## ECONOMIC ASSESMENT OF THE DEPLOYMENT OF LOW-TEMPERATURE SMRs FOR DISTRICT HEATING IN EUROPE

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The installed district heating capacity in Europe is around 300 GW, with an annual consumption of approximately 450 TWh of thermal energy, 60% of which still relies on fossil fuels. The need to fully decarbonize heat production by 2050, along with the expected increase in district heating demand, makes nuclear power one of the most viable solutions. We analyse the deployment of a network of SMRs together with a centralised spent fuel and waste management facility as a sustainable approach to this challenge. In this analysis, we consider the key engineering and management aspects of deploying SMRs for district heating, with a strong focus on the economic assessment of both the reactors and a centralized spent fuel and waste management facility. We assess the economic feasibility of various scenarios for deploying SMRs to supply different shares of Europe's total district heating capacity. This analysis focuses on estimating capital expenditures (CAPEX), operational costs (OPEX), and the expected rate of return. Furthermore, a comparative analysis is carried out to benchmark low-temperature SMRs against other district heating alternatives. Finally, the study explores financing mechanisms and investment strategies, including government subsidies, green bonds, and private investments, to identify viable funding pathways for implementation, securing a green, stable and reliable source of energy for Europe's district heating needs.

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