The requirement of complex technology and high temperature control for artificial cooling is being reduced. Using LED lamps reduces the energy demand for artificial lighting. The grey energy content of the entire building is minimized. The most energy per m³ is typically used in the process of processing materials. Renewable, unprocessed materials and assembled systems, decentral power production with renewable sources and self-sufficient projects are encouraged. This sheet is printed using energy green electricity with text and layout by Daniel Haselsberger & Pius Leuba.

01 LOCATION / MOBILITY

INFRASTRUCTURE: Supply networks are the roots of cities. New buildings must be planned so as to easily connect to the existing infrastructure, avoiding expansion of roads and networks. Good access to infrastructure and supplies ensures short transport routes and reduced costs in the construction process. Adapt to existing infrastructure and avoid a further expansion of it.

WALKABILITY: The location and connectedness of a building directly translate into users’ mobility choices. To avoid motorized traffic (transfers, parking, congestion), non-motorized traffic (NMT) tools like walkalot.ch or energytools.ch. Must be present nearby or be easily reachable by foot or bicycle (non-motorized traffic, NMT). Avoid diverse and comprehensive walkability for all user types.

PUBLIC TRANSPORT: The closer and the more comfortable the access to public transport, the higher the probability that people use it instead of their private cars. Motorized infrastructure reduces energy use and CO2 emissions per capita as well as traffic congestion and urban amenities.

MIXED USE: Mixed-use development can take the form of a single building, a city block or entire neighborhoods. In contrast to mono-functional, commercial, cultural or institutional buildings, mixed-use reduces travel distances and provides pedestrian and bicycle-friendly environments. Optimize access and the location of public transport and urban amenities.

ENVIRONMENT: A building must be thought of as an integral part of its built and natural environment. Projects are not only designed to reduce energy use, but also indirectly, through the reduction of CO2 emissions and the use of renewable energy sources. The organization of its neighborhood can plan your building so as to capitalize on existing infrastructures while simultaneously significantly improving its environment.

02 VOLUME / ORIENTATION

BUILDING ENVELOPE RATIO (BER): The BER describes the ratio between a building’s perimeter and its floor area. The larger the building, the lower its BER. Big and compact buildings can reach a BER of below 10, whereas single family homes have a BER around 50. The smaller the building, the more compact it is. Complicated forms (terracing, loggias, projections, etc.) can be turned into simple, cubic or spherical forms. Avoid small volumes and aim for an optimal compact form of the thermal envelope.

DAYLIGHT: Optimizing natural daylight (effective to about 6 m from outer walls) reduces artificial lighting and thus energy usage. Reducing the size of openings and allocation of usable space needs and availability of natural light. Natural light for building design is described by several factors, such as the clear sky and the ratio of usable light. Orientation, for example, can significantly reduce energy usage. Orienting the building to the south facing reduces energy usage, whereas the north facing requires more energy for artificial lighting. The thermal envelope requires U-values for optimized direct and indirect natural daylight usage.

OCCUPATION: Minimizing openings on the side facing away from the sun reduces energy usage. The location of building must be planned so as to avoid significant energy usage, the orientation is critical. The organization of its neighborhood can plan your building so as to capitalize on existing infrastructures while simultaneously significantly improving its environment. Plan your building so as to capitalize on existing infrastructures while simultaneously significantly improving its environment.

03 THERMAL ENVELOPE

EXTERIOR INSULATION: The insulation layer must enclose the entire building, if the building is not completely enclosed, then the insulation layer must completely enclose the building. This optimizes insulation and thus energy usage. A thermally insulated building is more climate-friendly and using more efficient technologies is not only possible but also necessary.

GLAZING: Thermally insulated glazing is essential for heat retention and grey energy content of windows. For Switzerland, it’s around 30% of the total energy use. A window to wall ratio of 40% is optimal.

04 WINDOW / SHADING

WALLS: The U-value results from thermal conductivity (W/m²K) depends upon the material density and its air inclusions. In other words, the thermal conductivity of an insulation material (W/m²K) is the thermal conductivity of an insulation material (W/m²K). This sheet is printed using energy green electricity with text and layout by Daniel Haselsberger & Pius Leuba.
**CLIMATE CHANGES DESIGN**

1. **LOCATION / MOBILITY**
   - Functional separation comes along with long traffic routes... 
   - ...so try to mix uses to create a delicate mesh of connections... 
   - ...and densify the built structure in order to shorten distances... 
   - ...so that the car becomes redundant.

2. **VOLUME / ORIENTATION**
   - Build compact to reach a small building envelope ratio (BER)...

3. **THERMAL ENVIRONMENT**
   - Insulate the building on the exterior to avoid thermal bridges... 
   - If the urban setting allows it, orientate the main facade to the sun...

4. **WINDING / SIZING**
   - If the urban setting allows it, orientate the main facade to the sun...
   - ...and try to reach an ideal window to wall ratio (WWR) for your climate...

5. **USER BEHAVIOUR**
   - First of all, consume less space...
   - ...and try to share things instead of owning them.