



# Energy Systems Integration: Economics of a New Paradigm

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**Tooraj Jamasb and Manuel Llorca**

**Abstract** Energy Systems Integration (ESI) is an emerging paradigm emanating from a whole system perspective of the energy sector. It is based on a holistic view in which the main energy carriers are integrated to achieve horizontal synergies and efficiencies at all levels. The energy system may in turn integrate with other infrastructure sectors such as water, transport, and telecommunications to meet the demand for a broad range of energy and essential services. It also implies that energy security, sustainability, and equity objectives can be balanced more effectively. There is already progress in the technical aspects of ESI. However, such systems require not only physical solutions but they also need economic, regulatory, and policy frameworks to ensure efficient performance over time. Thus, it is important to better understand the economic features of integrated energy systems. To our knowledge this aspect is barely addressed in the literature on ESI. This paper does not attempt to survey the technical literature on the topic but to describe some of its relevant economic features. We discuss selected aspects that relate to industrial organisation, regulation, business economics, and technology. Finally, we offer some early considerations and policy recommendations.

**Keywords** energy systems integration; economic principles; regulation; business models.

**JEL Classification** D4, L1, L5, L9, M2, Q4.

Contact [tooraj.jamasb@durham.ac.uk](mailto:tooraj.jamasb@durham.ac.uk)

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