

Excel files description for the diploma thesis:

Possible utilization of LCA principles to assess the impact of the ski industry and project its future development

Basic description of files

- **Database:** This file serves as a data source for impact calculations. At the moment, the content of the database is limited. The future goal is to expand the database with additional data obtained in case of continuation of this work.
- **Ski_resort_impact_calculation_basic:** This file is used to calculate the impact for different scenarios that can be changed arbitrarily.
- **Ski_resort_impact_energy:** This file is an extension of the previous file. Individual scenarios draw different data for electricity. These are selected electrical grids of various countries with different sources of electrical energy production.

Database

Sheet 1 – References

This sheet contains a list of resources used in this database.

Sheet 2 – LCC

This sheet contains economic data for individual processes.

Sheet 3 – Technical

Currently, the only information available to us relates to the amount of electricity used for snowmaking.

Sheet 4 – El. Mix

This sheet contains the source data for E-LCA for individual electricity sources for different countries.

Sheet 5 – El. Other

This sheet contains source data for E-LCA for individual sources of electrical energy. This was ultimately not used in MT.

Sheet 6 – El. Transformation

This sheet contains the source data for the E-LCA for the transformation of electricity for individual countries.

Sheet 7 – Fuels

This sheet contains source data for E-LCA for individual fuels.

Sheet 8 – Materials

This sheet contains source data for E-LCA for selected materials. This was ultimately not used in MT. This would be used at the moment if the production phase was included in the LCA.


Ski_resort_impact_calculation_basic

Sheet 1 – Main page

We can enter basic data on this sheet for four different scenarios.

1. Number of skiers during the season
2. Length of the season

We can also choose FU.



Overall operation - Basic Input			
Data type	Unit	Value	Automatic recalculation
Scenario 1			
Number of skiers during the season	Quantity	6750	67,5
We can also choose FU	Days	100	100
FU	Choice	One day per one guest	
Scenario 2			
Number of skiers during the season	Quantity	6750	67,5
Length of the season	Days	100	100
FU	Choice	One day per one guest	
Scenario 3			
Number of skiers during the season	Quantity	6750	67,5
Length of the season	Days	100	100
FU	Choice	One day per one guest	
Scenario 4			
Number of skiers during the season	Quantity	6750	67,5
Length of the season	Days	100	100
FU	Choice	One day per one guest	

On this sheet, the E-LCA results will be displayed graphically in the form of a graph. In particular, the impact category GWP100 is displayed both in the form of a graph and numerically.

Sheet 2 – IMPORT BASIC

On this sheet, we enter data for individual segments of ski resort operations. Furthermore, here we choose the quality of accommodation for the guest and the method of transporting the guest to the resort. Again, we enter data for 4 different scenarios, which allows us to directly compare the impact of individual changes. Some traffic segments have different data entry variants. In this case, a control code is set here to prevent duplication of entered data.

Scenario 1					
BASIC INPUT - operation phase only					
Snowmaking input					
Snowmaking input		Data type	Unit	Value	Control mechanism
	Input version 1	Snowmaking consumption per season	KWh	0	ok
	Input version 2	Amount of snow needed	Cubic meter	22000	ok
		Maintenance (working hours)	hours	200	
		snowmaking machine transport and maintenance consumption	litres of diesel	1900	
Ski lift Input					
		Data type	Unit	Value	Horizontal (Category) Axis
		Lift consumption	KWh	40000	
		Maintenance (working hours)	hours	3000	
		Lift support transport (snowmobiles)	litres of diesel	200	
		Light consumption (night skiing)	KWh		
Slope preparation					
		Data type	Unit	Value	
		Grooming machine consumption	litres of diesel	3600	
		Maintenance (working hours grooming machines drivers)	hours	250	
Ski resort Management					
		Data type	Unit	Value	
		Building electricity consumption	KWh	5000	
		Building gas consumption	cubic meter	10500	
		Maintenance (working hours)	hours	2000	
		Transportation (management car)	litres of diesel	500	

Accommodation (one guest)			
	Data type	Unit	Value
	Type of accommodation	type	Accommodation luxury
Transport (one guest)			
	Data type	Unit	Value
	Distanced travelled - diesel transport	Km	270 Bus
	Distance travelled - electric transport	Km	0 Electric car 2 passengers
	Distance travelled - plane	Km	2300
	Number of days in the resort (average or for one guest)	days	7 ok

Sheet 3 – Result LCC + SLCA

On this sheet, we see the results calculated based on the entered data from the previous two sheets and data from the database. Here we find cost items for different segments of operation and the number of hours of work, which can be further used in LCC analyzes and for some stakeholder categories in SLCA.

Sheet 4,5,6,7 – Results E-LCA

On this sheet we see the results calculated based on the inserted data from the first and second sheets and data from the database. Unlike the first sheet where we see the results shown graphically, here we find the results in numerical form.

Sheet 8,9 – Background processes

These two sheets serve only to facilitate coding. They can be understood as intermediate steps in the overall calculation. On the last sheet you can also find some input data for accommodation and transport calculations. Some of these values could be in the database file. However, the author decided to keep them in this file.

Ski_resort_impact_energy

This file is identical to “*Ski_resort_impact_calculation_basic*”. It differs only in the connection with the database for calculating the impact of electricity. Scenario 1 takes data for the Czech Republic, scenario 2 for Germany, scenario 3 for Denmark and scenario 4 for France.