholders interview and in the main survey response.



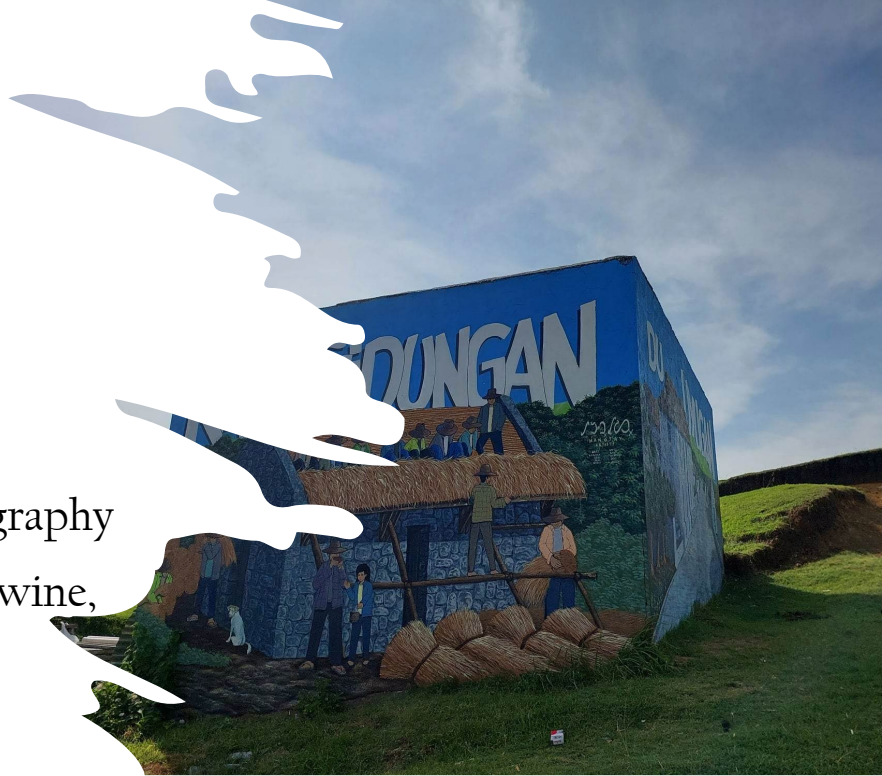


Priorities of sustainability indexes are different in different aspects and places considering tourism purposes

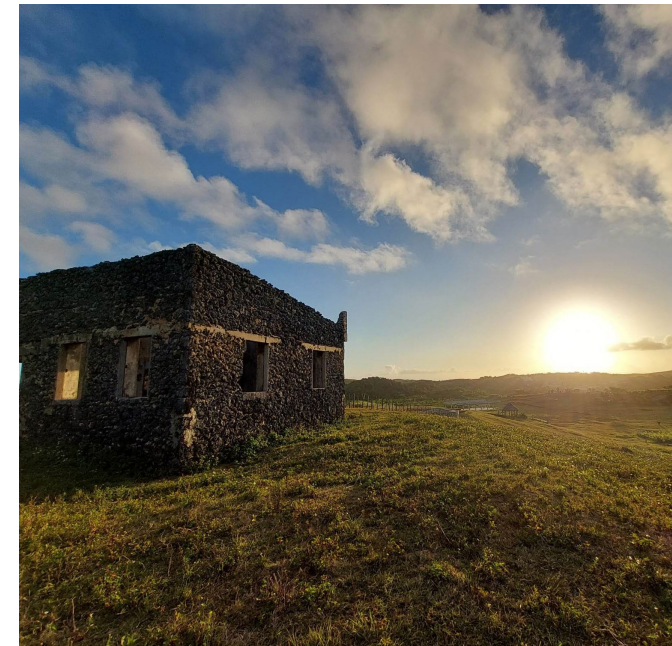
It means that, every touristic place has its own characteristics and features. Each touristic place has its specific priorities; so, we can attempt to make sustainability models of tourism activities as much as possible through quantitative techniques and more desired modeling consistent with the realities of tourism activities in each specific place. (Ryan, 2022)

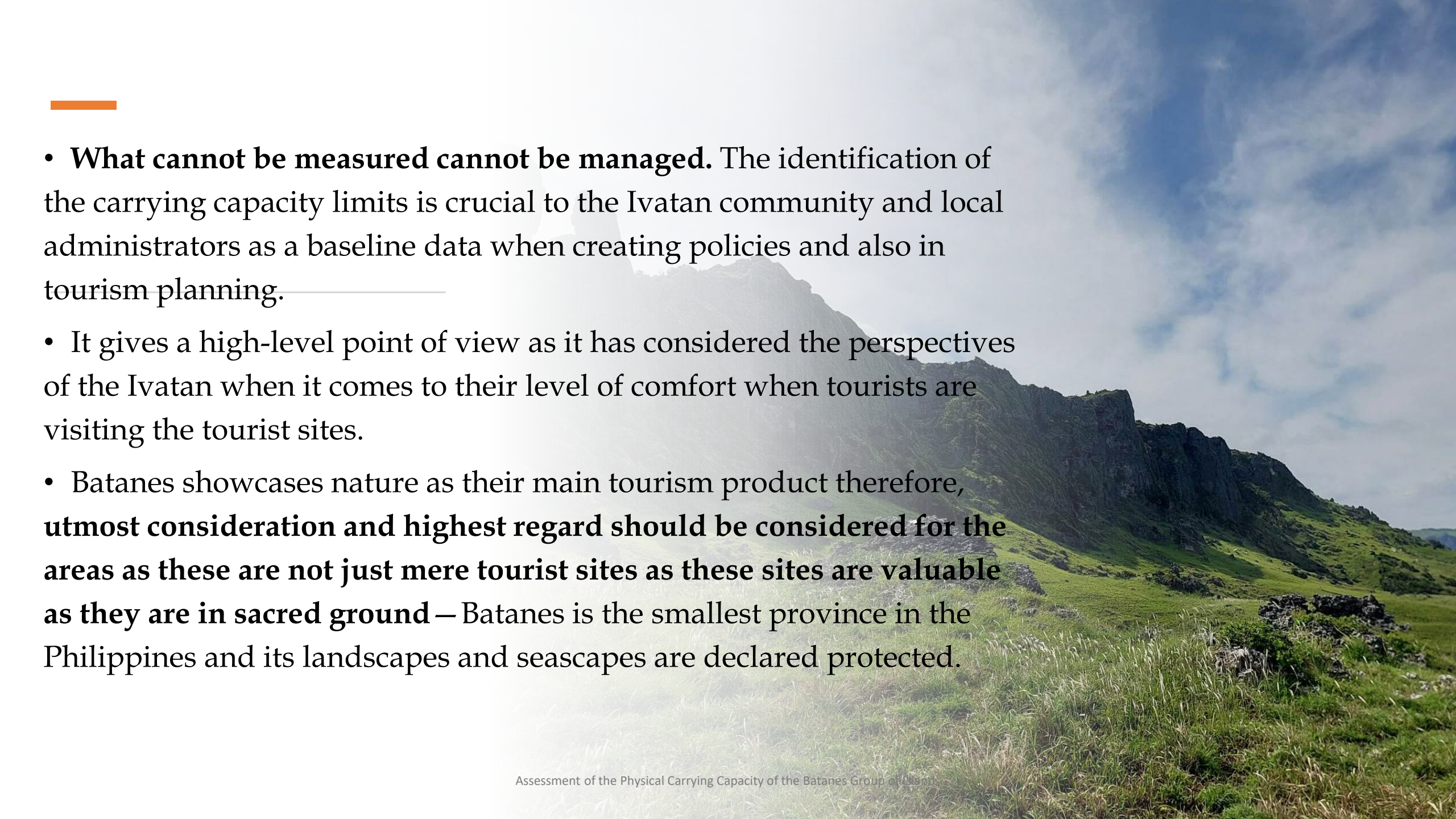
“Focused” Tourism packages for enthusiasts. Low volume high quality

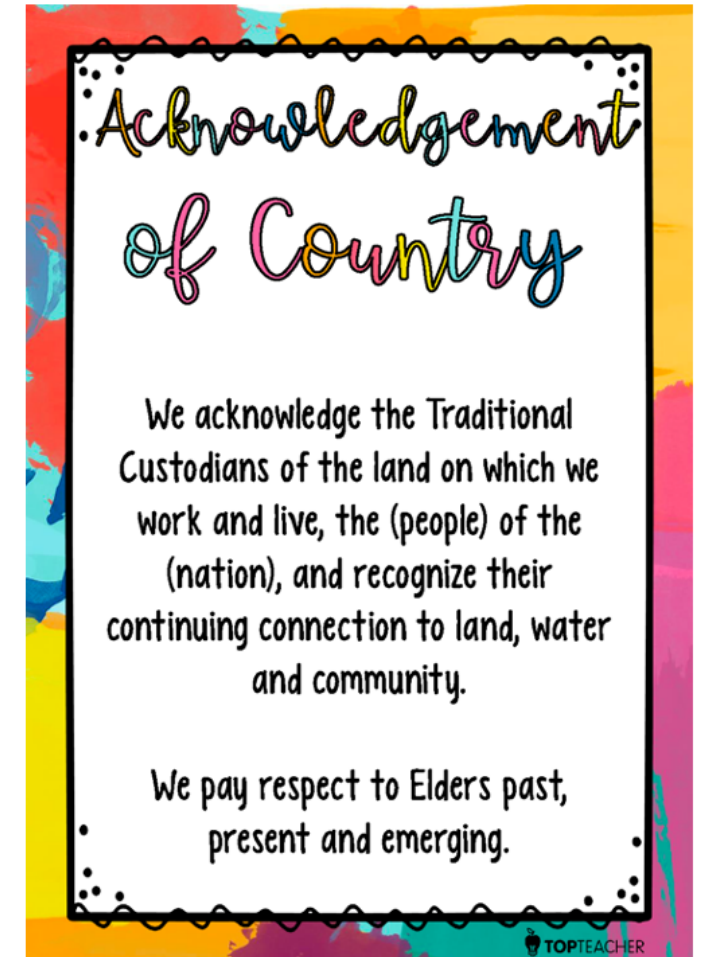
- Landscape and nature Photography/Night photography
- Wine/Food and Culture (Dibang, Vunung, Arius wine, Uved, Itbayat garlic)
- Cultural immersion
- Ecotourism
- Science/nature tourism: Flora and fauna (e.g. bird migration), geological surveys
- Hiking or Trekking or camping Diving
- RnR
- Street art/Artist hub
- Architectural/Historical tour Preserved old churches (San Carlos Borromeo original floor)

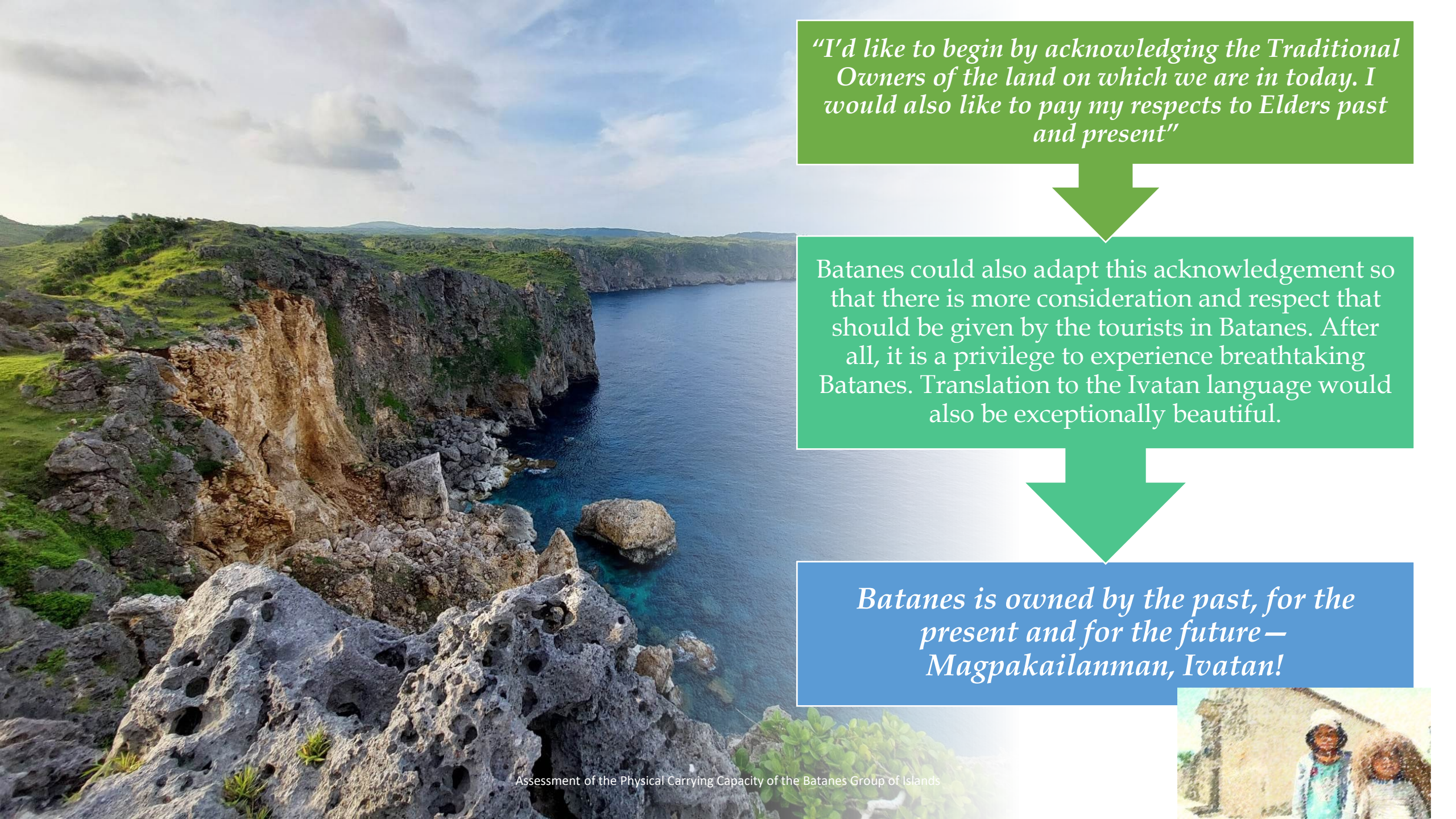


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- **What cannot be measured cannot be managed.** The identification of the carrying capacity limits is crucial to the Ivatan community and local administrators as a baseline data when creating policies and also in tourism planning.
 - It gives a high-level point of view as it has considered the perspectives of the Ivatan when it comes to their level of comfort when tourists are visiting the tourist sites.
 - Batanes showcases nature as their main tourism product therefore, **utmost consideration and highest regard should be considered for the areas as these are not just mere tourist sites as these sites are valuable as they are in sacred ground** – Batanes is the smallest province in the Philippines and its landscapes and seascapes are declared protected.






"I'd like to begin by acknowledging the Traditional Owners of the land on which we are in today. I would also like to pay my respects to Elders past and present"

Batanes could also adapt this acknowledgement so that there is more consideration and respect that should be given by the tourists in Batanes. After all, it is a privilege to experience breathtaking Batanes. Translation to the Ivatan language would also be exceptionally beautiful.

*Batanes is owned by the past, for the present and for the future –
Magpakailanman, Ivatan!*



A hand is shown in a blurred state, clicking a computer mouse. In the foreground, a large, three-dimensional '@' symbol made of cardboard stands prominently. The background is a soft-focus office setting with a desk and some office equipment.

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