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## Deep transitions: Theorizing the long-term patterns of socio-technical change

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### Abstract

The contemporary world is confronted by a double challenge: environmental degradation and social inequality. This challenge is linked to the dynamics of the First Deep Transition (Schot, 2016): the creation and expansion of a wide range of socio-technical systems in a similar direction over the past 200–250 years. Extending the theoretical framework of Schot and Kanger (2018), this paper proposes that the First Deep Transition has been built up through successive Great Surges of Development (Perez, 2002), leading to the emergence of a macro-level selection environment called industrial modernity. This has resulted in the formation of a portfolio of directionality, characterized by dominant and durable directions and occasional discontinuous shifts in addition to a continuous variety of alternatives sustained in niches or single systems. This historically-informed view on the co-evolution of single socio-technical systems, complexes of systems and industrial modernity has distinctive implications for policy-making targeted at resolving the current challenges.

### Keywords

Deep transitions Sustainability transitions Socio-technical systems Great surges of development Industrial modernity Portfolio of directionality