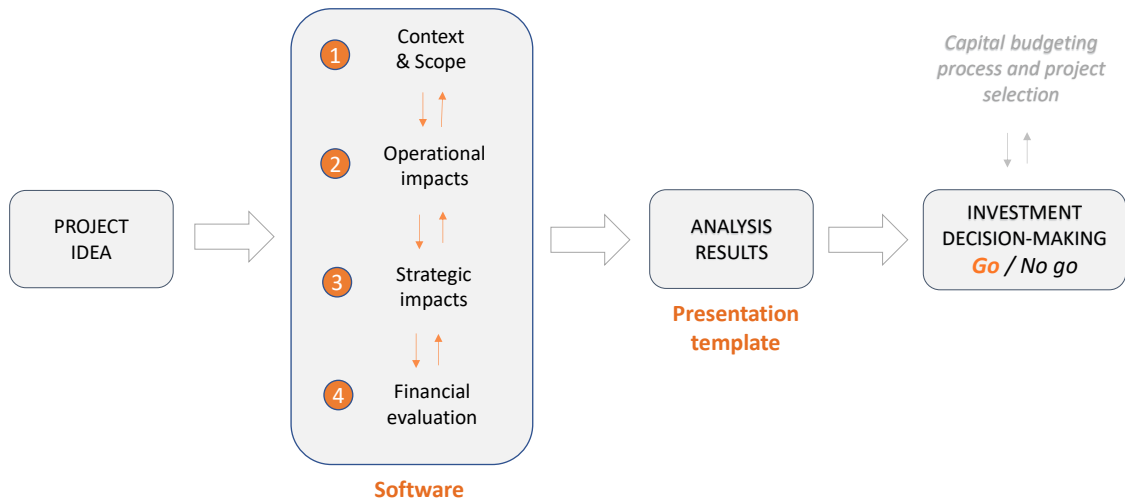


Analysis Methodology

Analysis Methodology
- 4 steps -
Checklist / Indicators



3

Step 1 – Project & Scope

Current situations and problems:

- The SOS1 building (built in 1973), intended for the practice of various sports by students and staff, is in a dilapidated state (the windows are 47 years old).
- A large part of the building is glazed (glazed facades and roof domes), in single glazing. Thermal inertia is almost non-existent. The condition of the building causes comfort problems for the users: excessive heat in mid-season and in summer, poor ventilation, insufficient lighting, humidity.
- The dilapidated state of all installations leads to unnecessary maintenance costs (heating, ventilation, sanitary facilities) and material replacement costs (false ceilings).
- The dilapidated state of the sanitary facilities (showers) creates a risk of deterioration in health and hygiene conditions, which is detrimental to the health of users.

4

Step 1 – Project & Scope

Refurbishment concept and benefits:

- Complete and in-depth renovation of the building (envelope and interior technical installations).
- A total of 7 energy efficiency measures identified.
- Installation of triple glazing on the facade and roof, controlled by an automatic regulation; replacement of lighting and false ceilings; renovation of ventilation; optimisation of heating; renovation of hot water production and sanitary installations.
- Significant improvement in the thermal quality, air quality, sanitary quality and visual quality of the building with a reduction in the risks of impact on the comfort and health of users.
- Reduction of many unnecessary maintenance and engineering costs (related to obsolescence).

5

Step 1 – Company analysis

University of Lausanne :

- A higher teaching and research institution composed of seven faculties with approximately 15,900 students and about 3,600 research, teaching and technical staff (2019).
- Its mission also includes the provision of services of general interest (e.g. organising public events on its premises).

Customer segment and value proposition:

- For its students, lifelong learners and society in general, UNIL aims to be accessible to all and to provide high-quality education in an open and safe environment.
- With the public authorities, the economy and cultural communities, UNIL is committed to supporting the development of socially relevant skills through the education it provides.
- UNIL offers its staff a high-quality working environment, favourable to career development, including training and project development. It emphasises collective excellence and institutional social commitment.
- Sustainability at the heart of the mission <https://www.unil.ch/central/en/home/menuinst/unil-en-bref.html>

6

Step 2 – Energy & operations

Energy analysis:**Current energy consumption:**

- Energy sources impacted by the project: district heating network, electricity.
- Total consumption of equipment affected by the energy efficiency measure: ... kWh*; not specified.

Future energy consumption (after refurbishment) :

- Estimated electrical savings: 60,800 KWh/year.
- Estimated thermal savings: 288,500 KWh/year.
- Reduction in energy costs: CHF 43,222/year.-Impact on total site consumption: data not provided.
- Impact on energy performance indicators: data not provided.
- CO2 emissions reduction: ...%; data not provided.

7

Step 2 – Energy & operations

Operational analysis - impacts of energy-efficiency measures on operational excellence:

The 4
DIMENSIONS
of
OPERATIONAL
EXCELLENCE

- Increased **safety** of students and staff using the sports facilities thanks to better thermal, lighting and air quality conditions.
- Better **quality** of the sport facilities thanks to better thermal, lighting and air quality conditions.
- Reduced operational **costs**: engineering, maintenance, rental costs.
- The building, which benefits from good thermal inertia following the renovation, can be used for a longer **time** of the year than before, as it is now comfortable during the warmer months. This means, in particular, that it can be used for examination sessions, which require a lot of space and take place in June.

Safety

Quality

Costs

Time

8

Step 4 – Financial analysis

Financial analysis**Energy benefits only:**

- CAPEX: 3'394'909 CHF
- Annual investment in-flow: 43'199 CHF
- NPV: -3'043'724 CHF
- IRR: -26.54 %
- Simple payback: > 50 years

Energy + non-energy benefits:

- CAPEX: 3'394'290 CHF
- Annual investment in-flow: 187'888 CHF
- NPV: -1'870'352 CHF
- IRR: -9.52 %
- Simple payback: 19 years

Discount rate: 4 %

Investment duration: 10 years (= number of years used to calculate NPV and IRR).

NB:

- The non-energy benefit of "increased asset value" was not quantified and included in the financial evaluation, as it should have been. This is a pity: taking it into account would significantly reduce the estimated financial loss.
- The duration of the investment, in this case 10 years, has been defined by UNIL as a function of the type of technical measures envisaged. However, in the case of a complete renovation of a entire building, the investment period is in principle much longer (20-30 years). An investment period of 20 years makes the project profitable.

11

Conclusion

Why this project is worthwhile:

- **Strategic missions and objectives:** Health and safety of students and staff. A good and safe working environment. Adherence to the core of the mission: sustainability. Exemplarity.
- **Operational efficiency:** Quality and modularity of the installations; longer possible annual operating time.
- **Financial efficiency:** Reduction of unnecessary costs (maintenance costs, engineering costs, rental costs for examination sessions) and energy costs.
- **Preservation and enhancement of the heritage:** The complete renovation of the building preserves the public heritage. The refurbishment is profitable if the investment period is 20 years and the increase in asset value due to the refurbishment is included in the financial assessment.

12