



Universidad
Zaragoza

Trabajo Fin de Grado

Poblaciones temporales:
el nomadismo en la Edad Contemporánea

Temporary Settlements:
Nomadism in the Contemporary Age

Autor/es

Jorge María Abad Martínez

Director/es

Carmen Díez Medina

Escuela de Ingeniería y Arquitectura (EINA)
2019

Temporary Settlements: Nomadism in the Contemporary Age



Trabajo de Fin de Grado.
Autor: Abad Martínez, Jorge
Tutora: Díez Medina, Carmen

Summary.

This bachelor thesis aims to state the processes that led to the establishment of provisional societies or the reasons why there were necessary; to explain the history of those settlements, or the series of events that marked the lives of thousands of people; to tell the stories and vicissitudes of those inhabitants, or how they would not be the same after inhabiting those places. A journey of more than 3 750km through Spain and Sweden, two countries that do not seem to share much background, nor culture, but that, when all is said and done, share much more than they could ever had imagined: from their same pragmatism to their love for the well conducted works. A shared history revolving around hydropower born in the dawn of the industrial boom that made Europe rise from its ashes. In short, how reservoirs shaped and changed both landscapes and human lives, constituting the perfect paradigm of what can be called a cultural landscape.

Keywords.

“Cultural Landscapes”, “Messaure”, “Lanuza”, “Búbal”, “temporary”, “reservoir”.

I. Preface. Subject, objectives, methodology	6
II. Context. Cultural Landscapes	10
III. Foreword. The first years of the Golden Age	14
IV. Temporary Settlements. Living along the water	22
III.1 Luleälven	23
<i>III.1.1 Messaure</i>	28
<i>III.1.2 Skivhusen och egnahemmen</i>	37
III.2 Río Gállego	44
<i>III.2.1 Búbal</i>	49
<i>III.2.2 Lanuza</i>	55
V. Reminders. Death and reawakening	64
VI. Afterword. Final thoughts	82
Illustrations sources	86
Bibliography	91

I. Preface. *Subject, objectives, methodology*

After the hectic first decades of the 20th Century, half Europe needed to recover. Buildings had to be rebuilt, cities had to be repopulated, and wounds needed to heal. This fact, naturally, led to an astonishing industrial growth, no matter the political inclinations of the different countries, or their own different circumstances.

Let's consider Sweden, for instance. A mostly unharmed country during the several armed warfares, the country thrived as they provided goods for Europe. Those years are often referred as the "golden years" or *rekordåren* [the record years, in Swedish] the, since their economic growth was such that most of the population increased their consumption levels, achieving to buy cars and even holiday residences¹. One of the main reasons that made this possible was the quick transformation that took place in the Swedish industry, from a domestic and limited market to the export production. Furthermore, with the help of technology, productivity increased².

All this development that took place in the country contributed to a rising demand of electricity. Among all the different options that there were to solve this urge –nuclear or thermal power plants, for mentioning some– the Swedish government chose to rely on hydropower: most of the northern rivers were still wild and untamed, which meant a considerable amount of energy just, technically speaking, being wasted.

On the other hand, taking Spain, although there was a really different context, the reliance on hydropower was still the same. A country devastated by a civil war, and immersed in a totalitarian regime that advocated an autarky –fostered by the international isolation of the fascist government– had but one single option: try to improve the country's wealth and health undertaking several public works. In a rough outline, this meant the construction –or reconstruction– of roads, villages, cities, factories, or power plants, to mention just a few. Hydropower plants provided not only electricity, but also, and more preeminently, water stock,

¹ L. Magnusson, *Sveriges ekonomiska historia* (Stockholm: Prisma 1999).

² H. A. Larsson, *Boken om Sveriges historia* (Stockholm: Bokförlaget Forum, 1999).

which would mean a constant supply for industry, agriculture, and drinking.

Taking all this into account, the main reason for this work is the relation that architecture had with this specific context, and also the importance that facets such as ethics or pragmatism might have. A large work such as the construction of a dam usually entails a large-scale operation where all kinds of decisions must be taken: from engineering ones –such as which kind of dam to build– to environmental ones, including for sure others more related to the architecture. What to do with preexisting settlements? Where should the workers live? Should they inhabit within the preexistences? Should a new village be built in order to provide shelter to all this temporary dwellers? Through this work we will try give an answer to this questions.

However, the reader might be asking themselves: why? Why this particular subject? The interest in this matter has two main reasons. First of all, the year that the author spent in the northernmost *län* –county– of Sweden: Norrbotten, and more specifically, the city of Luleå. There, at the university, there was a course regarding sustainable Urban Development. Some of the case studies that were analysed in that course revolved around this topic, and what the Swedes did about it. The second, but not less important, is the connection that the author has with the topic, as his father's family has its roots in a nowadays ghost village in the mountains, due to the construction of a dam.

Taking into consideration more technical aspects, the methodology utilised in this thesis is a mixed one, since it combines a “direct” source –a book which contains data and testimonies of people that inhabited near the construction sites of a dam in Sweden, as well as pictures and plans– with indirect ones – books and interpretations that the author conducted with the plans and pictures–. In addition, the author also carried on some empirical contacts, i.e., visits to the places where the villages were, or still are.

On the other hand, the reader will have realised at this point that this whole bachelor thesis is in English, even though is carried out within a Spanish university. The main reason for this is that

the author thought that it was an interesting topic and, since part of the information was in Swedish, and the other part was in Spanish, it felt appropriated to perform the works and write the text in the current common tongue –which is English, of course, as well as it was French in the past, and might be another language in the future.

As it will be seen later on, this bachelor thesis has five different parts: a first, briefer section, which will explain the general context of the thesis in the whole world, related to the cultural landscapes. Later, a second, which is the introduction and contextualisation –in a more general approach– and the place where we will meet for the first time the settlements –a Swedish case studio and a Spanish one, for sure– which will be analysed. Then, a third part, the largest, in which both phenomena will be analysed in depth, trying to understand how they worked and how were they built, if so. Afterwards, a fourth one, where the reader will be able to see what remains of the settlements, and what does not, and finally a fifth and last one, the conclusions, where the author will try to give some kind of general ideas and thoughts about what could be done and what could be learnt from all this.



Fig. 1. Family picture of the course C7002B, *Hållbar stadsutveckling*. September 2018

II. Context. *Cultural Landscapes*

What is more important? A natural landscape, or a human-made? The quick and easy answer might have sprouted in the mind of the reader: natural ones, for sure. After all, specially in these current days, humankind has to preserve the natural environment or, otherwise, face extinction. Nevertheless, human-made, or cultural landscapes, are also worthy of conservation processes.

Certain sites, after the long years of human use, have changed in an unique way –of course, related to the action of the human-kind– that, nowadays, guarantees the biological diversity of those places. Others, however, are important not for physical characteristics, but for their souls. These places, often kept forever in the minds of the people who inhabited them, are more related with characteristics such as faith, deep beliefs and rich cultures, both in unique traditions and art. And, in short, are the living example of the powerful connection that the human race has always had with nature.³

“To reveal and sustain the great diversity of the interactions between humans and their environment, to protect living traditional cultures and preserve the traces of those which have disappeared, these sites, called cultural landscapes, have been inscribed on the World Heritage List.”⁴

In this way, even though might not be listed as official Cultural Landscapes, it is our labor, as citizens and, better, as the heirs of our ancestors, to preserve and care fore these places. Of course also natural places have to receive a special care from us, but cultural landscapes are, usually, the last testimonies from cultures that are slowly –or even quickly– disappearing, vanishing, as if they never existed.

“Bernard of Chartres used to say that we [the Moderns] are like dwarves perched on the shoulders of giants [the Ancients], and thus we are able to see more and farther than the latter. And this is not at all because of the acuteness of our sight or the stature of our body,

³ World Heritage Centre, “Cultural Landscapes”, United Nations Educational, Scientific and Cultural Organisation (UNESCO). <https://whc.unesco.org/en/culturallandscape/#articles>

⁴ World Heritage Centre, “Cultural Landscapes”, United Nations Educational, Scientific and Cultural Organisation (UNESCO). <https://whc.unesco.org/en/culturallandscape/#articles>

but because we are carried aloft and elevated by the magnitude of the giants.”⁵

This quote, quite well-known, refers to the fact that us, humans, without all the knowledge, the experience from our ancestors, would not be able to do anything. We are the sum of everything that has occurred before, both the wise decisions, and the unwise. Without this cultural background, each generation would have to begin again from zero, and in such way, humankind would not have achieved anything. Hence, it is our sacred duty to preserve our cultures, our roots, as well it is our pledge to take care of the nature we live in.

“In other cases, I would say that one of the threats difficult to counteract is socioeconomic change. [...]

Certainly, it’s very difficult to preserve an evolving landscape. We live in a transitional world and have to adapt to our own constants. Sometimes it’s very difficult to imagine that something will remain exactly the same. We had to define heritage categories that are intrinsically evolving. We’re trying at UNESCO to change our approach a little bit to create a vision of how heritage can be seen in a transitional world.

[...] Preserving landscapes is about defining an approach to sustainability. Defining a sustainability approach implies revising how we use technology, how urban life is lived, how we understand the future and nature.”⁶

Thus, this bachelor thesis aims also to –as far as possible– constitute a fair portrait of the settlements that will be analysed, both in an architectonic point of view, but also with this delicate approach. Since, all things considered, what is Architecture itself, but another part –and might the author state that it is, actually, an important one– of this beautiful and subtle cultural heritage?

⁵ J. of Salisbury, *Metalogicon*, Book III, Chapter 4. Cfr. S. D. Troyan, *Medieval Rhetoric: A Casebook* (London: Routledge, 2004), 10.

⁶ Extract from an interview with Francesco Bandarin, Director of the UNESCO world heritage. J. Green, American Society of Landscape Architects (ASLA). <https://www.asla.org/ContentDetail.aspx?id=25842>

If it is not us, nobody will do it.

III. Foreword. *The first years of the Golden Age*

Think about almost 75 years in the past. The whole Europe was devastated by the warfare that had gone through all the continent, massacring mercilessly both human lives and, in general, countries. Examples such as Colony, Germany, are the perfect paradigm: a city in such heavy damage that large parts of its neighbourhoods do not stand still any longer; the contrast between the ruins and the cathedral, still on its feet, is overwhelming. This landscape, unfortunately, repeats itself all across Europe. Therefore, we have a whole continent to mend, both trying to heal human wounds and building ruins. Lets take now the case studies that occupy our attention: Spain and Sweden. Both countries were neutral during the World War II, and yet have quite a different context.

In the case of Spain, we also have a devastated land. However, it was not because of the global warfare: an insane, inhuman civil war took place within its borders just before the World War II. It is not the aim of this work to analyse any warfare, but for the sake of its purposes, might the reader allow us to point out that, if this war was at the beginning a mere *coup d'etat*, it soon evolved to a cruel conflict in which the villages took the worst part: instead of letting the armies fight, the civilians took their part in these small societies, using the context of the war for putting an end –and not a peaceful one, for sure– to their ancient



Fig. 2. City of Cologne after the end of the World War II.

quarrels. On top of that, the war ended with the victory of the rebel faction, which established a dictatorship that would last for almost 40 years.

Within this context, once the World War II ended, practically the whole world isolated Spain. Hence, we have a country devastated by a war –both in population and in its economic system that, by the way, had never been in its prime since the times of the Empire– that now is also denied any help from the outside due to be under a dictatorship. The situation was desperate, so the Government took actions. At first, the economic recovery was really slow: it took until the year 1955 to regain the industrial production levels that Spain had before the war, and until 1959 for the agricultural ones. A severe rationing of the food was undertaken, just like in the rest of Europe; nonetheless, while in the latter it took around 3 years to get rid of it, in Spain it lasted for 12 years⁷.

These were the years of the autarky, which did not achieve effectively the recovery of the country; Spain would not do so until there were a change of heart in the Government. It came when they decided to restructure the Government itself, transforming it into a more technocratic one. The policies they took were the ones that ensured what would be called as the “Spanish



Fig. 3. Ruins of Belchite –a village within Aragón. C. Díaz & C. Ibáñez, 2017. The inscription reads “Oh, old village of Belchite / the youngsters don’t wander around you anymore / The jotás our parents sang / won’t be heard ever more.”

⁷ A. Carreras & X. Tafunell, *Historia económica de la España contemporánea* (2003)

miracle”, and entailed different measures as the so-called *Planes de desarrollo* [Development Plans, in Spanish]. Thanks to this, Spain became the ninth economy of the world⁸.

This development plans included, among other things, the public investment in infrastructures –such as reservoirs– and in industry, as well as the opening of Spain as a touristic destination⁹. Furthermore, some of this new infrastructures would serve

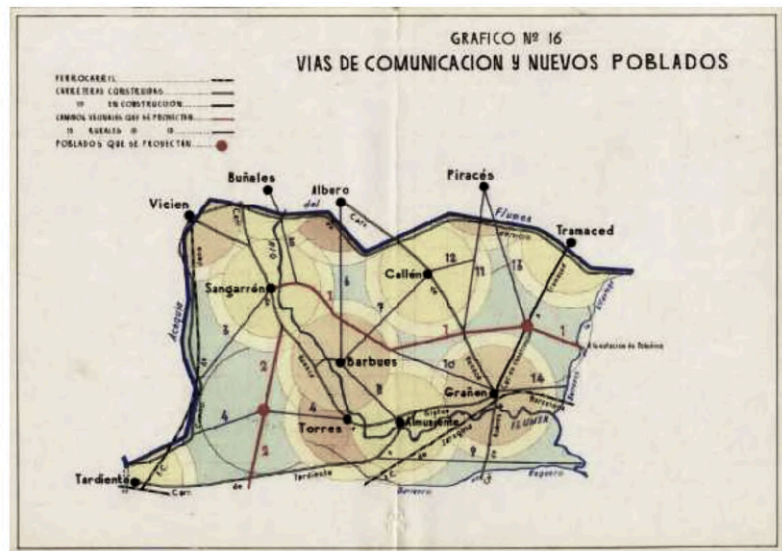


Fig. 4, 5. Graphic dispositions for the *Plan de Riegos del Alto Aragón*.

⁸ T. Reuter, “Before China’s Transformation, There Was the Spanish Miracle”, *Forbes*, 19th of May, 2014

⁹ T. Reuter, “Before China’s Transformation, There Was the Spanish Miracle”, *Forbes*, 19th of May, 2014

to the purposes of developing other plans, such as the *Plan de Riegos del Alto Aragón* [Plan for the Irrigation of the High Aragón, in Spanish], which would entail the transformations of large parts of the lands down of the mountains for agricultural purposes. This plan, still today, constitutes the biggest irrigation system of all Spain, and of the whole Europe¹⁰.

On the other hand, Sweden –which was a country hugely in debt after the foreign investments in its industry– took advantage of its neutral position during both World Wars, exporting all kinds of goods to the warring countries. Thus, the Swedish economy experienced a boom that, after the ending of the World War II, was also followed by the whole Europe¹¹. As exports continued to grow, industry grew as well, leading to a period of unprecedented social and economic wealth¹².

Hence, as has been mentioned before, the Swedish industry had to shift from the domestic and limited trade to the international export –and the corresponding import, of course. Also, technological advances allowed to an increase in the productivity. All these factor contributed to the fact that, between 1945 and 1965,



Fig. 6. Peace is celebrated on Kungsgatan, Stockholm. Expressen, 1945

¹⁰ Gran Enciclopedia Aragonesa, “Alto Aragón, regadíos del”, Prensa Diaria Aragonesa, http://www.encyclopedia-aragonesa.com/voz.asp?voz_id=750

¹¹ L. Schön, *En modern svensk ekonomisk historia: tillväxt och omvandling under två sekel* (Stockholm: SNS förlag, 2007)

¹² J. A. Lybeck, *Svensk samhällsekonomi: lärobok i makroteori och ekonomisk politik för grundnivån* (Stockholm Rabén & Sjögren, 1981)

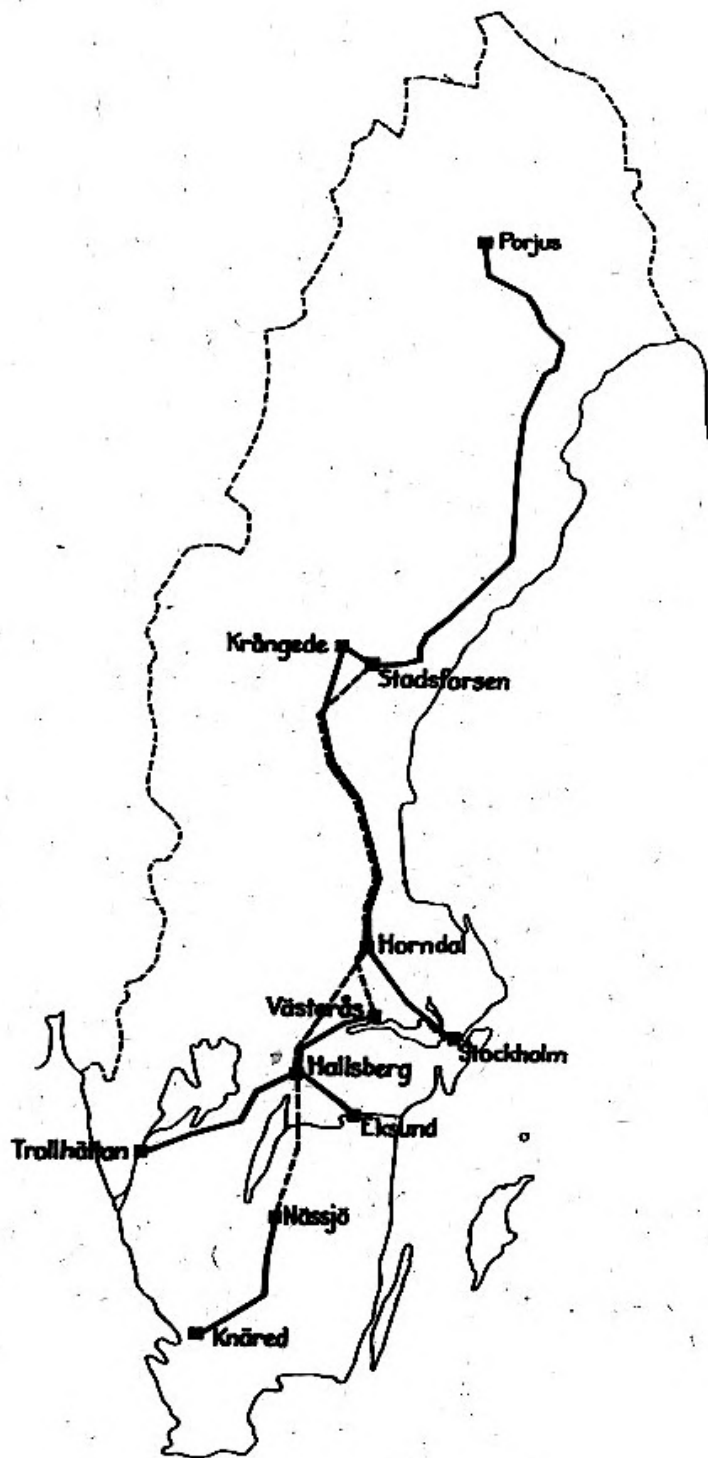


Fig. 7. Planned Swedish national grid in 1938. Vattenfall, 1938

200,000 new jobs were created in the Swedish industry¹³.

As a result of all this development –which also lead to a worrying shortage in quality housing– the demand for electricity rose to an unparalleled situation. Consequently, the Parliament of the Swedes took the resolution to allocate financial resources in order to expand the Swedish hydropower. It was considered necessary to prevent electricity shortages that could affect the Swedish industry, and in this fashion, more and more power plants were built along the Swedish rivers. In the second half of the 1950s, three power plants began to be built along the Luleälv: Porsi, Messaure and Laxede, which were to be opened in a joint ceremony in 1963. With the help of these power plants, Sweden would receive a secure energy supply¹⁴.

Vattenfalls kraftstationsbyggen och samhällsbyggen med mer än 30 familjer i lägenheter och egnahem					
Bygge	Effekt (full utb.) MW	Byggnadstid	Maximal arbetsstyrka (tjm+arb)	Maximalt invånarantal	Antal familjer
• Midskog	90-145	1941-44/56	1150	1700	175
• Harsprånget – Ligga	330-945 170-345	1945-52/80 1951-54/82	1200	2100	288
• Kilforsen – Lasele – Långbjörn	275 150 92	1947-54 1952-57 1956-60	1000	1500	220
• Näverede	68	1952-55	380	500	76
• Stugun	37	1952-56	250	330	60
• Storumansamhället – Umluspen – Stensele	95 50	1953-80 1953-57 1957-60	650	1100	160
• Grundfors	90	1953-58	500	700	100
• Stornorrfors	410-580	1953-58/85	1100	650	260
• Vargfors	70-132	1958-61/87	500	150	30
• Stalon	110	1958-61	1000	900	59
• Vuollerimsamhället – Porsi – Letsi	173-273 450	1956-89 1956-62/87 1960-67	800 700	1250	184
• Messauresamhället – Messaure	300-460	1957-83 1957-63/83	1350	2300	278
• Ajauresamhället – Gardikfors – Ajaure – Gejman	60 85 65	1960-70 1960-63 1962-67 1966-70	350	500	67
• Gallejaure	115-221	1960-64/88	450	250	40
• Jokkmokk, Nyborg – Seitevare	– 220	1963-88 1963-67	– 1000	110 800	33 28
• Vietas	320	1965-72	900	950	16
• Ritsem	300	1971-78	450	500	12

Fig. 8. Power station construction communities. Unknown, 1994

¹³ H. A. Larsson, *Boken om Sveriges historia* (Stockholm: Bokförlaget Forum, 1999).

¹⁴ M. Hallin, *Messaure – en tillfällig tätort i ödemarken* (Göteborg: Litorapid Media AB, 2004),

IV. Temporary Settlements. *Living along the water*

III.1 Luleälven

The Lule river [from the Swedish *älv* – river, *en* – the, and from the Lule Sámi *lulij* – the one who lives in the east]¹⁵ is one of the largest water courses in the whole Sweden. Even though it does not have a major catchment basin –around 25 240 km²– the mean water flow at the mouth of the river is of 506 m³/s¹⁶. In order to clarify, might the reader allow us to make a comparison: the river Ebro, the biggest in Spain, has a catchment basin of around 86 100 km² and a mean water flow of 600 m³/s¹⁷. Just 94 m³/s more than a much smaller river –461 versus 930 km in length. This is just one of the unique characteristics that justify the major “industrialisation”, so to say, of the river. Also, the already existence of several lakes that helped to stabilise the flow, and the high steepness of the river at some points made possible that, nowadays, there are a total of fifteen hydropower plants along the river Lule¹⁸.

Furthermore, 14 out of those 15 power plants were built by Vattenfall between the years 1951 and 1977 –which makes an average of one new reservoir each less than two years. Vattenfall [from the Swedish *Kungliga Vattenfallsstyrelsen* – Royal Council for Waterfalls], is a state-owned enterprise founded in 1909 with the main purpose of developing the hydropower production of Sweden, so the country could rely on it and, thus, gain in self-sufficiency¹⁹.

“Up to 1960, Vattenfall alone built 15 or so large or medium-sized plants in the rivers of Norrland. At the peak of activity, Vattenfall employed 5,000 in-house construction workers. The plants were not just numerous –they were built at a rapid rate.”²⁰

¹⁵ M. Wahlberg, *Svenskt ortnamnslexikon* (Uppsala: Språk- och folkminnesinstitutet, 2003), 198-9

¹⁶ T. Westrin, B. Meijer et al., *Nordisk Familjebok* (Nordisk familjeboks AB, 1912)

¹⁷ Gran Enciclopedia Aragonesa, “Ebro”, Prensa Diaria Aragonesa, http://www.encyclopediaragonesa.com/voz.asp?voz_id=4834

¹⁸ N. Forsgren, *Den effektfulla älven* (Luleå: Vattenfall Norbotten & Porjus Arkivkommitté, 1990)

¹⁹ Vattenfall AB, “A new way of living”, Vattenfall AB. <https://history.vattenfall.com/the-revolution-of-electricity/a-new-way-of-living>

²⁰ Vattenfall AB, “Massive investment in hydropower”, Vattenfall AB. <https://history.vattenfall.com/from-hydro-power-to-solar-cells/massive-investment-in-hydropower>

At this tremendous and frenetic working level, an absolutely huge amount of workforce was needed: construction workers who moved from building site to building site –water navvies, as they came to be called²¹. The issue lied in the fact that the Norrbotten *län* [county, in Swedish], the biggest in the country in terms of area, had a population of just 255 360 inhabitants in 1970, with an average of 2'58 inhabitants/km². Making another comparison, Aragón –one of the less populated regions of Spain– had 1 152 708 inhabitants, which made an average of 24'16 inhabitants/km² in half the area of Norrbotten. In addition, most people tended to live –just like nowadays– in or around cities or towns, which made –still makes– major parts of the county to remain deserted. As a consequence, apart from some small villages and the big cities of Luleå and Boden, most of the Lule river course did not have a proper settlement that could supply workers, or could host them. This is the starting point where Messaure makes its appearance. Many different housing options were taken into account: build entire residential areas in various points, gather those in just a single colossal one, establish small bachelor buildings along the different building si-



Fig. 9. Schema of the Lule River and its major settlements. M. Hallin, 2004

²¹ Vattenfall AB, “Massive investment in hydropower”, Vattenfall AB. <https://history.vattenfall.com/from-hydro-power-to-solar-cells/massive-investment-in-hydropower>

tes... However, as it will be shown later, Messaure was the chosen solution.

The intensive dam building altered the Lule river in a dramatic way, since it stopped being a wild river to become absolutely tamed. There are numerous examples of lost landscapes, such as waterfalls that nowadays run completely dry –such as the *Stora*



Fig. 10. Chromolithograph of the Harsprånget waterfall. C. S. Hallbeck, 1856

Fig. 11. Picture of the same spot, after the construction of the Harsprånget reservoir. 2018

Sjöfallet [from the Swedish *stor* – great, *sjö* – lake, *fall* – fall, *-et* – the], or the falls at Porjus and Harsprånget.

Last, but not the least, the construction of the reservoirs also affected the lives of the indigenous inhabitants of the north of Scandinavia: the *sámi* people. Their life, traditionally based on the husbandry and livestock farming –mainly reindeers and elks– revolves around the animals and where and what should they eat, and in this fashion they maintain a nomadic lifestyle. Their years are not divided in four seasons, but in eight, completely adapted to the animals, traveling through the land: in winter they stay in the mountains, while during spring they begin the annual migration to the coasts, both for letting the resources of the mountain regenerate, and in search of a more gentle climate.²²

*“The history of the Sámi people is the history of human adaptation to the Arctic climate and nature. The Sámi view of the relationship between humanity and nature is one of an integrated whole.”*²³



Fig. 12. Reindeer herd in the middle of a transhumance, northern Norway. J. Roberts

²² Personal blog of R. Kuokkanen –professor at the University of Lapland– “May is Miessemánnu – A season of its own”. <https://rauna.wordpress.com/2008/05/20/may-is-miessemannu-a-season-of-its-own>

²³ Quotation from Lars-Anders Baer, herder and President of the Sámi Parliament in Sweden. Official webpage of the organisation Survival International, “Our souls touch: Sámi reindeer herders”. <https://www.survivalinternational.org/galleries/reindeer>

“The reindeer is not just an animal to us, but an entire way of life. My people have been living with reindeer for thousands of years. We’ve become very close. You could say that our souls touch, or better still, they overlap.”²⁴

These migrations, however, were complicated by the construction of the reservoirs, as these human-made constructions altered the land and, as a consequence, the traditional paths that the Sámi people had followed for centuries.

²⁴ Quotation from an anonymous herder. Official webpage of the organisation Survival International, “Our souls touch: Sámi reindeer herders”. <https://www.survivalinternational.org/galleries/reindeer>

III.1.1 Messaure

The whole idea of Messaure [from the Lule Sámi *Miessávrrre: miesse* – reindeer calf, *jávrrre* – lake]²⁵ was conceived in the year 1955, when the board of Vattenfall was deciding what to do with the housing of their workforce. The main dilemma was whether to install them in already existing towns and villages –such as Porjus, established for hosting the workers that built between the years 1910 and 1915 the hydropower station and reservoir that bears the same name– and pay for the transportation costs, or build a brand new temporary settlement next to the building

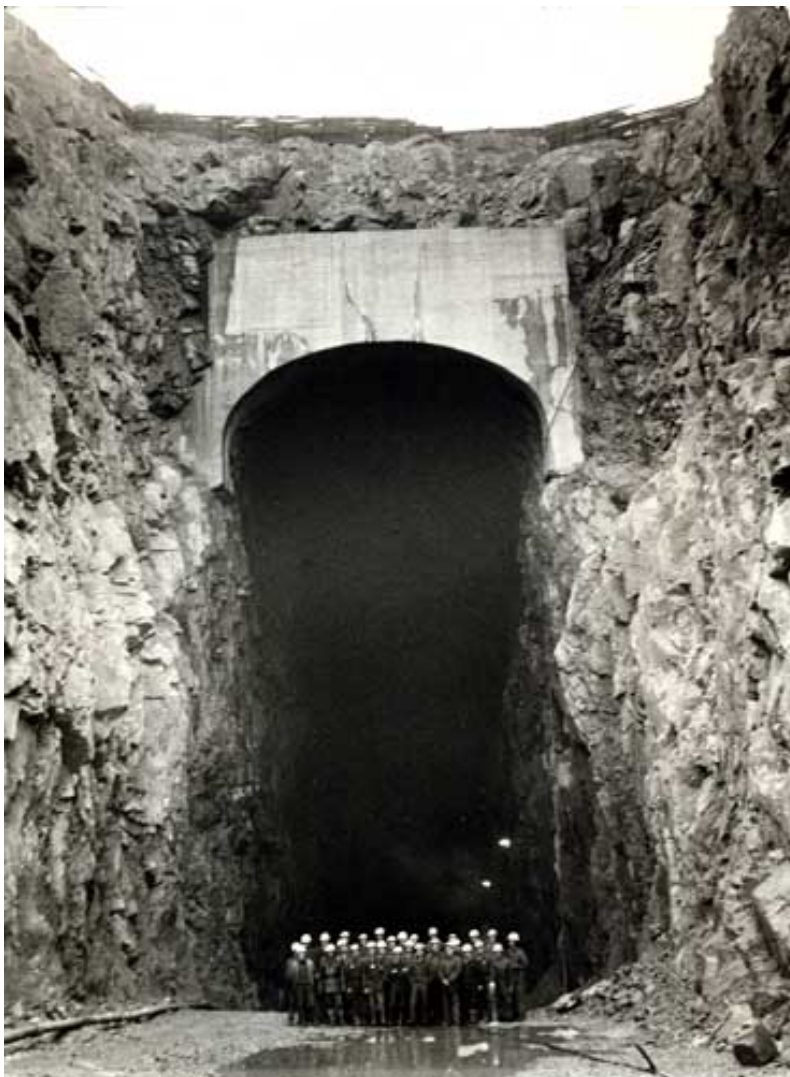


Fig. 13. Picture at the discharge tunnel mouth of the Messaure dam. H. Skogh, 1955

²⁵ M. Wahlberg, *Svenskt ortnamnslexikon* (Uppsala: Språk- och folkminnesinstitutet, 2003)

sites. After some research, it was found that even though erecting a village from the nowhere seemed pretty expensive, it was far more cheap than paying all of the 5 000 workers –that they had at their peak of activity– every single expense for their constant travelling²⁶.

When Messaure was designed, discussions were held on where the housing should be placed. The dwellings that were planned to be erected were bachelors' barracks, private homes –meaning that Vattenfall would not build them, just leave the plot prepared– family homes, civil servants' homes, commerces and some bungalows. The question was whether to place the settlement near the workplace or a bit away from the building site itself, or if there should be a division of the residential area by placing parts of it outside Messaure. What was finally decided was that the whole society would be built up a bit far from the workplace. The advantage of this was, among other things, that the constructions could then be placed facing the south –which is really important towards the extreme winters of the North– and that the noise at the workplace would not be so disturbing. For the most part, it was Vattenfall who planned the construction of the community. However, the Municipality of Jokkmokk was firmly involved with the planning of the school, since that should not depend on an enterprise but directly on the State, and the appointment of various government officials within the police and post office²⁷.

The final design for the settlement –and the actual one that was performed– is the plan that can be seen in figure 15. The most important point is located, as the reader might have deduced, at the central *torget* [the square, in Swedish], where the shops and main buildings were located. From there, the settlement was organised in kind of three –and forgive the repetition– thirds.

South of the *torg* lied the bachelor barracks, at the edge of the forest. In order to distinguish between one and another, they were given animal names: *älgen* [the elk], *vargen* [the wolf], *björnen* [the bear]... These austere residences consisted of dor-

²⁶ W. Granström & B. Bursell, *Från bygge till bygge: anläggarnas liv och minnen. En studie över vattenkraftbyggandet från 1940-talet till 1970-talet* (Vällingby: Kulturvårdskommittén i Vattenfall, 1994)

²⁷ L. Jansson, *Messaure: en etnologisk studie av ett anläggsamhälle* (Stockholm: Nordiska museet, 1983).

mitories in which the rooms were shared by two people. The room's furniture consisted of two iron beds, two wardrobes, two chairs, a desk, a chest of drawers and a bookshelf, with a total size of approximately 11 m². The buildings themselves were based on a long corridor with all the rooms around it, whereas washrooms were located in the two ends of the barracks. In the washroom there were toilets, washbasins, showers, and water heaters, being these all the sanitary facilities. The cooks room was about 7 m² and was furnished in the same scant way as the

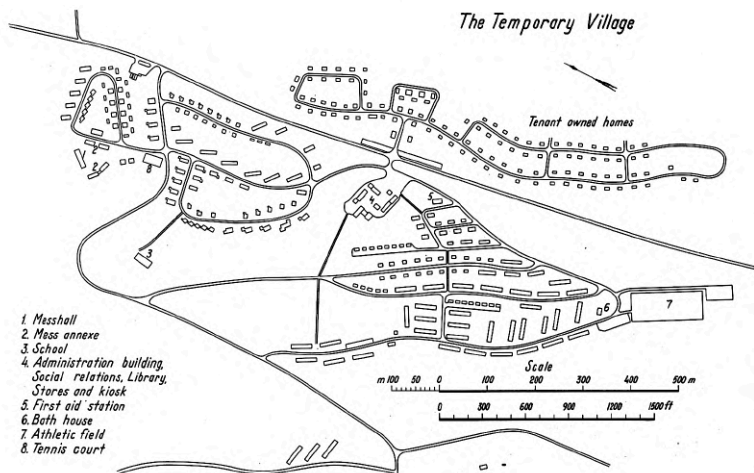
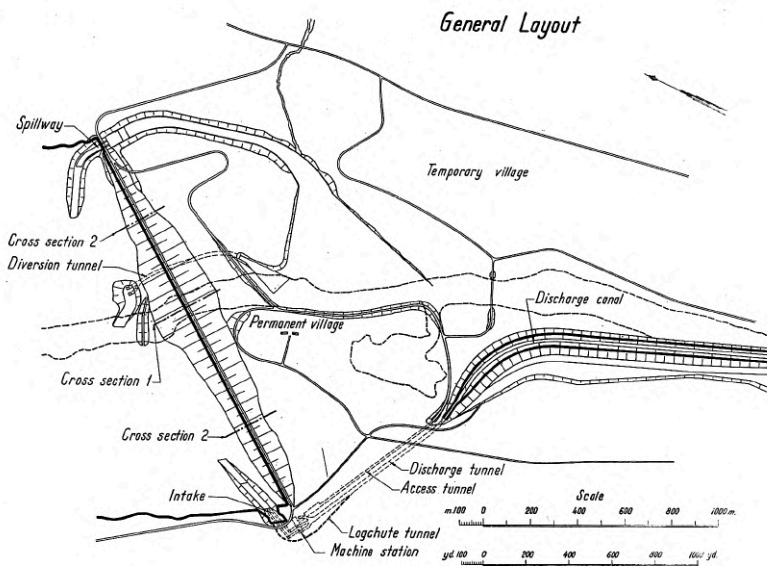


Fig. 14. General layout for the building site of Messaure. Vattenfall, ca. 1955

Fig. 15. Plan for the temporary settlement of Messaure. Vattenfall, ca. 1955

bachelor rooms²⁸. All these buildings, as can be inferred from the figure 16, were built in a modular way, similar to the *skivhusen* that will be explained in depth later.

Then, north of the plaza were mainly located the family houses built by Vattenfall –that is, the *skivhusen*. In this area it was also located the so-called *Kalkonhuset* [“the turkey house”, in Swedish] –which was a more “high quality”, so to say, apartment building for the young, unmarried officials and chiefs– as well as four less exclusive dormitories –that still were quite high-class. Both kinds of dwelling had bigger rooms, a small hall, and an in-built kitchen and a living room in the case of the *Kalkon*, or an in-built bathroom in the latter.²⁹

Finally, in the east part of the settlement –and at the other side of the main road– were located the *egnahemmen*. These, the private homes –that will be explained thoroughly later on– were usually also more related with the families of the chiefs and officials –since they usually were the only ones that could afford the expense of building a home– and were in this fashion kind of segregated from the rest of the village. There were also some small bungalows here, which were the smaller –and cheaper– version of the owned homes.

“In order to attract hard-recruited labour, Vattenfall tried to promote good, quality housing. Hence, one of the family homes was named Fjäskebo [literally from the Swedish, flattering life].”³⁰

²⁸ L. Jansson, *Messaure: en etnologisk studie av ett anläggarsamhälle* (Stockholm: Nordiska museet, 1983).

²⁹ A-G. Andersson & I. Kilander, *Porjus-Messaure. Hur sociala skillnader markerats mellan arbetare och tjänsteman i två anläggarsamhällen* (Stockholm: Stockholms Universitet, 1980).

³⁰ M. Hallin, *Messaure – en tillfällig tätort i ödemarken* (Göteborg: Litorapid Media AB, 2004), 17



Fig. 16. Assembly of one of the bachelor barracks. It can be observed that they also followed a module that was repeated, in the same way as the skivhusen. Vattenfall, 1957

Fig. 17. Final aspect of the bachelor barracks. Vattenfall, 1957



Fig. 18. View of one of the streets designated for the *egnahemen*. Vattenfall, 1958

Fig. 19. Winter view of one of the family housing areas. Vattenfall, 1957

There were also plenty of public facilities, as a way of improving the community life: after all, a happy worker, works better. To mention some, Messaure had two *bastu* [sauna, in Swedish], a primary school, a kindergarden, a church, a small clinic, football and tennis facilities, an ice hockey rink, a petrol station, and the torg itself, which had some shops, the post office, the administration building, and the main building of the whole society: the *Älvgården* [from the Swedish *älv* – river, and *gård*, which means farm or land, in a general way, but that can be interpreted in the sense of “hall” or “big house, manor”]. This latter was



Fig. 20. Main *façade* of the *Älvgården*. Vattenfall, 1958

Fig. 21. View of the central *torg*. Vattenfall

Fig. 22. Panoramic view of the *torg*, spotting the only two supermarkets. Vattenfall, 1959

sort of a community and cultural centre, with a huge range of activities arranged for all the inhabitants of the settlement.

At the suggestion of Vattenfall's architects, it was thought at the beginning to integrate the bachelor barracks with the other dwellings within the society. Against this proposal came protests, both from the workers who "did not want to be supervised by, for example, the engineers in their spare time", and from their wives, who did neither want to live next door to the bosses' wives³¹. However, things went in a total different way. Messaure, since the first days until the last ones, was an alive community, with the whole meaning of that word. All the people lived together, kind of in an harmonic way, as can be learned from the testimony of a child that grew up in the temporary settlement:

"The friends you played with were initially those who lived in the houses closest to you. Wasn't until the school started that the views were broadened. That's when you started playing with friends who lived in the upper village. Often it was decided what to do on the way home, after the end of the school. As I remember, it was very spontaneous games. We agreed to meet a certain time to play football or hockey, for example. No matter how many people came, we always divided into two teams, then it was full speed. [...]

Whatever one would do, it was just to get away, there was never any parent pushing or picking up their children. I did not experience any social stratification directly, but there were for sure fights sometimes between the workers' children and the children of the foremen. One thing I remember clearly was that all the fathers worked and all the moms were at home. Should my mother ever be away when you came home from school or a friend, almost our whole life was about to collapse, you were so used to her always being at home.

The special spirit that characterised the village –the "Messau-rean spirit"– I think was largely because everyone came to the place at the same time and that there was nothing there before. [...]"³²

³¹ J. Klerström-Hällberg, *Vildhjännor, fyllehundar och smitare- får de arbete som anläggare?* (Stockholm: Institutionen för folklivsforskning, 1981)

³² Quotation from an interview to Kid-Benny Eriksson. M. Hallin, *Messaure – en tillfällig tätort i ödemarken* (Göteborg: Litorapid Media AB, 2004), 69

This "Messaurean spirit" was heavily influenced, though, by the fact that the settlement had an expiring date. Kind of a sword of Damocles, Messaure was without a doubt a temporary society, and that bitter knowledge –since facts are stubborn things– hung in the air. For instance, this was evident in the correspondence that went on between different people. In various letters the headline is "Messaure Provisional Society", which clearly shows that it was only a temporary solution to a temporary need³³.

In spite of everything, Messaure was not the only temporary settlement that was established in the very same county of Norrbotten during those years: the villages of Harsprånget, Laver and Nautanen are some other examples, as well as the village of Porjus, that still exists today as a definitive and stable settlement.³⁴

³³ Statens Vattenfallsverk Byggt teknik.

³⁴ F. D. Vikström, "Samhällena som försvann", *Bilägare* 18 (2015): 62-6.

III.1.2 Skivhusen och egnahemmen

Possibly the most curious happening within the Lule river were the mentioned *skivhus* and the *egna hem*. Conceived to be easily movable, these houses often travelled from building site to building site, to end up permanently settled at some point. Many of these houses arrived to Messaure, where they stayed until the settlement finally passed away. Then, they just were dismantled or, for one last time, moved to a permanent village or town. Due to the fact that several building sites were running at the same time, the housing resources were not enough, and so many *skivhusen* were ordered in order to cover the staff's housing needs³⁵.

Skivhus [from the Swedish *skiva* – thin slice, *hus* – house, *-en* – [plural] the] was the name that a specific kind of modular house was given. Not to be mistaken with the “slab houses” –the archetype of collective housing during most of the 20th century– these buildings were a prefabricated way to easily build a home. Given the strict dimensions of 8 x 2'35 m, different types of modules could be assembled, in order to make different kinds of houses. These specific measurements also guaranteed the possibility of dismantling the house into the original pieces, put them again into a lorry, and move them to another location. Although the cost of building *skivhusen* was 9-10 percent more expensive than the previously used block houses, Vattenfall earned this additional cost just with the mere fact of moving the house once. Another factor that contributed a great deal was the time gain in connection with the movement of the house, instead of having to build new ones in each different spot³⁶.

As can be seen on figures 23 and 24, *skivhusen* could be easily extended, whether the family that lived there thrived. The modules, designed and built in a factory³⁷, matched perfectly the different configurations: in the place that in a small house there would be a corridor, in a bigger one it would be transformed into a door and a larger room behind it. All these parts were usually assembled *in situ*, over a false plinth, as figures 25 and 26 show. A grid of short wooden pillars, based on small concrete plates, were all that was necessary to give a solid support to the

³⁵ Statens Vattenfallsverk Byggt teknik.

³⁶ Statens Vattenfallsverk Byggt teknik.

³⁷ Y. Norberg, *Byggmästaren* 7 (1959)

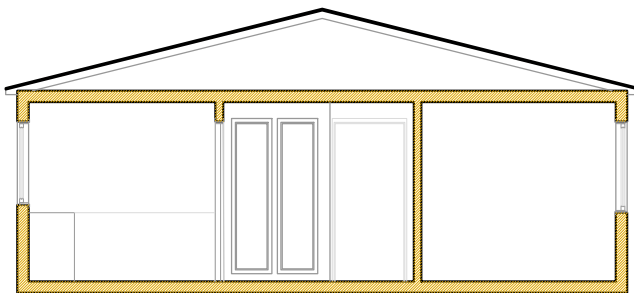
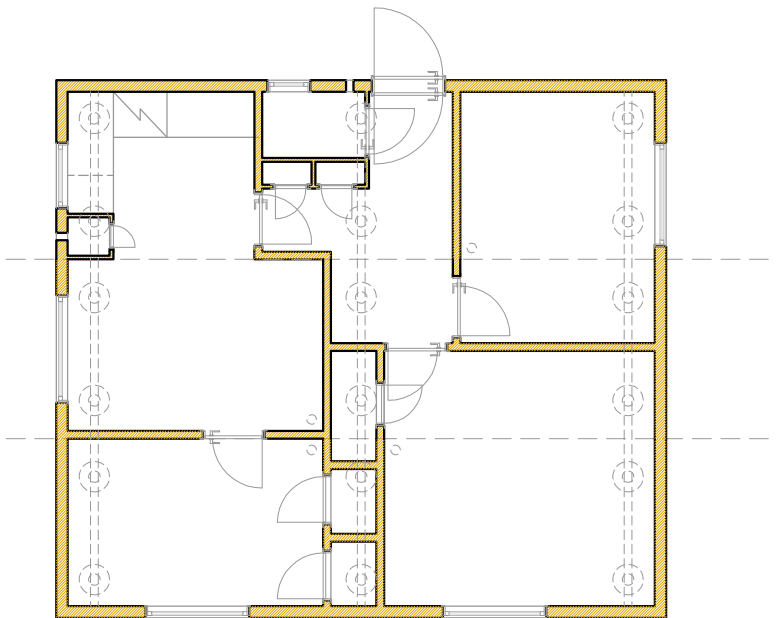
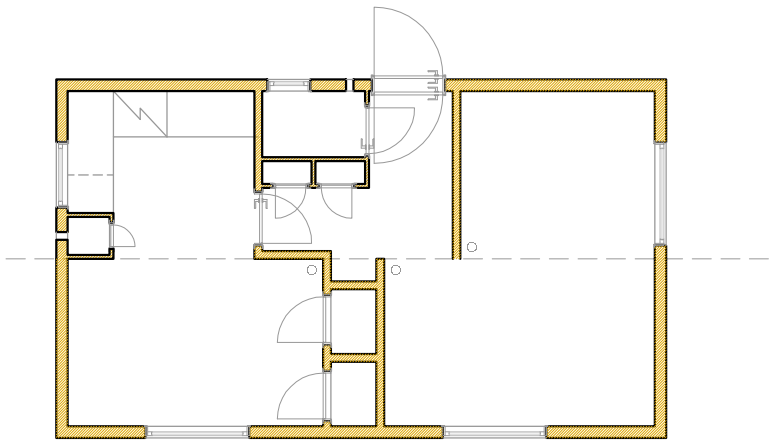


Fig. 23. Reconstruction of the plan for a two-module *skivhus*. E 1:100

Fig. 24. Reconstruction of the plan for a three-module *skivhus*. E 1:100

Fig. 25a. Constructive section of a *skivhus* internal structure. E 1:100

several crossbeams over which the house lied. Once the building was finished, this fake plinth kept the air within it steady. This fact was crucial, since air acted like a cushion that contributed not only to keep away the moisture, but also to enhance the thermal insulation of the building.

Nonetheless, the author hesitates about how was the exact configuration of this grid, for there is a little incoherence in one of the drawings that were studied. The structural section is supposed to be drawn “through the long elevation”, which means that it actually should be displaying the short elevation on the inside

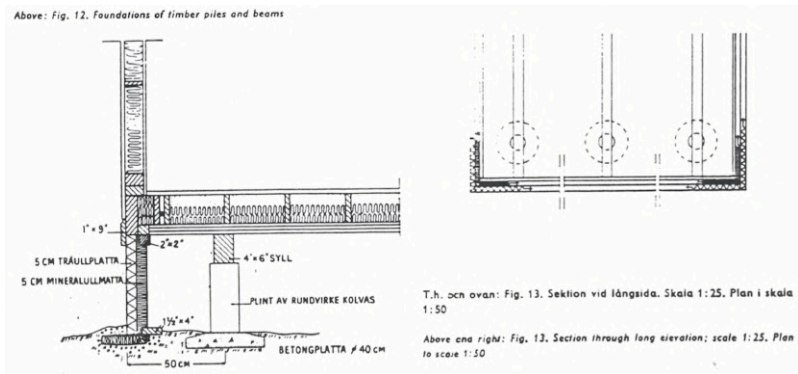


Fig. 25b. Constructive drawings of a *skivhus* internal structure.

Fig. 26. Assembly of a *skivhus*. L. Nilsson, 1958

–considering that “long elevation” refers to the original module longer side, the 8m one. Nevertheless, the plan just at its right, showing the disposition of the crossbeams over the wooden pillars, seems to be showing the beams perpendicular to the long side, and not parallel. The author thinks like this since, making the sum of the three lines, even though they are split, it gives a number larger than the short side of the module. Following this reasoning, and taking the crossbeam direction to be perpendicular to the longer side, it makes much more sense: after all, for the building structure to work like a single one, it is better that



Fig. 27. Transportation of some modules for the assembly of a *skivhus*. K. Lindbäk, 1962

Fig. 28. Transportation of a module for the assembly of a *skivhus*.

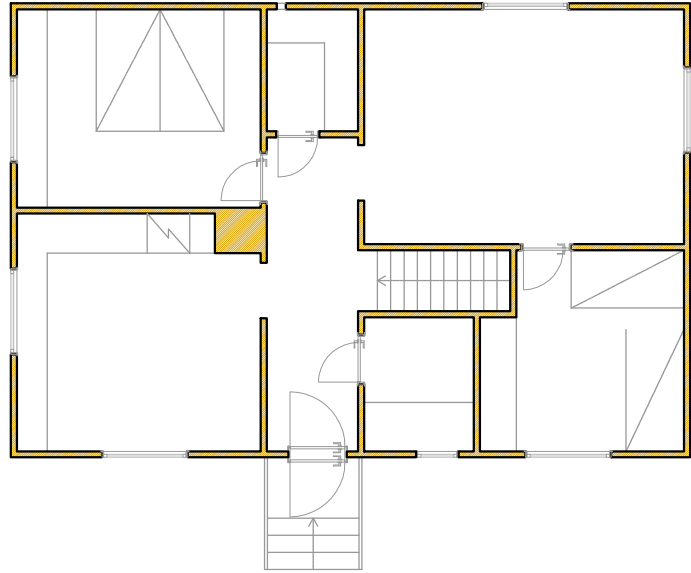


Fig. 29. Reconstruction of the plan of the prototype for an *egnahem*. E 1:125

Fig. 30. Building process of an *egnahem*. T. Lundström

Fig. 31. Transportation of a *egnahem* to Messaure. T. Lundström

the beams unite the different modules, as it is shown in the interpretation of the plan that the author draw.

Once it came the time for the houses to be moved, they simply dismantled the plinth, and put the houses on lorries. As a curiosity, the roof was, of course, not completely dismantled, and still it could not travel in all its height –it would have made the transportation more difficult, due to the height of the house itself and the aerodynamics. The roof was merely “folded”, so to say, lying one side over the other. In order to ensure the stability of the walls, some wooden planks were nailed forming triangulations and crosses in the gaps between the walls and partitions. All the openings to the outside of the house –windows and doors– were covered with wooden planks.

On the other hand, *egnahemen* [from the Swedish *egna* – own, *hem* – home, *-en* – [plural] the] were the houses that the owners themselves occupied, meaning this that the occupants were the owners of the home, i.e., they were not rented. The main difference with the *skivhusen* is that they were built following the liking of the owners, so they did not have to follow a strict module, measurements or dimensions. However, given that the *egnahem* were also usually moved from construction site to construction site, they should have a size suitable to fit in the lorry.

The land needed for the building was provided by Vattenfall, free of charge. It was also the company who was responsible for the purchase of supplies. In connection with the house being erected, the worker had to leave for 12 days. If the employee were to move the home from another building site, a 18 days' leave was granted to partly dismantle the house, and then to move it and install it at the next workplace³⁸. As the employees only received a small hourly wage during the time the house was erected, it was for many an economic loss.

Allowing the employees to build their own homes resulted in a cost of 1,000 crowns for Vattenfall, per building –being this the reason why the enterprise was so restrictive in granting building permits. Depending on their age, working experience, marital status and profession the workers would get the permit granted,

³⁸ Statens Vattenfallsverk Byggt teknik [Civil Engineering Department of Vattenfall].

or not; nonetheless, if there was a shortage of their specific occupation, for sure their chances improved quite a lot³⁹.

The basic basis was the same for both typologies: wooden walls insulated with both wood wool and mineral wool, built upon the fake plinth, both wooden or sometimes made out of concrete. *Egnahem* had another unique characteristic, though: sometimes, the plinth was transformed into a real and usable basement. Figure 29, which is the reconstruction of a prototype for an owned home, shows this feature in the appearance of a staircase; since it is absolutely sure that these houses did not have a second floor –and actually the upstairs direction is marked in the plan with an arrow– the only possible conclusion is the existence of the mentioned basement.

In addition, there were some specific rules to follow imposed by Vattenfall. The houses should be placed so that the ends were facing in the same direction, and the distance between them should be at least 15 m. In addition, it would be 6 m to the plot boundary and at least 5 m to the roadside. The outbuildings had to be placed adjacent, and could not be built as a standing building⁴⁰. The right of building an own home necessarily required that the owner-to-be had a contract with Vattenfall. If the conditions changed because the employee, for instance, changed their employers, the residence no longer was allowed to remain on Vattenfall's land. If it was so that the employee received an early retirement, the company let the house remain for a limited period and for this time a small rent was charged for the land⁴¹.

After the completion of all the dams, and the denouement of Messaure, some of these houses were one last time carried to a final destination: Vuollerim, a village a bit down the Lule river. There, a small neighbourhood of these houses still persists. Although the buildings are the same, the exterior appearance of them is completely different, since their facades were enhanced, improving the isolation and the characteristics of the facades, and fixing up the roofs, as can be seen on figure 61.

³⁹ Statens Vattenfallsverk Byggt teknik [Civil Engineering Department of Vattenfall].

⁴⁰ A-G. Andersson & I. Kilander, *Porjus-Messaure. Hur sociala skillnader markerats mellan arbetare och tjänsteman i två anläggarsamhällen* (Stockholm: Stockholms Universitet, 1980).

⁴¹ Nordiska Museet [Nordic Museum], Stockholm, Construction. Cultural Conservation Committee, Vattenfall.

III.2 Río Gállego

The river Gállego [from the Latin *Gallicum* – the one that comes from the *Gallia*, i.e. France]⁴² is one of the most important water courses that feed the river Ebro. As many other courses that are born in the Pyrenees, the Gállego flows through the mountains, carving the stone and the earth to form different valleys and hollows. Throughout the centuries, just like most of the rivers of this region, it has been used as a source of water, for sure, and as a transportation way as well. Waterways, since the early days of humanity, were a secure, quick way to move around, not only on boat, but also walking along the riversides, given that –usually– rivers tend to flow in a gentle way.

However, taking more into consideration the region about which this chapter wants to be about –the Tena valley– it was precisely the steepness of the river which made the dale relevant. Springing at about 2200 m a.s.l., at the end of the vale the river has already descended until the level of 600 m a.s.l., approximately. In addition, the watercourse goes through a narrow *foz* [gorge, in Aragonese] also at the end of the valley, a fact that contributed to the ease of defending the land against invaders –specially against the Muslim conquest of *Hispania* in the VIII century.

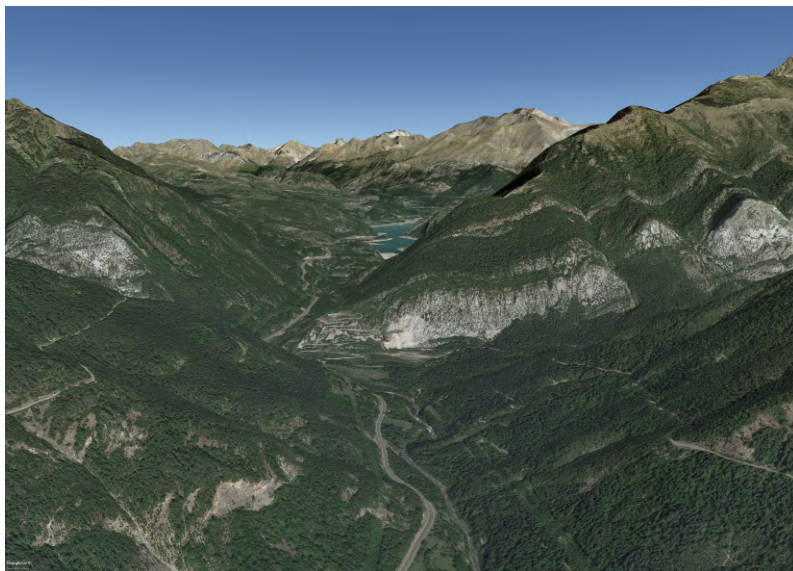


Fig. 32. *Foz* of Santa Elena, beginning of the Tena Valley. Google Earth, 2017

⁴² W. D. Elcock, “Toponimia del valle de Tena”, *Archivo de Filología Aragonesa (AFA)* 12-13 (1961-1962): 305

Actually, this is the reason why the Tena valley, in conjunction with the Aragón and the Hecho vales, were the seed for what would be known centuries later as the first County, then Kingdom and later Crown of Aragón, which ultimately would form the basis of the actual Spain of our time.

So, as it can be seen, rivers in this special region have had quite an importance, historically. They were the axis around which people lived, traveled, waged wars and commerced. They were their source of health, and of wealth. However, fickle as the History is, as years –and centuries– went by, industrialisation came. And valleys such as this, historically important and rich –relatively– saw how they could not compete against the new times: the traditional way of life did not have anything to do to face a, day by day, more globalised world.

“As a result [of all this], in barely a century, areas that had been key demographic reserves in the population development of the Peninsula [i.e. Spain], simply became little more than ethnographic reserves, just the remainders of a culture in decline.”⁴³

In order to give some context, might the reader allow us to explain briefly the consequences that industrialisation had. Firstly, a great “exodus”, so to say, of population: thousands of people moved from different towns and villages to bigger settlements, and specially cities, to improve their standard of living –or, straightaway, their lives. Those cities experienced an unprecedented growth, that in turn led to the depopulation of these previous areas. At the same time, better standards of living implied a growth in population, which also led to the necessity of more food. In this fashion, it came the time to exploit whichever lands were easier to cultivate. And those lands were, of course, the vast plains and steppes of the Ebro dale. Nevertheless, water has always been scarce down the mountains, all of it flowing concentrated in the great river –in a way that remembers, for sure in a less extreme way, to the contrast between the river Nile and the great deserts. That is why, on the year 1961, the dictatorial government of Spain finally ordered the construction of two major water reservoirs in the Tena valley, as a part of a larger plan

⁴³ S. Marín, *Pueblos recuperados en el Alto Aragón* (Huesca: Diputación de Huesca, 2018), Introduction

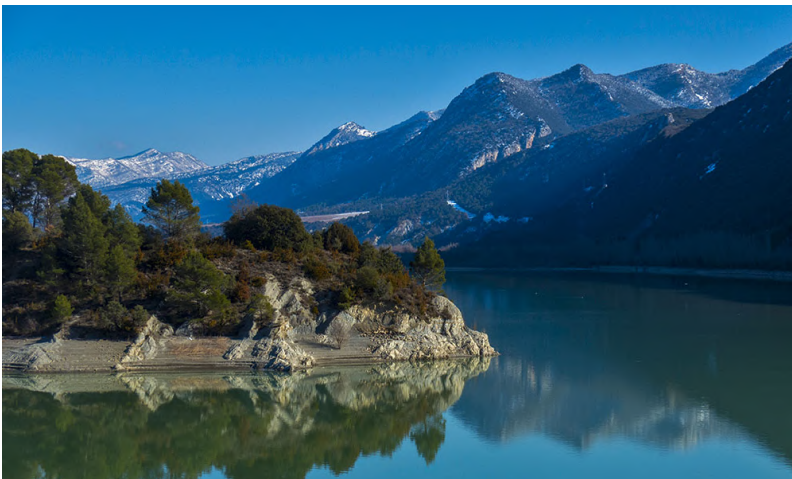


Fig. 33. *Ibón* of Piedrafita, one of the few untamed lakes that are left. 2017

Fig. 34. Highlands of the Tena Valley. Casa Biescas, 2018

Fig. 35. Reservoir of La Peña –located about 70km down the river Gállego– just other of the infrastructures carried out along the river.

to make this dry –and beautiful on its own– wilderness a huge irrigated land.

These “national”, so to say, reservoirs had a problem to encounter, though. The government had already given the rights to exploit the Gállego in those points to an enterprise, *Energía e Industrias Aragonesas S.A.* [Aragonese Energy and Industries Co., from this point forward EIASA], since this society wanted to exploit the hydropower potential of the river. Thus, both State and EIASA reached an agreement: they would build the reservoirs together, as a unique society, even though the final property of the dams and lakes themselves would remain a sole property of the State. The enterprise would maintain their rights to exploit the watercourse in terms of electricity transformation, for 75 years, but the costs of the latter would be assumed by the EIASA on their own⁴⁴.

“To summarise, the social and economic importance of the irrigation that has to be answered, and the increasingly urgent need to provide a regulated flow for it, advises the State to undertake, as urgently as possible, the construction of these reservoirs, with the economic cooperation of the Society [EIASA] for a faster conclusion of the works”⁴⁵

“The so-called reservoirs of Lanuza and Búbal, located within the High Gállego in the sections of this river previously granted to “Energía e Industrias Aragonesas, S.A.” [EIASA] are hereby kept for the Ministry of Public Works and will be built by it for the purpose of regulating the mentioned river, bound for the irrigation of the [lands within the] Plan for the Irrigation of the High Aragón.”⁴⁶

In such fashion, the reservoirs were finally built, being those the ones that mainly affected the lives of the people that inhabited the vale. However, other fifteen dams were built in this valley –

⁴⁴ Decreto 498/1961, *Boletín Oficial del Estado (BOE)* 74. Madrid: Ministerio de Obras Públicas. Artículos 3 & 4

⁴⁵ Decreto 498/1961, *Boletín Oficial del Estado (BOE)* 74. Madrid: Ministerio de Obras Públicas. Introduction

⁴⁶ Decreto 498/1961, *Boletín Oficial del Estado (BOE)* 74. Madrid: Ministerio de Obras Públicas. Artículo 1

region— up in the mountains, due to two purposes: firstly, regulate the amount of water available in the *ibones* [mountain lakes, in Aragonese] all through the year, since these lakes —the smaller ones, of course— occasionally dried up during summer. And, related with the first —being the issue that the EIASA truly concerned about— the possibility of exploiting those mountain lakes to produce hydropower.

This is the context that leads us to the settlements of Lanuza and Búbal. As the reader might have observed, the reservoirs take the names after the most important villages in the surrounding area —kind of a sarcastic joke, taking into account that those lakes were going to wipe out the original villages. Those ones, Lanuza and Búbal, were not the only villages affected by the building of the dams, though. The hamlets of Polituara [from the Latin *pulire* – clean, beautiful, probably making reference to the ancient hospital that was located there]⁴⁷ and Saqués [perhaps from the Latin *aqua* – water, making reference to the ravine next to it]⁴⁸ were also affected and deserted after the construction of the reservoirs.

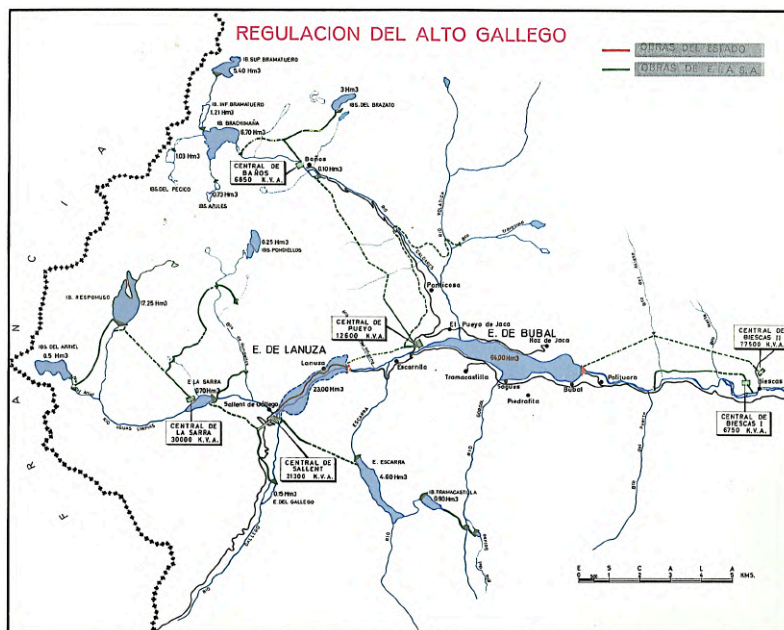


Fig. 36. Network of reservoirs and regulated *ibones*. CHE
 [In red, “State’s infrastructure works”; in green, “EIASA’s infrastructure works”]

⁴⁷ W. D. Elcock, “Toponimia del valle de Tena”, *Archivo de Filología Aragonesa (AFA)* 12-13 (1961-1962): 305

⁴⁸ W. D. Elcock, “Toponimia del valle de Tena”, *Archivo de Filología Aragonesa (AFA)* 12-13 (1961-1962): 304

III.2.1 Búbal

The village of Búbal [probably from the Aragonese *Bual*, and this one from the Latin *bolus* – throw, in the sense of throwing a net for fishing, or dam, in the sense of something used for containing]⁴⁹ was one of the many settlements in the Pyrenees that had to go through the phenomenon of the construction of a reservoir. As it has been told in the previous section, the *coup de grace* arrived in 1961, when the Government decided to undertake the plan for the irrigation. The new lake would put at risk some of the houses, so the State expropriated not only the lands that would end up under the water level, but also those constructions. Later on, the rest of the dwellers took the harsh decision to leave their homes, asking the State for a voluntary expropriation.

“The expropriation and purchase of the fields in the lower part of the valleys –which are the few arable lands in these sheer territories– affect intensely to the local economies and give really little opportunities to the ones that decide to stay. Many’s the time that forceful expropriation of the land led also to the willingly expropriation of the settlements that gave shelter to the owners, given that they were losing their livelihood.”⁵⁰

Taking into consideration Búbal, it was a small but thriving village at the end of the XIX century. With records of this settlement since the XV century –when it consisted of around 6 hearths– the number of inhabitants at the year 1900 was 111 people. Then, the industrial development of the country slowly begun to have an impact on the village, since it lost 42 dwellers until the year 1960, when Búbal reached 69 people. In the 70s, all the inhabitants that had not left before definitely departed, leaving the household deserted. Afterwards, the *Confederación Hidrográfica del Ebro* [Hydrographical Confederation of the river Ebro, from this point forward CHE] took upon the buildings⁵¹.

⁴⁹ W. D. Elcock, “Toponimia del valle de Tena”, *Archivo de Filología Aragonesa (AFA)* 12-13 (1961-1962): 304

⁵⁰ S. Marín, *Pueblos recuperados en el Alto Aragón* (Huesca: Diputación de Huesca, 2018), Causas de la despoblación

⁵¹ S. Marín, *Pueblos recuperados en el Alto Aragón* (Huesca: Diputación de Huesca, 2018), Búbal

On the other hand, the dam of the reservoir was quite an impressive building. With more than 78 meters over the original level of the river, and an average wideness of 195 meters, it took 5 years to be built– from March 1966 to March 1971. To give a sense of how big the construction was, it required 198 000 m³ of concrete, and another 128 000 m³ for the foundations⁵². All this



Fig. 37. Image of the reservoir, once completed. CHE

Fig. 38. Image taken from the dam, looking down the valley. CHE

⁵² Confederación Hidrográfica del Ebro, *Embalse de Búbal* (Zaragoza: Confederación Hidrográfica del Ebro, XXXX)

numbers might help the reader to imagine the huge amount of workers that were needed for this operation to be fulfilled. But the question that arises is: how did they live there for five years?

At this point, might the reader allow us to make a warning: from now on, lacking official information, the author will explain their opinion and inquiry, that in no case might be taken without a doubt.

In the figure 40 –an aerial picture from the year 1957– it lays the former settlement of Búbal. It can be seen that the main bunch, cluster of buildings is divided in two different groups: one to the north-east, and one to the south-west. Both “packs”, so to say, are united by a single path, or road, that passes through the village in a west-east direction, and meanwhile after and before the village it has a north, south direction. The river – not the Gállego, but a ravine called Feneros– can be slightly observed below the settlement, flowing between the different crops and lands, with a small underwood.

But then, in the figure 41 –an aerial picture of the same zone from the year 1986– it can be seen that something has changed. The settlement can still be seen, of course, but a quite large area south of the village has been developed. The crop fields are blurred between the overgrown vegetation, no longer taken care of by the nonexistent inhabitants of Búbal. The stream Feneros

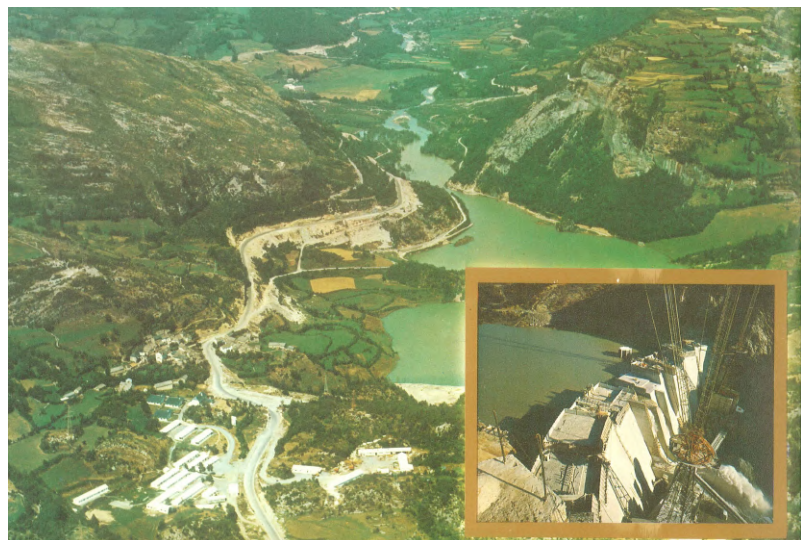


Fig. 39. Aerial image of Búbal, while the reservoir was being filled. CHE, 1986.

ends in something fairly white; taking into account what white things can be in an old aerial photo, there are few options: whether it is some kind of bright earth –sand, maybe– or snow –that, regarding the colour of the trees, cannot be, since they should also be whitish then– or water. It does not really matter if it is sand or water, as in any case both options lead to the presence of the reservoir.

Given that the settlement –at least parts of it– at the moment of the construction of the dam –i.e. 1966– was still property of the few dwellers that remained in their ancestral homes, the Government might definitely had not been able to give shelter and residence to all the workers in there. In order to avoid substantial differences between the workers –few living comfortably at the houses and the majority at some other place– the final deci-



Fig. 40. Aerial view of Búbal. 1957.



Fig. 41. Aerial view of Búbal. 1986.

sion was to build a whole temporary settlement, which are the construction developments that can be seen south of Búbal.

Furthermore, we could even establish a comparison between the settlement of Messaure and this one, in terms of being able to distinguish between the different buildings. There are two different groups of structures, divided by a road in a strange way that resembles the also two-nucleuses original settlement. The biggest of the two, also the one that is more in the west side, has 9 easily spottable I-shaped constructions, that with little doubt correspond to some kind of bachelor barracks –that is, the place where the single workers lived. Other small buildings in the upper part, 4 in total, could be more luxurious homes for the chiefs of the building site. In the east, a series of large buildings could perfectly be either more bachelor barracks or even communal places, such as a shared “living room”, so to say, in the ways of an amusement and communal living space, or simply storages. However, there is no clear way to be absolutely sure of this, since the picture is dated on 1986, 15 years after the dam was completed and the temporary village, abandoned.



Fig. 42. Historic picture of Búbal. Diario del Alto Aragón, 1984

III.2.2 Lanuza

Imagine a gentle, cold river flowing through wheat fields. At the end of what the sight can gaze, a massive two-peaked mountain framed by the mist dominates the vale, standing guard against intruders. There, at its shadow, lies the main town of the valley, but in the midst of the golden crops, shining dark like the jewel of a crown, the bunchy houses of Lanuza. That might be the panorama that the former inhabitants of the village –bit bigger than a hamlet– would have on their minds for the rest of their lives, after the completion of the reservoir.

The history of this settlement is rather more than curious, even odd: firstly obliged to abandon their homes, forcefully expropriated, the dwellers of Lanuza [from the Celtic *landa* – pejorative suffix that evolved to the French meaning of a “very poor, bad moorland”]⁵³ fought back, eventually achieving to retake – in a legal and proper way– their old land, ancestral home of the House of Lanuza, family from where a total of 9 Justicias [an endemic and unique legal figure of the old Kingdom of Aragon, entitled to mediate between the king and the noblemen, and to defend the rights of the people against bad actions or behaviour of the king]⁵⁴ came from.

Might the reader, at this point, allow us to make an explanation about expropriation in Spain, and in specific, the process that took place. The main issue was that the reservoir was planned and designed to have a maximum water level of 1283 m a.s.l., whereas the village of Lanuza is at 1284 m a.s.l. –taking into account that that is an average. In this fashion, this meant that the conditions for living there were seriously compromised, since the water would flood the lower parts of the settlement, put into risk the remaining structures –after all, a soaked land is worse for structural purposes than a dry, firm one– and also worsen the communications of the village, as the lake would isolate it, confine it, into the mountainside where it lies.

Thus, the situation incurred in the need for relocating the settlement, given that, according to the law, the land that was the

⁵³ W. D. Elcock, “Toponimia del valle de Tena”, *Archivo de Filología Aragonesa (AFA)* 12-13 (1961-1962): 302

⁵⁴ Gran Enciclopedia Aragonesa, “Justicia de Aragón”, Prensa Diaria Aragonesa, http://www.enciclopedia-aragonesa.com/voz.asp?voz_id=7515

livelihood of the population was going to be expropriated in any case. This process was not rare at that time: there are many other examples in Aragón of brand new settlements built as a substitute for the original one, or for repopulating an area: the village of El Temple [founded originally as *del Caudillo* – of the Caudillo, a Spanish word meaning leader that the dictator of Spain during the XX century named himself with]⁵⁵, or the – new– village of Belchite are some examples⁵⁶.



Fig. 43. View –postcard– of the vale, with Lanuza at the right, on the mountainside.

Fig. 44. Same view, after the completion of the reservoir. 2019

⁵⁵J. M. Alagón Laste, *Los pueblos de colonización del plan de riegos del Alto Aragón y su emplazamiento en el territorio* (Zaragoza: Universidad de Zaragoza, 2013)

⁵⁶ Gran Enciclopedia Aragonesa, “Alto Aragón, regadíos del”, Prensa Diaria Aragonesa, http://www.encyclopedia-aragonesa.com/voz.asp?voz_id=750

*“When it comes the time when it would be necessary to expropriate the land that serves as a elementary basis for the livelihood of all, or at least of the majority of the families within a Municipality or a Minor Local Entity, the Council of Ministers will agree, whether ex officio or at the request of the public Corporations concerned, on the translation of the settlement. [...]”*⁵⁷

*“Once the due date referred to in the previous article comes, a list of residents will be created –with a detailed description of the dwellings they occupied and the estates that they personally and directly utilised– that will be presented and exposed to the public for the period of a fortnight in order to give the possibility to rectify any material errors that might have occurred. [...] This list will then be raised until the Council of Ministers, so that, through the National Institute for the Colonisation, the purchase of proper estates for the establishment of the residents that had requested to do so, and for the erection of the new Local Entity that is meant to replace the missing one –as a result of the works determining the transfer of the population– might proceed.”*⁵⁸

As can be seen in the extracts, the legal apparatus in these cases was really complete, theoretically taking into consideration the needs of the former inhabitants –actually, this specific law has had little change up to the present day. Because of it, the village of Lanuza had to be moved, no matter what, provided that the water level remained at 1283 m a.s.l.. And this, precisely, was the key factor of the movement that the former dwellers carried out: the lowering of the water level in the reservoir. A little decrease would not signify much in terms of the water loss, and it however could mean the recovery of the settlement. This kind of crusade, so to say, gained a meaningful significance, symbolising the fight for the endurance of the Pyrenees and their culture and traditions.

⁵⁷ *Ley del 16 de Diciembre de 1954 acerca de la Expropiación Forzosa* (Madrid: Jefatura del Estado), Tercer Título, Quinto Capítulo, Artículo 86

⁵⁸ *Ley del 16 de Diciembre de 1954 acerca de la Expropiación Forzosa* (Madrid: Jefatura del Estado), Tercer Título, Quinto Capítulo, Artículo 95



Fig. 45. Aerial view of Lanuza. 1957



Fig. 46. Aerial view of Lanuza. 1986

“We consider that the Municipality of Sallent [de Gállego, main town and head of the Municipality where Lanuza is located] has already contributed enough to the regularisation of the catchment areas. There is no other village within Aragón that has suffered such a major decline because of the reservoirs. We do not want the matter of the water level heightening to be roused again, as we have already enough complaints and we have never received any compensation.”⁵⁹

On the other way around, the lowering of the water level actually meant some significant losses. The level that the former residents required was of 1272 m a.s.l. –i.e, 11 meters less than the original altitude– and, finally, the agreement established that the height would be 1275’5 m a.s.l., just a 68% of the requested reduction. Despite not having fulfilled the claim, it was calculated that the losses during the five-year period between 1980-84 were of about 92 millions kWh, which is the electricity that would be instead generating by the burning 20 000 tons of fuel oil. That entailed a drop-off of 736 millions ptas – around 4 millions and a half €. During a year, in terms of irrigation, the lowering lead to the loss of 14 million m³, which meant an approximation of 14 000 ha –140 million m²– of land that would remain dry⁶⁰.

As will be later explained more in depth, the residents finally were able to achieve the lowering of the water level and, with it, the regression of the property of their homes.

Coming back to the issue that is of more interest, the settlement, Lanuza had a population at the end of the XX century of around 208 people –almost the double than Búbal. Once again, due to the industrialisation processes the dwellers began to, little by little, migrate to other parts of the country: that is the reason why, in the year 1950, the population had already dropped until the 165 inhabitants. From then, there is a free fall until the year 1978 –the construction works began in the year 1975– when the settlement was officially deserted. A brief insight on how was the village might enlighten us. In the figure 45 we can see an

⁵⁹ Declaration of the mayor of Sallent de Gállego, Antonio Sancho García. Quoted in the newspaper *El Día*, 14th of December, 1990.

⁶⁰ Study performed by the CHE, referred in the newspaper *El Día*, 14th of December, 1990.

aerial picture dating the year 1957, once Lanuza was beginning its final decline. However, it shows still the majority of the constructions, clustered downhill around the church, towards the river, that can be spotted on the downside of the image. The original road, encircling the village, passes through the different fields, clearly defined.

But then, in the figure 46, another aerial photo from the year 1986 –after the reservoir was completed, in 1980– we can already see the effects of the abandonment: some houses have lost



Fig. 47. View of the vale, downwards. J. Soler, 1904-14. Lanuza can be spotted in the middle.

Fig. 48. Postcard of the church of El Salvador, Lanuza.

their roof, some others only have small parts of the walls left, the field's limits are beginning to blur. We can see the new road that was built in order to substitute the former one, that can be spotted running under the water in the lower part of the picture.

As it has been showed, there was no temporary settlement in Lanuza. The reason for this is the closeness –both in time and in space– of the two reservoirs: the construction of Búbal ended in 1971, whereas the first works in Lanuza began in 1968 and the construction of the dam itself, in 1975.⁶¹ As a consequence, can be inferred that the workers remained there, in the temporary settlement near Búbal, since the distance to Lanuza is too short to move the dwellings –just 9 km, around 9 minutes by car/bus. Nonetheless, this is just a theory from the author, and in any case it constitutes a verified truth, nor fact.

⁶¹ Gran Enciclopedia Aragonesa, “Lanuza, embalse de”, Prensa Diaria Aragonesa, http://www.encyclopedia-aragonesa.com/voz.asp?voz_id=7692

V. Remainders. *Death and reawakening*

The word “temporary” has mainly only one –and clear– meaning: “*lasting or effective for a time only; not permanent.*”⁶². With this in mind, nobody doubted that Messaure would have an end. Nobody doubted that Búbal would be deserted, eventually. Nobody doubted that Lanuza would lie under the water, forever. And yet, people dared to doubt, to fight for their homes, for their lives. Might the reader allow us to enlighten them.

For more than 20 years –23, for being precise– the society of Messaure thrived. Originally thought to be deserted in the year 1962 –after the completion of the dam and power station for which the settlement was originally planned and built– the settlers actually wanted to continue living there. Even so, they did not have any job to stay in the settlement, and actually, as the reader might remember, one of the main conditions for having a dwelling at Messaure was that the residents had a contract with Vattenfall. This issue was not solely addressing Messaure: all Norrland was in a shortage of employment, given Vattenfall's decline in civil engineering activities at that time⁶³. Some meetings were held by both the Government of Norrbotten and the Vattenfall board, trying to improve this situation; for instance, Messaure was kept as a central “base camp”, so to say, for the construction of a total of other eight power plants –and their respective reservoirs, of course: *Seitevare*, *Satisjaure*, *Vie-*



Fig. 49. Celebration for the inauguration of Messaure, Porsi and Laxede power plants and reservoirs. R. Ericson, August 31th, 1963. Held in the machine hall of Messaure's power plant, it marked the end of Messaure's prime and the beginning of its decline.

⁶² English dictionary, “Temporary”. <https://www.wordreference.com/definition/temporary>

⁶³ Statens Vattenfallsverk Luleålsarbetena.



Fig. 50. House being moved from Messaure. J. Palmqvist
Fig. 51. Same house, on its way to Jokkmokk. J. Palmqvist

tas, Suorva, Parki, Akkats, Ritsem and Randi⁶⁴. Nevertheless, the situation was hopeless: already by the end of the year 1964, 12 bachelor barracks were empty, even though 18 of the original ones had already been demolished, along with 20 family dwellings⁶⁵. Some of the house owners had also moved their homes out of town, in search of a more pleasant place or, merely, a job.

*“In 1972, Vattenfall called for a meeting with the inhabitants of Messaure concerning the future of the society. This meeting was held on March 19th. What clearly emerged at the meeting was that the residents largely wanted to stay in the village. The people who lived there enjoyed themselves and felt that it was pleasant to live in Messaure.”*⁶⁶

However, in spite of the residents' desire to stay within the settlement, large parts of the buildings had come to an end, and would continue to do so. From Vattenfall's board, the disposition was to take into account the residents' wishes, and in this fashion, the ensured that “no workers would be asked to be without roof over their heads”⁶⁷. The main requirement, though, was that the number of residents had to be at a level that could keep society afloat –i.e., that it was possible to maintain the public services and other establishments. In 1978, the community consisted of 74 family houses, some owned homes, the Älvgården, the shop, the kiosk, and the administration buildings. Over 20 families still remained there in May 1979⁶⁸.

The foreseen end was more and more evident, specially in the newspapers, which continuously talked about the “drama” of the phasing out of Messaure. On the 31st of May of 1979, the first page of the Norrbottens-Kuriren stated “*Messaure i dödsryckning*” [Messaure's last breath, in Swedish]⁶⁹. This article sho-

⁶⁴ W. Granström & B. Bursell, *Från bygge till bygge: anläggarnas liv och minnen. En studie över vattenkraftbygget från 1940-talet till 1970-talet* (Vällingby: Kulturvårdskommittén i Vattenfall, 1994), 159

⁶⁵ M. Hallin, *Messaure – en tillfällig tätort i ödemarken* (Göteborg: Litorapid Media AB, 2004), 63

⁶⁶ M. Hallin, *Messaure – en tillfällig tätort i ödemarken* (Göteborg: Litorapid Media AB, 2004), 63

⁶⁷ *Norrbottens-Kuriren*, 27th of September, 1962

⁶⁸ M. Hallin, *Messaure – en tillfällig tätort i ödemarken* (Göteborg: Litorapid Media AB, 2004), 63

⁶⁹ *Norrbottens-Kuriren*, 31st of May, 1979



Fig. 52. Newspaper clipping, *Norsbottens-Kuriren*, May 31st, 1979.
It reads: “*Messaure - a society that is disappearing*”.

Fig. 53. Newspaper clipping, *Expressen*, February 10th, 1980.
It reads: “*Sneaking destroys service*”, meaning the supposed furtive movements of Vattenfall against Messaure.

Fig. 54. Newspaper clipping, *Aftonbladet*, June 12th, 1979.
It reads: “*You must leave, the village will be demolished*”.

Fig. 55. Newspaper clipping, *Expressen*, February 10th, 1980.
It reads: “*The end, Messaure*”.

wed what was supposed to happen afterwards with the settlement. The number of students was expected to decline from 25 to 5, the petrol station was meant to close shortly – actually the pumps were finally shut down on July 1st– and the shop would remain open until Midsummer –just because the owners had delivery commitments with the school until the end of the spring term. After 1980, the settlement was completely empty of permanent residents, being this last ones offered housing in Vuollerim or Jokkmokk –both actual houses from the Municipality’s stock, or land plots in residential areas⁷⁰.

Even though having had to leave the settlements, the inhabitants of Messaure –at least, the ones who had remained until the very end– fought back, having some impact in the newspapers. In one of those, the fact that the community had come down in just a few months was really insisted on, kind of suggesting the idea that Vattenfall had something to do with it⁷¹. However, the criticisms made in the press regarding Vattenfall's way of both responding and treating the residents of Messaure, were rejected in a series of articles.

On the other hand, perhaps seeing Vattenfall’s point of view helps the reader to understand how sensitive was this issue. First of all, Vattenfall had a contract with Domänverket –the state-owned company that was in charge of the Swedish forests, both for forestry and conservation purposes⁷². In this document, it was specified that the hydropower company had to return the leased land in a restored condition; a fact that, as it is obvious, could not be achieved until the last dwellers had left and their dwellings, disappeared. Furthermore, as it has been previously stated, there was a irrevocable connection between the right to buy –or have– a home and the fact of being employed by Vattenfall. As a consequence, the dwellers were not considered entitled to dispose of Vattenfall's land, since the last contracts ended with a pension in December 1970⁷³.

⁷⁰ M. Hallin, *Messaure – en tillfällig tätort i ödemarken* (Göteborg: Litorapid Media AB, 2004), 64

⁷¹ *Expressen*, 10th of February, 1980.

⁷² H. Wallengren, G. Björnström, B. Linderöth et al., *Svensk uppslagsbok* (Malmö: Svensk uppslagsbok AB, 1931)

⁷³ M. Hallin, *Messaure – en tillfällig tätort i ödemarken* (Göteborg: Litorapid Media AB, 2004), 65-6



Fig. 56. Image of the current Messaure. M. Hallin, 2003. It reads "Shop".

Fig. 57. Image of the current Messaure. M. Hallin, 2003. It reads "Church".

Fig. 58. Image of the current Messaure. M. Hallin, 2003. It reads "Älvgården".



Fig. 59. Image of the current Messaure. M. Hallin, 2003. It reads “Kiosk”.

Fig. 60. Image of the current Messaure. M. Hallin, 2003. It reads “Forest road”.

Fig. 61. Picture of one of the *egnahem* after the transportation to Vuollerim.

During the 1980s, the apartments that over the years housed the employees at Vattenfall began to gradually be dismantled⁷⁴. Those who today go to the once populous settlement, will surely have difficulty understanding that once there were about 3000 inhabitants in the place. The only thing left is some single homes and plots that nowadays consist of growing vegetation. Today, in the center of the *torg*, there are only signs showing where the various buildings were once located. Today, the once lively streets, are quiet and peaceful paths through the forest.



Fig. 62. Monument –milestone– in Messaure’s torg. I. Ek, 2014.

Meanwhile, in Spain, quite a similar situation was occurring. On the 6th of May of 1976, the closing of the sluice gates of Lanuza took place, which meant the absolute *coup de grace* for the village. At that time there were still around 150 residents in Lanuza, which then gradually started to leave the settlement. In 1977, the road that lead to the village was flooded, and finally, on the 21st of January of 1978, the last dwellers said goodbye to their homes⁷⁵.

“[...] *The last ones [festivities in honour of the patron saints of Lanuza] that the residents celebrated, before saying the final farewell to their village, were especially touching. During those, they resurrected the dance [traditional dances, in Aragonese] and there were passacaglia music that brought tears to the eyes of all the inhabitants of the place. The Lanuza reservoir has swallowed a beautiful past of our land, even beautifuler than the landscape that now stands in its place*”.⁷⁶

As has already been gone through, the residents of Lanuza retaliated, and in the 90s a fierce legal fight began in order to recover their homes. In 1992, the CHE finally began to revert the property of the land, –in exchange of a fee, of course– and the dwellers started to retrieve their households. The first land that they asked for was the church, because for them “*it was of a deep preciousness and for anything in the world they wanted it to collapse*”⁷⁷.

“*We never lost track of the reservoir, nor the village, and when we saw that the initial estimations were not fulfilled and that the urban area [that is, the settlement] was going to escape its doom, we decided to take back what was ours*”.⁷⁸

Nevertheless, they encountered some more difficulties than the ones they had planned for. It had been 15 years since they had left the village, and during that time the houses had been despoi-

⁷⁵ Y. Aznar, *ABC Aragón*, 24th of December, 2015

⁷⁶ Gran Enciclopedia Aragonesa, “Lanuza”, Prensa Diaria Aragonesa, http://www.encyclopedia-aragonesa.com/voz.asp?voz_id=7690

⁷⁷ Y. Aznar, *ABC Aragón*, 24th of December, 2015

⁷⁸ Quotation from a former resident of Lanuza. Y. Aznar, *ABC Aragón*, 24th of December, 2015

led. Anything of value had disappeared, and not only the little furniture or decoration that might have remained in a moment of distraction: also the wood, doors, windows, wrought iron gates and fences, even stones. They had to start from the beginning, and in this fashion they invested their own money and began the restoration –in most of the cases, reconstruction. A society was created in order to coordinate all the efforts: out of the original 15 associates, they estimate that an average investment of half a million euros per partner, plus their own expenses in rebuilding their own homes.

Since then, the dwellers have been able to restore the church, retrieve the drinking water –kind of ironic if we consider that a great lake surrounds the village– restore the old council hall and the school. A total number of 32 buildings have been brought back –sometimes from their ruins– that, nowadays, contain 68 dwellings, as well as a hotel, a restaurant and a rural house – concept of hotel typical of Spain, which main characteristic is to be modest, but comfortable, in a rural way. Their effort has been the role model for other regions of Spain with settlements in the same conditions as Lanuza.⁷⁹

Finally, to be fair, the *Diputación de Huesca* [the Government of the province of Huesca, where Lanuza is located; from now on, DPH] also took some actions in order to revitalise the village. For instance, each summer Lanuza holds a big festival, *Pirineos Sur*, arranged by the DPH in collaboration with the CHE and local entities, such as ski resorts and municipalities. With a wide range –music, drama, cinema, sculpture and painting– the huge number of activities of the festival are organised in the whole Tena valley. Lanuza, for its part, hosts a great stage that floats over the lake, while the grandstands are settled in the mountain-side, constituting a temporary landmark that attracts a lot of tourism.⁸⁰

From the aerial view on figure 63 can be easily seen that most of the buildings of the old Lanuza have been lost, waiting still for their turn within the slow rebuilding process that is being conducted.

⁷⁹ Y. Aznar, *ABC Aragón*, 24th of December, 2015

⁸⁰ B. P., *El Día, Cultura*, 21st of June, 1992



Fig. 63. Aerial view of Lanuza. 2015.

Aragón

HUESCA

El alcalde de Sallent, Antonio Sancho, indicó a este periódico que su municipio no aceptaría ninguna propuesta que pasara por la elevación de la cota actual de agua embalsada en el pantano de Lanuza. Antonio Sancho se refirió al elevado nivel de aprovechamiento hidroeléctrico que se da en el municipio, en el que se encuentran siete embalses, y precisó que la elevación de la cota supondría la desaparición de parte del municipio. No obstante, quiso hacer a la presencia de Rubio en el pleno municipal del pasado viernes.

«Consideramos que el municipio de Sallent ya ha contribuido bastante a la regulación de las cuencas fluviales. No existe ningún pueblo en Aragón que haya sufrido un mayor deterioro por culpa de los embalses. No queremos que vuelva a resucitar el tema del aumento de las cotas porque ya tenemos bastantes afecciones y nunca se nos ha concedido ninguna indemnización», señaló Antonio Sancho, al tiempo que sacó a relucir los problemas que está teniendo el Ayuntamiento para construir la minicentral municipal, proyecto para el que tiene concedido un crédito por parte del Banco Crédito Local.

El acuerdo que limita la capacidad de agua embalsada en el pantano de Lanuza se firmó entre Antonio Sancho, el expresidente de la Confederación Hidrográfica del Ebro, Eugenio Nadal, y el exprocurador civil de Huesca, Miguel Godia, a raíz de la acción que protagonizaron varios vecinos del municipio de Sallent y en la que procedieron a abrir las compuertas del embalse. El documento que se firmó en el mes de marzo de 1987, llegó a una solución de compromiso que fijó la cota del embalse máxima en 1.275'5 metros, punto de equilibrio entre los



El alcalde de Sallent indicó que el municipio no aceptaría un aumento de la cota.

El presidente de la Confederación Hidrográfica del Ebro (CHE), Alfonso Rubio, se desplazó el pasado viernes hasta Sallent de Gallego con el fin de sondear la opinión municipal sobre el acuerdo que limita la capacidad del embalse de Lanuza a la cota 1.275'5 metros. La Corporación sallentina se ratificó en los puntos del acuerdo y manifestó su oposición a que se eleve la cota.

El presidente de la CHE se interesa por el acuerdo que limita la capacidad de Lanuza

Supondría la desaparición de una parte del municipio de Sallent

■ EL DÍA

1.283 metros de capacidad máxima y los 1.272 que solicitaban los vecinos.

Antonio Sancho consideró que el interés de conocer los extremos del acuerdo intransigente, así como el conocer sobre el terreno la problemática, no supone que se va a volver a reanudar el conflicto. No obstante, tanto la Comunidad de Regiones del Altoaragón, como

que se inauguró el 12 de julio de 1971. La viabilidad de esta posibilidad se abrió en virtud de un decreto de principios de los sesenta en el que se destinaba la tuela de la reserva de esas embalses al Ministerio de Obras Públicas con el fin de regular las aguas de cabecera del río Gallego y destinar los caudales al sistema de Riego del Altoaragón.

La empresa OCTSA fue la encargada de realizar la obra y el tipo de construcción es de bóveda de doble curvatura formada por arcos de grueso variable. El embalse tiene una capacidad de 25 hectómetros cúbicos, una cota máxima de 1.283 y un metro más en caso de crecidas. Como consecuencia de la obra se hizo preciso construir una variante en la carretera nacional 136, entre las poblaciones de Escarilla y Sallent.

Desde un primer momento hubo una fuerte oposición local al proyecto que determinó el abandono del municipio de Lanuza. Desde 1977 se sucedieron una serie de reuniones que tuvieron como objeto delimitar la cota definitiva de agua embalsada. La construcción de la presa hizo necesaria la construcción de un conector nuevo en el municipio de Sallent, ya que el precedente quedaba anegado por las aguas, si bien tres familias se oponían a esta medida.

Por otra parte, la reducción de la cota de agua y la CHE evaluó la reducción de la producción eléctrica, desde el quinquenio 1980-1984, en 92 millones de kilovatios-hora. También se fijó que la reducción de los ingresos era de 736 millones de pesetas y que en la energía que se producía con 20.000 toneladas de fuel-oil. Asimismo se calculaba que la pérdida anual de agua era de 14 millones de metros cúbicos y fijaba en 14.000 las hectáreas que vieron limitada sus expectativas para el riego.

Comarcas

Miércoles, 8 de mayo de 1991
Diario del Altoaragón

SERRABLO

El alcalde cree que subyace la polémica por la cota de Lanuza

La CHE paraliza los trabajos en la minicentral de Sallent

Santiago BENITO HUESCA. La Confederación Hidrográfica del Ebro ha paralizado las obras de la minicentral de Sallent de Gallego debido a un requisito formal que impide la aprobación definitiva del proyecto. El alcalde de Sallent, Antonio Sancho, ha criticado duramente al organismo de cuenca, considerando que esta

decisión no es ajena a la larga polémica mantenida sobre la cota de la presa. El Ayuntamiento se reunirá mañana con antiguos vecinos de Lanuza para llegar a un acuerdo sobre los terrenos que ocupará la minicentral. Esta obra hidroeléctrica, la primera en España de sus características, tiene un presupuesto cercano a los 500 millones de pesetas.

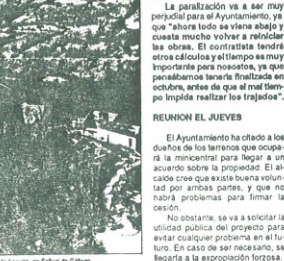
Las obras de construcción de la minicentral de Sallent de Gallego llevan una semana paralizadas por decisión de la Confederación Hidrográfica del Ebro. La CHE informó al Ayuntamiento que no podían continuar los trabajos hasta que no llegara a un acuerdo con los propietarios de los terrenos que ocupará la obra.

Se trata de antiguos vecinos de Lanuza que han conseguido la reversión de estas propiedades, expropiadas en su día para la construcción del pantano y que han quedado libres tras el acuerdo delimitado sobre la cota.

En el Ayuntamiento de Sallent existe un gran malestar ante la decisión del organismo de cuenca ya que, según el alcalde, Antonio Sancho, están perjudicando enormemente al municipio cuando saben que hay una central de transformación en marcha y que interesa comenzar cuanto antes la producción para quitarnos la carga financiera que tenemos». La actitud de Confederación «no tiene ningún sentido, cuando ellos dieron la concesión y dijeron que no había ningún impedimento para ubicar la central en estos terrenos, que eran públicos hasta la reversión».

El alcalde de Sallent reconoce que, aunque burocráticamente la CHE pueda tener razón, «ya en contra del estilo de buena voluntad que anunció Eugenio Nadal cuando firmó el contrato con nosotros, y el Ayuntamiento firmamos un acuerdo fijando la cota en 1.275 metros».

«Yo no puedo entender cómo no dan por zanjado este tema, cuando en su día el anterior presidente de la CHE, el gobernador civil y el Ayuntamiento firmamos un acuerdo fijando la cota en 1.275 metros».



Vista panorámica del pantano de Lanuza, en Sallent de Gallego.

El nuevo presidente de Confederación, Alfonso Rubio, «estuvo un día en Sallent para hablar sobre este tema, y ya le dijimos, en pleno municipal, que es algo innegociable».

El alcalde critica, igualmente, las trabas que el organismo de

Gestión municipal

S.B.

HUESCA. La minicentral de Sallent de Gallego, que se está construyendo en los terrenos de Lanuza, cuenta con un presupuesto de unos 450 millones de pesetas, a los que hay que añadir sesenta más del centro de transformación.

Se trata de una iniciativa del Ayuntamiento sallentino, que se considera así en el programa de España en construcción y gestión una minicentral, según su alcalde.

Para finalizar las obras, la Corporación ha firmado un crédito de cuatrocientos millones de pesetas con el BCL, y se han conseguido subvenciones a fondo perdido de la Comunidad Europea por un importe de diez millones de pesetas.

El proyecto se realizó por la firma ICOM, y prevé la producción de 12 millones de kilovatios al año. Según los cálculos, se obtendrán unos beneficios líquidos de unos cincuenta millones de pesetas anuales, durante los diez primeros años. El primer beneficio económico se la subvención. Los gananciales posteriores irán a las arcas municipales.

La energía eléctrica producida se pasará a la central de «Aragonesas» mediante un centro de transformación que ha costado al Concejo de Sallent sesenta millones de pesetas.

La minicentral, que dio mucho que hablar en el momento de la licitación y adjudicación de los diferentes tipos de obra, está muy adelantada. La presa ya ha sido construida y en el momento de la paralización se estaba instalando en el edificio civil en los anclajes de la turbina.

Fig. 64. Newspaper clipping, *El Día*, December 14th, 1990.

It reads "The CHE president shows interest in the agreement that limits Lanuza's capacity".

Fig. 65. Newspaper clipping, *Diario del Altoaragón*, May 8th, 1991.

It reads "CHE stops the construction works of the mini power plant of Sallent", referring to a polemic that there were on the building -by the council of Sallent- of a small power plant for their own benefit. That would have been unprecedented in Spain.

Cultura

El presidente de la DPH, Marcelino Iglesias, y la responsable cultural, Eva Almunia, presentaron ayer el programa de actuaciones que durante los dos meses de verano inundarán los escenarios naturales de los dos valles del Pirineo altoaragonés, Aragón y Tena. Música rock, clásica, teatro, cine, escultura y pintura componen el programa que pretende completar la oferta turística del Pirineo y abrirse al exterior. El presupuesto asciende a 49 millones y medio de los que 37 son aportados por la Diputación y el resto por las instituciones colaboradoras.

«Pirineos Sur»: música, teatro, cine y escultura en escenarios naturales

La DPH presenta la programación cultural de este verano para los valles de Aragón y Tena, que tiene un presupuesto de cerca de cincuenta millones

■ B. P.

Bajo el eslogan «Pirineos Sur», «suficientemente contradictorio para hacerlo interesante -según palabras del presidente de la DPH, Marcelino Iglesias- que responde a la visión internacional de los Pirineos que desde siempre han sido el norte de España», y con la ambición de completar la oferta turística se lanza una programación interesante que abarca todos los ámbitos del arte, con música, teatro, cine y escultura. Una idea «con vocación de continuidad», en opinión de Marcelino Iglesias, «con la que vamos a estar convencidos de que el Sur también existe». El presupuesto total asciende a 49 millones y medio de los que 37 son aportados por la Diputación Provincial y el resto por las instituciones participantes, ayuntamientos, asociación del Valle de Tena, Estación de esquí de Formigal y asociación del Somport y lo que se obtenga de la venta de localidades.

El Festival de Las Culturas que será como se identifiquen las actuaciones que se celebren en el valle de Tena, concentrará un ciclo de cine en la localidad de Biescas, conciertos y representaciones teatrales en el escenario flotante que se instale en el pantano de Lanuza y en Panícoso, y una exposición monográfica sobre *Anatomía y Dibujo* en el castillo de Larnes, en homenaje a Santiago Ramón y Cajal, que se prolongará del 4 de julio al 30 de septiembre. Ketama, M. M. Queen, Luz Casal y la orquesta de Budapest en música; Teatro



PABLO OTIN

La CHE ha permitido la instalación de un escenario flotante sobre el pantano de Lanuza.

del Alba y Producciones Calígula en teatro, y las películas *El Rey Pasmado*, *Ran*, *El nombre de la rosa* y *El cielo protector* en el ciclo de Biescas, son algunos de los nombres propios programados para el valle de Tena.

Paralelamente El Festival en el Camino de Santiago, que será el eslogan de los actos del Valle Aragón reunirá una exposición escultórica, el espectáculo teatral de Directa Productora Teatral, de Los Titiriteros de Binéfar en Canfranc, y cine con *Orosia* de Florian Rey, música con Amancio Prada y ópera en Jaca, entre otros. El

El alcalde de Canfranc destacó que «la comunicación también se hace por medio de la cultura»

alcalde de Canfranc, José Marraco, asistente a la presentación de los Festivales, incidió en la necesidad de apertura en comunicaciones con Europa a través de los Pirineos altoaragoneses e hizo especial hincapié en la reapertura de la vía ferroviaria del Canfranc. Aún así destacó el interés de los Festivales para que la población del Pirineo se abra al exterior y en este sentido manifestó que «la comunicación también se hace por medio de la cultura». «Los Festivales son un buen camino para llegar a algo» añadió Marraco.

Fig. 66. Newspaper clipping, *El Día*, June 21th, 1992.

It reads “«Pirineos Sur»: music, drama, cinema and sculpture in natural stages”.

A very similar procedure took place with Búbal, and yet totally different. As has already been explained, out of the two nuclei-
ses only one had the possibility of being restored, since one of them remains under the water for some time along the year,
whereas the rest of the time is whether still flooded or too close to the water for being inhabited. The other part –and the main
one– of the settlement has, thank God, been restored. Property of the CHE following the depopulation of the settlement, it was
included in the Programa de Recuperación de Pueblos Abandonados [Programme for the Recovery of Deserted Villages, in
Spanish; from now on, PRUEPA].⁸¹

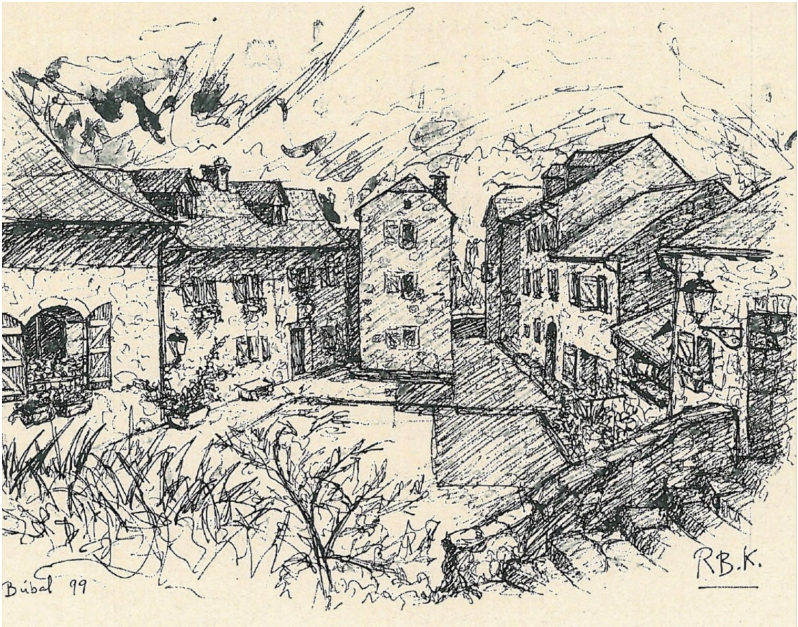


Fig. 67. View of Búbal. PRUEPA Búbal, 2019.

Fig. 68. Drawing of the main square of Búbal. R. B. K.

⁸¹ S. Marín, *Pueblos recuperados en el Alto Aragón* (Huesca: Diputación de Huesca, 2018), Búbal



Fig. 69. Aerial view of Búbal. 2015.

“It [the PRUEPA] aims for an approach to the rural life of the youngsters –that, for the most part, live in the urban world– affording them with the possibility to comprehend the necessity of a change of heart in order to ensure the future harmony of the humankind with their environment.”⁸²

This initiative, promoted by the Spanish central Government, intends to restore, to take back to life, deserted settlements, by means of educational activities such as workshops in environmental education, anthropology, carpentry, pottery, dancing, health, recycling, or photography⁸³. These activities have been being carried out since 1986, and currently, thanks to the PRUEPA, most of the original west nucleus has been restored. Recently, the property of the land was given from the central Government –to which the CHE belongs– to the Government of Aragón, that now is in charge of arranging the activities⁸⁴.

Last, but not least, the southern nucleus –the workers temporary settlement– was also included in this initiative. It could have been dismantled, or left to its fate, but instead it was converted and re-used as accommodations for the activities conducted by the PRUEPA. In this fashion, the main difference between Búbal and Lanuza, as the reader might have seen, is that in one instance the restoring actions and thrust came from the State, whereas in the latter all the effort was accomplished by private parts. Up to now, there are 25 dwellings in the settlement, although there are still no permanent residents so far.

⁸² Programa de Recuperación y Utilización Educativa de Pueblos Abandonados, Ministerio para la Transición Ecológica, <https://www.miteco.gob.es/es/ceneam/programas-de-educacion-ambiental/pueblos-abandonados/>

⁸³ Programa de Recuperación y Utilización Educativa de Pueblos Abandonados, Ministerio para la Transición Ecológica, <https://www.miteco.gob.es/es/ceneam/programas-de-educacion-ambiental/pueblos-abandonados/>

⁸⁴ S. Marín, *Pueblos recuperados en el Alto Aragón* (Huesca: Diputación de Huesca, 2018), Búbal

VI. Afterword. *Final thoughts*

Once to this point, it would be good to outline what can be learnt from this experiences. It is not easy, no close, to give housing to this huge amounts of people –let’s take into consideration that we are talking of about 1350 people, which were the inhabitants of Messaure at its prime. The solution carried out in both samples, Búbal-Lanuza and Messaure, was in fact a good one: a temporary village which buildings could be re-used. Even though the processes are different –in the Swedish case studio the buildings were whether dismantled or moved, whereas in the Spanish one they were simply converted and restructured into another use– the concept is the same: sustainability, responsible behaviour with the environment, and pragmatism.

However, there are other factors that might be taken into account.

First of all, we have the issue itself of building reservoirs. On one hand they are one of the best ways of producing energy in a responsible way. Furthermore, at the same time they also serve to the purposes of regulating the mean flow of the rivers –which is crucial in rivers that have a high tendency to cause inundations, such as the river Ebro– and also of store water in cases of severe droughts –which once again is the case of Spain, not Sweden.

On the other hand, though, reservoirs cause tough changes to the rivers, and to the people that inhabit near them. In this way, rivers become tamed, not natural anymore, not free. This affects to the movement of the sediments –which contribute to the fertilisation of the riversides, in the end– but also to the movement of the animals. Fish, and other kinds of animals, tend to move along the rivers, specially some species such as the salmon, and dams definitely cut any possibility of movement for them. Reservoirs also –incredible as it might seem– tend to flood large parts of land, that become useless.

Last, but not least, we have the human tragedies. Let’s address first the ones related to the reservoir themselves. As we have been able to learn through all the thesis, reservoirs deeply affected the lives of the people that lived near the rivers. Actually, they did not just affect them: they changed completely their lives. The case of the sámi people has already been mentioned; nevertheless, since their lives are still nomadic, reservoirs constitute just a new obstacle that they, with no doubt, will be able to

deal with. The case of the mountain people is more complicated. Mountainous regions –specially in Spain, which is the example we will go for– usually depend on resources that, in turn, rely on the Earth itself. For instance, in villages such as Lanuza or Búbal most of the population would base their livelihood on agriculture, or husbandry, while just a small part would perform more specific tasks –smithery, pottery, and so on. Both agriculture and husbandry require land to “work”, fields for the first and pastures for the latter. And those lands are commonly located in the lower parts of the valley, where the earth is most fruitful –except husbandry during summer, when herds are usually taken to the highlands.

Hence, what happens when a reservoir is completed? That, of course, the land gets flooded, that same land the livelihood of the residents relied on. Although this might seem bad, it is actually the best scenario. It could also happen that the reservoir actually floods as well the village itself –which almost was the situation with Lanuza, but that actually happened with other villages of Aragón, such as Mediano.

To cap it all, reservoirs have a last consequence over the grounds. As these enormous quantities of water soak the terrain, it turns less stable. As a result, it can happen that small portions of the mountainsides become totally unstable and fall, filling the bottom of the reservoir. These small quantities might not seem much at the beginning, but in the end they would contribute to the failure of the turbines –as the worst scenario– or simply, to lower the original capacity of the reservoir. In order to evade this, the Government usually reforested the mountainsides. These actions, goodhearted since they intended to activate the economies of the valleys –motivating a change in the livelihood of these regions, a shift of mind– were, in the end, ineffective; it is nearly worthless to pretend that a productive system with hundreds of years of tradition will change in a short period, just because a foreigner tells them to do so.

To summarise, we have villages that, with the reservoirs, lost their lands –at least, the most fruitful ones– making impossible for all of them to rely on agriculture. Then, the mountainsides around them get reforested, making really hard to live on husbandry. And, finally, instead of investing the little money they had in creating a forestry industry, they decide to emigrate to

bigger nucleuses, where the opportunities for a good life are much more plentiful. In short, we have rootless people, angry with the Government for having taken their ancestral homes, and willing to come back.

Coming back again to the case of Messaure, people had a totally different motivation, yet the same. Despite the fact that they were not born there –except some of the children– they all felt deeply attached to the settlement –at least, the ones that remained there for longer. This fact might be related to the so-called “Messaurean spirit”: the good relations between the neighbours, the fact that they all arrived there and started from zero, the good atmosphere at the settlement. Whatever the reason, the truth is that, after the passing out of the settlement, the former residents felt the necessity of coming back. And, specially, the once children –now grown-ups– since, after all, they grew up there and, as a consequence, their roots lie there. Actually, each year the former settlers reunite once again in Messaure.

Those were the motivations why people fought so hard for their villages. In the Spanish cases, they finally were able to restore them, and take them back to live. Nevertheless, sadly, the settlements of the Swedes did not have the same luck, and nowadays do not exist any more, at least in a physical way: it will always be alive in the memories of the inhabitants.

Hence, in the end, both cases show the importance that the settlements had in the lives of the inhabitants. It is the settlement, its planning, and also the way that it is built, which makes its residents interact –or not– and live at ease. It is the settlement the thing that, all in all, constitutes the scene of the lives of the people, the background of their memories. It is the settlements that, when all is said and done, define who we are.

And, in short, what greater cultural landscape does a human have, than the place that saw them grow.

Illustrations sources

Fig. 1. Family picture of the course C7002B, *Hållbar stadsutveckling*. Sotoca, Adolfo. September, 2018.

Fig. 2. City of Cologne after the end of the World War II. <https://www.frihetskamp.net/de-allierte-terrorbomber-koln/>, retrieved September, 2019.

Fig. 3. Ruins of Belchite –a village within Aragón. Ibáñez, Cristina & Díaz, Carlos. 2017. <https://www.unplanetaporviajar.com/belchite-fantasmas/>, retrieved September, 2019.

Fig. 4, 5. Graphic dispositions for the Plan de Riegos del Alto Aragón. Alagón Laste, José María. 2013. *Los pueblos de colonización del plan de riegos del Alto Aragón y su emplazamiento en el territorio*. Zaragoza: Universidad de Zaragoza.

Fig. 6. Peace is celebrated on Kungsgatan, Stockholm. *Expressen*, 1945. Retrieved at <https://www.expressen.se/nyheter/finns-du-med-pa-bilden/> in September, 2019.

Fig. 7. Power station construction communities. Unknown, 1994. Retrieved in <https://history.vattenfall.com/from-hydro-power-to-solar-cells/new-communities-in-the-wilderness> in September, 2019.

Fig. 8. Planned Swedish national grid in 1938. Vattenfall, 1938. Retrieved in <https://historia.vattenfall.se/sv/hela-sverige-blir-elektriskt/ett-stamnat-blir-till> in September, 2019.

Fig. 9. Schema of the Lule River and its major settlements. Hallin, Maria. 2004. *Messaure – en tillfällig tätort i ödemarken*. Göteborg: Litorapid Media AB.

Fig. 10. Chromolithograph of the Harsprånget waterfall. C. S. Hallbeck, 1856

Fig. 11. Picture of the dry Harsprånget waterfall. Abad Martínez, Jorge. September, 2018.

Fig. 12. Reindeer herd in the middle of a transhumance, northern Norway. Roberts, Jason. Retrieved in <https://www.survivalinternational.org/galleries/reindeer#2> in September, 2019.

Fig. 13. Picture at the discharge tunnel mouth of the Messaure dam. Skogh, Henrik. 1955. Retrieved in <http://messaure.se/> in September, 2019.

Fig. 14. General layout for the building site of Messaure. Vattenfall, ca. 1955. Given at the course C7002B, *Hållbar stadsutveckling*, at Luleå Tekniska Universitet.

Fig. 15. Plan for the temporary settlement of Messaure. Vattenfall, ca. 1955. Given at the course C7002B, *Hållbar stadsutveckling*, at Luleå Tekniska Universitet.

Fig. 16. Assembly of one of the bachelor barracks. Vattenfall, 1957. Retrieved in Hallin (2004).

Fig. 17. Final aspect of the bachelor barracks. Vattenfall, 1957. Retrieved in Hallin (2004).

Fig. 18. View of one of the streets designated for the *egnahe-men*. Vattenfall, 1958. Retrieved in Hallin (2004).

Fig. 19. Winter view of one of the family housing areas. Vattenfall, 1957. Retrieved in Hallin (2004).

Fig. 20. Main façade of the *Älvgården*. Vattenfall, 1958. Retrieved in Hallin (2004).

Fig. 21. View of the central *torg*. Vattenfall. Retrieved in Hallin (2004).

Fig. 22. Panoramic view of the *torg*, spotting the only two supermarkets. Vattenfall, 1959. Retrieved in Hallin (2004).

Fig. 23. Reconstruction of the plan for a two-module *skivhus*. Abad Martínez, Jorge. 2019. Based on the drawings from the course C7002B.

Fig. 24. Reconstruction of the plan for a three-module *skivhus*. Abad Martínez, Jorge. 2019. Based on the drawings from the course C7002B.

Fig. 25a. Reconstruction of the plan for a three-module *skivhus*. Abad Martínez, Jorge. 2019. Based on the plan found in Hallin (2004).

Fig. 25b. Constructive drawings of a *skivhus* internal structure. Retrieved in <https://c7002b.blogspot.com/>. August, 2019.

Fig. 26. Assembly of a *skivhus*. Nilsson, Lennart. 1958. Retrieved in <http://messaure.se/> in August, 2019.

Fig. 27. Transportation of some modules for the assembly of a *skivhus*. Lindbäk, Kjell. 1962. Retrieved in <http://messaure.se/> in August, 2019.

Fig. 28. Transportation of a module for the assembly of a *skivhus*. Retrieved in <https://c7002b.blogspot.com/>. August, 2019.

Fig. 29. Reconstruction of the plan of the prototype for an *egnahem*. Abad Martínez, Jorge. 2019. Based on a drawing found in Hallin (2004).

Fig. 30. Building process of an *egnahem*. Lundström, Tommy. Retrieved in <http://messaure.se/> in August, 2019.

Fig. 31. Transportation of a *egnahem* to Messaure. Lundström, Tommy. Retrieved in <http://messaure.se/> in August, 2019.

Fig. 32. Foz of Santa Elena, beginning of the Tena Valley. Abad Martínez, Jorge. 2019. Created used the information from Google Earth, 2017.

Fig. 33. Ibón of Piedrafita, one of the few untamed lakes that are left. Abad Martínez, Jorge. March, 2017.

Fig. 34. Highlands of the Tena Valley. Casa Biescas, 2018. Retrieved at <http://www.casabiescas.es/el-valle-de-tena/> in September, 2019.

Fig. 35. Reservoir of La Peña. Retrieved at <https://www.pico-seuropa.net/prepirineos/embalse-pena/index.php> in September, 2019.

Fig. 36. Network of reservoirs and regulated *ibones*. Confederación Hidrográfica del Ebro, *Embalse de Búbal*. Zaragoza: Confederación Hidrográfica del Ebro.

Fig. 37. Image of the reservoir, once completed. Confederación Hidrográfica del Ebro, *Embalse de Búbal*.

Fig. 38. Image taken from the dam, looking down the valley. Confederación Hidrográfica del Ebro, *Embalse de Búbal*.

Fig. 39. Aerial image of Búbal, while the reservoir was being filled. 1986. Confederación Hidrográfica del Ebro, *Embalse de Búbal*.

Fig. 40. Aerial view of Búbal. USA flight, 1957. Retrieved in Marín, Sixto. 2018. *Pueblos recuperados en el Alto Aragón*. Huesca: Diputación de Huesca.

Fig. 41. Aerial view of Búbal. 1986. Retrieved in Marín (2018).

Fig. 42. Historic picture of Búbal. *Diario del Alto Aragón*, 1984. Retrieved in <http://www.diariodelaltoaragon.es/NoticiasDetalle.aspx?Id=782731> in September, 2019.

Fig. 43. Postcard of Lanuza. Retrieved in <https://www.todocoleccion.net/postales-aragon/huesca-sallent-n-15-fotografica-lanuza-foratata-sin-circular~x29019014> in September, 2019.

Fig. 44. Picture of Lanuza. Abad Martínez, Jorge. August, 2019.

Fig. 45. Aerial view of Lanuza. USA flight, 1957. Retrieved in Marín (2018).

Fig. 46. Aerial view of Lanuza. 1986. Retrieved in Marín (2018).

Fig. 47. View of the vale, downwards. Soler Santaló, Julio. 1904-14. Retrieved in <http://esmemoriaus.blogspot.com/2014/04/lanuza.html> in September, 2019.

Fig. 48. Postcard of the church of El Salvador, Lanuza. Retrieved in <https://elbosquedetrimbolera.blogspot.com/2012/12/fotos-antiguas-de-lanuza.html> in September, 2019.

Fig. 49. Celebration for the inauguration of Messaure, Porsi and Laxede power plants and reservoirs. Ericson, Rolf. August 31th, 1963. Retrieved in Hallin (2004).

Fig. 50. House being moved from Messaure. Palmqvist, Jan. Retrieved in <http://messaure.se/> in September, 2019.

Fig. 51. Same house, on its way to Jokkmokk. Palmqvist, Jan. Retrieved in <http://messaure.se/> in September, 2019.

Fig. 52. Newspaper clipping. *Norsbottens-Kuriren*, May 31st, 1979. Retrieved in Hallin (2004).

Fig. 53. Newspaper clipping. *Expressen*, February 10th, 1980. Retrieved in Hallin (2004).

Fig. 54. Newspaper clipping. *Aftonbladet*, June 12th, 1979. Retrieved in Hallin (2004).

Fig. 55. Newspaper clipping. *Expressen*, February 10th, 1980. Retrieved in Hallin (2004).

Fig. 56. Image of the current Messaure. M. Hallin, 2003. Retrieved in Hallin (2004).

Fig. 57. Image of the current Messaure. M. Hallin, 2003. Retrieved in Hallin (2004).

Fig. 58. Image of the current Messaure. M. Hallin, 2003. Retrieved in Hallin (2004).

Fig. 59. Image of the current Messaure. M. Hallin, 2003. Retrieved in Hallin (2004).

Fig. 60. Image of the current Messaure. M. Hallin, 2003. Retrieved in Hallin (2004).

Fig. 61. Picture of one of the *egnahem* after the transportation to Vuollerim. Retrieved in <https://c7002b.blogspot.com/>. August, 2019.

Fig. 62. Monument –milestone– in Messaure’s *torg*. Ek, Irene. 2014. Retrieved in <http://messaure.se/> in September, 2019.

Fig. 63. Aerial view of Lanuza. Plan Nacional de Cartografía Aérea (PNOA), 2015. Retrieved in Marín (2018).

Fig. 64. Newspaper clipping. *El Día*, December 14th, 1990.

Fig. 65. Newspaper clipping. *Diario del Altoaragón*, May 8th, 1991.

Fig. 66. Newspaper clipping. *El Día*, June 21th, 1992.

Fig. 67. View of Búbal. PRUEPA Búbal, 2019. Retrieved in <https://www.educacionyfp.gob.es/dam/jcr:689520a2-d85a-4115-8574-eeacaddc9449/bubaldocumentodeincorporacionydesarrollodelaactividad2019.pdf> in September, 2019.

Fig. 68. Drawing of the main square of Búbal. R. B. K. Retrieved in <https://www.educacionyfp.gob.es/dam/jcr:689520a2-d85a-4115-8574-eeacaddc9449/bubaldocumentodeincorporacionydesarrollodelaactividad2019.pdf> in September, 2019.

Fig. 69. Aerial view of Búbal. Plan Nacional de Cartografía Aérea (PNOA), 2015. Retrieved in Marín (2018).

Bibliography

Note: all sources have been properly translated by the author, no matter the language of the original text –except the few already in English.

Alagón Laste, José María. 2013. *Los pueblos de colonización del plan de riegos del Alto Aragón y su emplazamiento en el territorio*. Zaragoza: Universidad de Zaragoza.

Andersson, A-G. & Kilander, I. 1980. *Porjus-Messaure. Hur sociala skillnader markerats mellan arbetare och tjänsteman i två anläggsamhällen*. Stockholm: Stockholms Universitet.

Aznar, Y. *ABC Aragón*, 24th of December, 2015

B. P., *El Día, Cultura*, 21st of June, 1992

Carreras, Albert & Tafunell, Xavier. 2003. *Historia económica de la España contemporánea*. Barcelona: Crítica.

Confederación Hidrográfica del Ebro, *Embalse de Búbal*. Zaragoza: Confederación Hidrográfica del Ebro

Confederación Hidrográfica del Ebro, “Study”. *El Día*, 14th of December, 1990.

Cultural Conservation Committee, Vattenfall. Nordiska Museet, Stockholm (Construction).

“Decreto 498/1961”, *Boletín Oficial del Estado (BOE)* 74. Madrid: Ministerio de Obras Públicas.

Elcock, William Dennis. 1961-62. “Toponimia del valle de Tena”, *Archivo de Filología Aragonesa (AFA)* 12-13.

El Día, 14th of December, 1990.

Expressen, 10th of February, 1980.

Forsgren, Nils. 1990. *Den effektfulla älven*. Luleå: Vattenfall Norbotten & Porjus Arkivkommitté.

Gran Enciclopedia Aragonesa, “Alto Aragón, regadíos del”, Prensa Diaria Aragonesa, http://www.encyclopedia-aragonesa.-com/voz.asp?voz_id=750

Gran Enciclopedia Aragonesa, "Ebro", Prensa Diaria Aragonesa. http://www.encyclopedia-aragonesa.com/voz.asp?voz_id=4834

Gran Enciclopedia Aragonesa, "Justicia de Aragón", Prensa Diaria Aragonesa, http://www.encyclopedia-aragonesa.com/voz.asp?voz_id=7515

Gran Enciclopedia Aragonesa, "Lanuza", Prensa Diaria Aragonesa, http://www.encyclopedia-aragonesa.com/voz.asp?voz_id=7690

Gran Enciclopedia Aragonesa, "Lanuza, embalse de", Prensa Diaria Aragonesa, http://www.encyclopedia-aragonesa.com/voz.asp?voz_id=7692

Granström, Willard & Bursell, Barbro. 1994. *Från bygge till bygge: anläggarnas liv och minnen. En studie över vattenkraftbygget från 1940-talet till 1970-talet*. Vällingby: Kulturvårdskommittén i Vattenfall.

Green, Jared, "Interview with Francesco Bandarin", American Society of Landscape Architects (ASLA). <https://www.asla.org/ContentDetail.aspx?id=25842>

Hallin, Maria. 2004. *Messaure – en tillfällig tätort i ödemarken*. Göteborg: Litorapid Media AB.

Jansson, Lena. 1983. *Messaure: en etnologisk studie av ett anläggsamhälle*. Stockholm: Nordiska museet.

Jefatura del Estado. 1954. *Ley del 16 de Diciembre de 1954 acerca de la Expropiación Forzosa*. Madrid: Jefatura del Estado

Klerström-Hällberg, Jeanette. 1981. *Vildhjärnor, fyllehundar och smitare- får de arbete som anläggare?*. Stockholm: Institutionen för folklivsforskning.

Larsson, Hans Albin. 1999. *Boken om Sveriges historia*. Stockholm: Bokförlaget Forum.

Lybeck, Johan A. 1981. *Svensk samhällsekonomi: lärobok i makroteori och ekonomisk politik för grundnivån*. Stockholm: Rabén & Sjögren.

Magnusson, Lars. 1999. *Sveriges ekonomiska historia*. Stockholm: Prisma.

Marín Gavín, Sixto. 2018. *Pueblos recuperados en el Alto Aragón*. Huesca: Diputación de Huesca.

Norberg, Y. 1959. *Byggmästaren* 7.

Norrbottens-Kuriren, 27th of September, 1962

Norrbottens-Kuriren, 31st of May, 1979

Official webpage of the organisation Survival International, “Our souls touch: Sámi reindeer herders”. <https://www.survivalinternational.org/galleries/reindeer>

Personal blog of R. Kuokkanen –professor at the University of Lapland– “May is Miessemánnu – A season of its own”. <https://rauna.wordpress.com/2008/05/20/may-is-miessemannu-a-season-of-its-own>

Programa de Recuperación y Utilización Educativa de Pueblos Abandonados, Ministerio para la Transición Ecológica, <https://www.miteco.gob.es/es/ceneam/programas-de-educacion-ambiental/pueblos-abandonados/>

Reuter, Tim. 2014. “Before China’s Transformation, There Was the Spanish Miracle”, *Forbes*, 19th of May.

Schön, Lennart. 2007. *En modern svensk ekonomisk historia: tillväxt och omvandling under två sekel*. Stockholm: SNS förlag.

Salisbury, John of. *Metalogicon*, Book III, Chapter 4. Cfr. Troyan, Scott D. 2004. *Medieval Rhetoric: A Casebook*. London: Routledge.

Statens Vattenfallsverk Byggt teknik, Riksarkivet, Stockholm.

Statens Vattenfallsverk Luleälvsarbetena.

World Heritage Centre, “Cultural Landscapes”, United Nations Educational, Scientific and Cultural Organisation (UNESCO). <https://whc.unesco.org/en/culturallandscape/#articles>

Vattenfall AB, “A new way of living”, Vattenfall AB. <https://history.vattenfall.com/the-revolution-of-electricity/a-new-way-of-living>

Vattenfall AB, “Massive investment in hydropower”, Vattenfall AB. <https://history.vattenfall.com/from-hydro-power-to-solar-cells/massive-investment-in-hydropower>

Vikström, Fredrik Diits. 2015. "Samhällena som försvann", *Bi-lägare* 18.

Wahlberg, Mats. 2003. *Svenskt ortnamnslexikon*. Uppsala: Språk- och folkminnesinstitutet.

Wallengren, Hans; Björnström, Georg; Linderoth, Bror et al. 1931. *Svensk uppslagsbok*. Malmö: Svensk uppslagsbok AB

Westrin, Theodor; Meijer, Bernard; et al. 1912. *Nordisk Familjebok*. Stockholm: Nordisk familjeboks AB.

Word Reference English Dictionary, "Temporary". <https://www.wordreference.com/definition/temporary>