

Postfossil Neighbourhoods



Introduction

All countries bordering the Alpine Rhine Valley aim for net zero greenhouse gas emissions by 2050. This is only realistic if spatial planning, infrastructure development, urban planning and architecture are also consistently geared towards this goal. But what does this mean in concrete terms for the built environments in the region?

In this series of design studios, examples of existing neighbourhoods are used to examine which spatial strategies and design measures are necessary and how they affect everyday life and social prosperity. The design projects integrate issues such as energy, mobility, resources, climate adaptation, and social development with questions relating to public space, usage scenarios, upgrading existing buildings, or contemporary forms of living and working. During the semesters, we will develop various urban design scenarios for selected neighbourhoods that show how the net zero goal can be achieved at neighbourhood level, how social prosperity is possible in the postfossil future and what challenges arise. The results contribute to the discourse for future-oriented planning within the discipline and among the public.

The climate legacy: The story of a changing planet

Michael Wagner and Oscar Buson

Ten years after the Paris Agreement, the fight to limit global warming to 1.5°C is more urgent than ever. A new form of post-fossil city must emerge, with neighbourhoods designed to reduce dependence on the car. Architecture will have to go beyond simple buildings and open up to larger scales, from the neighbourhood to the city to the territory.

A decade below the 1.5°C bubble: between commitments and climate reality

It has been ten years since the first climate conference was held in Paris. Ten years have already passed since member states committed to reducing greenhouse gas emissions so that global warming does not exceed 1.5°C. The reference temperature chosen is that of the pre-industrial era, when fossil fuels were extracted and exploited on a large scale. The comforts acquired over the last 140 years - the same comforts that have enabled the world's population to rise from around 1.5 billion to 8 billion - will have to be nestled in a 1.5°C heat bubble.

From the fossil city to the post-fossil landscape

For thousands of years, the size of human settlements was determined by the natural resources available nearby. The land provided food for the population as well as building materials. The emergence of the industrial society in which we live coincides with the extraction of fossil fuels. Let's distinguish two different energy sources and two different types of urbanisation: first coal, then oil. The first industrial revolution began with coal and the

steam engine. Initially used to extract coal from mines, these steam engines later became locomotives, enabling the movement of people and goods around the world. New towns could be built along this new network, linking extraction, production and consumption sites. The first industrial estates were built along the railway lines, far from residential areas. Air and soil pollution created a new urban ecology. In Paris, London or Berlin, wealthier neighbourhoods settled where the winds blew favourably, while toxic fumes polluted working-class districts. The exploitation of fossil fuels gave rise to a new form of social segregation: zoning.

The second energy revolution emerged thanks to oil resources. This new liquid form of energy led to the development of new vehicles, which in turn made it possible to exploit the land in a new way. The gradual but steady reduction in the cost of fossil fuels until the early 1970s enabled goods to be transported on a global scale and natural resources to be exploited on a new planetary scale. Cities became definitively detached from their immediate territory of nourishment. The countryside is losing its value as a productive resource and is gradually becoming a place to live and consume for leisure. The

car and the motorway will allow a new colonisation of the land, where new megacities may emerge, consuming space and the resources necessary to maintain them to the detriment of natural areas and biodiversity.

The influence of urban spaces on fossil energy consumption: challenges and solutions

Urban space plays a major role in the consumption of fossil fuels. To understand the link between architecture, living space and energy, let's take a look at the case of Switzerland. The Sankey diagram for 2023 provides a good overview of the relationship between energy sources and final consumption. We can see that while households account for 27.4% of energy consumption, the largest consumer is the transport sector, with 37.8% of final consumption.

The responsibility of planners and architects therefore lies not only with the efficiency of the building itself, but also at the level of the neighbourhood, the city and the region as a whole. The consumption of fossil fuels for the transport of people and goods is a decisive factor.

While it is not possible to make a tabula rasa of the world we have built, which continues to consume too much energy, it is essential to take radical measures.

The Principality of Liechtenstein, for example, has managed to reduce its total energy consumption despite an increase in population, thanks in particular to the recycling of waste and an increase in the number of photovoltaic panels, making the Principality more energy independent.

Reinventing urban mobility: towards a post-fossil city and revitalisation of neighbourhoods

The post-fossil fuel city will have to free itself from massive motorised individual mobility and increase the supply and attractiveness of public transport. In this way, spaces dedicated to cars can be transformed to benefit biodiversity, make cities more permeable and redesign existing urban spaces.

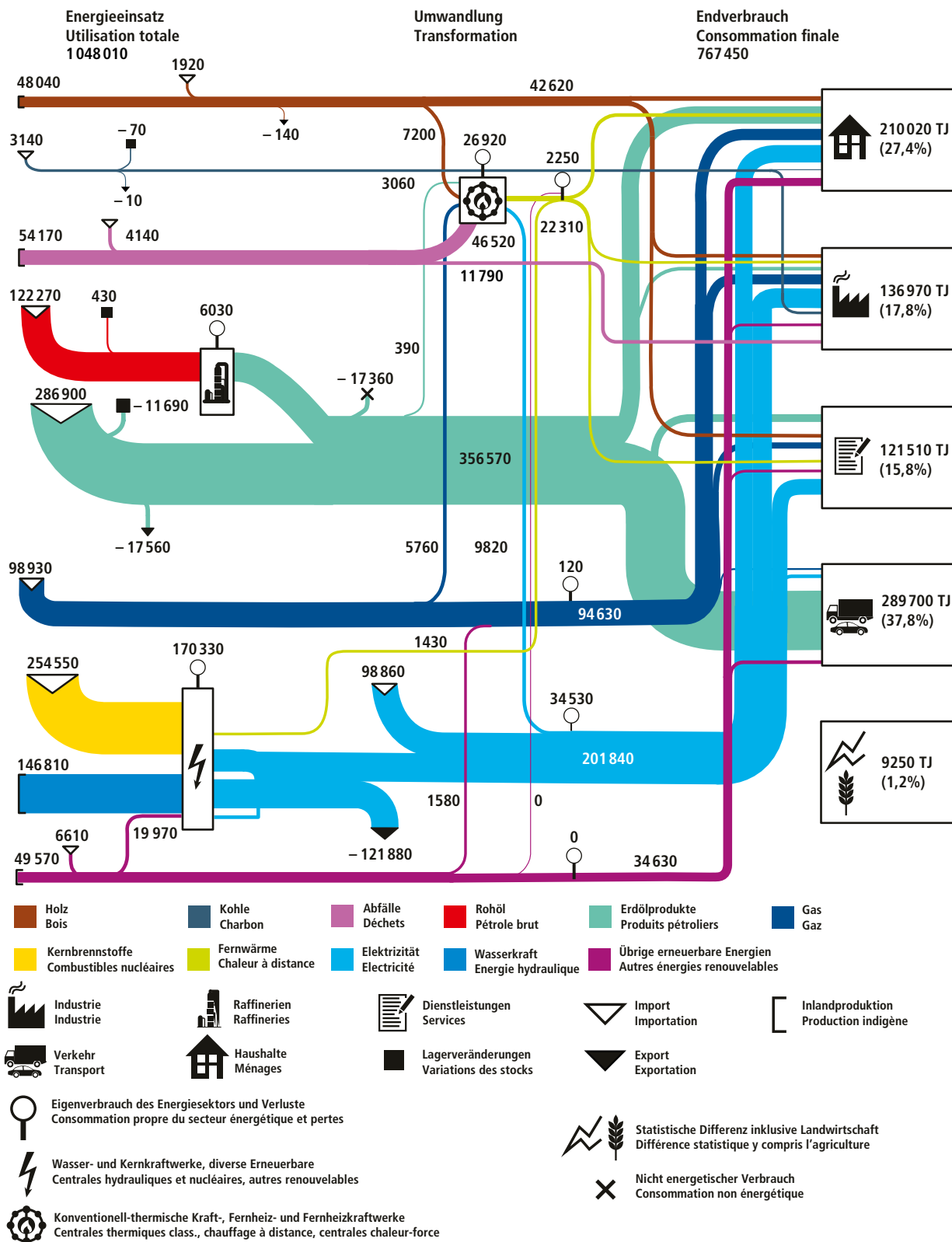
Post-fossil mobility will be based on the concept of the quarter-hour city, an urban planning concept that will enable people to meet most of their needs in less than 15 minutes. The concept of the neighbourhood will become increasingly important. Post-fossil neighbourhoods will have to be mixed, socially rich, participative and of high quality.

The urban landscape: pillar of the post-fossil city and environmental resilience

The landscape plays a key role in the post-fossil city. Clean, local food production will help to reduce the global transport of goods. What's more, the landscape plays an active role in energy generation, as a sink for greenhouse gases and as a refuge for biodiversity. Strengthened blue and green networks offer the opportunity to improve the urban microclimate, which is subject to more frequent heat waves. As part of the built environment, the landscape is also home to leisure and recreation areas. The functional pressure on the landscape is leading to inward densification and a complete preservation of existing permeable spaces.

Architecture at the centre of changing lifestyles

But what role can architects and aspiring architects play in this global debate? Post-fossil architecture goes beyond the building envelope and extends to the urban scale of the neighbourhood, the city and the territory. The post-fossil city is built on the existing, using local and bio-sourced materials. By densifying the already built-up areas, more landscape and green spaces can be preserved. This reconstruction of the existing must combine quality of life, social diversity and local production, as well as spatial support for the paradigm shift in lifestyles and local economic realities.



Sankey Diagramm of Swiss energy final consumption, source: OFS