

# The [dis]position of Albanian Adobe Constructions. The potential of earth as a traditional building material in the future.

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## **Abstract**

*In traditional societies, building construction was related with local materials available in situ. In Albania, traditional architecture is especially built with adobe in the lowest areas, especially near the coast and with stone especially in the mountains. The scarce resources of stone near the coast and the facility to build with mud bricks, has made possible its implementation both in urban and rural dwellings. The greatest number of adobe constructions belongs to the Ottoman period and lasted until the first decades of nineties. This paper focuses in analyzing the design principles and the constructional elements of the traditional earthen architecture in Albania. Through the documentation and study of the local traditional adobe construction systems, it would be more interesting to understand its potential use today.*

*This paper's analyses are based on large-scale in-situ research made with students in the framework of the restorations course at Polis university, which includes field survey, archival research, detailed photographic recording of the remaining traditional buildings mainly in central Albania and literature review of the main causes of deterioration of adobe structures. Analysis of spatial distribution of housing typologies, basic structural elements, and different construction systems influenced by the geographical position highlight specific earth architecture techniques used in different traditional building typology. Based on the collected data and critical analyses, this paper will provide some useful suggestions concerning the typology, form, and the construction techniques of traditional earth buildings, and it will guide us in finding some techniques currently used for the restoration and preservation of traditional adobe buildings and the use of new earth buildings construction in particular locations.*

## **Keywords**

Adobe architecture, traditional buildings, earthen material, contemporary use, revitalisation, preservation

## Introduction

The adobe construction technique is one of the oldest methods of construction known to humans. The adobe consists of sand, soil or clay, water, and a fibrous or organic material such as straw or manure. Its preparation with sun-dried bricks is simple low-cost. The term “qerpiç”, known as adobe in English, or al-tube from Arabic, or thobe in Egyptian, corresponds to a building material made of earth and other organic materials. According to H. Raulin<sup>1</sup> (1990), worldwide, there are three main techniques mainly used for the construction of adobe walls, which are: *adobe walls mixed with fiber from woody plant materials such as ground straw, hay, cattle waste, etc; pure clay without the presence of a mixture of vegetable matter*, with the use of lime between each paving and the last one is earthen bricks dried in the sun. The first methodology is applied in different countries in Europe, and it was still applied at the end of the nineteenth century in the west of France. The second one, which is also known with the term *Pisé*, is realized by compacting the clay with a kind of earthenware pressing between two wooden walls connected to each other by beams. The use of lime between each paving and the regularity of the walls distinguishes this technique from the first one. In the third technique, sun-dried bricks are connected to each other with clay mortar. This first and the third techniques are also used in Albania, differently from the second technique, which is not known in this area.

In Albania, adobe constructions belong mainly to the Ottoman period. The scarce resources of stone in some areas in Albania have pushed the people to define new ways of using local materials in constructions. The ease of using earth as a building material in particular regions of Albania, because of the geology formation of the terrain, especially in the central and western parts, has made possible the implementation of both urban and rural earthen dwellings with a distinct architectural identity. Nowadays, the earthen urban typology is under risk due to the abandonment, non-maintenance, and the decay of these houses. Restoration techniques for both urban and rural dwellings are missing. In this research, the aim is not only to document different typologies of earthen building according to their space distribution, volume form, construction techniques and materials combinations, but also to find out some design principles, which can be useful for the restoration, preservation and construction of new earthen buildings especially in rural areas.

## Geographical location of earthen architecture in Albania

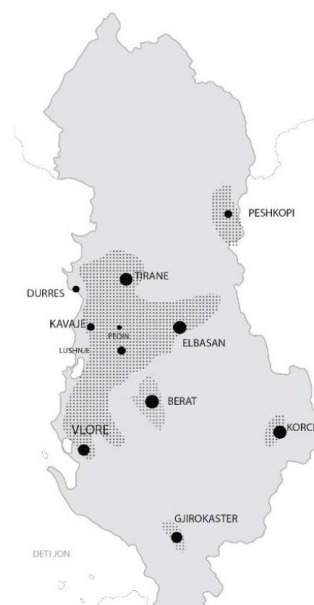
Traditional houses in Albania are mostly constructed with stone in combination with wood. In some areas, the stone was not easily found and the cost for its provision was high. For this reason, people used earth as a local material in construction, which was peculiar especially in the lowland of Albania, even though it was also used in some regions near the mountains. We

<sup>1</sup>Henri Raulin, (1990). *Konservimi dhe vendi qe ze ne kuadrin europian arkitektura shqiptare, kryesisht banesa qytetare dhe ajo e ndertuar me qerpiç, ne Monumentet 2, Tirane, f.65*

can classify three different techniques of adobe constructions used in Albanian traditional buildings that are closely related to geographical areas.

The first area, and the main one for the concentration of adobe buildings, is the lowland of western and central of Albania. According to Muka (2001), earth, wood and reed were the main materials used to build walls in the wetlands of Myzeqe in the upper region of the city of Vlora. It was also, widely used in Tirana, Elbasan, Durres, Kavaje, Peqin, Rrogozhinë, and Lushnjë villages, all parts of the lowlands of Western Albania. A similar use of adobe constructions can also be observed in villages surrounding the city of Korça, which although is quite a separate area, it has similar geological conditions to provide earth as a building material (Fig. 1, 3). In the lowland area, adobe was used for one or two floor residential buildings but also, for service and low-cost building and courtyard walls. In Central Albania the main typology of residential building was the fire house with one or two floor plans. Adobe was used for masonry walls and internal partition walls and was combined with other materials such as stone and wood. To protect the buildings from humidity, the foundations were built with river stone with a height of 15-20 cm from the ground level. The wood was used as horizontal timber beams in the walls, to reinforce the walls in better resisting earthquake. Timber beams were placed mainly every 0.7-1 meter-high, one in the internal part of the wall and the other on the outside for walls up to 70 cm wide, and another one was added for wider walls that went up to 1 meter of thickness.

Adobe walls, built with clay mortar, straw, and wooden beams, range from 40 - 60 cm, up to 90 - 110 cm (Muka 2007). According to Muka (2001) there were used two types of adobe: “thin” and “large” adobe walls. The thin adobe walls were usually constructed with bricks 20 – 30 cm wide, mostly belonging to



**Figure 1.** Adobe vilas distribution in the Albanian territory

modern techniques, while the large walls were from 40 to 100 cm, representing mostly the traditional techniques

In some cases, the stone was used only for foundations and the rest of the wall was in adobe, in other cases it includes the basement up to the first timber beam, but there are also examples of stone walls that can reach the second last beam and only a small part is built in adobe. In two storage buildings, for example, the first floor is usually made of stone and the upper part is in adobe. There are cases in which the side wall, exposed to the rain humidity is made of stone and the rest of the building is in adobe, or the outside walls were built in stone and the inside in adobe. In rainy areas, most of the walls were made of stone and adobe was used between the last two horizontal timber beams. In these dwellings, the roof of the house was wide to protect this part of the wall from the rain as adobe is vulnerable to humidity. According to (Muka, 2007) the ratio between stone and adobe in the tradition buildings in Albania is from 1: 4 to 1: 1. Typical for this area is also the use of the technique with *furka* to build walls. (timber frame infilled with mud or mud bricks). Most of adobe walls, especially in urban areas, were plaster with clay mortar and then smeared with lime. In Myzeqe area, it was mainly used with red earth. In this area we can sum up 5 variants of adobe walls based on the ratio between the stone and adobe, their position and the use of timber beams.

- The stone is used only for continuous foundations and reaches up to 15-20 cm from the ground level.
- The stone is used for foundations and reaches up to the

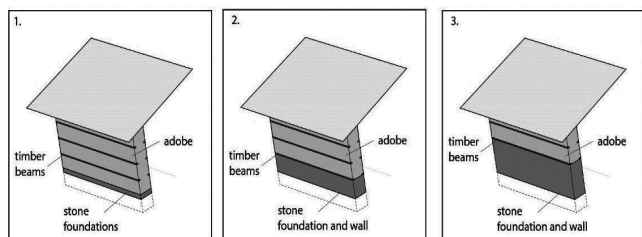


Figure 2. Adobe wall variants

first timber beam, in order to protect the adobe part from the water coming down from the roof to the ground and hitting the wall.

- In rainy areas, most of the wall is made of stone, and adobe was used between the last two horizontal timber beams. In these areas, the roof was wider to protect the walls from the rainwater.
- In rainy areas, where the stone is missing, the wall of the first floor is built in stone and that of the upper floor is built in adobe. The upper floor is less exposed to the rainwater.
- In rainy areas, sometime the outside walls were built in stone and the inside walls in adobe. (fig.2)

The second area of use of the Adobe walls, is in mountainous area in north-eastern part of Albania such as Peshkopi and Diber, especially in a few villages in the lowlands of the Drini i Zi river such as Kastriot, Sopot, Maqellarë, etc. Adobe techniques in this area are similar to those in the western and central part of Albania, but there are also other techniques used. The use of adobe walls built in timber frame with mud brick infills

can be found in these areas, a rare technique with the use of diagonals in wood timbers in order to better resist better the horizontal forces. (Fig. 4) The third area of use of the earth as a building material is Gjirokastra and Berat. The technique in these areas is very different with the first two mentioned before. The traditional houses in these cities are made of stone, and mud is used as infill material in the upper floor. The walls in the last floor are constructed by wood construction, and adobe is used as a filling material and as a plaster layer in both external



Figure 3 a,b,c. The use of adobe in the lowlands of central western Albania. View of the ground floor raised above the ground level. View of the inside house with perimeter walls in stone until 2m high and then the continuation is in adobe wall.

and internal part of the wall, or as a light ceiling. This technique was called "*çatmá*" which means a thin wall, with wood planks or twigs and painted with mud or plaster. This technique was used also for the ceiling not only in traditional houses but also in houses of the beginning of the XIX century. In Berat and Gjirokastra, there are some examples of *çatmá* made of wood and reeds and used for the upper part of the buildings, which was then white plastered with clay. (Fig. 5). Similar examples can be observed also in Myzeqe and Korça villages.

#### Analyses of Albanian key study with adobe walls

The widespread use of adobe as a building material in our country makes it an element of tradition, culture, and an added value



Figure 4. The use of adobe in Dibra area

of architectural evolution. Nowadays, cities like Tirana are losing their identity, the memory of their origin because of the demolition and non-preservation of traditional dwellings. In the authentic neighbourhoods of Tirana are still found earthen traditional villas, which are threatened by the large urban development of multifamily houses. Part of this heritage is ruined, due to their abandonment by the inhabitants, lack of maintenance by the authorities of heritage preservation, and the subsequent speculations of a multi-storey buildings. No initiative has been taken to restore, maintain them, or adapt them for another useful function. In Tirana, the main adobe villas are located in the old parts of the city, mainly along Dibër Street, Kavaja and Dur-





**Figure 5.** The use of adobe for the *çatma* technique in Berat e Gjirokastra rës Street and their transversal roads, or the eastern part along Elbasan road.

Raising the awareness of the younger generations about preservation and the reuse of these buildings for various purposes, such as social, culture and economic activities, seems to remain the only hope for the future. The urban houses in Albania from XV to XIX century, according to E. Riza (2009), can be classified into six typologies based on their compositional character:

- The Fire House, especially developed on two floors, around of which are distributed the other living and auxiliary spaces
- The Porch House (*Hajat*) has next to the living rooms, in front of the house, an open space with wooden pillars which is called the porch. This is a tampon space between the house and the courtyard. This house typology is mostly located in the central of Albania, in the lowlands.
- The *Çardak* House (*loggia*), is usually constructed in two-floor buildings. The *Çardak* element is built mainly on the main facade of the house, and in its original stage it was open. This space was greatly used by the residents during the warm season, because of the big windows in it and the presence of the natural light. The *çardak* or *loggia*, in Albanian houses is used in different typologies, all over the front facade, positioned only in one side or in the central part.
- The Fortified house, also known as *Gjirokastra* house because of its extended use in this city, is distinguished for its outstanding development height and its protective features.
- The Tower typology is mainly the tradition of the mountainous areas and is mainly built in stone walls.
- The Corner House (*Qoshk*), is mostly used in Korça, and in some cities in Kosovo, such as Gjakova, Prishtina, Vushtri, etc.

In the adobe villas taken as a case study in this paper, because of their different spatial distribution, they will be characterized according to the six typologies explained above.

- The first case study is a private villa, situated in Thanas Ziko road, but does not overlook the main road. It is only one floor and is a porch house, in which the porch is the central element of the house that provides a distribution space for the ground floor. In the main facade there is the entrance to

the porch which guides one to the other two spaces of the private room and the storehouse with a reduced height. In the main facade, there are also lateral stairs which bring one to the other room, situated over the storehouse.

- The second case study villa is composed in one floor. It has a U shape and creates an inner garden which serves as spatial distribution for two houses. The original shape of the Adobe wall construction has been modified along the years by adding new living spaces and creating two detached houses for two brothers and their respective families. The new created spaces are made by ceramic brick walls by changing the original L shape of the house. This house is not a listed building.
- These two villas (the third case study), situated in Bargjini Street, are two vernacular houses located in the same courtyard and planned for two growing families. The first villa has a rectangular shape with a central main entrance which takes one to the central space distribution. The second villa has a quadratic shape with a lateral entrance. Both houses, which were originally designed with a space of 1 + 1, have undergone later modifications in time adding other additional spaces for the family.
- The fourth case study villa is composed in one floor. It is accessible from the garden. It has a quadratic shape creating a symmetrical imprint. The internal central corridor makes the distribution to the lateral rooms. The ground floor is elevated from the ground level and is realized in wood construction. This house is still in use and has been modified during the years according to the daily needs. The internal spaces that face directly onto the courtyard are the spaces used mainly during the day, and for this reason there are more than one big opening for each space. Night spaces are placed on the back of the house and have less openings. This house is not a listed building.
- The fifth case study is the *Begeja* House located in Dibra Street, in the old neighborhood near the bazaar of Tirana. It is a two-floor building. It has a specific architecture and construction in comparison with the other villas taken as a key study in Tirana. The perimeter walls of the house are made in



**Figure 6.** Adobe construction distribution in Tirana City

stone for the entire height of the ground floor and in adobe only for the height of the first floor. The interior walls are made with adobe material, for the whole height of both the first and second floor. All the walls are structural walls. The house plan is a merging of the two houses of the two brothers. It has a direct view of the road, but the main entrance is from the back façade, which faces the internal courtyard.

- The sixth case study villa directly faces the main Dibra Street and is composed of two floors. It is accessible from the back façade, from the garden. It has quite a rectangular shape and is symmetrical. The central corridor enables the distribution to the lateral rooms and hosts the stairs for the second floor. On the ground floor are located the rooms for daily activity, while on the first floor are located bedrooms, the central corridor lit with natural light and the loggia. The whole structure of this house is constructed with adobe structural walls and wood roof. This house is still in use and because of family needs it has been modified inside by adding a new bedroom in the central corridor, creating a shop in the ground floor accessible from the main road and closing the loggia to create a private space. This house is not a listed building, but it is one of the few vernaculars remaining.
- The seventh case study is an adobe house in Kavaja, which today functions as an Ethnographic Museum. Originally the villa had been used as "an adjoining housing for two families." It is a listed building and is under protection by the Ministry of Education and Culture as a first category monument. It is used as the Ethnographic Museum of the city and it's a tourist attraction. The spatial composition of the house is derived from two houses with 3 living spaces for each of them. This house typology is known as the hajat house because of the lobby in front part of the house. In the center of the house there are placed two (separated) fire spaces. On their sides there are two rooms and in front along the four rooms there is the porch (veranda). Sofa are the rooms that extend from the veranda creating two wings in the front façade and with a higher level of the ground floor (1.2 m higher than the veranda level), accessible through the stairs. These spaces are more airy and have a natural ventilation system, creating cooler spaces for the summer. Consequently, these spaces are used more in the summertime, because of the higher temperatures. The roof of the house in the main rooms is decorated with wood elements. The windows have wood grids and wooden shutters.
- The ninth case study house, is situated in Abdi Toptani Street (former Alqi Kondi street), composed in two floors. This house, with an axial symmetry, is made with adobe construction walls for the whole height of two floors. The only exception is the construction of the second floor of the summer space of the rooms overlooking in the main façade, which have wood construction. The center of the house is the fire space creating an open atrium.

Even in the two-story buildings, the fire room was the gathering place for the whole family. In these houses the fire room reached the height of two floors, and it communicated directly with the

other premises through an internal staircase. In front of the fire room is the porch, which served more during the summer period.

### **Some features of the traditional house with adobe construction**

From the analysis of these houses and case studies, we can see that after 1920, some of the traditional Tirana villas built with earthen walls underwent changes on their facade, importing elements and decorations from the Italian style. Both outside and inside the houses were finished with lime. Most of the houses were originally one-story, but later two-story houses were built, with wooden stairs positioned in the interior space. The ceilings and floors were made of planks. Only the fire room was without a ceiling to allow the smoke to escape through the roof. Bathrooms were built adjacent to the bedrooms. The bathroom floor was paved with cement with a hole in the middle, which served to remove water. The protruding roof creates a shelter quite often more than 50 cm out of the plane of the wall. This element, which may seem as purely aesthetic, actually had a very important function, as it protected the wall from rain. The floor was designed in two ways. It was raised from the ground level, and it was constructed with wood, thus creating a detached floor from the ground, or it was constructed with rammed earth directly adjacent to the soil layer. The foundations were always constructed with stones and were always higher than the ground level in order to create a layer of stone, to protect earthen walls from the rainwater. Windows had wood shutters to offer protection from the sun, especially in the South facades.

Houses were mostly detached from the road through an intermediate space that was the courtyard. In the cases when the house was built along roadsides, the main entrance was not from the road but from the back facade that was facing from the courtyard. The courtyard was in front of the house, paved with cobblestones and had a smaller area compared to the garden. The water well was a central element of the courtyard. After 1944, garden spaces were expropriated by the communist regime for the construction of new social multifamily housings, streets, schools, etc. Since 1990s, these traditional dwellings have always been under the pressure of demolition because of the increased demand for urbanization. A large part of traditional buildings, listed as monuments or not, have been damaged or are in danger of falling due to lack of restoration.

### **Restoration, Reconstruction and Reusing of earth architecture.**

Adobe buildings are very much used in traditional societies as a natural and local material. They are also widely used today in the context of green building. Earth is a natural and biocompatible material. Its environmental impact is minimal since it is an abundant resource, and it is not mixed with chemicals or subject to processes that produce polluting waste. At the end of its life cycle it can be returned to nature without special treatments. In addition to being sustainable, earthen buildings have considerable mass and, consequently, a high thermal inertia. Earthen walls more than 50 cm thick, have excellent heat storage capac-

ity and can retain heat and the humidity present in the air. Both heat and humidity are released into the environment only when necessary. The sound proofing properties are also good, also



**Figure 7 a,b,c.** Protruding roof/Wood beams in the external walls/Porch space in front of the house

thanks to the porosity of the adobe. Adobe walls have good performance of fire resistance. Adobe walls have good structural resistance and excellent structural capabilities. Earth buildings have demonstrated that they can last for hundreds of years and remain structurally sustainable. Adobe is an elastic and ductile material that makes it suitable for buildings of different shapes and sizes. Using less energy than fired materials and requiring less operational energy during their lifetime to create comfortable, healthy indoor environments, these buildings create sustainable society and local economy.

One the weaknesses these structures present is their sensitivity to water, which could compromise its performance and resistance. For this reason, it is always necessary to evaluate some very important architectural solutions related to the building body. First creating an elevated basement from the ground level. The air layer between the pavement and the ground layers will create the possibility of creating an interspace layer which protects the floor from water and keeps it warm in the winter and fresh in summer. To stop rising the humidity, it is necessary to set up horizontal barriers between the wall and the foundations. The foundations can be designed with a water-resistant layer to protect the wall from the capillary water and the pavement. The creation of an external drainage system near the basement can also help to keep the foundation and the walls dry from the water.

The use of ventilated roof is the best solution in creating insulated and cool roofs. An adequate coating, to protect adobe walls from atmospheric agents or increase its thermal characteristics, can be designed with different solutions. Another external fire bricks or wood layer in both exterior and interior, can be designed to protect the adobe wall. Insulation materials can also come in three variations. On the exterior side of the wall, on the interior side, or in the cavity between two layers. Insulation materials can be of different materials, as glass fiber, rock wool or fibrous materials such as cellulose insulation or glass wool, or solid fill as polyurethane or polystyrene, mineral wool fiber, polystyrene beads, or insulation foams. When the insulation is located on the outside of a building's load-bearing wall, the structural components are better protected from extreme temperature variations and condensation risk. This reduces the possibility of damage due to thermal stress and water vapor saturation (Krus et al., 2005). External insulation can change

the building's appearance and sometimes may not be favorable when we must intervene in a listed building. It can also change the footprint of the building by increasing its total surface.

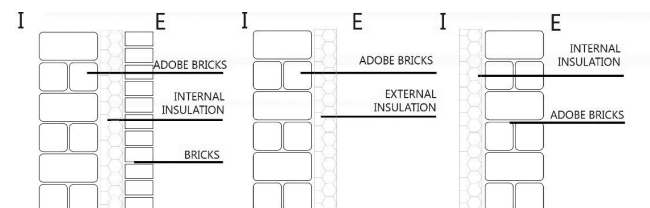
Internal insulation is relatively easy to apply, does not require additional elements outside, and is often the most viable in terms of costs and permissions. However, the biggest technical problems one will face with internal insulation are related to the occurrence of thermal bridges, in the architectonic nodes of the building. Cavity wall insulation refers to insulation that is placed between the outer and the inner layer of an external wall. A cavity wall presents advantages and disadvantages that are similar to externally insulated structures that often benefit from reduced overheating hours in summer due to the retention of thermal mass in the inner side. Adobe walls can be used also in new contemporary architectures as a passive wall heating system by contributing in the green building performance.

### Revitalization and reassessment of traditional architecture and materials in developed European countries

Museumsdorf Niedersulz is an open-air museum, built in 1979



**Figure 8.** External Adobe walls of a traditional house in Kavaja, coated with an external brick layers



**Figure 9.** Different solutions of insulation of the external layer of earth wall

in the village of Sulz in Weinviertel, Austria. This museum, within approximately 45 km from Vienna, is a collection of about 80 important traditional buildings, characteristic and representative for the architecture of Weinviertel's area. These buildings have been transported from their areas of origin from the entire region, to be housed in this open-air museum, to enable their preservation, constant surveillance, maintenance, and also give the opportunity to the tourists and academics to have access in traditional techniques and design. The structure of these buildings is made of retaining adobe walls. These 'monuments' are mainly residential buildings, but they are also buildings with social or service functions. The placement of these monuments, have the form of a linear village, according to the traditional settlement of 1000 years p.e.s along a stream. Inside this complex, immediately after the entrance, there is a hut, left for the academic activities of the TU Vienna students, experimenting on the adobe material. The idea of the workshop



and the whole open museum is to study the adobe material, to build with traditional methods of this material and to study its problems or its different behaviors in cases of being interwoven and combined with other materials. The adobe material in this area was mainly used as a mixture of several elements, such as soil, sand, straw, and lime (fig. 14). The mass of these elements, and their variation, constituted a change in the characteristics of the final material. During the workshop with the students, the adobe was experimented as a building material in several ways and part of the building, as follows:

**Casting Adobe walls / 2. Wall with wooden structure and Adobe used as a connecting material in between**

**Adobe brick wall / 4. The adobe as a structural wall element with large dimensions without the need for a connecting element between them / 5. The adobe as a ceiling material (architectural element dividing between the roof and the living environment)**

**Case 1 / Casting Adobe walls** In this case adobe wall is not created on the basis of a certain shape. After preparing the earth material at the

right viscous mass, the material was built by filling, creating a vertical wall. After reaching a certain height, the adobe material that protruded on both perimeter sides of the wall was cut with a knife to give to the wall regularity and vertical finesse. After this process, the wall was plastered on the inside with adobe material, but with a finer composition of soil and straw. The outer side of the wall which was in contact with the external environment could be plastered or not. From the tests performance of the use of paint on the inner plastering layer, the adobe material got the color very well.

**Case 2 / Wall with wooden structure and Adobe used as a connecting material in between.** The second case with wooden wall and the use of adobe as a filler and as a plastering material is quite frequent in Austria. In this case, the wall is made by horizontal wooden beams and between them is placed the material of the adobe with the same thickness as that of the wood. Two types of plastering have been experimented in this. On the outside surface, a three-centimeter-thick plaster was used. On the inside part, the plastering is done with roofs (small wooden shutters), a thin layer of adobe mixed with the binder, straw, and a layer of straw as the connecting element.

**Case 3 / Adobe brick wall.** The third case is the realization of the adobe bricks according to the process explained above and the realization of a vertical wall with adobe bricks using the adobe as a connecting element again. This wall is very similar to the adobe wall that is also found in our country. On top of the adobe wall is placed a plaster layer approximately two cm thick, and a thinner layer of adobe without the straw material about 0.5 cm, to give a uniform finish to the wall.

**Case 4 / The adobe as a supporting wall element with large dimensions without the need for a connecting element between them.** In this case, wide pipes of adobe are used to create walls. Once the processed adobe reaches the right viscous mass, it is laid on a certain square surface, and then assembled into the shape of a "pie" to create a so-called "brick" which has

a considerable width, over a meter, and a diameter of approximately 10-15 centimeters. They are placed on top of each other without being dried and without the need of a foundation under it. Because of their gravity they don't need the presence of a connecting layer between as well.

**Case 5 / The adobe as a ceiling material (architectural element dividing between the roof and the living environment)**

The last case, similar with the fourth one is created as a horizontal architectural element for the ceiling, as a layer in between the living room and the roof, creating the possibility of a room under the roof for the placement of animal feed. This ceiling is



**Figure 10.** The table where the adobe material was placed and the mold made with wood, useful for the brick shape. In the right there are different shapes of adobe bricks



**Figure 11.** The different amount of straw inside the brick and its size, change the binding properties of the material and its finesse in appearance.



**Figure 12.** Limestone as a mixture of several elements, such as soil, sand, straw, and lime

reinforced by a strong stick in the center of the assembled adobe layer, which also helps in the stability of the horizontal structure

## Conclusions

Adobe is a material that is widely used in many places around the world and is one of the most widely used building materials. A big number of world's population lives in adobe buildings today. The widespread use of earth buildings in our country makes it an element of tradition, culture, and architectural values. Nowadays, Albanian cities are losing their identity because of the demolition and non-preservation of traditional dwellings.

In the authentic neighborhoods of Tirana there are still villas with earth materials. Most of them are ruined, abandoned and forgotten. A lot of research and many studies about earth materials are returning the attention to this construction material because of its good thermophysical properties, its low cost, good resistance to earthquake vibrations for one- or two-story buildings, low impact in the environment and the adequate microclimate in the interior. It keeps the environment fresh in summer when external temperatures are high and creates warm environments in winter. These properties make this material stable and of interest to be used, on the outskirts of the city or in suburban areas, where the demand for private villas is high. The results of this article show that different techniques can be applied for the restoration or strengthening of existing earth retaining walls, which lead to the preservation of local identity by contributing to sustainable development. Sustainable development with earth construction is related to several factors that contribute to the preservation of traditional architecture and memory, to minimal impact on the environment, low construction costs and low energy requirements of these dwellings which from the beginning can be designed with high energy efficiency requirements. New adobe constructions can use traditional local techniques, and through laboratory analysis of the material can be intervened to increase the thermophysical properties of the natural material thus contributing to a better energy performance. New techniques can also be introduced which are used today in other countries with climates like ours, in order to make this material more usable and more competitive in the construction industry, so that the time of realization can be faster. In preserving the traditional material and its use in construction building, raising awareness is also worthwhile as in the case of the Open-Air Museum in Lower Austria, Museumsdorf Niedersulz, in the village of Sulz in Weinviertel. This material can be turned into a useful material for new houses in case of emergencies, providing speed in construction, low economic costs, and good living conditions for families in need.

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