

# PROJECT PROGRESS

## Steel sector

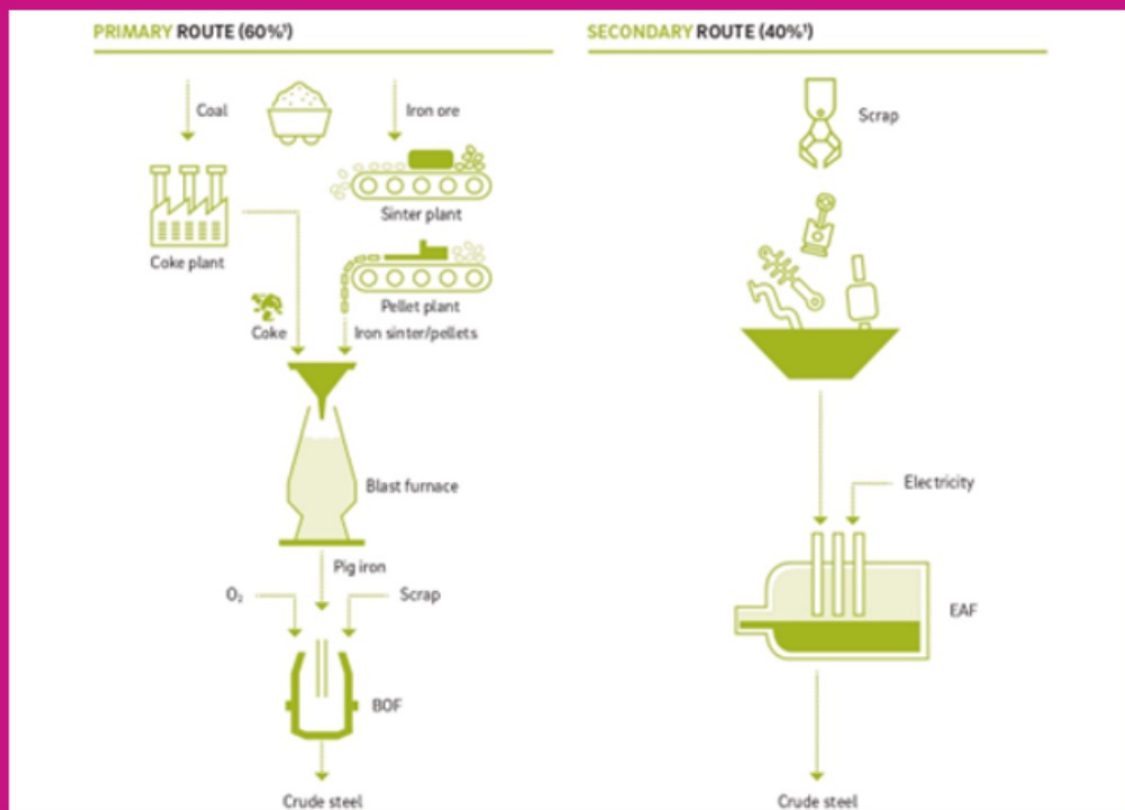
The objective of the report is to capture the current state of the steel industry in Europe, furnish data about its energy consumption and greenhouse gas emissions, and outline various decarbonization options that are being studied. The European steel sector is facing pressure due to its high energy and resource-intensive processes that produce CO<sub>2</sub> emissions. In 2018, the European Commission published its long-term climate protection strategy to make the region free of greenhouse gas emissions by 2050.

The conventional steel production sector in Europe is one of the leading sources of CO<sub>2</sub> emissions, contributing to approximately 4% of the total CO<sub>2</sub> emissions in Europe. The steelmaking process in Europe is responsible for 22% of CO<sub>2</sub> emissions. There are two primary routes for producing steel in Europe (refer to the figure).

The first route involves processing iron ore into iron sinter or pellets, which are then melted in a blast furnace with coke to produce pig iron. This pig iron is further processed in a basic oxygen furnace to make steel. The remainder of steel production in Europe is obtained through the secondary route, where steel is produced from scrap metal by heating it in an electric arc furnace. While the primary route produces mainly direct greenhouse gases, the secondary route produces primarily indirect greenhouse gases that depend on the electricity mix used in the electric arc furnace. Therefore, the primary route is the primary focus of emission reduction efforts in the sector.



The report offers an overview of the steel industry and its significance for the European and global economies. It encompasses the primary industrial activities in the steel industry, including production and the most energy-intensive processes. The report provides information on the present usage and importance of steel, primary production processes, energy and greenhouse gas emissions, as well as potential alternatives for cleaner production processes to mitigate their climate impact.



**Figure.1** The future of steelmaking – How the European steel industry can achieve carbon neutrality. (Source: Roland Berger GMBH (2020))

