Raise the Roof: Mapping and Characterizing the Transformations of the Ifugao Bale in the Batad Rice Terraces

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Abstract

Significant change is observable within the landscape of Batad Rice Terraces, a UNESCO World Heritage site located in the Ifugao Province of the Philippines. One distinct fixture that is transforming within Batad's landscape is the 'bale' or the traditional Ifugao house. The 'bale,' with its steep pyramidal thatched roof echoing the mountainous landform around it, is one of the most distinct features of Batad. The traditional use of the 'bale' is, of course, as a residence. It also serves as a granary for harvested rice, with the topmost level considered sacred - allocated for rice, heirloom articles, and sculptures of the 'bulul' (rice guardians). Today, the bale(s) of Batad not only sit beside more modern-looking structures, but they themselves also have transformed uses and configurations. The study aimed to map, quantify, and characterize the transformations of Batad's bale(s) through a multi-method combining drone photogrammetry, GIS-based geo-tagging, and actual field visits to document the bales' conditions. Two maps pertaining to Batad's bale(s) were produced from the study. First, a map showing the categorization of each bale based on their current occupancy type, i.e., residential, agricultural, tourism-related, etc. The second map shows a five-tier categorization based on the level of the bales' physical transformations (or conservation) in terms of design and material. Supplementing these maps are photo-documentations of the bale(s), and anecdotal interviews with locals focusing on stories about the transformations of the traditional houses surveyed. All of these informed the narrative about the drivers of change and factors that support the sustainability of the bale(s) in Batad's landscape.

Keywords: Ifugao Bale, Batad Rice Terraces, Heritage Mapping, GIS, Sustainable Cities and Communities, Life on Land

I. Introduction to the Batad Rice Terraces and its "Bale"

Batad Village. Batad is one of 18 barangays under the jurisdiction of the Municipality of Banaue, in the mountainous Ifugao Province in the Philippines (Banaue MLGU, 2015). The Poblacion (center) of Banaue itself is approximately three 368 kilometers from Manila. Batad is around 20 km from Banaue's Poblacion. Overall, it takes more than fourteen (14) hours of combined bus and jeepney commute, plus hiking to reach Batad Village from the city of Manila (Belga, 2020). The IRT (Ifugao Rice Terraces) Master Plan for 2015-2024 reports that Batad's land area covers around 1,240 hectares and is bounded on the North by Barangay Cambulo, on the Southwest by Barangay Bangaan, and on the Southeast by Barangay Anaba. Batad has eighteen (18) smaller sitios under its jurisdiction, of which only nine (9) border its famous main terraces, namely Chung-Chung, Gab-Gab, Tatagwang, Ti-id, Balluha, Higib, Babloy, Ballihong, and Bocos (ICHO, 2014). The majority of Batad's residents belong to the "Ayangan" ethno-linguistic group of Ifugaos (Binalet, 2019). As of late 2019, there were 943 people living in Batad, distributed across 200 households, with a total of 222 families (Belga, 2020). Despite the emergence of alternative livelihoods, agriculture, specifically subsistence rice farming, remains the main source of livelihood in Batad. Approximately seventy-eight percent (78%) of Batad's households are engaged in farming (BLGU Batad, 2018).

Figure 1. Political map of Banaue showing the different barangays under its jurisdiction. Boundaries are indicative only.

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Batad Rice Terraces. Batad Village is also the home of Batad Rice Terraces(BLGU Batad, 2018). In 1995, the Ifugao Rice Terraces (IRT) were officially inscribed as a World Heritage Site (WHS), and the processing of the inscription was initiated and spearheaded by the late Architect Augusto Villalon (Zulueta, 2018). Five IRT clusters were included in the inscription—Batad, Bangaan, Kiangan, Mayoyao, and Hungduan. Batad and Bangaan are located in the municipality of Banaue. The WHS inscription was the first international recognition of the universal value of the IRT. In 2001, the IRT clusters were placed on the 'List of World Heritage in Danger' after an IUCN-ICOMOS mission at the request of the Philippine State Party (UNESCO & SITMo, 2008). The reason for the listing was attributed to several threats to the conservation of the IRT, which include poverty, out-migration, dispossession of property rights, diminishing cultural diversity, and resource management conflicts (UNESCO & SITMo, 2008). Despite being included in the WHS heritage in danger list, the IRT was still recognized by the UN's Food and Agriculture Organization (FAO) in 2004 as a 'Globally Important Agricultural Heritage System' (GIAHS) (Regunay, 2009). This was mostly attributed to the ingenious montane agricultural system developed by the Ifugaos in close harmony with the environment that allowed them to thrive despite the difficult landscape (Regunay, 2009). In 2012, the IRT was finally removed from the WHS heritage in danger list following systematic and documented efforts from the Philippine State Party to conserve IRT (UNESCO WHC, 2012). These conservation efforts included the establishment of Schools of Living Tradition (SLT), the rehabilitation of rice terraces and traditional houses, and the formulation of an IRT Masterplan (UNESCO WHC, 2012).

Figure 2. The Batad Rice Terraces as seen from Sitio Higib. Photo courtesy of Avegail Casono (2019).

Rice-Centered Culture and Batad's Landscape. It is without doubt, that rice has literally shaped the landscape of Ifugao. Being the most sacred article in Ifugao traditions, all ceremonies and activities held are centered towards making the rice harvest more productive, year after year (UNESCO & SITMo, 2008). It is a common misconception that the heirloom "tinawon" rice is the staple food of the Ifugaos. Tinawon rice, being sacred, means that it is only traditionally consumed during special occasions and festivities (Binalit, 2015); root crops, like sweet potato, are actually the main food staples (Binalit, 2015). Locals of Batad still observes traditional practices and more importantly ceremonies associated with the rice planting cycle. The practice of worship of elemental deities, as well as ancestors who have passed away, is still evident. The practice of rice planting is still accompanied by much regard for the Ifugao rice-giver gods and minor spirits (UNESCO & SITMo, 2008).

Figure 3. Harvested rice and a close-up view of the Batad rice terraces' walls and "pay-aw(s)." Photos courtesy of Anna Maria Asuncion (2014) and Jose Ricardo Rustia (2019).

Ifugao Bale of Batad. Aside from its renowned rice terraces, another distinct feature in Batad's landscape is the '*bale*' (fa-luy). The bale is the traditional house-on-stilts of the Ifugaos. Aside from its residential function, it also serves as an enlarged granary for storing harvested rice (Belga, 2020). It is a compact house, with a square footprint, elevated by four corner posts of which cylindrical wooden rat guards are fitted to keep out vermin (Scott, 1962). Similar to the vertical zoning of land uses in the rice terraces, the space of the bale is divided into three levels (Lambrecht, 1929)—the first level being a multi-purpose living and working space, which is also sometimes used for social ceremonies and rituals. The second level accommodates a sleeping space for the family and an interior hearth for cooking. And the topmost level is considered as a sacred space and is used for storing the precious harvested rice (Lambrecht, 1929), and valuable family heirlooms.

Figure 4. A typical bale found in Batad.

The traditional bale features a "no-nail" construction methodology and utilizes a system of joinery and pegs together with lashing to maintain the structural integrity of the house. Because of its manner of construction, a whole bale may be "knocked down, moved, and raised again on a new site within a single day" (Scott, 1962). Materials utilized in its construction are those that are locally sourced from the clan forest ("muyong") or the "ala" (communal forest). These materials include different varieties of hardwood, "cogon" grass, "runo," "rattan" vines, and stone (Binalit, 2015). Unlike most homes, the traditional bale does not have windows, and can only be accessed through a small sliding door (Scott, 1962). The most prominent architectural feature of the bale is its thick pyramidal thatch roof made up of local "cogon" grass that thrusts steeply upwards and covers much of the house's structure (Perez, Encarnacion, & Dacanay, 1989). The bale's form mirrors that of the triangular morphology of steep mountains where it is found (Perez et al., 1989). The dense layering of "cogon" grass bundles in the roof provides waterproofing, while the soot from the hearth within the bale serves to eradicate pests and prevent moisture build-up (Binalit, 2015).

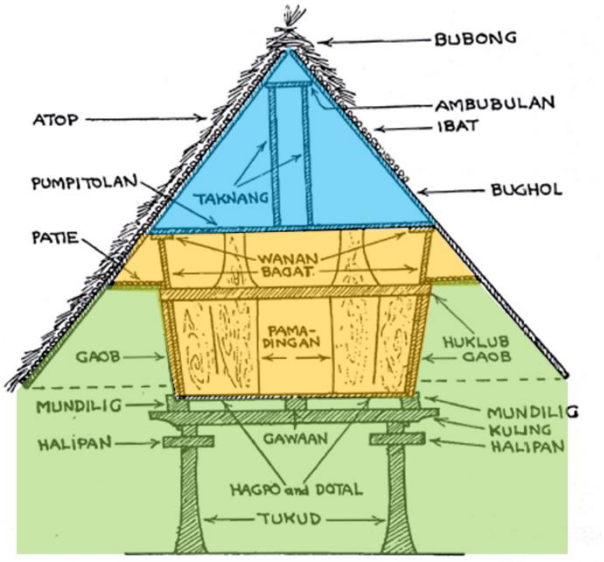

Figure 5. A typical cross-section of an Ifugao Bale (Scott, 1962). Areas highlighted in green are multipurpose areas located at the first level, second-level areas are highlighted in yellow and accommodate the sleeping space and interior hearth, while the highest level is highlighted in blue— the sacred rice granary level.

Considering the above characteristics of the bale, it is apparent that this indigenous structure is highly suited to the surrounding landscape of the rice terraces. Its functional design elements are complementary to the environment in which it is situated, making it a prime example of local vernacular architecture.

II. Objectives of the Study

The primary goal of the research was to establish baseline information about the different landscape and heritage assets of the Batad Rice Terraces that will aid in the future evaluation of levels of conservation of the Batad Rice Terraces as a WHS and as a GIAHS. The specific objectives of the study were:

1. To map the Batad Rice Terraces and its traditional Ifugao bales.
2. To observe and characterize changes or transformations of the Ifugao bales in Batad.
3. To categorize the observed alterations made on the traditional Ifugao bales of Batad.

II. The Rationale of Mapping Batad Rice Terraces' Bale(s)

The Batad Rice Terraces, which have been designated as both a World Heritage Site (WHS) and a Globally Important Agricultural Heritage Site (GIAHS), necessitate meticulous documentation and continuous monitoring of its landscape and cultural assets. While the data presented herein focused specifically on the Ifugao Bales of the Batad Rice Terraces, the findings are expected to aid the community and the LGU in conducting their mandated periodic assessments of Batad as a WHS and a GIAHS.

Furthermore, encouraging monitoring of landscape changes (in this case – the changes to Batad's bales), as well as their drivers of change and corresponding impacts, empowers stakeholders to learn from them, potentially improving their landscape management practices and ultimately reducing future risks.

III. Scope and Limitations

Study Area. Owing to the challenges associated with accessing various sitios in Barangay Batad, the researcher restricted the mapping, interviews, and surveys to the ones located within and near the primary terraces. The survey was initially intended to encompass only six (6) sitios but was subsequently expanded to include nine (9) sitios, namely Chung-Chung, Gab-Gab, Tatagwang, Ti-id, Balluha, Higib, Babloy, Ballihong, and Bocos. These sitios are significant because they contain current tourism activities, infrastructure, and facilities, and therefore, exhibit a more conspicuous rate of landscape change.

Study Period. The collection of data commenced in the second week of May 2019 and lasted until the first week of February 2020. The months of May and February were considered optimal for conducting drone mapping and qualitative interviews. May is the beginning of the rice harvest season, during which the terraces exhibit a distinctive golden hue, while in February, the newly planted rice terraces display vibrant green colors. Both months had weather conditions relatively clear for drone flights and conducive for extended hikes.

Figure 6. Location of the sitios covered by the mapping and fieldwork. The map shown is from first-hand drone mapping conducted by the researcher.

IV. Methodology

The research design utilized a multi-method, multi-phase approach, with data gathered through first-hand methods and assistance from research assistants. Consent was secured from local authorities and preliminary ground-working was done to engage and enlist the help of the community.

A combination of methods was employed, including a review of related literature (RRL), key informant interviews (KIIs), drone photogrammetry, and actual field visits to validate information about Batad's landscape features. Data were consolidated and analyzed using Quantum GIS (QGIS) to produce several high-resolution base maps, which included orthophotos, contours, DEM, 3D mesh or point cloud, and geo-tagged maps of traditional houses.

To observe and classify changes across Batad's bale(s), past photos, maps, and published articles were reviewed. Visits to key resource persons who have worked in Batad over the decades were essential in securing these data. High-resolution maps generated from the drone mapping phase were used to validate changes identified through site inspection and photo documentation with local key informants. The analysis involved comparing current Batad bale(s) features with past documented features, mapping and categorizing observed changes through QGIS. Outputs included a conventional site inventory report that listed observed tangible changes in the bale(s) and maps showing the location of categorized types of changes observed, such as types of transformations of the traditional houses.

A. Mapping via Drone Photogrammetry

The study conducted drone mapping activities on May 18 to 20, 2019, and February 20, 2020, using a DJI Phantom 4 Advanced launched from three different points within the terraces. The drone covered several areas, including the main terraces, Tappiyah Falls, and Tappiyah River, as well as the nine sitios of Batad that surround the main terraces. The flight path of the drone and the post-processing to create 3D point clouds were accomplished through Pix4Dmapper. The resulting maps were automatically geo-referenced and later processed using QGIS 3.4 Madeira. Aerial video shots were also taken to capture unique vantage points that were difficult to access on foot. While the maps provided detailed insights into the location and characterization of the physical landscape elements, identification of landform disturbances, and distinctions between traditional versus more contemporary physical features in the landscape, the researchers still validated the map features through field visits or ocular inspections.

Figure 7. Photos of drone photogrammetry activities conducted. The center photo shows the flight path taken by the drone in Pix4D Mapper. Also shown in photos are the volunteer drone pilot (Tricia Leigh Lunas) and volunteer drone spotter (Jose Ricardo Rustia).

B. Field Validation and Geo-tagging

The researcher conducted a total of four field visits to Batad Rice Terraces, each lasting at least four days. The first three visits occurred in 2019 from April 4 to 9, May 18 to 23, and July 6 to 10, while the most recent visit took place from February 28 to March 1, 2020. To address the difficulty of distinguishing certain landscape features even with a high-resolution map, the researcher performed an actual field visit or site inventory to verify observations. A site inventory is a record of observations made within a site based on a specific theme of investigation, and for this study (Gail Hansen and Erin Alvarez, 2010), the researcher focused on documenting the levels of preservation in the structure and use of traditional 'bale(s).'

Prior to conducting field visits, the researcher conducted preparatory table mapping sessions with local guides to

identify areas of interest and establish efficient hiking routes. During the field visits, observations were thoroughly documented through photographs with geotagged locations. This was facilitated by the GPS function of smartphones. Garmin GPS trackers were also used as backups to support the geo-tagging activity. Key maps for each sitio were created in advance using the high-resolution ortho-photo map generated from the drone photogrammetry to aid in the geotagging process. The researcher geotagged and profiled all bale(s) within the study area based on their levels of preservation and use (occupancy). The resulting geotagged data were encoded, processed, and analyzed using QGIS 3.4 Madeira.

Figure 8. Preliminary table mapping with local guides and actual site inspection.

Figure 9. On-site profiling and geo-tagging of traditional houses done by the author, seen here being assisted by her local guide.

C. Research Ethics

Free Prior and Informed Consent. The Province of Ifugao is a widely recognized ancestral domain, and Batad specifically is the ancestral domain of the Tuwali and Ayangan Ifugao ethnolinguistic groups. Thus, it was deemed necessary to obtain free, prior, and informed consent (FPIC) from not only the local government of Banaue but also the local barangay and other important stakeholders. Local support and endorsement were vital to instill confidence in the local community about the research intent, goals, and importance of the project. The researcher was able to secure the required research permits from various governing bodies, including the National Commission on Indigenous Peoples (NCIP - National, CAR, & Banaue branches), as well as the Municipality of Banaue and the Barangay of Batad.

Private Information. In the conduct of field observations, site inventory, and interviews, no sensitive information that compromised privacy and personal security was obtained. The identity of the respondents was only known and recorded by the researcher for the purpose of validation during interview transcription and review. Most importantly, it must be underscored that the identities of the respondents shall remain undisclosed to the general public. These research procedures were thoroughly explained by the author to all respondents when securing consent for their interviews.

Processing of Informal and Personal Data. Personal identifiers such as names, contact details, and other sensitive information that link the data to respondents or specific individuals have been removed or anonymized, helping to protect the privacy of participants. Findings or results were aggregated and presented in a way that prevents the identification of individual respondents or participants.

V. Data Analysis and Results

The study conducted a comprehensive and detailed first-hand mapping of Batad Rice Terraces to establish baseline information about its landscape features. In addition to mapping the general area, the researcher geo-tagged and field-validated several landscape features, including typical site elements such as landmarks and points of interest. As the traditional bales were significant in prior Q-sort interviews conducted by the researcher, they were also included in the mapping and documentation activities. The resulting maps can be found in Section 5.A to 5.B, while Section 5.C provides further information on the conditions of the Ifugao bales, which were established through field visits and site inventory.

A. Batad Landmarks & Points of Interest

The researcher identified and marked significant landmarks and points of interest in Batad. A copy of the resulting map was provided to the barangay and municipal LGU during the latest fieldwork. Despite its limited public facilities, Batad has several important buildings concentrated in the Chung-Chung and Gab-Gab sitios. These include the barangay hall (#15), the barangay health center (#12), the local public elementary school (#13), and the teacher's lodge (#14). The public school serves as an assembly area for residents, while the health center is an important gathering place for local women. Batad also has several churches, including the Catholic Church (#6), the Protestant Church (#11), and the Presbyterian Church (#4).

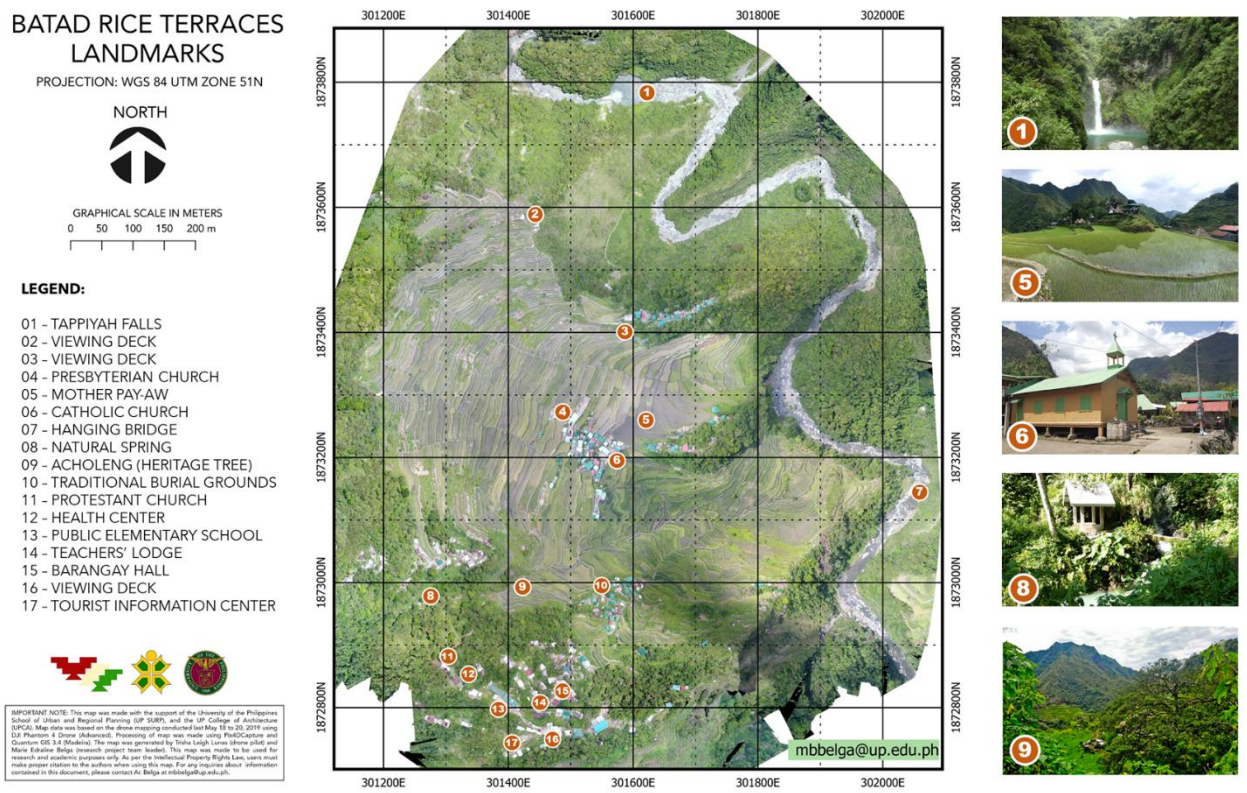

Figure 10. Landmarks and Points of Interest in Batad.

Although many locals still practice animistic beliefs, they are deeply religious and attend weekly masses, which are conducted in the Ifugao local tongue.

In addition to the well-known central amphitheater rice terraces, Batad has several other notable landscape features that are of interest to both locals and visitors. These include the natural springs in Sitio Higib (#19), the towering tree known as "Acholeng" (#9), and the "Mother Pay-aw" (#5), which is the first rice paddy to be planted each planting season. Other points of interest include Tappiyah Falls (#1), a hanging bridge (#7), and traditional burial grounds (#10) in Sitio Ti-id. Figure 10 (above) shows a plotted map of these landmarks and points of interest, based on the researcher's own orthophoto map processed during the drone photogrammetry phase.

B. Categorized Uses of Traditional Bales

The researcher also conducted a mapping of the Ifugao traditional house ('bale'), which is a remarkable landscape feature in Batad and an established symbol of Ifugao identity and pride. The primary function of the bale is to serve as a dwelling place for a family, as well as a granary for storing harvested rice. The topmost level of the bale, deemed sacred, is reserved for rice, heirloom items, and sculptures of the 'bulul' (rice guardians). While situated alongside more contemporary structures, some of the bale(s) in Batad have undergone modifications in both form and function. A total of 122 bales were documented in nine sitios of Batad, and this number could increase if the research scope expanded to all 18 sitios of the barangay. Batad boasts a significant number of traditional houses in comparison to other areas in Banaue.

Contrary to the popular assumption that most bales in Batad were used as tourism accommodations, more than half (57 percent or 70 bales) are still being used as residential dwellings, accommodating sleeping, living, and rice storage functions for families. Meanwhile, 21 percent (26 bales) are solely used for rice storage or granaries, and when combined with the residential bales, this indicates that the majority of bales (78 percent or 96 bales) continue to serve their traditional purposes related to rice farming. Only 20 percent (24 bales) are now used for tourism purposes, suggesting that the continued existence of Batad's bales heavily depends on the maintenance of their rice farming culture. During interviews conducted with local residents, a notable proportion of respondents expressed a strong desire to preserve the traditional role of their "bales." This inclination cannot be attributed solely to nostalgia or external pressures from the tourism industry but is grounded in practical considerations related to their rice farming livelihood citing that the traditional bale is still the best venue for properly storing their harvested rice.

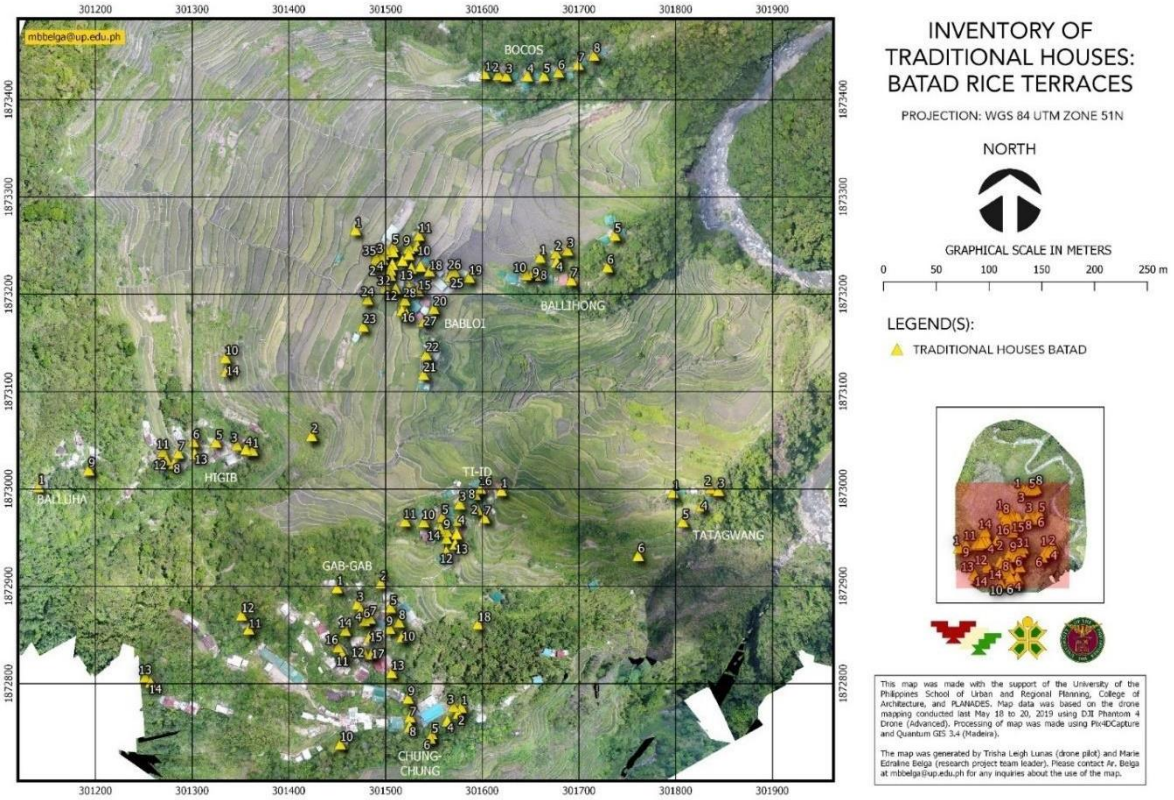

Figure 11. Map showing the 122 surveyed traditional houses (bales) of Batad.

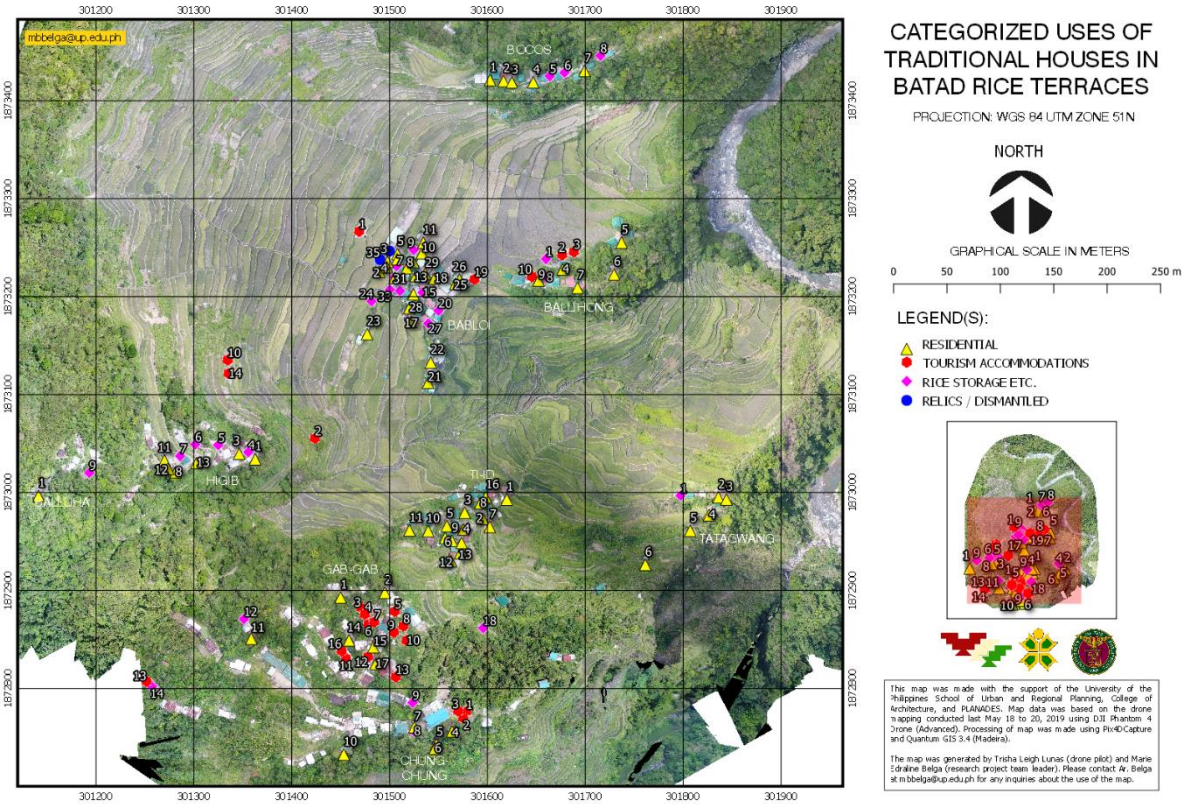

Figure 12. Map and chart of distribution of the categorized uses of traditional houses in Batad.

On the other hand, 11 percent (13 bales) have been abandoned and are in varying levels of deterioration. Although the Ifugao families who owned them have migrated to other areas, the bales are still regarded and respected as private property and are not dismantled by the community.

Examining the context of the construction of these bales versus their current uses reveals noteworthy observations. Among the cataloged houses, a significant portion (60 houses or 49 percent) were already pre-existing, original structures. An additional sub-set of 24 houses (20 percent) were actually transferred to their current sites, with their original location being either in Batad or in nearby barangays. What is quite surprising was the emergence of 16 new houses (13 percent) in Batad with their uses distributed equally between traditional occupancies (residential dwellings and rice storage) and tourism occupancy. This indicates growth in the household proliferation and tourism-related economic activities. Upon closer inspection of map attributes, these new structures would differ in their physical configurations, with the new residential structures having modifications in their design and materiality, while the new tourism-use structures bear a more heightened resemblance to the traditional design and construction of the bales.

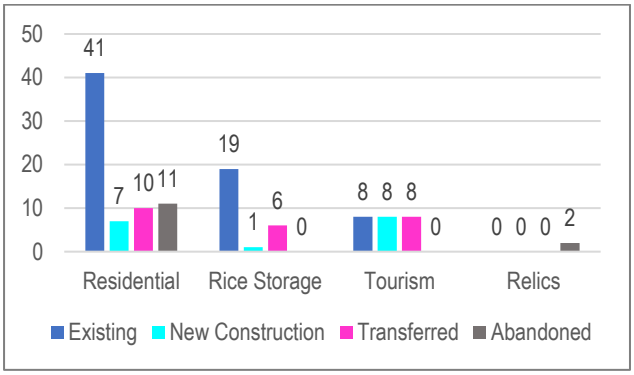

Figure 13. Chart showing the intersection of the current uses of the bales and their construction contexts.

C. Levels of Conservation of the Traditional Bales of Batad

The utilization of the Batad bales has remained largely traditional, yet this does not imply that their original form or structure has been retained. In this study, the researcher has examined the extent to which the bales have been conserved or altered and has categorized them into five modes.

Mode A (Preserved). The first mode, Mode A, includes bales that have been preserved in their traditional form without any modifications to their material or physical structure. Out of the 122 geo-tagged and surveyed bales, 40 (40 or 33 percent) fall under Mode A, a noteworthy proportion compared to other prominent sites in the Cordilleras such as Sagada. It is also worth noting that out of these preserved traditional houses, the majority of them also maintain their traditional uses. Among them, 25 were being used as residential dwellings, and seven were used as rice storage or granaries (see Figure 21). This translates to 80 percent of preserved bales upholding their traditional functions. This statistic further supports the observation that the enduring rice farming culture of Batad plays a pivotal role in the preservation of their traditional bales. On the other hand, eight (8 or 20 percent) of these preserved bales have been repurposed as tourism accommodations.

Figure 14. Example of Mode A – 'Bale' preserved in original or traditional form found in Sitio Babloy.

Figure 15. An example of Mode B – 'Bale' with modified design or form also found in Sitio Babloy.

Mode B (Modified Design). Mode B comprises bales with modified physical designs, which usually involve additional dormer windows on the thatched roof to allow more natural light and ventilation into the traditionally enclosed bales. Among the surveyed bales, twenty-two (22 or 18 percent) have been modified in this manner. Referring to Figure 19, it was evident that among Mode B categorized bales, a significant subset (14 houses) has been repurposed into accommodations for tourists, suggesting that alterations in the design are most likely dictated by foreign preferences. On the other hand, this trend actually reinforces the notion that tourism indeed plays an important role in driving the preservation of the traditional bales (and Batad's landscape).

Mode C (Modified Material). Mode C encompasses bales that have been modified only in terms of the building

materials used, such as the replacement of the traditional "cogon" grass thatching with galvanized iron. Ten (10 or 8 percent) of the bales surveyed fall under Mode C. Among these ten, nine (9) still adhere to their traditional uses – either as residential dwellings or granaries. Only one (1) has been repurposed for tourism-related stays. However, it must be mentioned that this particular tourism accommodation expressed intentions of placing "cogon" thatch over its galvanized iron roof in the future.

Figure 16. Example of Mode C – Bale with modified material only found in Sitio Ballihong.

Mode D (Modified Material and Design). Mode D includes bales with modifications in both physical design and materials used. These modifications range from unusual structural expansions to traditional houses almost completely concealed by new additions. Of the surveyed bales, forty-eight (48 or 39 percent) fall under Mode D. Among these 48 bales, 35 serve as private residences, and 12 function as rice storage. Only one (1) bale under Mode D serves as tourism accommodation, indicating that the type of changes seen in Mode D are driven primarily by the changing socio-economic needs of Ifugao families (e.g., the need for study areas or entertainment rooms).

Further study of Modes C and D revealed that their use of galvanized iron contradicts the assumption that it has become the preferred material. Local respondents attest that due to the reduced supply of cogon grass in Batad, residents are compelled to use galvanized iron because it is more affordable and accessible. While cogon grass is preferred for its durability, its scarcity has resulted in its importation from other areas with its cost becoming unaffordable for most farmers of Batad. Previous interviews conducted with the local residents divulged their belief that the decline in the traditional agricultural practices of "kaingin" and swidden farming is actually responsible for the shortage of local cogon grass(Belga, 2020).

Figure 17. Mode D – Bale with modified material and design found in Sitio Bocos.

Based on previous interviews conducted by researchers, it has come to light that the customary practice of "badchang" (community volunteerism) is experiencing a significant decline (Belga, 2020). This is attributed to the introduction of a monetized system by external entities and organizations that have undertaken terrace repair and other conservation projects. In contrast to a monetary compensation system, "badchang" relies exclusively on community collaboration and volunteerism. Farmers who require assistance in repairing or constructing their terraces would only need to provide food and water (and occasionally rice wine), to volunteers. Moreover, work-sharing arrangements are established to enable farmers to reciprocate the kindness and aid of the volunteers when they require similar assistance in the future (ICHO, 2014). The new monetary compensation scheme has led to a rising inclination among local workers towards remuneration in exchange for their construction and repair services. However, the escalating compensation rates associated with this system are beyond the means of ordinary farmers (Belga, 2020), consequently contributing to the deterioration and changes in the traditional bale(s) and other landscape features such as the rice terraces.

Mode E (Dismantled or Relics). Mode E pertains to bales that have been nearly dismantled but still have standing columns or posts. Only two (2 or 2%) bales were categorized under this mode. The condition of the bales classified under Mode E is primarily attributed to the migration of local residents in search of better employment opportunities or prospects in other areas. As previously

noted, these dismantled bales continue to serve as essential boundary markers, serving as a reminder to community members to still respect the private property of those who are far from their native homes. These effectively prevent lot encroachment by others thus contributing to the maintenance of order and harmony within the community.

Figure 18. Example of Mode E – Dismantled bale serving as property marker found in Sitio Babloy

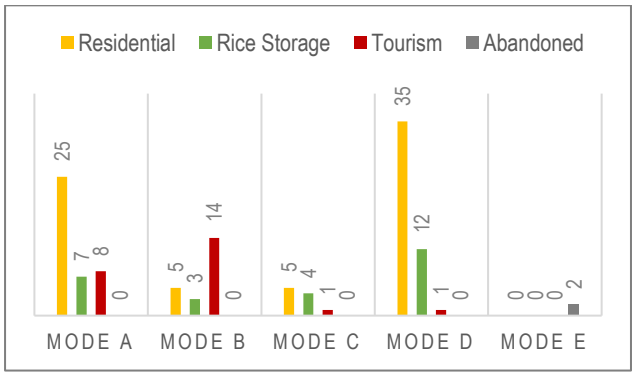

Figure 19. Chart showing statistics of the intersection between categorized changes in the traditional bales and their current uses.

Focal Points of Resilience and Change. It is important to note that the majority of bales that closely resemble the traditional design and construction (Modes A and B) are situated within the sitios located in the middle of the main terraces, namely Chung-Chung, Ti-id, Ballihong, Bocos, Tatagwang, and Higib (see Figure 21). Because of the concentration of these well-preserved bales, they serve as unique place markers in the landscape that display distinctive Ifugao identity. However, upon further examination of the maps (see Figure 23), it becomes apparent that these were also areas with a significant concentration of modifications (Modes C and D) employed unto the bales. Consequently, the visual dynamic in these areas shows a convergence and juxtaposition of contrasts. The conspicuous differences highlight a developmental trend that is both grounded in the responsive adaptation to evolving lifestyle requirements, while also reflecting a commitment to uphold the proud Ifugao tradition and identity.

Figure 20. A closer look at Sitio Babloy where we see both traditional bales and more novel-looking structures.

Landscape Resilience. In many ways, the landscape of Batad may be considered a highly resilient "slow-change landscape." As the term implies, transformations in such areas have been gradual and subtle, enabling them to retain their distinct character and identity (Selman, 2012). In Batad, the enduring presence of its traditional bales amid its vibrant rice terraces exemplifies its resilience as a "slow-change landscape." However, attributing this resilience solely on its remoteness and difficulty of access would be an oversimplification. Its landscape's resilience is underpinned by a variety of factors including:

1) **Alignment of Socio-Cultural Drivers with Ecological Processes.** This is manifested through the persistence of its rice farming culture, with its social capital and economy ingrained in the way the land is used and its settlements are built.
2) **Capacity for Adaptation and Intergenerational Learning.** This is achieved through passing on collective memories about the landscape, and the Ifugaos' cultural identity.
3) **Enforced Community Norms.** Central to Batad's resilience is the presence of mutually agreed values and social norms that emphasize responsible custodianship and "intelligent care" of the landscape.

The apprehension towards alterations seen in Batad's traditional bales might be perceived as a threat to its resilience. However, it is crucial to underscore that Batad's landscape has endured for centuries, nurturing a diverse agroecological system that has immensely benefited the Ifugao people. Insights from local residents gathered through interviews reaffirm their strong commitment to conserving the landscape along with their traditional bales, which continue to contribute significantly to their well-being. To further ensure the sustained resilience of Batad, targeted and well-guided support for the conservation of identified areas in close collaboration with Batad's community, and in consideration of their core cultural values may be implemented

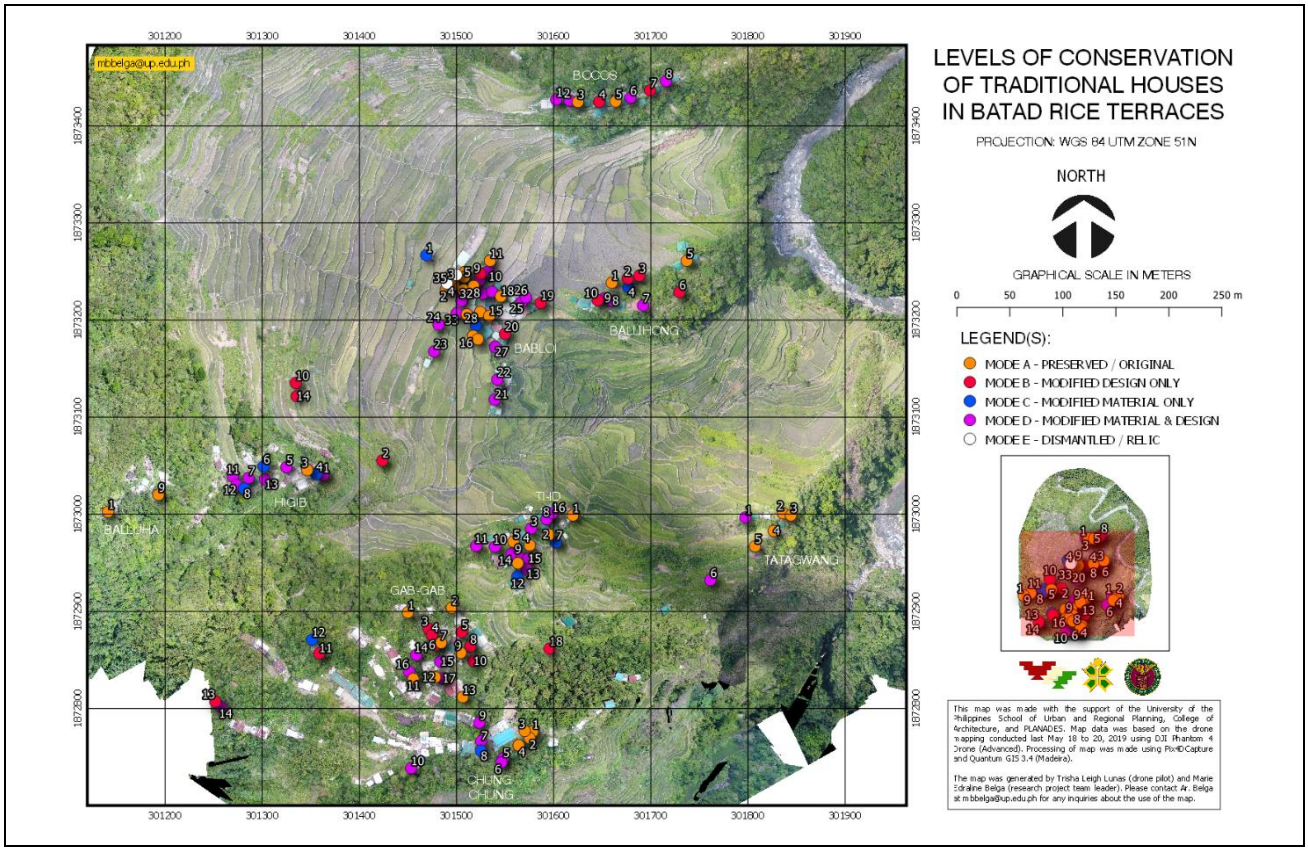

Figure 21. Map of the distribution of traditional houses in Batad based on their levels of conservation.

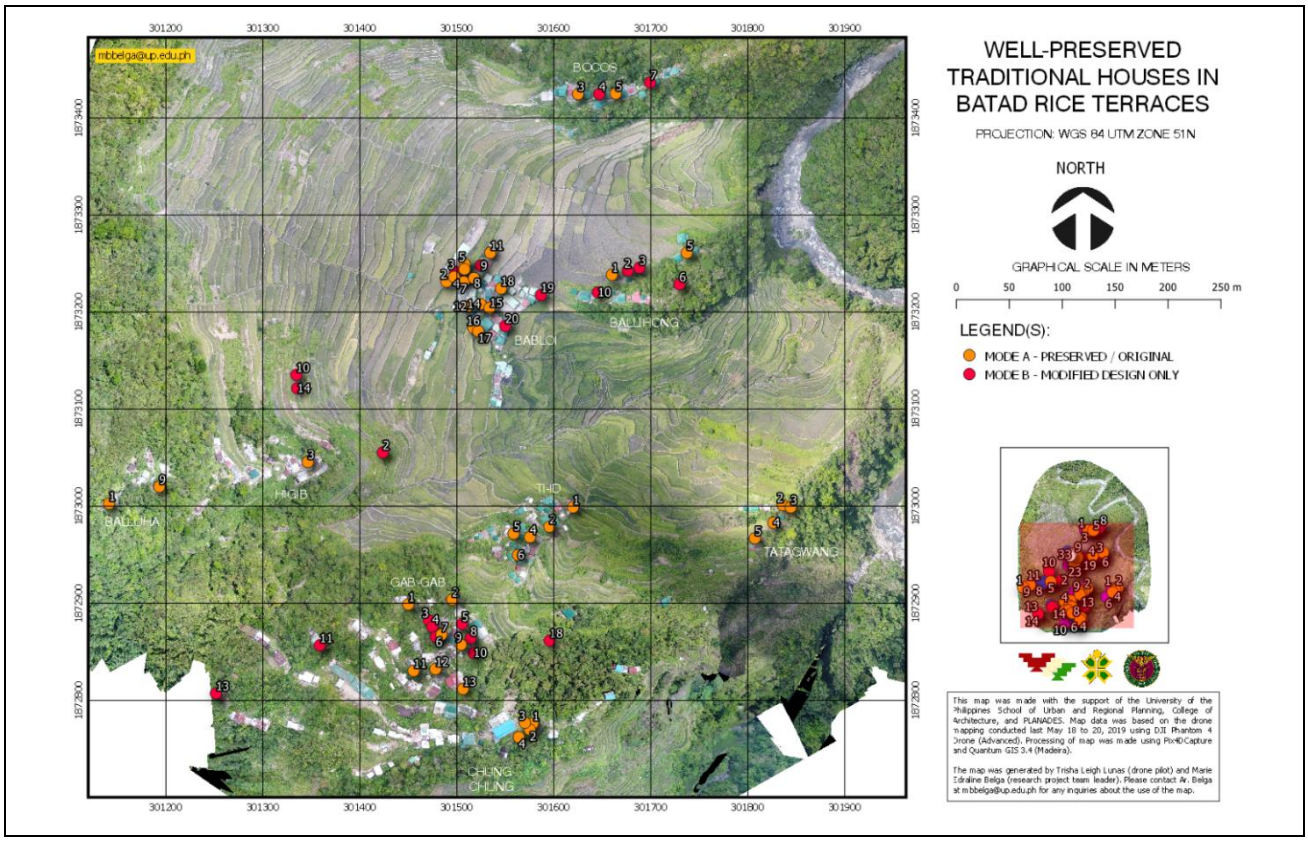

Figure 22. Map of the distribution of bales categorized as Modes A and B, or those with close resemblance to traditional bales.

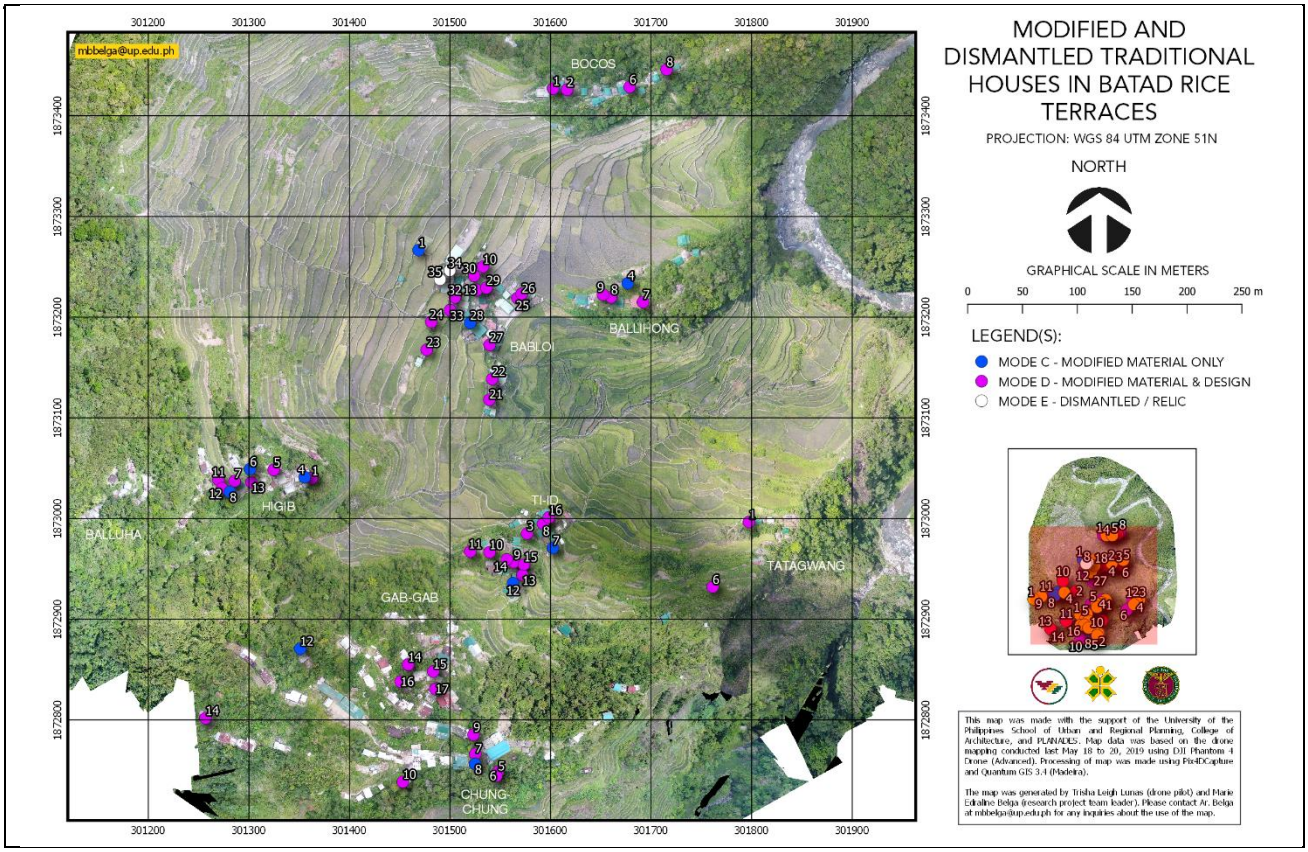

Figure 23. Map of the distribution of bales categorized as Modes C and D, or those that employed significant modifications that deviate from the original design and construction of the traditional bales.

VI. Conclusion

The majority of this study focused on showcasing observations about the tangible (physical) changes in the traditional houses (bales) of the Batad Rice Terraces. Contemporary transformations observed include varying levels of restoration, renovation, and adaptation. There were modifications in the materials used, architectural elements introduced, physical configuration adopted, and occupancy (spatial use) of the bale(s).

Insights from supplementary interviews conducted by the researcher also uncovered intangible drivers of change in the bale(s) form and materiality. The factors revealed included environmental shifts, social shifts, and economic shifts. The most important realization that has to be underscored is that the resilience (and sensitivity) of Batad's traditional houses (and landscape) to change is highly contingent on the continuity of their rice farming culture and their traditional core community values of neighborhood cooperation and collaboration.

The significant decline of traditional practices such as "badchang," and "pag-uuma" apparently impact many facets of the Ifugaos way of life. They appear to impact the ease of preserving heritage assets, as well as disrupt ecological processes, ecosystem services, and local economics. With these findings, we find that external assistance by well-meaning groups introducing monetary currency may have inadvertently contributed to the decline in the practice of "badchang" or "bayanihan" in Tagalog. National government policies on forest management must be reviewed to take into consideration the local (and scientific) context of communal forestry management practices, as they may have undermined the sustainable practice of "pag-uuma," thereby eventually depriving the local Ifugao custodians of native materials traditionally used in their "bales." These serve as strong reminders that any intervention to restore cultural heritage assets in these indigenous communities should not come at the expense of eroding the fundamental community core values that once supported their landscape's sustainability and resilience.

It is critical that programs and projects for this heritage site be well-informed and conducted in close collaboration with the Batad community. These collaborative efforts should closely take into account any potential impact on the Batad community's core cultural values, and consider how projects can be aligned to further enrich and sustain the community's customs, while at the same time harmonizing the said interventions with the evolving needs of the Ifugao people.

On the other hand, it is worth noting that the documented changes implemented by locals to their bale(s) played a crucial role in ensuring their preservation and continuous use, as well as adapting to changing socio-ecological conditions. Emphasis must be placed on the fact that Batad

is not simply a vestige of the past, but a dynamic and evolving community of indigenous people facing contemporary challenges. Given this premise, it is only natural to observe changes in their lifestyle, which are reflected in their dwelling arrangements. The Ifugao people have evolving and modernized requirements that necessitate bright, roomy, and well-ventilated spaces for purposes such as studying, socializing, recreation, etc. The introduction of formal education, interaction with foreign cultures, and the utilization of new technologies have also impacted their outlook on comfort, prosperity, and lifestyle. Ultimately, the observed changes were undertaken by Ifugao families to meet their evolving requirements and circumstances.

While the study has pointed out the many changes (tangible and intangible) that influence the configuration of Batad's traditional bale(s), it is important to note that the indicators point out that there is also a strong level of conservation observed among the bale(s) of Batad Rice Terraces. Surprisingly, most of the bale(s) examined were well-preserved with respect to their form, materiality, and traditional use (occupancy). Regarding their use, the majority continued to serve their original function as private residential dwellings and rice granaries. This corrects the misconception that well-preserved bale(s) are only primarily used as tourist accommodations, emphasizing that the conservation of Batad's heritage assets and landscape is actually highly reliant on the vitality and resilience of its rice farming culture. Although tourism has the potential to support the conservation of the bale(s) in the Batad Rice Terraces, Ifugao rice farming, and its associated customs have been confirmed as the most potent drivers of local heritage conservation.

Consequently, the findings of the research strongly suggest that local policymakers and other stakeholders reassess their development priorities and formulate development interventions that focus on strengthening and further enriching rice farming practices above all else. It must be strongly emphasized and reiterated that programs and projects supporting Batad's rice farming culture should be prioritized as it was apparent in the results of the study that it was the main driver of resilience and preservation of heritage assets in Batad. However, it also cannot be denied that tourism has also been found to drive the conservation of heritage assets, in particular—the traditional "bales." Tourism projects and programs therefore must be ideally implemented with the goal of linking with and further enriching the rice farming culture of Batad.

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