

1. Record Nr.	UNINA9910557712403321
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Titolo	Wave and Tidal Energy
Pubbl/distr/stampa	Basel, Switzerland, : MDPI - Multidisciplinary Digital Publishing Institute, 2020
Descrizione fisica	1 electronic resource (222 p.)
Soggetti	Research & information: general
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	Concerns relating to energy supply and climate change have driven renewable energy targets around the world. Marine renewable energy could make a significant contribution to reducing greenhouse gas emissions and mitigating the consequences of climate change, while providing a high-technology industry. The conversion of wave and tidal energy into electricity has many advantages. Individual tidal and wave energy devices have been installed and proven, with commercial arrays planned throughout the world. The wave and tidal energy industry has developed rapidly in the past few years; therefore, it seems timely to review current research and map future challenges. Methods to improve understanding of the resource and interactions (between energy extraction, the resource and the environment) are considered, such as resource characterisation (including electricity output), design considerations (e.g., extreme and fatigue loadings) and environmental impacts, at all timescales (ranging from turbulence to decadal) and all spatial scales (from device and array scales to shelf sea scales).