

# Adaptive reuse of historical building heritage in Lofoten, Norway

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**Abstract.** The present paper is developed from the teamwork carried out in the context of the „Adaptive reuse of historical building heritage in Lofoten” workshop, organised in Norway as an intensive programme for higher education learners. The workshop was an activity of the VVITA project: „Modernizing learning and teaching for architecture through smart and long-lasting partnerships leading to sustainable and inclusive development strategies to vitalize heritage villages through innovative technologies”, financed by the European Commission through the Erasmus+ Programme. Workshop participants, with different backgrounds, gathered to propose a model for the adaptive reuse of traditional buildings in the Vestbygda commune, with the underlying purpose to revitalize the entire area for a smooth transition into a new socio-economical context. The proposed project addressed local issues like depopulation and economic decline, starting from a particular building that would become a catalyst for the revitalization of the entire village and even of the entire area.

**Key words:** rural heritage, sustainable rural development, heritage valorization, strategic partnerships.

## 1. Introduction

### 1.1. Background

The “Adaptive reuse of historical building heritage in Lofoten” workshop organized in Norway between 20 and 30th of June 2018 as an intensive programme for higher education learners is the 1st Learning & Teaching activities of VVITA Project, an Erasmus+ K203 Strategic Partnerships for higher education between Ion Mincu University of Architecture and Urbanism (UAUIM) - coordinator, University of Catania (UNICT) and Norwegian University of Science and Technology (NTNU), that raises the question of European high education and underlines a thematic approach of complexity on rural heritage conditions emergencies, actual chances and challenges where traditional division of disciplines are outdated. Participant universities have different approaches and profiles offering diversity in the project; cooperation sets up creativity and discipline interference based on identity. Engineering disciplines focus on technical-economic aspects, architecture brings focus on architectural design and aesthetic approaches, while urbanism disciplines focus on territorial development and cultural landscape.

The area where the workshop had its main focus is Lofoten, an archipelago of islands located on the north-west coast of Norway, often discussed as potential candidate as UNESCO world heritage site for its astonishing nature and historical heritage. The main economic activity in the area was fishing, followed by farming in the parts of the islands that were cultivable.

The built environment is dominated by wooden houses, laying on stone foundations, many of which display green roofs that act as an effective thermal insulation while blending



beautifully with the landscape. Most families sustained themselves in the past by fishing or cultivating the land and owned, beside a house, a “fjøs” for animals and a “brygge” by the water, where fishing equipment was stored.

Today, the stockfish industry is still very present, but at a different, industrial scale, as a wealthier economy throughout Norway favoured the transition of a large part of the population into the tertiary sector. Nowadays, Lofoten’s main economic sectors are large fishing industries and tourism.

## **1.2. Workshop Objectives**

In Lofoten, the transition into this new economy, mostly relying on tourism and large fishing industries, is leaving behind buildings and territories that until the mid-twentieth century represented the structural core of socio-economical life in the islands. Workshop participants, with different backgrounds and affiliated to different universities, gathered to propose a model for the adaptive reuse of traditional buildings in the Vestbygda commune, bearing in mind an underlying purpose to revitalize the entire area for a smooth transition into a new socio-economical context. Solutions aimed to address environmental concerns while still respecting historical values of the selected case studies. Participants, divided in multidisciplinary groups, worked at different scales and typologies covering issues related to climate adaption, socio-economical issues and historical buildings preservation.

## **2. Description of work carried out**

### **2.1. Task 1. Analysis of relevant case studies**

During the first two days of the workshop, all participants attended lectures at NTNU in Trondheim, with the purpose of getting a clearer understanding of the historical background of the area, as well as getting acquainted with the specifics of the built environment, learning about local building techniques and about ways to assess heritage values and to propose different types of interventions based on various criteria. End of lectures, a visit was organized to NTNU’s Living Lab, a multipurpose experimental facility, focused on the occupants’ patterns of interacting with the innovative building technologies installed on the premises.

The third and fourth days were dedicated to study trips in the Lofoten area, visiting settlements like Å, Reine, Nusfjord and Henningsvær, which offered opportunities to explore the area, perceive the landscape and to learn more about both history and status quo.

Å is the southernmost town on the island of Moskenes and it used to be a small fishing village specializing in stockfish, before tourism prevailed as main economic activity. All the buildings in Å are under cultural heritage protection and nowadays most of them function as holiday homes, while some are still used by active fishermen.

The visit to the Norwegian Fishing Village Museum (Fig. 1) provided an experience of immersion into the past, with detailed information on fishermen’s lives and their homes



(rorbuer), fishing boats and thorough description of activities like cod-liver oil production.



**Fig. 1.** Former fishermen's cabins in the Norwegian Fishing Village Museum.

Nusfjord is one of Norway's oldest and best preserved fishing villages. Again, today it is a touristic hotspot and the touristic offer is quite varied, most of the inhabitants working in this sector.

Nusfjord has an intertwining building area, which evolved at the end of the 19th-Century and the beginning of the 20th-Century. Most of the buildings are well kept and have been renovated keeping the same appearance and atmosphere. In recent times, Nusfjord has been modernised in keeping with developments that have occurred in the transition from being purely a fishing settlement to a modern tourism business where its proximity to the sea, its cultural landscape and its resources stand out as comparative advantages.

The Norwegian Directorate of Cultural Heritage has granted protected status to 5 buildings in Nusfjord. The fact that altogether only eight buildings have been granted protected status anywhere in Lofoten further underlines the status of Nusfjord as an example of the preservation of buildings of notable national heritage value.

Two small-scale recent interventions are distinct in the village as contemporary touches that blend very well with the landscape and provide spaces of relaxation for visitors: the Nusford outdoor SPA (Fig. 2) and the Tensegrity terrace in front of Karoline restaurant. Both projects were designed by a studio group of architecture students and teachers that spent five weeks in Nusford to build them.

Henningsvær (Fig. 3) is also a fishing village located on several small islands in the Lofoten archipelago. Due to its traditional fishing village architecture and due to the natural surroundings, Henningsvær draws many tourists. Rock climbing and diving/snorkeling are also popular tourist activities.



**Fig. 2.** The open air SPA in Nusford, in use even in the days with less than perfect weather.

Successful functional reconversions such as the the waterside wharf turned into arts & crafts shop with exhibition and glassblowing and pottery making studio or the Kaviar Factory turned into a gallery of contemporary art attest to old fishing villages' potential to thrive in the new tourism era.

## **2.2. Task II. Vestbygda Project**

Between 24-29th of June, the entire participants' group worked together in Vestbygda, hosted by the local school, in an attempt to bring forward feasible proposals for the social and economic regeneration of the area. Divided in interdisciplinary and international teams, the students tackled these issues starting from a particular building that would become a catalyst for the revitalization of the entire village / area.

The group project presented in this paper focused on the building known locally as Kristiansen Hus, by the name of its former owner (or "The Doctor's House", as the visiting doctor used to have a room rented for his cabinet in the house).



**Fig. 3.** Henningsvær waterfront.

The project approach was structured around three main themes (subtasks):

- SITE AND PROGRAM

The overall objective of this task is to develop a contemporary and future use strategy for the area. This new use has to be manifested through architectural interventions on the built environment as well as new activities and functions proposed for various buildings.

- CLIMATE AND FORM

Digital tools for climate analysis and energy modelling make it possible to explore the potential of alternative retrofitting solutions during the early stages of the design process. This way, the analysis of climate data are used to inform the proposal so that all interventions contribute towards transforming vernacular buildings into highly energy efficient buildings adapted to the present and future local climate conditions.

- HERITAGE PRESERVATION

By assessing the multi-value of historical buildings and evaluating their state of decay, relevant knowledge is created that will contribute to guiding decision-making for keeping and retrofitting the buildings and/or proposing stronger interventions that change the original structure and volume of the house. The current decay analysis and identification of conditions that may trigger decay in materials is done with the use of monitoring devices such as IR camera, moisture meters, thermos-hygrometers to evaluate surface temperature and moisture content in the materials, air temperature and relative humidity etc.

The proposals were developed based on both qualitative and quantitative methods, as participants had the opportunity to discuss with locals, including local business owners and

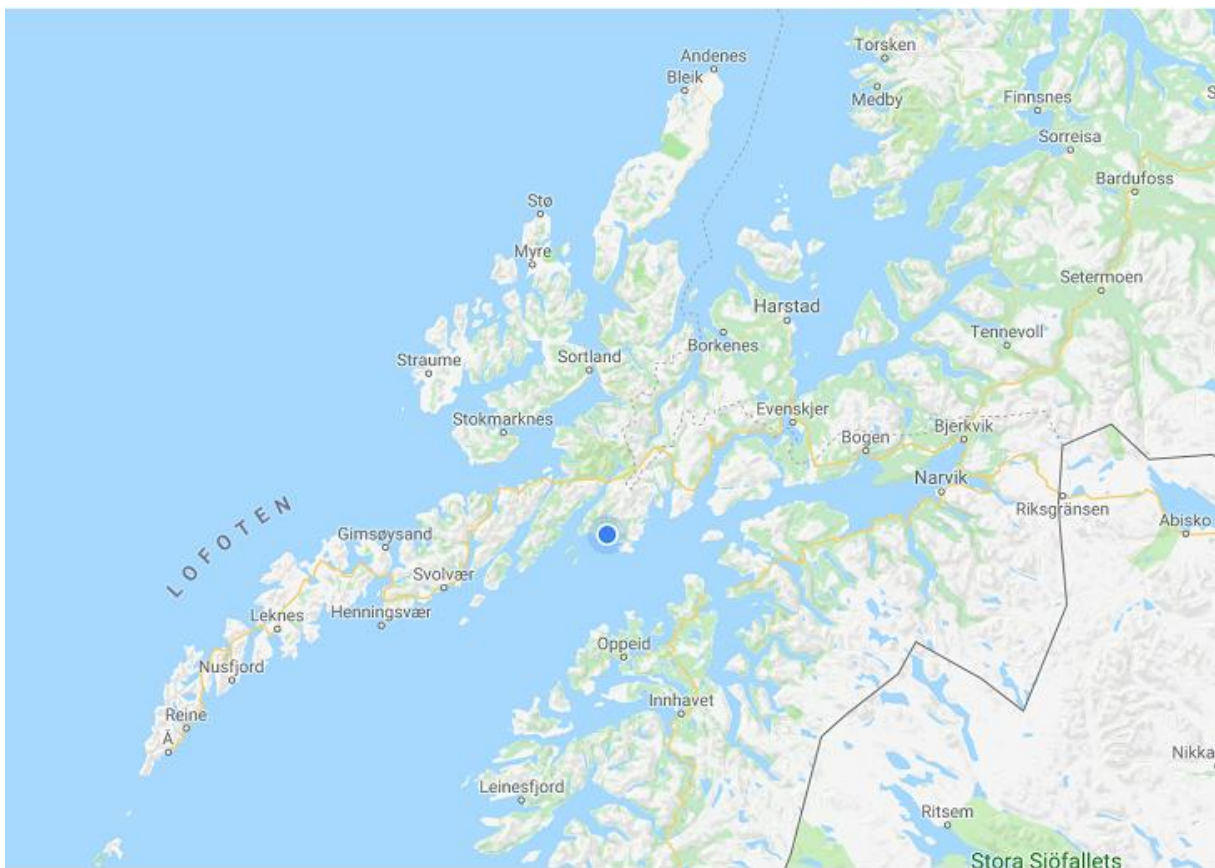
people that have relocated in Vestbygda to change the scenery and break from the big city life, and had the chance to work with state-of-the-art measurement tools and climate data processed by specialized software.

On June 29 the teams' project proposals were presented to the general public in the Vestbygda school and discussed as ideas for revitalization of rural heritage that would have the potential to attract new people and businesses in the area.

### 3. Discussion and results

#### 3.1. Status Quo and Vision

Vestbygda is a rural area in the north of Nordland county, 200 km north of the arctic circle (Fig. 4).



**Fig. 4.** Location of Vestbygda in the Lofoten archipelago.

Vestbygda used to be a thriving community based on fishing and farming, but is now severely depopulated. In comparison with 1958 when the population counted 2000 inhabitants, today only 200 people live in the area. The community school that was built in 1964 has the capacity to host 120 pupils, however, nowadays, less than 20 pupils use the facility. The main reason for this demographic decline is the change in fishing industry, replacing small family owned businesses with large companies that are no longer located in Vestbygda. With this change, connected functions like fish reception centres that bought



fish from the fishermen are now gone and the cod liver oil factories are closed and demolished.

Some farms still exist, however nowhere near as many as before. One of the new and successful initiatives in this direction is the goat farm next to the school, also comprising a restaurant that serves dishes cooked with local products.

The building that represented the Vestbygda revitalization catalyst in the authors' proposed project is **Kristiansen Hus** (Fig. 5), a place that is well known and has a particular significance in the community. From the interviews with the locals, all of them would be particularly happy to see it brought back to life, hosting new activities.

The house was built in the 1980s and it has been abandoned for more than 20 years, therefore its general condition is rather poor. The owner intends to give it away to someone who would refurbish it and keep, as much as possible, its general character while bringing back its old charm.



Fig. 5. Kristiansen Hus.

The project approach was structured by the three subtasks presented in chapter 2.2 and by the way they interconnected to generate an integrated solution, keeping in mind that it also needs to address:

- a specific **theme** for the overall revitalization strategy that takes into account creating attractiveness for people to come/live in Vestbygda, seasonal change in profile and type of activities as well as a clearly defined **target group**;
- proposed architectural **interventions** related to both refurbishment of the existing structures and new structures;
- creating a connection between the interventions on the building and the vision for the entire area, through **scale jumping**.

Analysing the Vestbygda area, the identified **strengths** were: the unique landscape and breathtaking nature, the potential generated by the rural heritage and local specificity derived from traditional activities that are still present to some extent and the openness and welcoming nature of the local community.

Compared to other Lofoten touristic hotspots such as Nusfjord or Henningsvær, Vestbygda may seem a bit disadvantaged, as it is quite remote and not so easily accessible. However, these characteristics may be turned into strengths if the right target groups are addressed. Perhaps it is better that mass tourism does not seem like an easy development option, as this leaves place for a different type of tourism, oriented towards a particular niche.

In this sense, the **vision** for Vestbygda is that of a place fostering **health, wellbeing and mindfulness**, that will attract people seeking solace in rural living, people that love nature and need to feel (re)connected to it or people that simply need to take a break or even change their settings completely from the mundane city life.

Kristiansen Hus, reborn, is envisioned to act as catalyst for this renewal by becoming the „**View to the South**” **Wellness Centre**, named after the most scenic view from the house (Fig. 6). The intention for it is to develop as a regional hub, well connected in terms of activities and resources exchange with the other buildings in the village and in the area, a hub that will catalyze the regeneration of Vestbygda by bringing in the people that need to be regenerated themselves.



**Fig. 6.** The most offering view from the building, the View to the South.

### *3.2. Site analysis and functionality at the village scale*

Kristiansen Hus is located approximately half-distance between the harbour area and the main road connecting the settlements in Vestbygda (Fig. 7), thus being in a central and accessible area. In its immediate vicinity, the community school and retirement homes for the elderly are found. In a 3 to 5 minutes walk, the harbour, the old shop, the grocery store, the community house and the goat farm and can be reached, while a walk of 8-10 minutes will lead to the southern shore and the church (Fig. 8).

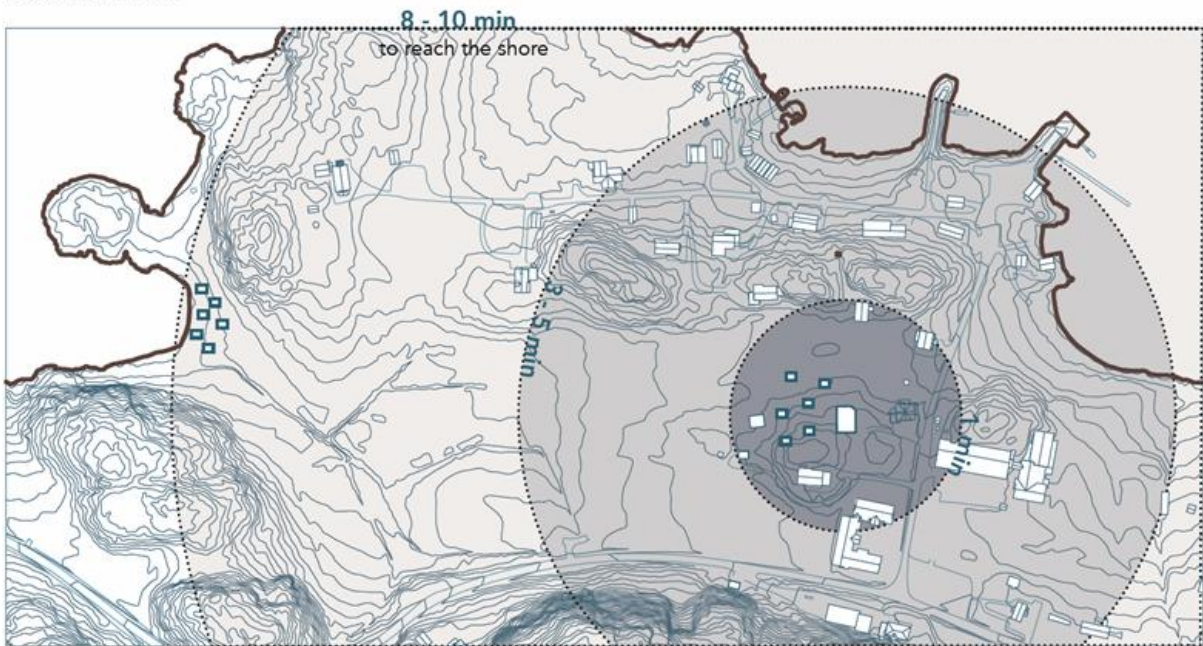


## SITE ANALYSIS



**Fig. 7.** Site plan.

## DISTANCE MAP



**Fig. 8.** Distance map showing the walking time to the closest facilities.

### *3.3. Building analysis and proposed interventions*

The analysis carried out by visual assessment and with the measurement tools revealed that, on a superficial level, evidence of decay of materials was present in many parts of the house, while the structure appears still solid. However, the most degraded element is the southern facing wall (Fig. 9).

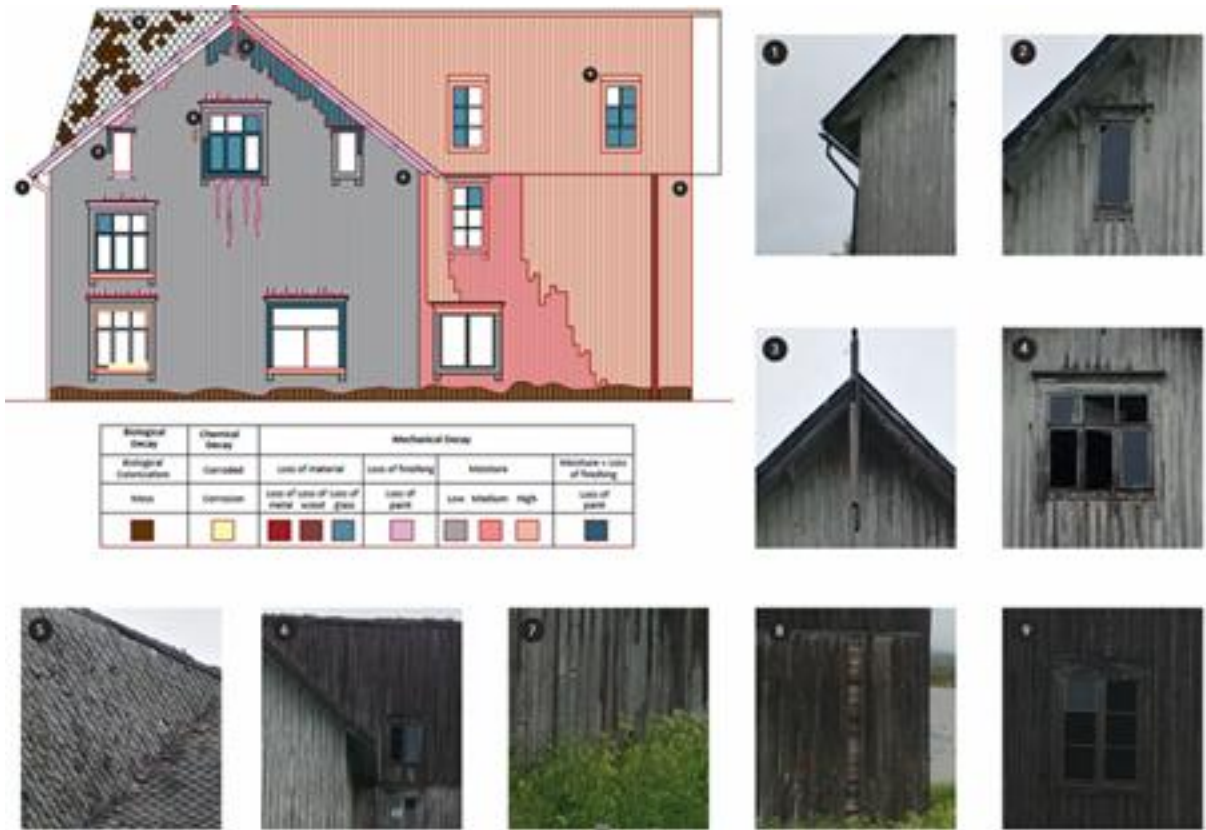


Fig. 9. Decay map showing the pronounced degradation of materials on the southern wall.

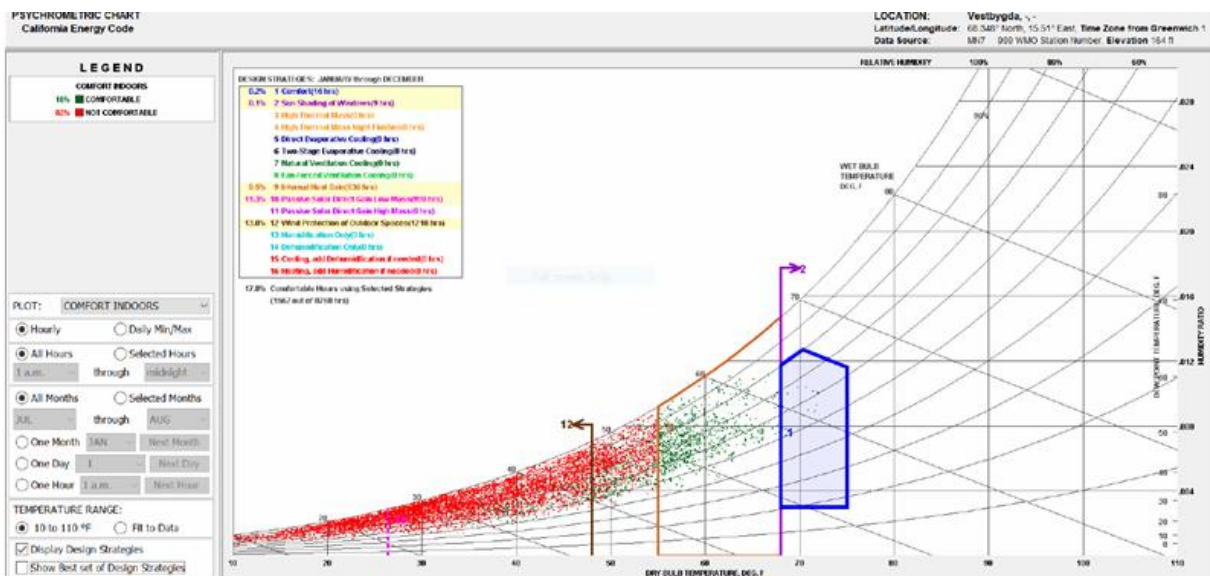


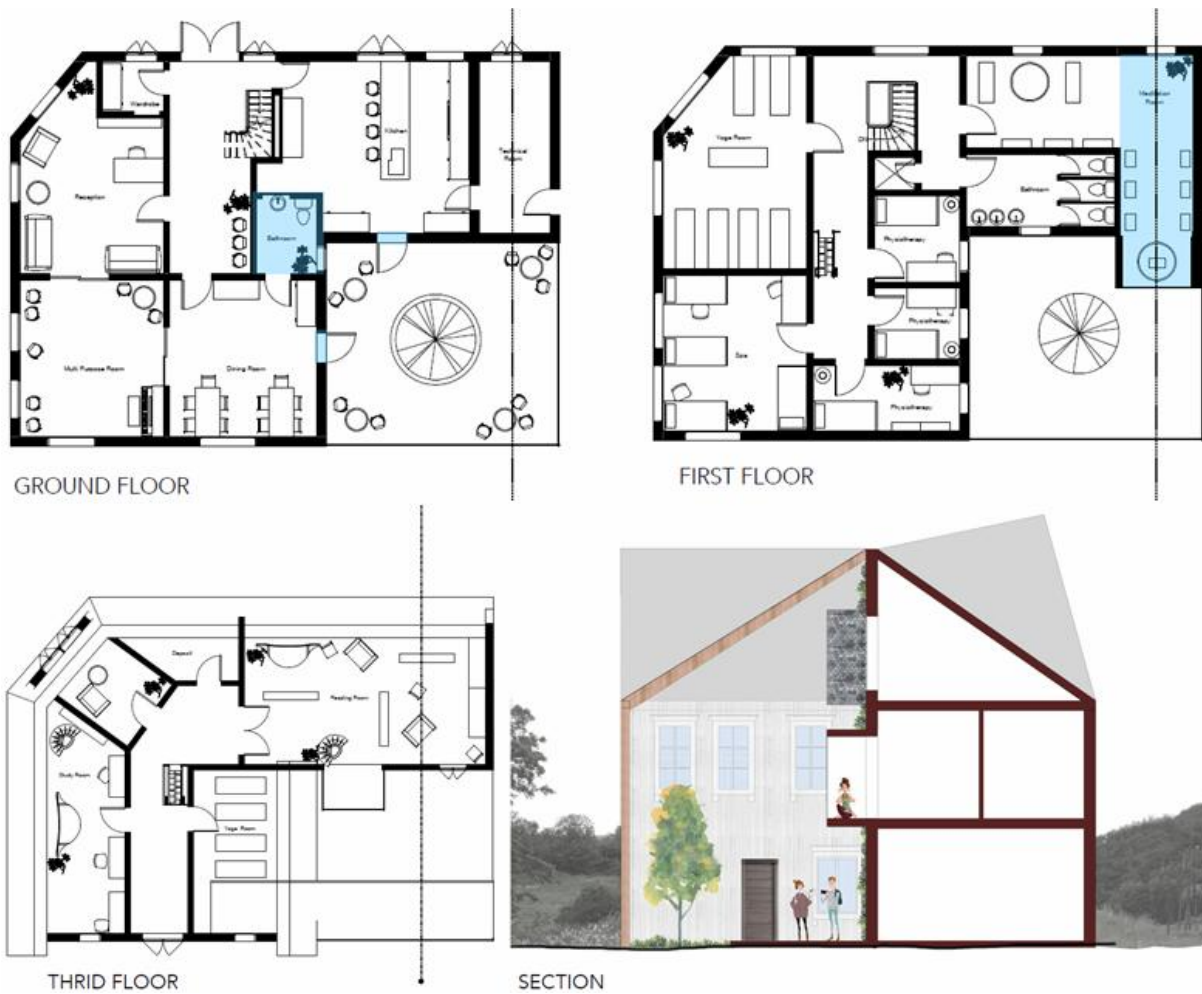
Fig. 10. Climate analysis. Psychrometric chart showing the increase in the thermal comfort gained by adding the glass volume to the existing building.

Climate analysis (Fig. 10) revealed that by adding a new glazed element as an extension to the south, to complete the unfinished volume of the building will bring a gain in thermal comfort and increase the overall protection against the climatic factors.

From the heritage maps available on environment.no, the building is not listed as protected heritage, therefore there is a freedom in the interventions proposed from a legislative point of view.



**Fig. 11.** Rendering of the new image of the house after interventions.



**Fig. 12.** Reorganizing the existing plans to serve the new functions of the building.

Taking these considerations into account, the project proposes to refurbish the house with minor changes to support the new functionality, to dismantle part of the southern wall and to complete the existing volume by adding a greenhouse with glass walls (Fig. 11).



**Fig. 13.** Concept of the new accommodation and sauna units.

In terms of functionality, the new house plans will be organised to support a wellness centre (Fig. 12). The ground floor comprises the reception area, a kitchen and a dining room, a multi-purpose room that can be used for creative activities (poetry reading, creative gatherings, singing and dancing lessons) and the greenhouse area that will host a teahouse and will provide the community and visitors the opportunity to relax by doing indoor

gardening when the weather is unfavourable. The building is envisaged to serve both visitors and locals, by hosting areas that are open to the public on most of the ground floor.

On the first floor, that is dedicated to the customers of the wellness center, a spa area, physiotherapy units, a yoga room and a meditation space are placed.

Since the accommodation offer is very limited in the area, new accommodation units will be developed and placed on the same plot of land, in the direction towards the shore (Fig. 13). These new units are inspired from traditional small buildings that can be found in Vestbygda and are constructed following earthships principles, in such a way that they are seamless in the landscape (minimal indoor space and overall size, green roof). The people that will be accommodated in these units will be able to observe during the winter season the northern lights through a skylight placed on the top of the huts. Some of these units will host indoor saunas while an open air sauna may also be planned along with other small scale landscaping interventions. To the south of the house, a remaining foundation of an old annex can be found, which will be used by being reconverted into an outdoor grill space.

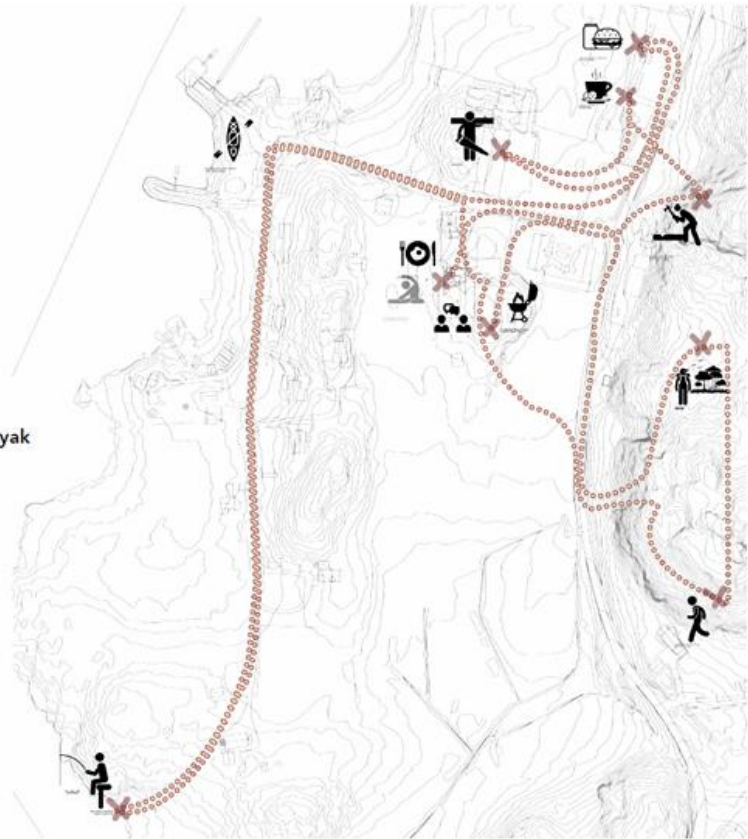
In terms of creating functional interactions that will support the revitalization of the entire area, the Wellness Centre represents an articulation node in a web of activities, some of which are already existing, that can converge towards this purpose (Fig. 14).



**Fig. 14.** Activity map depicting planned co-functionality within the entire village.

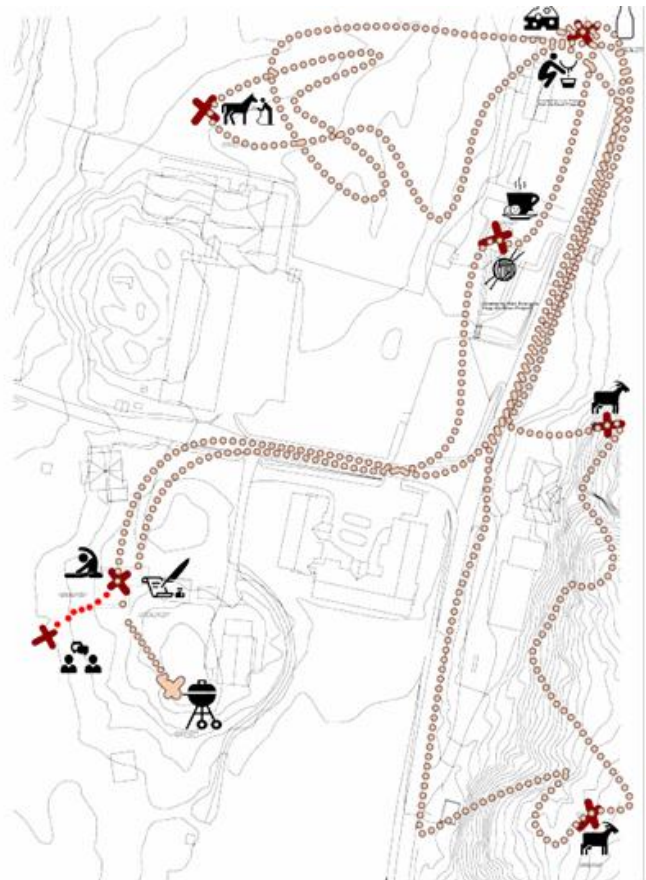
In this sense, the center will cooperate with the goat farm, that can be providers of local organic products such as dairy and meat. In the same time, the center's visitors are able to go and see the farm animals and even get practically involved by working at the farm.

- 7:00 Jogs in the forest
- 8:00 Breakfast
- 9:00 Meditation
- 10:00 Fishing with local Björn
- 13:00 Lunch at the farm
- 14:00 Carpentry workshop - working at his kayak
- 16:30 Coffee
- 17:00 Gather wood for the fire
- 18:00 Barbecue - cooking the caught fish
- 20:00 Chilling with Ariana



**Fig. 15.** Personalized activity map for an active nature lover.

- 7:00 Yoga - in doctor's house
- 8:00 Breakfast
- 9:00 Tends the goats in the farm
- 10:00 Takes a walk with the goats
- 13:00 Lunch
- 14:00 Hangs out knitting with the people in the common house
- 16:00 Spa / Physiotherapy
- 18:00 Reading club in the doctor's house
- 20:00 She chills with Philip



**Fig. 16.** Personalized activity map for a seeker of health and wellbeing.

Since the school building is now oversized for the existing population, part of that building will be acquired by the center and the existing spaces and even some of the existing equipment will be used for arts and crafts workshops. The current users of the common house may offer knitting and weaving lessons to the visitors.

The closeness to the shore provides for multiple opportunities related to fishing and water sports while the wood and rocks formations to the north are very offering for rock climbing, hiking and wilderness observation.

As very specific target groups were considered when defining the new programme for the building, this aspect was showcased by creating some examples of visitors profiles and the activities that they would be able to enjoy in a regular day in Vestbygda. The custom made activity maps detailed below have been developed for specific visitor profiles: 1. a man that is a nature lover, fishes as a hobby and enjoys engaging in adventure sport (Fig. 15) and 2. a woman that spends much time working in her office therefore has health issues that require physiotherapy and generally needs a break from the bustle of the city life (Fig. 16).

#### **4. Conclusions**

Based on the examples of the villages visited as case studies, on the knowledge gathered in Vestbygda and personal experience of the place, as well as on inspiration drawn from perhaps less common personal success stories (such as the young man that moved from Oslo to open his own farm and now is active in the local community in Vestbygda or the family that opened the goat farm that is now an attraction in the area), it can be concluded that Vestbygda has enough potential to attract new people, new businesses and to reverse the process of depopulation.

For this purpose, making use of the local specific cultural and natural heritage and refurbishing and reusing the existing building stock is a required course of action. Projects such as those proposed during the workshop, starting as small scale investments, carefully placed in a larger functional context, may become catalysts for the entire area's regeneration by bringing new life to a shrinking rural settlement.

#### **Acknowledgements**

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<sup>1</sup> The project activities and results are available at: <http://vvita.uuim.ro> or on VVITA Social Media: <https://www.facebook.com/VVITAerasmus/> [https://www.instagram.com/vvita\\_erasmus/](https://www.instagram.com/vvita_erasmus/) [https://www.youtube.com/channel/UCG0KROcbjQ5gTefab7ENUuw?view\\_as=subscriber](https://www.youtube.com/channel/UCG0KROcbjQ5gTefab7ENUuw?view_as=subscriber)



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