# MULTIDIMENSIONAL FACTORS INFLUENCING RENEWABLE ENERGY STORAGE DEPLOYMENT: PESLTE ANALYSIS

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*Abstract* – The share of renewable energy in heat and power generation is expected to increase significantly and reach record levels in the coming decades. As a result, emerging energy storage technologies will be key elements in balancing the energy system. Compared to power generation technologies, storage technologies are considered one of the most complicated and least understood technologies for decarbonizing the energy system. There is still lack of understanding among scientists and policymakers about the choice of optimal integration of energy storage in carbon-neutral energy systems, as there are many multidimensional factors that influence this. In this study, the PESLTE analytical framework and composite index methodology is applied to examine the multidimensional factors that influence the deployment of renewable energy storage technologies: political (national and international level policy targets, appropriate regulation), economic (CAPEX, LCOE), social (public acceptance, knowledge and on-site capacity on RES storage in local energy supply enterprises), legal (level of bureaucracy and time of approval), technological (TRL, response time, efficiency level of complexity for technology to be integrated in the existing grid), and environmental (specific need for specific geographical condition, landscape friendliness, potential environmental risk, potential creation of environmental benefits, lifetime of technology, environmental impact).

*Keywords – Composite index; energy storage; indicators; renewable energy; sustainability*
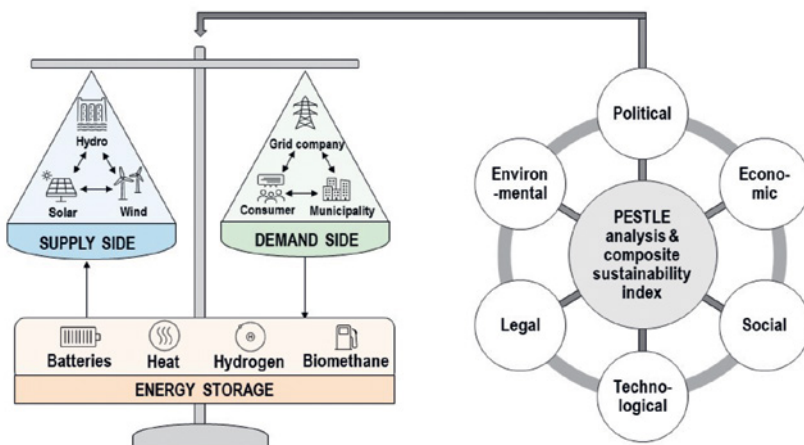
PESTLE analysis framework for renewable energy storage technologies.