Facultad de ciencias económicas y empresariales

Building a ski resort in Spain a profitability study

Iñigo de Mir Morera

Ramón Cidón

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Iñigo
De Mir
Morera

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Abstract

This research project is a study of the profitability of building a ski resort in the eastern region of the Pyrenees. Since a ski resort is a clear example of project finance because it can be self-maintained through the cash flows that come from the sale of tickets the methodology that will be used will be that of project finance. The project will include an explanation of the calculation of the main financial statements that are needed to study the profitability of the result. The ultimate goal will be, through the calculation of the internal rate of return, to determine if it is profitable to build a resort in the mentioned region.

1. Introduction

Spain is a country with a very strong tourist sector. Above all, the country is known for its warm, sunny summers and for its long cozy beaches that attract tourists from a lot of countries in the world (mainly Germany and the UK). Although it is true that this is the predominant form of tourism, Spain has many other tourism attractions. One of them is the architecture of the cities (it has many Unesco World Heritage buildings). And then there is rural tourism and winter sports. This paper will be based on the sector of ski resorts which is the most important source of revenues for winter sports of Spain. The main objective of the paper will be to make a profitability analysis of building a ski resort in the region of the Pyrenees. It will analyze whether it is profitable to build and run a ski resort in this area using the current prices charged by similar neighboring resorts to calculate the revenues.

The paper will be divided into different sections. The first section will be an overview of the current situation of the ski sector in Spain. It will explain the main areas (mountain ranges) where it is possible to ski and the resorts that exist. I will also address the economic situation of the resorts, distinguishing those that are profitable from those that are not.

The second section of the paper will be the first part of the profitability analysis of building a ski resort in the Eastern third of the Pyrenees and finance it through project finance. This analysis will begin with an explanation of the characteristics of the location chosen to install the resort, focusing mainly on geography and climate. The second stage will be a thorough analysis of the risks of installing a resort and possible ways to mitigate them. Then I will calculate the EBITDA and the Income statement to have an idea of the possible financial results of this sector. To make it realistic the revenues will be calculated on the basis of current prices charged by similar ski resorts in the area.

The third section of the paper will be the scenario analysis. Two different scenarios will be studied: an optimistic scenario in which there are favorable conditions that increase revenues and reduce costs and also a pessimistic one that will be just the opposite. The objective of this section is to study the sensitivity of ski resorts to changes that could happen such as an increase in the price of electricity, a decrease in the amount of snowfall due to the effects of climate change or other increases in costs that could happen.

The last section will try to address the amount of revenues needed for a ski resort to be successful and the future outlook of the sector. It will be an attempt to provide an insight into how the future of ski resorts could look like.

2. Methodology

A ski resort meets the conditions that have to be met to be considered project finance. It requires an important initial investment to build the ski lifts and the artificial snow making system and to prepare the parking and the runs for the practice of skiing. It also has maintenance and other costs related to the correct functioning of the business. But building a ski resort is a project that can be self-maintained with the income generated from the sale of ski tickets. It is possible to ask a bank to finance the resort and be confident that the project will be able to repay the debt with the income it generates. Therefore, the methodology that will be used will be the methodology used in any project finance.

First of all, there is the need to make a deep research of the sector to find the weaknesses (risks) and the strengths it has. This step is crucial when deciding where to locate the resort. It will need to be located at a place where conditions make the development of a ski resort most likely to be profitable. Therefore, the first part of the project, as mentioned in the introduction, will be dedicated to this necessary research and to describing the chosen location and the reasons that lie behind this choice.

The second step is to perform the calculations of the project finance of the ski resort. The calculation will start with the definition of the main financing, revenues and costs that will be taken into account to perform the analysis. The next step will be to calculate the EBITDA. The third step will be the calculation of the financing conditions of the project. The financing conditions will be followed by the profit and loss which will be followed by the statement of cash flows. The ultimate goal is to calculate the internal rate of return (IRR) to judge if the investment is worthwhile.

Once the main calculations have been made it will be time for the scenario analysis. With favorable conditions most projects are likely to be successful but in less favorable scenarios the probabilities are not as high. In the case of the ski resort the scenario analysis will be based on what happens if, due to an economic crisis or other reasons, the number of skiers drops and what happens if the ski season has to be shortened because there is not enough snow to keep it open during the whole season.

The tool that will be used to perform the calculations will be Excel. This program is useful because it is easy to perform calculations in it. In addition, by linking cells and spreadsheets it is possible to make changes in any part of the calculations and see how this affects the cash flows and the value of the internal rate of return.

3. Skiing in Spain: An overview of the sector

3.1 Distribution of Spanish resorts

When it comes to tourism Spain is widely known for its beaches and its sunny weather and for having beautiful cities (like Barcelona or Seville) with monuments declared world heritage by UNESCO. Every year thousands of tourists from different nationalities visit our cities and go to our beach resorts to spend their holidays. Most of its revenues, which represent approximately 12 % of the country's GDP, come from the two previously described types of tourism but, in

addition, there are also rural tourism and ski resorts. This paper will be based on ski resorts. This first section of the paper will give an overview of the sector of skiing in Spain.

Spain is definitely not the first European country of choice for skiers. Countries such as Switzerland or France have huge resorts with excellent snow conditions. But Spain is more than suitable to practice ski as it has many mountain ranges where conditions are met to allow the practice of winter sports such as skiing or snowboarding.

There are five mountain ranges in Spain with sufficient snow to allow the practice of winter sports: the Pyrenees, the Cantabrica range, the Iberica range, the central range and Sierra Nevada. Not all offer the same conditions and it is possible to make a distinction between those with very good, good and acceptable snow conditions. Very good conditions are only found in the west of the Pyrenees (province of Huesca), in North-oriented resorts of the rest of the Pyrenees and in the resort of Sierra Nevada in the South of the country. Good conditions are found in the rest of the Pyrenees and acceptable conditions in the remaining ranges.

The Pyrenees is a mountain range located in the North of the country between the Mediterranean Sea and the Atlantic. It receives abundant precipitation along the year and has peaks higher than 3000 meters. For these reasons, it is the mountain range that has more resorts of Spain with 13. The resort of Sierra Nevada in the South has the privilege of being the highest resort of the country. It is for this reason that this resort enjoys excellent conditions most years with a ski season that can extend until early May.

The other 3 ranges have 12 resorts but conditions there are only acceptable. Snowfall is unreliable due to the Mediterranean climate they have and to their low altitude (less than 2200 meters). Years with considerable lack of snow alternate with few good years but the season is shorter and they require abundant artificial snow production. This makes them costly to maintain.

Resorts are mainly for Alpine skiing and snowboarding but a few offer Northern skiing. This type of skiing is less costly as it does not require many ski lifts (only the preparation of the run and compacting of the snow) but tickets are way cheaper so it does not bring important revenues. Examples of Northern skiing only resorts include Rasos de Peguera in Catalonia or La Ragua in Sierra Nevada (very close to the Sierra Nevada resort). As this is not common and brings little revenues I will not include Northern skiing in the analysis of the ski report I will make.

3.2 Production of artificial snow: a must nowadays

Skiing in Spain goes back to 1908. In that year, the mountain of La Molina saw its first skiers practicing telemark and Stemmbogen (the first modalities of ski). Thanks to the arrival of the first train in 1922 the mountain gained popularity and in the two following years many people visited this mountain. In this early stage, skiers had to walk to the top of the mountain as there were no lifts. The first lift was built in 1943 and the second only three years later. Between 1950 and 1970 the resort expanded its skiing area considerably to become the reference ski resort in the country. During these three decades, La Molina had its own management team,

only for the resort. In 1985 the resort became part of the Ferrocarrils de la Generalitat de Catalunya (FGC) and remained so until the present date.

From its beginning in 1908 until the 1970 the resort of La Molina had abundant snowfall to rely on. Of course some seasons were better than others but overall snow was quite reliable and the season with significant absence of snow was rare. When the resort first opened it was possible to ski from the village of La Molina (situated at an altitude of 1400 meters). As time went by, La Molina has seen a progressive rise in temperatures and a decrease in the quantity of snowfall. As a result, it became harder and harder to keep the lower run open until it was no longer possible. Nowadays it is only possible to ski from an altitude of 1700 meters. (La Molina)

Towards the end of the decade of the 1980s, it became evident that it was necessary for resorts to find a way of producing snow to ensure the opening for the beginning of the season (provided that temperatures stay below freezing during most of the day). Skiing is seasonal and has peak periods. Around 40 % of the revenues are made in the holiday weekend of the beginning of December and during the Christmas Period. Hence it is essential to have snow from the early season. This can be guaranteed by using artificial snow production. Artificial snow making is essential in professional skiing. In recent years many races have been saved thanks to artificial snow making. When conditions are slightly milder than usual this technique might be the only way to ensure that there will be enough snow at the lower elevations of the run where the competition is expected to take place. (Steger, Robert)

Artificial snow production works in the following way. It requires building a series of interconnected snow making machines with access to a source of water. When temperatures are below freezing and there is a certain level of humidity they release pressurized water that transforms into snow as it gets in contact with the cold air. The snow produced is completely valid to ski on it. Nowadays, each machine is equipped with a thermometer to detect when the conditions are met to produce artificial snow. In the beginning, artificial snow making could only be used to reinforce existing snow but not to cover a bear slope. (Steger, Robert)

3.3 Economic situation of ski resorts in Spain. Overview focusing in Catalonia

The analysis of the ski resort sector will be faced into three parts. The first part will be the ski resorts of Sistema Central (Valdesqui, Navacerrada, Sierra de Bejar and la Pinilla) and the resorts of Javalambre and Valdelinares. The second part will be based On the Cordillera Cantabrica resorts. The final part will analyze the Pyrenees and Sierra Nevada.

The first group of resorts has in common the unreliability of snowfall. Resorts like Navacerrada or La Pinilla are located less than an hour drive away from Madrid which means they have enough clients so it should be possible for these resorts to be profitable. However this is not the case due to the unreliability of the snow. The ski season is very short, sometimes starting in early or mid-January and always ending before the end of March. Some seasons are even shorter like last year when conditions did not allow opening the resorts until mid-February and the resorts could only stay open during 6 weeks. Artificial snow-making here is helpful but is costly and does not always solve the problem. In the case of the other two resorts, they are close to cities like Castellon or Teruel so they have enough customers but their low altitude makes snow too unreliable. Overall, in terms of profitability it would not be advisable to

operate ski resorts in these area but resorts are maintained due to the benefits that come associated with tourism and employment creation.

Regarding the second group, the resorts of the Cordillera Cantabrica range have a similar problem. They are located in the North of the country on a mountain range that has oceanic climate with abundant precipitation all year round. But the low altitude of the resorts, all of them bellow 2000 meters means that the resorts see a mixture of rain and snow during the winter. With these conditions it is difficult to run a profitable resort. These resorts have an additional problem, they are located far away from the major cities and do not have important tourist resorts nearby which means they lack the availability of customers necessary to bring economic benefits.

The third sector of analysis is the most important one: Sierra Nevada and the Pyrenees. Both have high altitudes and reliable snowfall. When it comes to profitability however, only two resorts have positive financial resorts: Baqueira Beret and Masella. All other resorts experienced losses in the period of 2007-2015. Table 1 represents the financial results of the ski resorts of Catalonia (in thousand €). Regarding the resort of Sierra Nevada, it closed 2015 with a benefit of 2,6 million €. Sierra Nevada is another profitable resort due to the high altitude it has, reliability of the snowfall and the close distance from cities like Granada or Malaga. Of course the benefit has not always been positive (in years of very bad snow conditions or after an important investment in the resort) but overall it can be said to be profitable. (Sanchez Pulido, Laura)

Table 1. Financial results of the ski resorts of Catalonia. Source: resorts and paper by Laura Sanchez Pulido.

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Baqueira Beret	3700	3750	3800	3850	2100	2200	2400	2400	2450
Masella	100	300	600	600	500	300	150	150	-
Vallter 2000	-300	-300	-50	-150	-150	-1000	-750	-500	-750
Boi Taull	-4000	-5500	-5100	-3000	-3000	-15450	-	-	-
Val de Nuria	-2600	-2600	-2700	-3200	-3300	-3200	-3000	-3500	-2500
La Molina	-2050	-2000	-2050	-3000	-2950	-3000	-2950	-2950	-3000
Espot Esqui	-	-	-	-	-2000	-2100	-2050	-2100	-2000

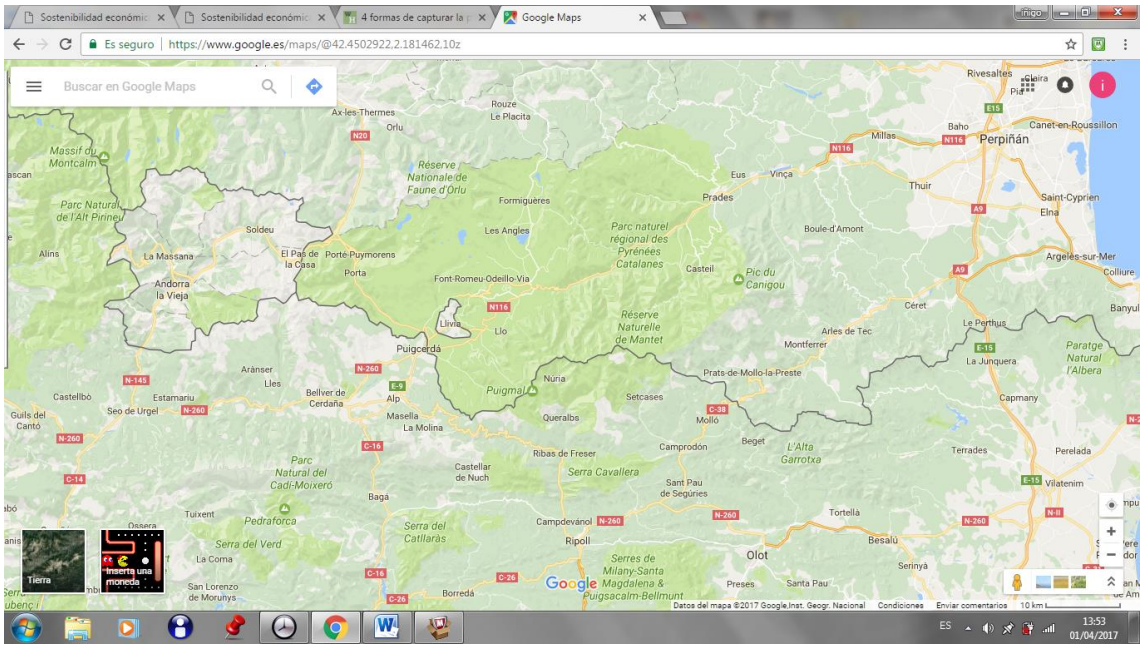
- Not available

4. Profitability analysis of building a ski resort in the Eastern Pyrenees

4.1 Main features of the project

4.1.1 Location

Figure 1. Map of the Eastern Pyrenees.



Source: Google maps

The first aspect that needs to be considered when building a ski resort is its location. The figure above (figure 1) is a map of the Eastern half of the Pyrenees (from Google Maps). According to the FGC (the company in charge of most ski resorts in Catalunya) a ski resort needs to meet some conditions to be profitable. The first condition is that it has to be no more than two hours away by car from the main cities. In addition, any ski resort must also have at least 40 km of runs, at least 250000 skiers per season and a minimum average price for the tickets of at least 20€. Finally and to guarantee the availability of snow the ski resort needs to have a minimum altitude of 1600 meters, a good artificial snow production system for the lower part of the resort (1600 to 1900 meters) and have the majority of its runs oriented to the North. It is also crucial to have enough parking space and other facilities (like the skiing school or the cafeteria).

Taking all the factors previously mentioned into consideration -in the Eastern half of the Pyrenees- the most suitable location to build a resort will be close to Andorra, between the resorts of Grandvalira and Porte-Puymorens. Both resorts are separated by a distance of approx. 5 km and the area is more than suitable for the practice of skiing. First of all, most runs will be located at an altitude above 1900 meters and will be oriented to the North for better conservation of the snow. Additionally, the area is the wettest of this region of the Pyrenees meaning snow is guaranteed during the majority of the seasons. Finally, the terrain meets the requirements as it is not too steep and is not too rocky, something that would make it very difficult to prepare the slopes for skiing. Figure 2 below is a map taken from Google Earth showing the chosen location. The idea of this location is not new as there was a project of building a resort in this region (called “porte des neiges”) but it did not go any further due to ecological reasons. As building this resort would mean de facto linking the two existing resorts with a new one. Ecologists were afraid this could attract more tourists than what the area can handle, resulting in a deterioration of the natural landscape. However, from a financial point of

view it makes sense. Nearby resorts of La Molina and Masella and Grandvalira registered respectively 330,000, 380,000 and 1.65 M skiers in this season (above the 250,000 minimum to have a profitable ski resort) so it is safe to assume that this figure is reachable for our resort as well. (Nevasport, May 2017)

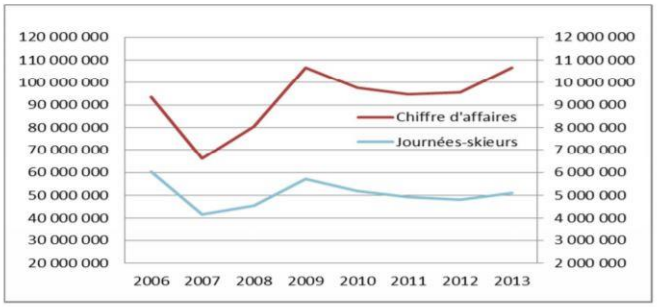
The most important question that needs to be answered when building a ski resort is if there will be enough skiers visiting the resort. The chosen location is less than two hours' drive away from important cities such as Girona, Barcelona or Toulouse. The resort is also close to the important valley of "La Cerdanya" home to many villages where the potential customers could spend the night. The majority of customers will then travel by car to those villages (and stay in hotels or in their houses) and then ski during the day in our resort. The rest of the customers will be international customers that will purchase a ski holiday pack and spend a few days skiing in the region. To analyze the potential number of skiers that could come to the resort it is essential to know the situation of the ski market in the region. One of the previous sections has already described the current situation of Spanish ski resorts but now we will give a more detailed overview of the market of French, Andorra and Catalonia resorts.

According to the FGC memories and to the webpages of Masella and Baqueira Beret, the number of skiers in Catalonia has remained stable over the past decade. Approximately 2 million skiers have visited the resorts every year with total profits of about 42 M€ (average price of ski tickets slightly over 20 €, except for Baqueira with much higher prices). In the case of France, the number of skiers for the French Pyrenees has been stable over the past decade in about 5 M. The returns were of 100M€ which gives an average price of 20€ (skipass 2016). Andorra, the most direct competence of our resort received a total of 2,5M skiers. Their ticket average price was 35€ without taxes (total returns of over 55 M€). All the previous information can be summarized in the following two graphs (the first one of France and the second one of Andorra. The figure below (figure 2) shows the evolution of the turnover and the number of days of ski over the past decade. Although it is true that this figure represents all the French resorts of the Pyrenees it can be used in this paper to calculate the number of skiers that can be expected to use our resort.

The fact of building a resort of high altitude has been proved to attract international tourists. Travelers seeking snow will choose a resort where there is more guarantee of having snow and our resort suits perfectly. International tourists will be the main customers who will buy 4 day passes

Figure 2. Evolution of the turnover and the number of skiers of the resorts of the French Pyrenees.

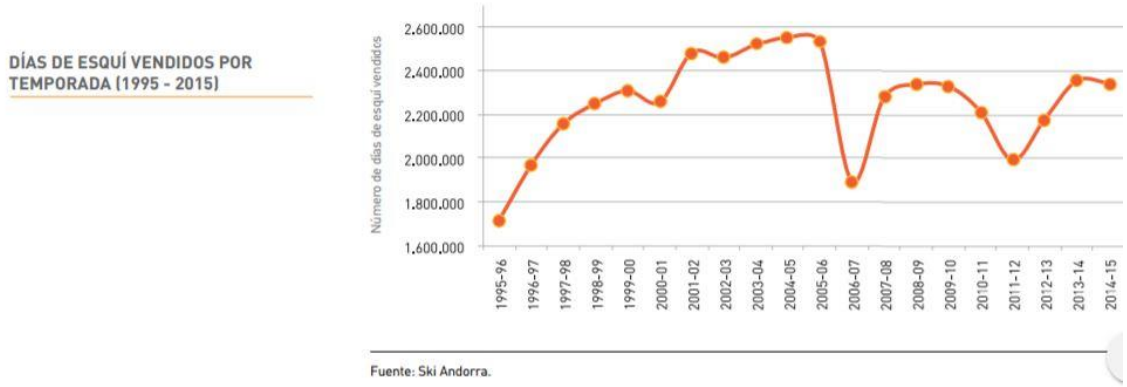
Graphique n° 1 : évolution du chiffre d'affaires total (en € – échelle de gauche) et du nombre de journées-skieurs (échelle de droite)



Source : Domaines skiables de France

Source: skipass 16 march 2014

Figure 3. Days of ski sold per season.



DOMINIOS ESQUÍ	Km. de pistas	Remontes (pax/h)	Forfait diario (precio medio)	Forfait 5 días (precio medio)
GRANDVALIRA	210	100.700	45,0 €	201,3 €
VALLNORD	93	55.690	36,0 €	160,0 €

Source: http://www.estadistica.ad/serveiestudis/publicacions/Publicacions/Andorra%20en%20Xifres_cast.pdf

The figure above (figure 3) shows the evolution of the number of skiers over the past decade. In it, it is possible to observe the strong link between the health of the economy and the number of ski passes sold. For example, in 2011, as a result of the financial crisis in Spain, there was a 20 % decrease in the number of skiers from 2009.

With a stable market, it seems obvious that the phenomena known as cannibalization will have to occur for our resort to have skiers. This refers to the fact that when a new resort is built, some skiers of the neighboring resorts will stop going to the previous resort they went to and start going to the new resort. The new resort needs to have some attractive features for this to happen. Our resort will have good quality and quantity of snow most years as it is located at a high altitude and has most of its runs oriented to the north. In addition, we will offer a very attractive price of 30 €, lower than 35€/ daily tickets which is the average in Andorra, for the day tickets which will for sure attract skiers to our resort. Once they have tried it, through

word of mouth, it is likely that more skiers will visit the resort so we will have enough customers. As it will be explained later in the revenues section, we will assume that approximately 20% of the skiers that currently ski in the neighboring resorts will move to our resort, representing a total of 549600 skiers.

4.1.2 Description of the project

The project will consist in building a resort to link the existing resorts of Porte Puymorens in France and Grandvalira in Andorra. The project, as mentioned in previous sections, will be based on the previous project called Porte des neiges. Linking the two resorts will require the construction of ski lifts that cross the valleys that separate them and also creating new runs.

Figure 4. Regional map of the area where the resort is to be built

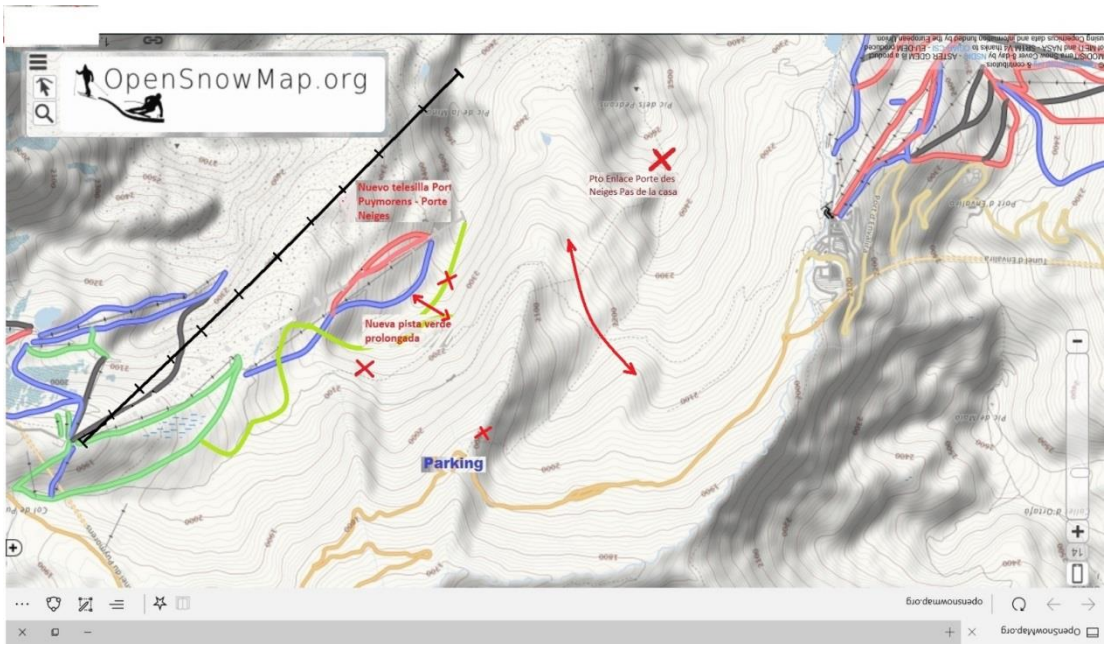
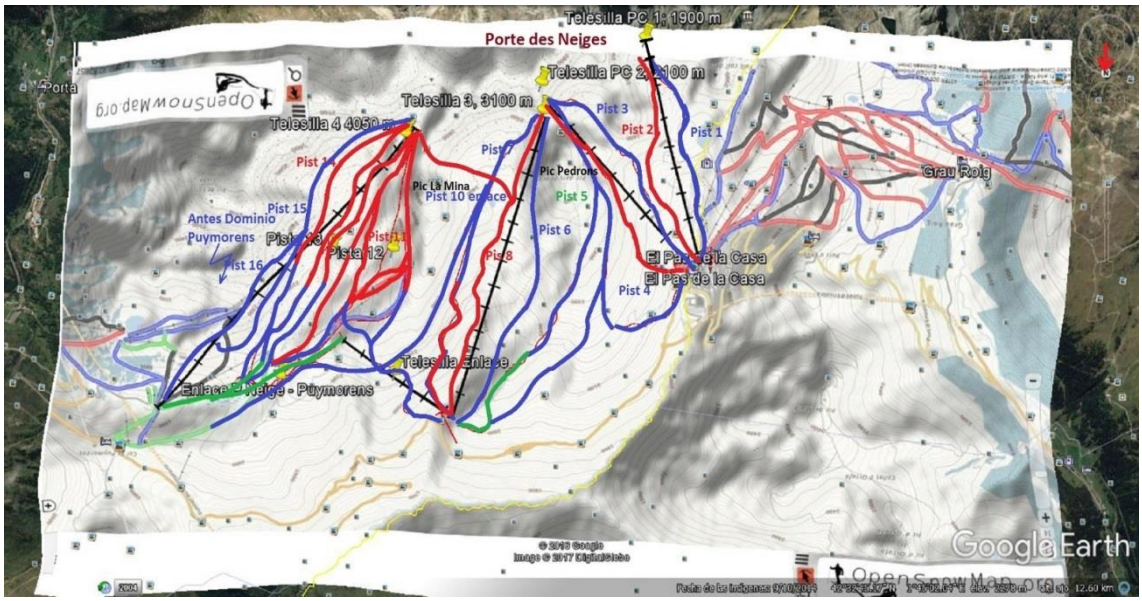


Figure 5. Possible layout of the resort.



The previous two figures show a map of the terrain where the resort will be built and a possible layout of the runs and lifts it could have. Both maps were taken from the web page opensnowmap.org. The tool Google Earth has been used to calculate the length of both the ski lifts and the runs. As it can be seen in figure 4, the resort will have five ski lifts, all of which will be chair lifts. There will be one long ski lift of five kilometers, one small lift of one kilometer that will link two sectors of the resort and three medium lifts of around three kilometers. The resort will have about 17 runs with a total of 50 kilometers (more than the minimum 40 km required to have a profitable resort). A summary of the length and vertical descent of the runs can be found in the following table.

Table 2. Description of the runs of the resort.

Run	Length in meters	Vertical descent (m)
Nr 1	2.190	350
Nr 2	2.230	350
Nr 3	2.550	465
Nr 4	2.560	465
Nr 5	3.160	585
Nr 6	3.370	630
Nr 7	3.390	565
Nr 8	3.360	560
Nr 9	3.460	555
Nr 10	3.850	360
Nr 11	2.180	350
Nr 12	2.950	410
Nr 13	2.110	320
Nr 14	2.960	405
Nr 15	3.360	460
Nr 16	3.410	460
Link 1	2.400	480
Link 2	1.350	160
Total	50.840	

Source: own elaboration with the help of Google Earth to calculate distances.

4.1.3 Risk analysis and mitigation

The purpose of this section is to analyze the risks associated with building a ski resort. It will first describe the different risks of this sector and then explain possible ways to mitigate them. The section will include the most relevant risks: environmental, physical, economical…

The main risk that every ski resort has to face is weather variability. Although the location chosen has abundant precipitation and is located at an altitude that should have reliable snow conditions, there is always the risk that snow may not fall in time for the beginning of the season. The first days of December and the period of Christmas are critical as they represent about 30% of yearly revenues. The only way to ensure that there will be enough snow to open during this period (provided it is cold enough) is through an extensive network of artificial snowmaking. The network should cover the lowest runs, as they are more likely to suffer from lack of snow, and at least 20% of the upper section of the resort. (Pons et al, 2014).

The second risk a resort faces has to do with technological failure. Ski resorts depend on the correct functioning of the lifts. If they fail then the resort cannot open. This risk can be mitigated by signing a guarantee and a good maintenance contract with the supplier. In case a lift does not work properly the supplier will have to compensate the resort for the losses.

Regarding the lifts, it is important to mention the risk that the cost of the lifts might turn out to be more expensive than what was previously thought. Reasons for this rise in the costs could be a delay in the construction period or higher than average costs due to difficulties in leading with the terrain (e.g. steep terrain that makes it very costly to transport the different parts of the lift). The way to mitigate is to make an in depth study of the location and to have the building company sign a contract that includes compensation in case of delays.

The fourth risk that is worth mentioning is environmental risk. It is the risk that the project could be rejected due to environmental reasons. Our project plans to make a sustainable development of a ski resort. For this purpose, we will expand the existing parking lot of Puymorens, build a new parking lot (smaller than the other one), in an area free of trees so that no deforestation is required and we will build as few buildings as possible to minimize any impact on the environment. It is not possible to guarantee completely that the project will not be rejected but the project will have limited reasons for environmental concern.

Additionally, there is the concern that the use of the resort could damage the environment. For example the skiers could generate waste that if left of the slopes could seriously damage the environment. Although this is true it is a problem easy to deal with. There should be close to the main lifts and to the cafeteria at the bottom trash bins where skiers could throw their waste. Then, workers can attempt to clear up at the end of the day when the skiers leave the resort. The employees in charge of closing the runs can make sure everything is left clean. It is important to do this every day so that trash does not accumulate. Further efforts to clean the mountain can be made as the snow melts towards the end of the season, especially in areas that are more difficult to access when there is snow and ice. Of course it is not possible to cover 100% of the mountain but the negative effects this issue could have can be minimized.

Another risk that has to be taken into account is the risk that the number of skiers could go down due to, for example, a decrease in the quantity of snow that discourages skiers from visiting the resort or a financial crisis. The financial crisis means tourists have less money to

spend which translates into fewer skiers for our resort and, as a result, lower revenues. Not much can be done to hedge against the negative effects of a financial crisis. The resort could try to reduce costs by hiring fewer employees for the season or slightly lower the wages they pay.

Other risks that need to be considered are fire/accidents and volatility in electricity prices. The risk of suffering accidents or fires can be dealt with by having insurances while for the risk of a sudden change in the price of electricity the resort could buy financial instruments (like options or futures) to hedge against this risk. In the case of a tax increase during the course of a season, the managers will need to translate the increase into the prices of the tickets. Season pass holders will not be affected by it.

4.1.4 Revenues

a) Winter

As it is common in ski resorts, the main source of revenues will come from the sale of ski tickets. Three different types of tickets will be sold: season tickets, single day tickets and tickets for consecutive days (from 2-6 days). For the purpose of this project and to make calculations simpler it will be assumed that skiers can only buy a season pass, a 4 day ticket or a single day ticket. Only adult prices will be taken into account; no children or junior. The price of the tickets will be slightly higher than prices charged by Porte (a medium size resort with 40 km of runs) but significantly lower than what the resort of Grandvalira in Andorra (a large resort with almost 200 kilometers of runs) charges. The table below shows the prices charged by both resorts for the mentioned tickets for adults.

Table 3. Ticket prices in the ski resorts of Grandvalira and Porte Puymorens

	Grandvalira	Porte Puymorens
Single day	47€	30€
4 days	174€	105€
Season pass	793€	383€

Source: web pages of the resorts

In our resort, single day tickets will be sold at a fixed price of 30 €, 4 day tickets at a price of 120 € and season passes at a price of 500 €. It can seem strange to see that we will be charging for the single day tickets the same price as Porte when our resort has 10 kilometers of additional runs. The reason for this price is so that we are able to attract more skiers. The expected increase in the number of skiers should compensate the possible drop in revenues from the price reduction. For the majority of this project I am going to consider that the number of skiers remains constant so the revenues will increase only due to the inflation rate (a 2 % inflation rate will be considered). The scenario analysis section will analyze what happens when the number of skiers is not constant but decreases due to a financial crisis or due to lack of snow.

The percentage of season passes sold will be very low, 5,000 or about 1.35% of the total tickets sold. The reason for this is that only residents of Andorra and surroundings of the ski resort and very few others will buy this type of pass. A season ticket requires at least 15 days of skiing

for being worth buying and we will consider that each skier will use the pass a total of 25 days (this is an assumption). Four day passes will be bought mainly by tourists who want to spend a few days skiing at the same resort. A total of 20,000 passes of this type will be sold, representing close to 5.4 % of the total. The remaining will be day tickets.

To calculate the revenues, the season will be divided in two: high season and low season. The high season will include the period of December 6th to December 10th, the Christmas period (2 weeks), 4 weekends in February and the Easter holidays (10 days). This makes a total of 37 days of high season. The remaining 127 days will be considered low season.

The resort will have two parking lots with an accumulated capacity for 8000 skiers. During the high season the parking lot will have an occupation rate of 80 % (6400 skiers). The rest of the season the occupation rate will be of 35 % (2800 skiers). The number of skiers per season will be the capacity of the parking of the resort multiplied by the occupation rate in high season and the number of days of high season plus the capacity of the parking of the resort times the occupation rate in low season times the number of days of low season. This gives a total of 549,600 skiers per season.

To know exactly how many skiers will be buying the single day passes it is essential to know the number of days of ski that the other two passes represent. Firstly, for the season passes, the number of ski day can be calculated by multiplying the number of passes sold (5,000) by the average number of days that each user will ski. This gives a total of 125,000 days. For the 4 day tickets it is very much straightforward: simply multiply the number of passes (20,000) by 4 which give a total of 80,000 days. The remaining (344,600) will be the number of daily passes that will be sold.

Finally, the revenues will be calculated by multiplying the number of passes of each type that will be used by its price. This calculation gives total revenues of 15.238 million €. Assuming a total of 549600 skiers per season is reasonable because as it has been noted the ski market in the region has been stable over the past decade. This means that skiers need to come from neighboring resorts. The total number of skiers in all the neighboring resorts has totaled around 2.8 million (2.4 million in Andorra and the remaining from the rest of the resorts) so it is safe to assume that about 20% will come to our resort.

b) Summer

Skiing in summer is obviously impossible as Spain and the South of France don't have any place of Glacier skiing. However, tourists visit the area during this season for trekking activities. Ski resorts such as La Molina or Font Romeu open one lift during the peak summer months. This could be a possible activity for the resort but it is very unlikely that it will be profitable. Hence I will not include any additional source of revenue derived from the summer months as it makes little sense.

c) Rest of the year

The resort will be completely closed outside of the main ski season. During the fall, maintenance will be done to ensure a good start for the following season. Not much activity is expected in May and June.

4.1.5 Costs

There are many costs a ski resort needs to deal with. To understand how important each cost is for the resort it is useful to analyze what lies behind the price of a ski ticket. Approximately 30,2% of the price of a ticket is used to pay the wages of the employees. Another 21.1% represent taxes paid to the government. An additional 18.7 % of the price corresponds to the expenses of the resort (lifts, snowmaking, maintenance machines…). The remaining 30% includes energy costs, administrative fees, maintenance fees and other fees. (Infographie)

The first cost that will be described is the cost of producing artificial snow. Artificial snow is needed to ensure that there will be enough snow at the beginning of the season and that the season will have the desired length. Snow-making machines use a combination of air and water to produce the snow. With subfreezing temperatures and an adequate level of humidity they release pressurized water that instantly transforms into snow and stays on the ground.

Ski resorts have usually between 25 and 60% of its surface covered by snowmaking. The proposal for this resort is to cover with artificial snow 11 kilometer with an average width of 30 meters. This represents 330.000 m2 or 33 Ha. Covering this surface with snow of a depth of 0.7 meters requires 231.000 cubic meters of snow. This requires 92.400 cubic meters of water (2.5 m3 of snow per m3 of water) which will be supplied through the construction of a reservoir with a capacity of 50.000 m3 that will be filled twice. The money that will need to be invested to build the reservoir will be of 1.5 M € (30€/ m3 of water, will be treated as CAPEX). According to the calculations made by a study of the ski resort Puy-Saint-Vincent, covering 11 km of runs with snow making is the equivalent to installing 66 snow cannons. The total investments required for the production of the artificial snow can be summarized in the following table (the 1.5 M of the reservoir is not included)

Table 4 Investment required for the network of artificial snow making

concept	quantity	Price/ quantity	Total €
Installation of water pipes for cannons	15000 meters	130€ /meter	1.950.000
Bombs to move water	2	50000€	100.000
Regular cannons	66	14000€ /unit	925000
Special cannons	4	35000/unit	140.000
Additional pipes	1		55000
		Total snow cannons	**3.100.000**

Source: project of enlargement of the ski resort Puy Saint Vincent. DREAL Provence-Alpes-Côte-d'Azur. http://hmf.enseeiht.fr/travaux/bei/beiere/content/2015/hypothese-dagrandissement-du-domaine-skiable

The ski runs require a preparation of the terrain including movement of land. To build the resort described in the previous section requires making an investment of 1.5 M €. In addition, there is the cost of building the lifts. A modern chair lift for 6 people has an average cost of between 6 and 7 million €. A chair lift for 4 people or a gondola will cost slightly less (Infographie). Ground lifts are less expensive but are highly inefficient as they have very limited capacity of skiers per hour. Regarding ski groomers, their price varies between 200000 and

300000 €. The proposed resort will have a total of 5 chair lifts (one for four people and the other five for six). In addition it will also have a total of 10 grooming machines. The total costs so far account for 33 M € (3 M for the grooming machines and the remaining for the ski lifts). (http://www.montagneleaders.fr/sites/default/files/reportage/ML/ml253/01rm-neuves.pdf)

The final part of the initial investment is the one related to the parking lot. The project includes the enlargement of the existing parking of the resort of Puymorens to 100000 m2 and the building of a new parking lot of 24000 m2. The first parking will have a capacity of 6,000 skiers. The second parking will serve approximately 2,000 skiers. The investment required for the first parking can be divided into:

- Terrain levelling: 60000 m3 at 6€/m3= 360000€
- Extension of hoe 20 cm high: 100000*0.2* 15€/m3= 300000
- Extension and compacting of MBC (6 cm high): 100000*0.2*2.4TM/m3= 14400 TM*45€/tm= 650000€
- Other: 40000€

Source: pavement project ELCHE.
http://tramitarahora.ajuntamentdelx.es/CONTRATACIONYSERVICIOS/PROYECTOS/caminos%20rurales%20en%20zahorras%20y%20asfalto/proyecto-ZNorte1.pdf

The second parking lot, although smaller, requires a higher investment. This is due to the fact that it requires moving 300000m3 of soil which has an estimated cost of 3200000. The second parking also includes building 500 m2 with a cost of 600000 €.

The total Capex investment amounts to over 45 M €. It can be summarized in the following table.

Table 5. CAPEX

concept	€
4 chair lifts 6 places	26,000,000
1 4 place chair lift	4,000,000
Runs	1,500,000
Grooming machines	3,000,000
Water reservoir	1,500,000
Snow cannons	3,100,000
Parking 1	1,350,000
Parking 2	3,800,000
other	800,000
Total	**45050000**

In addition to the Capex, there are other costs that should be considered. First of all, there is the cost of maintenance. The lifts require maintenance to work properly. The resort will invest 50 % of the amount invested in building the lifts in maintenance. This represents a total of 15 million € or 750,000 € per season.

As with every business, the ski resort will require hiring employees. Some employees will sell tickets, others will supervise the lifts and the director and financial advisor of the resort will be in charge of going through all the financial results of the resort. The resort will have a total of

30 employees. Each employee will earn a net wage of 15,000 € (+ 3,000 taxes) for the whole season which means the resort will need to spend a total of 540,000 €/year in paying wages.

Additionally, the resort will also require insurance for the lifts and maintenance of the equipment (such as grooming machines). The insurance will cost 0.5% of the total investment in ski lifts (0.5% of 30 million €). The cost of maintenance of grooming machines will be 75 % of the investment in grooming machines. This cost will then be divided by 20 to distribute it between the years of the project.

Finally, there are another two costs to consider. The first one is the cost of producing artificial snow. In the Capex I've included the costs of building the network of snow making machines but producing the snow require additional costs of water and electricity that need to be considered. The cost of producing artificial snow will amount to 184400 € per season. The last cost is the cost of electricity. Ski lifts require electricity to run so it is crucial to take into account this cost. The calculation of this cost is simple. Every season has a total of 1200 hours (lifts work 8 hours a day and the season has 150 days). The chair lifts consume 3650 kW*h. Since the current price of the kW*h is 0.1232 €, the cost is simply the multiplication of the price of the kW, the consumption of the lift and the number of hours of the season. This gives a cost of 542287 €. (Infographie)

3.1.6 Data source and origins

The purpose of this short section of the paper is to give a general overview of the main variables that will be used for our projects. The table below is just a summary of the main information of our project, including total revenues, maintenance costs and sources. The Capex has not been included here because it had already been included in a table of the previous section. The financing conditions will be included in a table and explained in detail in the next section (financing conditions).

Table 6 Data sources and origins of the ski resort project.

Capacity of the Parking lot	8000 skiers/ day	**Revenues**	
Utilization of the parking lot high season	80 %	Season tickets price	2,500,000
Utilization of the parking lot low season	35 %	4 day tickets price	2,400,000
Depreciation Period	20	Daily tickets Price	10,338,000
Construction period	1	**Total revenues**	**15,238,000**
Lifespan	20	**Operations and maintenance cost**	
Tax rate	25 %	Lifts	750,000
Inflation rate	2 %	Snowmaking	184,800
Sources		equipment	112,500
Equity	14096822.33	Insurance	150,000
Project finance debt	32892585.44	Personnel expenses	270,000

Total sources	**46989407.77**	Electricity expenses	542,288
		Total costs	**2,009,588**

4.1.7 Financing

The resort will be financed through project finance because it meets the requirements for this type of financing. It is possible to ask for a loan to a bank and be certain that the money invested in the lifts will be paid back through time with the revenues obtained from the sale of tickets. The investment will require asking for a loan representing 70% of the total amount required. The other 30 % will be provided by the investors as capital. The margins during construction and operation will be of 2.15 and 2.65% respectively. This represents the percentage the bank will charge for the financing of the debt of the project. The loan will be paid back in 15 years.

Understanding the financing requires explaining three concepts: the margins, the interest payment and the repayment of the debt. For the first item, the margins, the first thing that needs to be considered is the Euribor. The Euribor right now is quite low, at 0.25% but is expected to rise at a rate of 0.1% every year. It is important to hedge against an increase in the Euribor rate and in this project the hedging will be done through the purchase of an interest rate swap to cover 70 % of this increase. The margin during operation and the margin during construction will simply be the result of adding the margin with the IR swap to the required margin that the bank will charge. The bank will offer the swap at a fixed rate of 1.25 %. To calculate the margin with the interest rate swap I multiplied 70 % by the cost of the IR swap (i.25%) and then added the part that is not covered by the swap multiplied by the Euribor rate. As an example, for the first year this will be 2.15 + 0.95= 3.1% (this is the margin during construction).

Regarding the payment of the debt and the interests, they are calculated as follows. Since the useful life of the project is 20 years the debt cannot be paid in 20 years; it will have to be paid in less time. For this reason we will consider 15 years as the payment period for the ski resort. The quantity of each installment will be the amount of the initial investment of that will be financed (70 % of the Capex) divided by 19 which is the number of years during which the debt will be paid. The interest payment is the product of the average between the initial balance and the end balance (after paying the debt of the year) and the margin during operation.

The financing page will include one additional element which is the DRSA. This is an additional amount of money that the project needs to keep in case of unfavorable conditions, such as lack of snow, a power outage due to a powerful storm or other unpredictable events. This reserve is calculated by subtracting the interest to the debt payment and then multiplying the result by the required percentage pf reserve. For this project, a 50 % DRSA requirement will be required. The table below summarizes all the financing conditions described in this section.

Table 7 Financing conditions for the ski resort.

Structuring fee	2.5 %
Maximum leverage	70 %
Margin during construction	2.15%

Margin during operation	2.6%
Repayment period	15 years
Euribor Swap (as a %)	70 %
Euribor Swap (price)	1.25 %
Amortization option	Fixed
DSCR	1.7
Requirement DRSA	50 %
Cash sweep	0 %

The resort will be constructed in one year. The lifts will have an expected life of 20 years and the depreciation period will be of 20 years. After the 20 years lifespam the lifts will become obsolete and will lose its value. After this period new lifts will need to be built but then it will be a new project. The table below is the first years of the financing of the project.

Table 8 Financing of the resort.

Year		1	2	3	4	5	6
Euribor		0.25%	0.35%	0.45%	0.55%	0.65%	0.75%
IR Swap	70%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%
Margin with IRS		0.9500%	0.9800%	1.0100%	1.0400%	1.0700%	1.1000%
Margin during construction	2.15%	3.10%					
Margin during Operation	2.65%		3.63%	3.66%	3.69%	3.72%	3.75%
Tipo de Amortización	fixed						
Préstamo Senior	32892585.4						
Year		1	2	3	4	5	6
Initial Balance		0	32892586.44	30543116.05	28193645.66	25844175.27	23494704.88
Withdrawal		32892585.4					
Repayment		0	-2349470	-2349470	-2349470	-2349470	-2349470
Cash Sweep		0					
Saldo Final		32892586.4	30543116.05	28193645.66	25844175.27	23494704.88	21145234.49
Fixed Payment							
Couta Fija		0.00%	7.14%	7.14%	7.14%	7.14%	7.14%
	-70016567.8						

Interest							
Interest		0.00	1,151,358.00	1,074,882.74	996,997.80	917,703.17	836,998.86
Capitalised Interest		1,019,670.16					
Structuring Fee		822,314.64					
DRSA							
Required Balnce		1750414.19	1712176.564	1673234.092	1633586.78	1593234.626	1552177.631
Initial Balance			1750414.194	1,712,176.56	1,673,234.09	1,633,586.78	1,593,234.63
Withdrawal		1750414.19	0.00	0	0	0	0
Endowment			-38,237.63	-38,942.47	-39,647.31	-40,352.15	-41,056.99
End Balance		1750414.19	1,712,176.56	1,673,234.09	1,633,586.78	1,593,234.63	1,552,177.63

4.2 Expected results of exploitation of the resort

This section of the paper will give an overview of the main results of the exploitation of the ski resort. It will include all the steps used for the calculation of the resort: EBITDA, profit and loss, statement of cash flows and internal rate of return. The section will include the results and a brief comment of each of the results.

4.2.1 EBITDA (Earnings before interest, taxes, depreciation and amortization)

This section has to objectives. The first objective is to explain how the EBITDA has been calculated. The second objective is to give the results of the EBITDA and make a brief analysis. The most relevant information to analyze the profitability of the project is the Net Present Value and the Internal Rate of Return but the EBITDA is the first stage towards calculating the NPV or IRR.

The EBITDA is calculated by taking first the value of the profits and subtracting from it the costs. During the first year of the project the result will not be operational so there won't be any revenues. The main cost for the first year will be the CAPEX. As mentioned in the previous section the CAPEX will be composed of the cost of the ski lifts, the cost of the grooming machines and the installation of the artificial snow-making equipment.

The resort will not be fully operational until year 8 (year 7 of operation). It would not make much sense to assume that the resort will be able to attract all its expected customers in the first year of operation. For this reason, during the first three years the resort will only have 55% of the profits it will enjoy once it becomes fully operational. During the following three years, the resort will be able to attract more customers but still not the full amount. Hence, revenues during this period will only be 70 % of the full amount. All this percentages have been included in the calculation of the EBITDA. From this moment the revenues will come from the sale of ski tickets while the costs will come from maintenance costs of the lifts and

the rest of the equipment, the payment of wages to the employees and from the production of artificial snow. The EBITDA will show the division between the three modalities of revenues (three types of ski tickets that will be sold) as well as the different costs. Both costs and revenues will be updated every year using an inflation indicator of 2 %.

The results will be included in a table below. They show a steady and progressive increase in both costs and revenues with no significant drop or increase. Table x is the EBITDA for the first 6 years of the project. The whole EBITDA will be made available in the first table of the first annex of this paper. As mentioned before, the revenues keep increasing at a constant rate of 2 % every year because the number of skiers remains constant over the useful life of the resort. A scenario in which the number of skiers is not constant (resulting in variable revenues and EBITDA results) will be provided in a later section.

Table 9 EBITDA of the first 6 years of the project.

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
CPI	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Construction Variable	1	0	0	0	0	0
Operation Variable	0	1	1	1	1	1
		35% 3 años			70% 3 años	
revenues season tickets	2,500.00	1,275.00	1,300.50	1,326.51	1,932.14	1,970.78
revenues 4 day tickets	2,400.00	1,224.00	1,248.48	1,273.45	1,854.86	1,891.95
revenues daily tickets	10,338.00	5,272.38	5,377.83	5,485.38	7,989.79	8,149.59
	15,238.00	7,771.38	7,926.81	8,085.34	11,776.79	12,012.32
Cost						
lifts	750.00	765.00	780.30	795.91	811.82	828.06
snowmaking	184.80	188.50	192.27	196.11	200.03	204.03
equipment	112.50	114.75	117.05	119.39	121.77	124.21
Insurance Expenses	150.00	153.00	156.06	159.18	162.36	165.61
electricity	542.29	553.13	564.20	575.48	586.99	598.73
personnel	540.00	550.80	561.82	573.05	584.51	596.20
Total	2,279.59	2,325.18	2,371.68	2,419.12	2,467.50	2,516.85
EBITDA	0.00	5,446.20	5,555.12	5,666.23	9,309.29	9,495.47

4.2.2 Profit and loss

The profit and loss is calculated first by subtracting the depreciation from the EBITDA (earnings before interest, taxes, depreciation and amortization) to obtain the EBIT. The depreciation has been obtained by dividing the total CAPEX investment by the depreciation period. The second step in the calculation of the P&L is the subtraction of the interest from the EBIT (earnings before interest and taxes) to obtain the EBT (earnings before taxes). The final step to have the result of the P&L is to subtract the taxes from the EBT. For this paper a tax rate of 25% will be considered. This will be the tax rate for the neutral scenario. The scenario analysis that will be performed in the following section will take other tax rates into consideration for the P&L.

The results will be included in a table below. They show a steady and progressive increase in both costs and revenues with no significant drop or increase. Table x is the P&L for the first 6 years of the project. The whole P&L will be made available in the second table of the first annex of this paper.

Table 10 Profit and loss of the ski resort

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Revenues	15,238.00	7,771.38	7,926.81	8,085.34	11,776.79	12,012.32
Operation Cost	2,279.59	2,325.18	2,371.68	2,419.12	2,467.50	2,516.85
EBITDA	0	5,446 €	5,555 €	5,666 €	9,309 €	9,495 €
Depreciation	2349.47	2349.47	2349.47	2349.47	2349.47	
EBIT		3,097 €	3,206 €	3,317 €	6,960 €	7,146 €
Financial Cost	0.00	1,151.36	1,074.88	997.00	917.70	837.00
EBT		1,945.37 €	2,130.77 €	2,319.76 €	6,042.12 €	6,309.01 €
Taxes		486.34 €	532.69 €	579.94 €	1,510.53 €	1,577.25 €
Results		1,459.03 €	1,598.08 €	1,739.82 €	4,531.59 €	4,731.75 €

4.2.3 Statement of cash flows

For the purpose of this paper, the cash flow is the most important financial statement. The reason for this importance is that it is the only one that includes both the results of the P&L and the initial investment or Capex. The cash flow included not only interest payment but also the repayment of the debt. The cash flow is what allows us to calculate the internal rate of return (IRR) and the net present value (NPV).

The cash flow calculation starts with the EBITDA from which the average working capital, the DRSA, the CAPEX (first year only) and the taxes are taken out to get the free cash flow. The next step is to subtract the interest and the payment of the debt to get the free cash flow after paying the debt. In the years of operation, this represents the money available to shareholders. From this quantity it is possible to compute the IRR and the NPV.

The table below shows that the first year requires making an investment of approximately 14 million € (the data in the table are in thousands). Then, in the first five years of operation cash flows vary from 8 million to 12 million in the fifth year. It is important to remember that the resort will not be operating at full capacity until year 8 (year 7 of operation) so the cash flows in the first years are significantly lower compared to the later years. The full cash flow will be provided in the annex. For the neutral scenario, the IRR gives a value of 34%. The significance of the IRR will be analyzed in detail in the next section, the sensitivity analysis.

Table 11 Statement of cash flows for the ski resort.

Cash Flows	Year1	Year 2	Year 3	Year 4	Year 5	Year 6
Revenues	15,238.00	8,548.52	8,719.49	8,893.88	11,776.79	12,012.32
Operation Cost	2,009.59	2,049.78	2,090.78	2,132.59	2,175.24	2,218.75
EBITDA	0.00	6,498.74	6,628.71	6,761.29	9,601.55	9,793.58

Awc						
DRSA Adjustmet	1,446.88	-26.88	-27.40	-27.92	-28.43	-28.95
Capex	46,989.41	0	0	0	0	0
Taxes		746.67 €	792.60 €	839.45 €	1,563.47 €	1,625.69 €
Free Cash Flow	-48,436.29	5,778.94 €	5,863.51 €	5,949.76 €	8,066.51 €	8,196.84 €
Financial Cost		1,162.58	1,108.83	1,054.03	998.20	941.33
Debt Payments/Withdrawal	32892.59	-1731.19	-1731.19	-1731.19	-1731.19	-1731.19
Free Cash Flow after paying the debt	15543.71	2,885.17 €	3,023.49 €	3,164.53 €	5,337.12 €	5,524.32 €
Cash sweep	0	0	0	0	0	0
Equity	14096.82233	0	0	0	0	0
Free Cash Flow before Dividends	0	2,885.17 €	3,023.49 €	3,164.53 €	5,337.12 €	5,524.32 €
Dividends	0	2,885.17 €	3,023.49 €	3,164.53 €	5,337.12 €	5,524.32 €
Shareholders Loan	0	0	0	0	0	0
Shareholders IRR	-14096.82233	2,885.17 €	3,023.49 €	3,164.53 €	5,337.12 €	5,524.32 €

5. Sensitivity analysis

This section of the paper will deal with five different scenarios for the resort. There will be two pessimistic scenarios. The first pessimistic scenario will have lower occupancy ratios of the parking lot (and less revenues as a result), a lower inflation rate and a higher tax rate. The second pessimistic scenario will use the same occupation ratio of the parking lot, same inflation rate and same tax rate but it will include one big difference: the existence of a financial crisis that will last four years. During these four years the number of skiers will go down 20%. The third scenario will be the scenario described in the previous sections of the paper (neutral scenario). The fourth scenario will be the optimistic scenario. This scenario will be opposite to the pessimistic one. It will answer the question of what will happen to the IRR if the inflation is higher than expected, the taxes are lower than expected and the revenues higher than expected because more people visit the resort. The final scenario will be completely different. The intention of this last case is to take into consideration an uncertainty variable: the weather. It will address the issue of what will happen if climate conditions are unfavorable enough to have a significant impact in the ski season. Without enough snow the length of the season and the distribution of the days of high season and low season will be modified.

5.1 Pessimistic scenario.

5.1.1 Normal pessimistic scenario

In this scenario (and in the following two) the number of days of low season and high season will be maintained constant at 114 and 36 respectively. The variables that change are the tax rate, the inflation rate and the occupation rate of the parking lot both during the high season and during the low season.

For this pessimistic scenario I have considered a tax rate of 30 % and an inflation rate of 1.5 %. The occupancy rates are for the high season and low season are 70 % and 20 %. The table below shows the cash flow taking into consideration the new conditions.

Table 12 Statement of cash flow for the normal pessimistic scenario of the resort.

Cash Flows	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Revenues	11,638.00	5,906.29	5,994.88	6,084.80	8,776.20	8,907.84
Operation Cost	2,279.59	2,313.78	2,348.49	2,383.72	2,419.47	2,455.76
EBITDA	0.00	3,592.50	3,646.39	3,701.09	6,356.73	6,452.08
Awc						
DRSA Adjustmet	1,750.41	-38.24	-38.94	-39.65	-40.35	-41.06
Capex	46,989.41	0	0	0	0	0
Taxes		27.50 €	66.61 €	106.39 €	926.87 €	979.68 €
Free Cash Flow	-48,739.82	3,603.24 €	3,618.72 €	3,634.35 €	5,470.22 €	5,513.45 €
Financial Cost		1,151.36	1,074.88	997.00	917.70	837.00
Debt Payments/Withdrawal	32892.59	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47
Free Cash Flow after paying the debt	15847.24	102.41 €	194.37 €	287.88 €	2,203.04 €	2,326.99 €
Cash sweep	0	0	0	0	0	0
Equity	14096.82233	0	0	0	0	0
Free Cash Flow before Dividends	0	102.41 €	194.37 €	287.88 €	2,203.04 €	2,326.99 €
Dividends	0	102.41 €	194.37 €	287.88 €	2,203.04 €	2,326.99 €
Shareholders Loan	0	0	0	0	0	0
Shareholders IRR	-14096.82233	102.41 €	194.37 €	287.88 €	2,203.04 €	2,326.99 €

As it can be seen in this table, the cash flows for the first years of the investment vary between 0.102 and 2.326 million €. The initial investment required to build the project logically does not vary between scenarios since they do not include a change in the CAPEX. The internal rate obtained with this scenario is 19%. This is the required rate of return that makes the net present value equal to zero. Together with the NPV they are the most commonly used criteria to decide whether a project is viable and can be carried out. The IRR needs to be above a certain level to approve the project. In this case since the IRR is close to 20%. This value might seem low but this is quite a negative scenario so an IRR close to 20 % is not low enough to state that the project should not be carried out.

5.1.2 Pessimistic scenario with a 5 year long economic crisis

This is a variant of the pessimistic scenario. I will analyze this scenario making the assumption that all the variables previously mentioned will remain the same. Thus, the occupation rate will

be 70 % during high season and 20% during low season; the tax rate will be 30 % and the inflation rate 1.5 %.

The main difference with the previous scenario will be the existence of a financial crisis for a period of five years that will affect the number of skiers that will come to our resort. With less money to spend we expect the number of skiers to go down by 20 %. The crisis will last 4 years and will start in year 5 of the operation of the resort and will end on year 8. Unlike in other scenarios, here it is necessary to include a table with ten years of operation so it is possible to see the effects of the crisis on the statement of cash flow. Under the normal pessimistic scenario 384,000 skiers visited the resort which resulted in revenues of 10,270,000 €. Under the new scenario, the number of skiers decrease 20% which causes total revenues to drop to 7,966,000 € or 22.43%. Below is the cash flow of the resort for the first ten years.

Table 13 Statement of cash flows of pessimistic scenario with economic crisis (€)

Cash Flows	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenues	11,638.00	5,906.29	5,994.88	6,084.80	8,776.20	8,907.84	9,041.46	13,110.12	13,306.77	13,506.37
Operation Cost	2,279.59	2,313.78	2,348.49	2,383.72	2,419.47	2,455.76	2,492.60	2,529.99	2,567.94	2,606.46
EBITDA	0.00	3,592.50	3,646.39	3,701.09	4,930.92	5,004.88	5,079.95	8,207.01	10,738.83	10,899.92
Awc										
DRSA Adjustmet	1,750.41	-38.24	-38.94	-39.65	-40.35	-41.06	-41.76	-42.47	-43.17	-43.88
Capex	46,989.41	0	0	0	0	0	0	0	0	0
Taxes		27.50 €	66.61 €	106.39 €	499.12 €	545.52 €	592.68 €	1,555.85 €	2,340.88 €	2,415.11 €
Free Cash Flow	-48,739.82	3,603.24 €	3,618.72 €	3,634.35 €	4,472.15 €	4,500.41 €	4,529.04 €	6,693.62 €	8,441.12 €	8,528.68 €
Financial Cost		1,151.36	1,074.88	997.00	917.70	837.00	754.88	671.36	586.43	500.08
Debt Payments/Withdrawal	32892.59	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47
Free Cash Flow after paying the debt	15847.24	102.41 €	194.37 €	287.88 €	1,204.97 €	1,313.94 €	1,424.68 €	3,672.79 €	5,505.23 €	5,679.13 €
Cash sweep	0	0	0	0	0	0	0	0	0	0
Equity	14096.82233	0	0	0	0	0	0	0	0	0
Free Cash Flow before Dividends	0	102.41 €	194.37 €	287.88 €	1,204.97 €	1,313.94 €	1,424.68 €	3,672.79 €	5,505.23 €	5,679.13 €
Dividends	0	102.41 €	194.37 €	287.88 €	1,204.97 €	1,313.94 €	1,424.68 €	3,672.79 €	5,505.23 €	5,679.13 €
Shareholders Loan	0	0	0	0	0	0	0	0	0	0
Shareholders IRR	-14096.82233	102.41 €	194.37 €	287.88 €	1,204.97 €	1,313.94 €	1,424.68 €	3,672.79 €	5,505.23 €	5,679.13 €
NPV										
Tax Rate										

In the table it is possible to see that revenues in year 5 are expected to reach 1.204 M €. In the last year of the crisis revenues will total 3.672 M € and in the following year they will be 5.505 M €. The internal rate of return in this case is a 17 % which is sufficiently high to conclude that the investment should be carried out. As this pessimist scenario does not have any year with negative cash flows the bank does not have any important reason to reject our project so it is very likely it will finance the resort.

5.2 Neutral scenario

The neutral scenario is the normal scenario with the conditions described above. The inflation rate is 2 %, the tax rate is 25 % and the occupation rates are 80 % (high season) and 35 % (low season). The IRR for this scenario is 30%. It is more than safe to state with this IRR that the project of building the resort is profitable and should be carried out. The cash flow of this scenario has already been discussed so I will not include it here

5.3 Optimistic scenario

The optimistic scenario has even better conditions than the neutral scenario. The occupation rate of the parking lot is expected to reach 90 % during the days of high season and 50 % during the days of low season. The inflation rate is 2.5%, and the tax rate is only 20%. The following table shows the cash flow for this particular scenario.

Table 14 statement of cash flow for the optimistic scenario of the resort.

Cash Flows						
Revenues	18,838.00	9,654.48	9,895.84	10,143.23	14,919.43	15,292.41
Operation Cost	2,279.59	2,336.58	2,394.99	2,454.87	2,516.24	2,579.14
EBITDA	0.00	7,317.90	7,500.84	7,688.37	12,403.19	12,713.27
Awc						
DRSA Adjustmet	1,750.41	-38.24	-38.94	-39.65	-40.35	-41.06
Capex	46,989.41	0	0	0	0	0
Taxes		763.41 €	815.30 €	868.38 €	1,827.20 €	1,905.36 €
Free Cash Flow	-48,739.82	6,592.72 €	6,724.49 €	6,859.63 €	10,616.34 €	10,848.97 €
Financial Cost		1,151.36	1,074.88	997.00	917.70	837.00
Debt Payments/Withdrawal	32892.59	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47
Free Cash Flow after paying the debt	15847.24	3,091.89 €	3,300.14 €	3,513.17 €	7,349.16 €	7,662.50 €
Cash sweep	0	0	0	0	0	0
Equity	14096.82233	0	0	0	0	0
Free Cash Flow before Dividends	0	3,091.89 €	3,300.14 €	3,513.17 €	7,349.16 €	7,662.50 €
Dividends	0	3,091.89 €	3,300.14 €	3,513.17 €	7,349.16 €	7,662.50 €
Shareholders Loan	0	0	0	0	0	0
Shareholders IRR	-14096.82233	3,091.89 €	3,300.14 €	3,513.17 €	7,349.16 €	7,662.50 €

For this optimistic scenario the cash flows vary between 3 million and 7 million. The value obtained for the internal rate of return is 41%. This is an incredibly high value for an IRR. It means that with the occupation rates of the parking of 45 % during the low season and 90 % during the high season we would obtain a very high level of profitability on this project.

5.4 Uncertainty scenario: lack of snow

This scenario is usually not analyzed in a sensitivity analysis but I want to see what would happen to the profitability of the resort if the conditions are very unfavorable. I will consider here a very pessimistic scenario worse than the previous pessimistic scenario analyzed above. Let's assume that our resort over the next 20 years experiences 8 really bad years with very limited snow availability. The lack of snow will considerably reduce the number of days of the season to 120. This is the equivalent of reducing the revenues by 22 %. In addition, the days that will be missed will be the beginning of the season and the Easter holiday period. This includes both days of high season and days of low season so this decrease will have a significant impact on the revenues of the resort. The occupation rates that will be considered in this scenario will be those of the pessimistic scenario (20 % for the low season and 70 % for the high season).

In reality years with lack of snow are mixed with years with abundant snow. It makes little sense to accumulate all the bad years either at the beginning of the useful life of the resort or at the end of the useful life of the resort. For this reason, I will consider that the years of low snow will be spread over the useful life of our resort. Years 3, 5, 6, 8, 11, 12, 15 and 16 will be years with lack of snow. The remaining 12 years will have normal snow conditions. The number of season ski passes and the number of 4 day passes sold will remain the same. The number of day passes wil obviously decrease as the season is now shorter. The table below shows the cash flows for this particular scenario.

Table 15 Statement of cash flow for the uncertainty scenario of the resort

Cash Flows						
Revenues	11,638.00	5,906.29	5,994.88	6,084.80	8,776.20	8,907.84
Operation Cost	2,279.59	2,313.78	2,348.49	2,383.72	2,419.47	2,455.76
EBITDA	0.00	3,592.50	2,844.18	3,701.09	4,958.25	5,032.62
Awc						
DRSA Adjustmet	1,750.41	-38.24	-38.94	-39.65	-40.35	-41.06
Capex	46,989.41	0	0	0	0	0
Taxes		27.50 €	-174.05 €	106.39 €	507.32 €	553.85 €
Free Cash Flow	-48,739.82	3,603.24 €	3,057.18 €	3,634.35 €	4,491.28 €	4,519.83 €
Financial Cost		1,151.36	1,074.88	997.00	917.70	837.00
Debt Payments/Withdrawal	32892.59	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47

Free Cash Flow after paying the debt	15847.24	102.41 €	-367.18 €	287.88 €	1,224.11 €	1,333.36 €
Cash sweep	0	0	0	0	0	0
Equity	14096.82233	0	0	0	0	0
Free Cash Flow before Dividends	0	102.41 €	-367.18 €	287.88 €	1,224.11 €	1,333.36 €
Dividends	0	102.41 €	-367.18 €	287.88 €	1,224.11 €	1,333.36 €
Shareholders Loan	0	0	0	0	0	0
Shareholders IRR	-14096.82233	102.41 €	-367.18 €	287.88 €	1,224.11 €	1,333.36 €

This table shows that making these pessimistic assumptions will give as a result negative cash flow in year 3. The main reason is that we are making the assumption that during the first three years of operation our resort will only have 50 % of the revenues. If we apply another reduction of 22 % to this value it is not strange to see a negative cash flow for this year. Banks Having a negative cash flow one year is not a thing banks usually like because this means that during one year our project will be unable to repay the full amount of the debt. However, in this particular case the bank will see with the numbers that the project is sound and that the negative cash flow is more due to the realistic and somewhat pessimistic assumption regarding the revenues previously mentioned. This scenario gives a value of the IRR of 17 %. In spite of the fact that 17% is lower than the value obtained for the regular scenario it is still high enough to conclude that the project should be carried out. There is a high probability that the resort will be built. Bellow I will include the following five years of the cash flow so that it is possible to see that the cash flow is still positive. As in other cases, the full table for the cash flow of the uncertainty scenario will be provided in the annex.

Table 16. Cash flow uncertainty scenario (continued)

Cash Flows	Year 7	Year 8	Year 9	Year 10	
Revenues	9,041.46	13,110.12	13,306.77	13,506.37	
Operation Cost	2,492.60	2,529.99	2,567.94	2,606.46	
EBITDA	6,548.86	8,252.50	10,738.83	10,899.92	
Awc					
DRSA Adjustmet	-41.76	-42.47	-43.17	-43.88	
Capex	0	0	0	0	
Taxes	1,033.35 €	1,569.50 €	2,340.88 €	2,415.11 €	
Free Cash Flow	5,557.27 €	6,725.47 €	8,441.12 €	8,528.68 €	
Financial Cost	754.88	671.36	586.43	500.08	
Debt Payments/Withdrawal	-2349.47	-2349.47	-2349.47	-2349.47	
Free Cash Flow after paying the debt	2,452.92 €	3,704.64 €	5,505.23 €	5,679.13 €	
Cash sweep	0	0	0	0	
Equity	0	0	0	0	
Free Cash Flow before Dividends	2,452.92 €	3,704.64 €	5,505.23 €	5,679.13 €	
Dividends	2,452.92 €	3,704.64 €	5,505.23 €	5,679.13 €	
Shareholders Loan	0	0	0	0	
Shareholders IRR	2,452.92 €	3,704.64 €	5,505.23 €	5,679.13 €	

6. Conclusion

The purpose of this paper was to study the profitability of building a ski resort in a region of the French Pyrenees very close to Andorra. The paper has provided a thorough analysis of the conditions that are required to have a profitable resort and also of the location of the resort and a description of the resort. It has included the calculation of the main financial statements that are required to calculate the value of the IRR (the EBITDA, the financing conditions, the P & L and the cash flows). In this paper I have also performed a sensitivity analysis to study the variation of all the financial statements to a change in conditions such as the inflation rate, a decrease in the number of skiers for a period of 4 years due to a financial crisis or the occupation rate of the parking lot (something that has a direct impact on the revenues of the resource). Finally, I have analyzed what will happen if there is a dramatic change in the snow conditions of the region that reduced the duration of the ski season and the proportion of days of high season and low season. The objective was, as I have said, to see in each case if the investment was plausible through the calculation of the IRR. It was also important to ensure that not a single year had a negative cash flow in order not to risk having the financing rejected by the bank.

After making the analysis it is possible to conclude that unless there are very unfavorable conditions the investment is worthwhile. The value of the internal rate of return varies from 17 % in the pessimistic scenario to 37% in the optimistic scenario. In all cases, the IRR is sufficiently high to conclude that it is safe to build the ski resort since we will obtain a satisfactory level of returns. Moreover, the majority of the scenarios do not have a single year of negative cash flows. The only exception to this is the uncertainty scenario of what will happen if there is a lack of snow that reduces the length of the season to 120 days. This particular scenario shows one year with negative cash flow. However, the bank will look at the project as a whole and it is very unlikely that it will refuse to finance it just for this reason. In general, from the study performed, it is possible to state that the project should be given green light and that it is very likely to be profitable. Only a very adverse scenario in which more than half of the years have significant lack of snow could make the investment undesirable but the probability that this happens is very low.

Future lines of research and future courses of action that could improve the resort.

I have performed a broad study of the profitability but there is still room to research more on this subject. First of all regarding the previous analysis of the project it is possible to investigate further on the impact that building a ski resort has on the environment. I have mentioned during the paper that our resort will try to disturb the environment as little as possible by building only the buildings that are strictly required for the correct functioning of the resort but it is possible to perform a more in-depth environmental analysis. Environmentalist specialists could analyze, for instance, the effect that the resort could have of the migration of birds in the area or the negative effect of the waste generated by the resort if it is not properly handled.

Regarding the calculations it is possible to analyze many variations of the scenario analysis. However, the general conclusion that the project is profitable is not likely to change unless a very unfavorable scenario in which the length of the ski season is shortened by more than 30 days for more than half of the useful life of the resort is taken into account (something unlikely to occur).

Apart from studying possible future lines of action it is also important to analyze if there is any potential to improve the resort. Since our resort will be located in the middle of the resorts of Porte Puymorens and Grandvalira a possible suggestion could be to form an alliance with Grandvalira to exploit both resorts together.

It is clear that the situation of the station of Porte des Neiges will require operating agreements with the company operating Grand Valira, the municipal area of Porta and its Commune, as well as with the French Department on which it depends in the Eastern Pyrenees.

It is important to point out that the Nr of ski passes sold in today's Porté - Puymorens resort is above 100.000. All of them would be automatically clients of the new resort. So alliances are good and could help the functioning of the resort and improve its level of profitability so should be considered.

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Annexes: Tables of the calculation of the resort in the following order: Financing, EBITDA, P&L, cash flow, scenarios.

Table 1 financing conditions

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Euribor		0.25%	0.35%	0.45%	0.55%	0.65%	0.75%	0.85%	0.95%	1.05%	1.15%	1.25%	1.35%	1.45%	1.55%	1.65%
IR Swap	70%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%
Margin with IRS		0.9500 %	0.9800 %	1.0100%	1.0400 %	1.0700 %	1.1000 %	1.1300 %	1.1600 %	1.1900 %	1.2200 %	1.2500 %	1.2800 %	1.3100 %	1.3400 %	1.3700 %
Margin during construction	2.15%	3.10%														
Margin during Operation	2.65%		3.63%	3.66%	3.69%	3.72%	3.75%	3.78%	3.81%	3.84%	3.87%	3.90%	3.93%	3.96%	3.99%	4.02%
Tipo de Amortización	fixed															
Préstamo Senior	32892 585.4															
Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Initial Balance		0	328925 86.44	3054311 6.05	281936 45.66	258441 75.27	234947 04.88	211452 34.49	187957 64.11	164462 93.72	140968 23.33	117473 52.94	939788 2.553	704841 2.165	469894 1.777	234947 1.388
Withdrawal		328925 85.4														
Repayment		0	-234947 0	-2349470	-234947 0	-234947 0	-234947 0	-234947 0	-234947 0	-234947 0	-234947 0	-234947 0	-234947 0	-234947 0	-234947 0	-234947 0
Cash Sweep		0														
Saldo Final		328925 86.4	305431 16.05	2819364 5.66	258441 75.27	234947 04.88	211452 34.49	187957 64.11	164462 93.72	140968 23.33	117473 52.94	939788 2.553	704841 2.165	469894 1.777	234947 1.388	1.000000 0005
Fixed Payment																
Couta Fija		0.00%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%	7.14%

RCSD		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RCSD Payment																
Sculpting Debt																
	-70016567.8															
Interest																
Interest		0.00	1,151,358.00	1,074,882.74	996,997.80	917,703.17	836,998.86	754,884.87	671,361.20	586,427.85	500,084.81	412,332.09	323,169.69	232,597.61	140,615.84	47,224.40
Capitalised Interest		1,019,670.16														
Structuring Fee		822,314.64														
DRSA																
Required Balnce		1750414.19	1712176.564	1673234.092	1633586.78	1593234.626	1552177.631	1510415.795	1467949.118	1424777.6	1380901.24	1336320.04	1291033.998	1245043.115	1198347.392	0.02025
Initial Balance			1750414.194	1,712,176.56	1,673,234.09	1,633,586.78	1,593,234.63	1,552,177.63	1,510,415.79	1,467,949.12	1,424,777.60	1,380,901.24	1,336,320.04	1,291,034.00	1,245,043.12	1,198,347.39
Withdrawal		1750414.19	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0
Endowment			-38,237.63	-38,942.47	-39,647.31	-40,352.15	-41,056.99	-41,761.84	-42,466.68	-43,171.52	-43,876.36	-44,581.20	-45,286.04	-45,990.88	-46,695.72	-1,198,347.37
End Balance		1750414.19	1,712,176.56	1,673,234.09	1,633,586.78	1,593,234.63	1,552,177.63	1,510,415.79	1,467,949.12	1,424,777.60	1,380,901.24	1,336,320.04	1,291,034.00	1,245,043.12	1,198,347.39	0.02

Table 2. EBITDA

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
CPI	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Construction Variable	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operation Variable	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		35% 3 años			70% 3 años			100%												
revenues season tickets	2,500.00	1,275.00	1,300.50	1,326.51	1,932.14	1,970.78	2,010.20	2,929.15	2,987.73	3,047.49	3,108.44	3,170.60	3,234.02	3,298.70	3,364.67	3,431.96	3,500.60	3,570.62	3,642.03	3,714.87
revenues 4 day tickets	2,400.00	1,224.00	1,248.48	1,273.45	1,854.86	1,891.95	1,929.79	2,811.98	2,868.22	2,925.59	2,984.10	3,043.78	3,104.66	3,166.75	3,230.08	3,294.69	3,360.58	3,427.79	3,496.35	3,566.27
revenues daily tickets	10,338.00	5,272.38	5,377.83	5,485.38	7,989.79	8,149.59	8,312.58	12,112.61	12,354.87	12,601.96	12,854.00	13,111.08	13,373.31	13,640.77	13,913.59	14,191.86	14,475.70	14,765.21	15,060.51	15,361.72
	15,238.00	7,771.38	7,926.81	8,085.34	11,776.79	12,012.32	12,252.57	17,853.75	18,210.82	18,575.04	18,946.54	19,325.47	19,711.98	20,106.22	20,508.34	20,918.51	21,336.88	21,763.62	22,198.89	22,642.87
Cost																				
lifts	750.00	765.00	780.30	795.91	811.82	828.06	844.62	861.51	878.74	896.32	914.25	932.53	951.18	970.20	989.61	1,009.40	1,029.59	1,050.18	1,071.18	1,092.61
snowmaking	184.80	188.50	192.27	196.11	200.03	204.03	208.11	212.28	216.52	220.85	225.27	229.78	234.37	239.06	243.84	248.72	253.69	258.76	263.94	269.22
equipment	112.50	114.75	117.05	119.39	121.77	124.21	126.69	129.23	131.81	134.45	137.14	139.88	142.68	145.53	148.44	151.41	154.44	157.53	160.68	163.89
Insurance Expenses	150.00	153.00	156.06	159.18	162.36	165.61	168.92	172.30	175.75	179.26	182.85	186.51	190.24	194.04	197.92	201.88	205.92	210.04	214.24	218.52
electricity	542.29	553.13	564.20	575.48	586.99	598.73	610.70	622.92	635.38	648.08	661.05	674.27	687.75	701.51	715.54	729.85	744.44	759.33	774.52	790.01
personnel	540.00	550.80	561.82	573.05	584.51	596.20	608.13	620.29	632.70	645.35	658.26	671.42	684.85	698.55	712.52	726.77	741.30	756.13	771.25	786.68
Total	2,279.59	2,325.18	2,371.68	2,419.12	2,467.50	2,516.85	2,567.19	2,618.53	2,670.90	2,724.32	2,778.80	2,834.38	2,891.07	2,948.89	3,007.87	3,068.03	3,129.39	3,191.97	3,255.81	3,320.93

EBITDA	0.00	5,446.20	4,333.00	5,666.23	7,261.25	7,406.47	9,685.38	11,883.47	15,539.92	15,850.72	12,610.83	12,863.05	16,820.91	17,157.33	13,650.37	13,923.38	18,207.49	18,571.64	18,943.08	19,321.94

Table 3 P&L

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
Revenues	15,238.00	7,771.38	7,926.81	8,085.34	11,776.79	12,012.32	12,252.57	17,853.75	18,210.82	18,575.04	18,946.54	19,325.47	19,711.98	20,106.22	20,508.34	20,918.51	21,336.88	21,763.62	22,198.89	22,642.87
Operation Cost	2,279.59	2,325.18	2,371.68	2,419.12	2,467.50	2,516.85	2,567.19	2,618.53	2,670.90	2,724.32	2,778.80	2,834.38	2,891.07	2,948.89	3,007.87	3,068.03	3,129.39	3,191.97	3,255.81	3,320.93
EBITDA	0	5,446 €	4,333 €	5,666 €	7,261 €	7,406 €	9,685 €	11,883 €	15,540 €	15,851 €	12,611 €	12,863 €	16,821 €	17,157 €	13,650 €	13,923 €	18,207 €	18,572 €	18,943 €	19,322 €
Depreciation		2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47	2349.47
EBIT		3,097 €	1,984 €	3,317 €	4,912 €	5,057 €	7,336 €	9,534 €	13,190 €	13,501 €	10,261 €	10,514 €	14,471 €	14,808 €	11,301 €	11,574 €	15,858 €	16,222 €	16,594 €	16,972 €
Financial Cost	0.00	1,151.36	1,074.88	997.00	917.70	837.00	754.88	671.36	586.43	500.08	412.33	323.17	232.60	140.62	47.22	0.00	0.00	0.00	0.00	0.00
EBT		1,945.37 €	908.64 €	2,319.76 €	3,994.07 €	4,220.00 €	6,581.03 €	8,862.64 €	12,604.02 €	13,001.16 €	9,849.03 €	10,190.41 €	14,238.84 €	14,667.24 €	11,253.67 €	11,573.91 €	15,858.02 €	16,222.17 €	16,593.61 €	16,972.47 €
Taxes		486.34 €	227.16 €	579.94 €	998.52 €	1,055.00 €	1,645.26 €	2,215.66 €	3,151.01 €	3,250.29 €	2,462.26 €	2,547.60 €	3,559.71 €	3,666.81 €	2,813.42 €	2,893.48 €	3,964.51 €	4,055.54 €	4,148.40 €	4,243.12 €
Results		1,459.03 €	681.48 €	1,739.82 €	2,995.55 €	3,165.00 €	4,935.77 €	6,646.98 €	9,453.02 €	9,750.87 €	7,386.77 €	7,642.81 €	10,679.13 €	11,000.43 €	8,440.26 €	8,680.43 €	11,893.52 €	12,166.63 €	12,445.20 €	12,729.35 €

Table 4 statement of cash flows.

Cash Flows																				
Revenues	15,238.00	7,771.38	7,926.81	8,085.34	11,776.79	12,012.32	12,252.57	17,853.75	18,210.82	18,575.04	18,946.54	19,325.47	19,711.98	20,106.22	20,508.34	20,918.51	21,336.88	21,763.62	22,198.89	22,642.87
Operation Cost	2,279.59	2,325.18	2,371.68	2,419.12	2,467.50	2,516.85	2,567.19	2,618.53	2,670.90	2,724.32	2,778.80	2,834.38	2,891.07	2,948.89	3,007.87	3,068.03	3,129.39	3,191.97	3,255.81	3,320.93
EBITDA	0.00	5,446.20	4,333.00	5,666.23	7,261.25	7,406.47	9,685.38	11,883.47	15,539.92	15,850.72	12,610.83	12,863.05	16,820.91	17,157.33	13,650.37	13,923.38	18,207.49	18,571.64	18,943.08	19,321.94
Awc																				
DRSA Adjustmet	1,750.41	-38.24	-38.94	-39.65	-40.35	-41.06	-41.76	-42.47	-43.17	-43.88	-44.58	-45.29	-45.99	-46.70	-1,198.35	0.00	0.00	0.00	0.00	0.00
Capex	46,989.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxes		486.34 €	227.16 €	579.94 €	998.52 €	1,055.00 €	1,645.26 €	2,215.66 €	3,151.01 €	3,250.29 €	2,462.26 €	2,547.60 €	3,559.71 €	3,666.81 €	2,813.42 €	2,893.48 €	3,964.51 €	4,055.54 €	4,148.40 €	4,243.12 €
Free Cash Flow	-48,739.82	4,998.10 €	4,144.78 €	5,125.93 €	6,303.08 €	6,392.53 €	8,081.89 €	9,710.28 €	12,432.09 €	12,644.30 €	10,193.16 €	10,360.73 €	13,307.19 €	13,537.21 €	12,035.30 €	11,029.90 €	14,242.99 €	14,516.10 €	14,794.67 €	15,078.82 €
Financial Cost		1,151.36	1,074.88	997.00	917.70	837.00	754.88	671.36	586.43	500.08	412.33	323.17	232.60	140.62	47.22	0.00	0.00	0.00	0.00	0.00
Debt Payments/Withdrawal	32892.59	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	0.00	0.00	0.00	0.00	0.00
Free Cash Flow after paying the debt	15847.24	1,497.27 €	720.43 €	1,779.47 €	3,035.91 €	3,206.06 €	4,977.53 €	6,689.44 €	9,496.19 €	9,794.75 €	7,431.35 €	7,688.09 €	10,725.12 €	11,047.13 €	9,638.60 €	11,029.90 €	14,242.99 €	14,516.10 €	14,794.67 €	15,078.82 €
Cash sweep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equity	14096.82233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Free Cash Flow before Dividends	0	1,497.27	720.43 €	1,779.47	3,035.91	3,206.06	4,977.53	6,689.44	9,496.19	9,794.75	7,431.35	7,688.09	10,725.1	11,047.1	9,638.60	11,029.9	14,242.9	14,516.1	14,794.6	15,078.8

Dividends	0	1,497.27 €	720.43 €	1,779.47 €	3,035.91 €	3,206.06 €	4,977.53 €	6,689.44 €	9,496.19 €	9,794.75 €	7,431.35 €	7,688.09 €	10,725.12 €	11,047.13 €	9,638.60 €	11,029.90 €	14,242.99 €	14,516.10 €	14,794.67 €	15,078.82 €
Shareholders Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shareholders IRR	-14096.82233	1,497.27 €	720.43 €	1,779.47 €	3,035.91 €	3,206.06 €	4,977.53 €	6,689.44 €	9,496.19 €	9,794.75 €	7,431.35 €	7,688.09 €	10,725.12 €	11,047.13 €	9,638.60 €	11,029.90 €	14,242.99 €	14,516.10 €	14,794.67 €	15,078.82 €

Table 5. Normal pessimistic scenario.

Cash Flows																				
Revenues	11,638.00	5,906.29	5,994.88	6,084.80	8,776.20	8,907.84	9,041.46	13,110.12	13,306.77	13,506.37	13,708.97	13,914.60	14,123.32	14,335.17	14,550.20	14,768.45	14,989.98	15,214.83	15,443.05	15,674.70
Operation Cost	2,279.59	2,313.78	2,348.49	2,383.72	2,419.47	2,455.76	2,492.60	2,529.99	2,567.94	2,606.46	2,645.55	2,685.24	2,725.52	2,766.40	2,807.90	2,850.01	2,892.76	2,936.16	2,980.20	3,024.90
EBITDA	0.00	3,592.50	2,844.18	3,701.09	4,958.25	5,032.62	6,548.86	8,252.50	10,738.83	10,899.92	8,629.46	8,758.91	11,397.81	11,568.77	9,159.00	9,296.38	12,097.22	12,278.67	12,462.86	12,649.80
Awc																				
DRSA Adjustmet	1,750.41	-38.24	-38.94	-39.65	-40.35	-41.06	-41.76	-42.47	-43.17	-43.88	-44.58	-45.29	-45.99	-46.70	-1,198.35	0.00	0.00	0.00	0.00	0.00
Capex	46,989.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxes		27.50 €	-174.05 €	106.39 €	507.32 €	553.85 €	1,033.35 €	1,569.50 €	2,340.88 €	2,415.11 €	1,760.30 €	1,825.88 €	2,644.72 €	2,723.61 €	2,028.69 €	2,084.07 €	2,924.32 €	2,978.76 €	3,034.02 €	3,090.10 €
Free Cash Flow	-48,739.82	3,603.24 €	3,057.18 €	3,634.35 €	4,491.28 €	4,519.83 €	5,557.27 €	6,725.47 €	8,441.12 €	8,528.68 €	6,913.75 €	6,978.31 €	8,799.08 €	8,891.86 €	8,328.65 €	7,212.31 €	9,172.89 €	9,299.91 €	9,428.84 €	9,559.70 €
Financial Cost		1,151.36	1,074.88	997.00	917.70	837.00	754.88	671.36	586.43	500.08	412.33	323.17	232.60	140.62	47.22	0.00	0.00	0.00	0.00	0.00

Debt Payments/Withdrawal	32892.59	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	0.00	0.00	0.00	0.00	0.00
Free Cash Flow after paying the debt	15847.24	102.41 €	-367.18 €	287.88 €	1,224.11 €	1,333.36 €	2,452.92 €	3,704.64 €	5,505.23 €	5,679.13 €	4,151.94 €	4,305.67 €	6,217.01 €	6,401.78 €	5,931.96 €	7,212.31 €	9,172.89 €	9,299.91 €	9,428.84 €	9,559.70 €
Cash sweep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equity	14096.82233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Free Cash Flow before Dividends	0	102.41 €	-367.18 €	287.88 €	1,224.11 €	1,333.36 €	2,452.92 €	3,704.64 €	5,505.23 €	5,679.13 €	4,151.94 €	4,305.67 €	6,217.01 €	6,401.78 €	5,931.96 €	7,212.31 €	9,172.89 €	9,299.91 €	9,428.84 €	9,559.70 €
Dividends	0	102.41 €	-367.18 €	287.88 €	1,224.11 €	1,333.36 €	2,452.92 €	3,704.64 €	5,505.23 €	5,679.13 €	4,151.94 €	4,305.67 €	6,217.01 €	6,401.78 €	5,931.96 €	7,212.31 €	9,172.89 €	9,299.91 €	9,428.84 €	9,559.70 €
Shareholders Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shareholders IRR	-14096.82233	102.41 €	-367.18 €	287.88 €	1,224.11 €	1,333.36 €	2,452.92 €	3,704.64 €	5,505.23 €	5,679.13 €	4,151.94 €	4,305.67 €	6,217.01 €	6,401.78 €	5,931.96 €	7,212.31 €	9,172.89 €	9,299.91 €	9,428.84 €	9,559.70 €

Table 6 Optimistic scenario (cash flow)

Cash Flows																			
Revenues	18,838.00	9,654.48	9,895.84	10,143.23	14,919.43	15,292.41	15,674.72	22,952.27	23,526.08	24,114.23	24,717.09	25,335.02	25,968.39	26,617.60	27,283.04	27,965.12	28,664.24	29,380.85	30,115.37	30,868.26
Operation Cost	2,279.59	2,336.58	2,394.99	2,454.87	2,516.24	2,579.14	2,643.62	2,709.71	2,777.46	2,846.89	2,918.07	2,991.02	3,065.79	3,142.44	3,221.00	3,301.52	3,384.06	3,468.66	3,555.38	3,644.26
EBITDA	0.00	7,317.90	5,850.66	7,688.37	9,674.49	9,916.35	13,031.10	15,789.20	20,748.62	21,267.34	17,003.24	17,428.32	22,902.60	23,475.16	18,768.39	19,237.60	25,280.18	25,912.19	26,559.99	27,223.99
Awc																				
DRSA Adjustmet	1,750.41	-38.2	-38.9	-39.6	-40.3	-41.0	-41.7	-42.4	-43.1	-43.8	-44.5	-45.2	-45.9	-46.7	-1,19	0.00	0.00	0.00	0.00	0.00

		4	4	5	5	6	6	7	7	8	8	9	9	0	8.35					
Capex	46,989.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxes		763.41 €	485.26 €	868.38 €	1,281.46 €	1,345.98 €	1,985.35 €	2,553.67 €	3,562.55 €	3,683.56 €	2,848.29 €	2,951.14 €	4,064.11 €	4,197.02 €	3,274.34 €	3,377.63 €	4,586.14 €	4,712.54 €	4,842.10 €	4,974.90 €
Free Cash Flow	-48,739.82	6,592.72 €	5,404.34 €	6,859.63 €	8,433.38 €	8,611.43 €	11,087.51 €	13,277.99 €	17,229.25 €	17,627.66 €	14,199.53 €	14,522.47 €	18,884.48 €	19,324.84 €	16,692.40 €	15,859.98 €	20,694.04 €	21,199.64 €	21,717.89 €	22,249.09 €
Financial Cost		1,151.36	1,074.88	997.00	917.70	837.00	754.88	671.36	586.43	500.08	412.33	323.17	232.60	140.62	47.22	0.00	0.00	0.00	0.00	0.00
Debt Payments/Withdrawal	32892.59	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	-2349.47	0.00	0.00	0.00	0.00	0.00
Free Cash Flow after paying the debt	15847.24	3,091.89 €	1,979.99 €	3,513.17 €	5,166.20 €	5,424.96 €	7,983.16 €	10,257.16 €	14,293.35 €	14,778.10 €	11,437.73 €	11,849.83 €	16,302.42 €	16,834.76 €	14,295.71 €	15,859.98 €	20,694.04 €	21,199.64 €	21,717.89 €	22,249.09 €
Cash sweep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equity	14096.82233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Free Cash Flow before Dividends	0	3,091.89 €	1,979.99 €	3,513.17 €	5,166.20 €	5,424.96 €	7,983.16 €	10,257.16 €	14,293.35 €	14,778.10 €	11,437.73 €	11,849.83 €	16,302.42 €	16,834.76 €	14,295.71 €	15,859.98 €	20,694.04 €	21,199.64 €	21,717.89 €	22,249.09 €
Dividends	0	3,091.89 €	1,979.99 €	3,513.17 €	5,166.20 €	5,424.96 €	7,983.16 €	10,257.16 €	14,293.35 €	14,778.10 €	11,437.73 €	11,849.83 €	16,302.42 €	16,834.76 €	14,295.71 €	15,859.98 €	20,694.04 €	21,199.64 €	21,717.89 €	22,249.09 €
Shareholders Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shareholders IRR	-14096.82233	3,091.89 €	1,979.99 €	3,513.17 €	5,166.20 €	5,424.96 €	7,983.16 €	10,257.16 €	14,293.35 €	14,778.10 €	11,437.73 €	11,849.83 €	16,302.42 €	16,834.76 €	14,295.71 €	15,859.98 €	20,694.04 €	21,199.64 €	21,717.89 €	22,249.09 €