The Alpine Metabolic Transition: the Evolution of Forest-River Relations from an Agrarian to an Industrial Regime

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This project aims to analyse industrialisation as it occurred in the Alps by examining the relationship between woodlands and rivers. These resources and the changing criteria for their use will prove a useful standpoint from which to observe the evolution of the socio-ecological dynamics, both within the Alpine region and between this region and the neighbouring urban areas. The case studies which will be the focus of the research are on the southern side of the Alpine chain and in the adjacent area whose urban centres were the main outlets for the supply of alpine wood: the Po valley.

Wood was the main energy source and the most used raw material in pre-industrial societies. As significant as the centrality of wood in traditional agrarian systems were the limitations and constraints concerning its transport due to its weight and volume. Until the 19th century, the continental transport of wood was mainly via water, and it was only possible to exploit a woodland extensively if it was close to the area of demand or if there were rivers nearby that were able to transport the trunks from the cutting areas to urban and manufacturing centres. Therefore, Alpine rivers played a fundamental role in defining the flows of raw materials and energy, since they represented the main routes for transporting timber from Alpine forests to lowland urban areas.

The beginning of industrialisation put this model into crisis and led to a radical redefinition of the social and environmental structures linked to it. The development of the railway network broke the relationship between forest resources and waterways, and profoundly changed the geography of timber flows. The shift from water to rail transport put an end to the competitive advantages of the Alpine forests (which were based on the presence of water courses that had kept transport costs low, rather than on the greater availability of the raw material) and started the decline of the sector. In the following years, the advent of hydroelectricity had other implications for the mountain areas, caused by the changes linked to the creation of artificial lakes and by the introduction of increasingly restrictive forest laws to protect the interests of the hydroelectric sector. This process reversed the former relationship between woodlands and rivers, since the Alpine woodlands became mainly a functional infrastructure for the exploitation of hydroelectric energy. This change also had profound repercussions at the social and environmental levels. Therefore, it enables us to analyse a wider transformation involving the relationship between mountains and plains during the industrial transition.