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Sommario/riassunto

In an era marked by escalating energy demands and imperatives of environmental stewardship, this compendium serves as a comprehensive exploration of the multifaceted dimensions shaping contemporary energy development, with a focal lens on the symbiotic relationship between energy, information, and transportation systems. The canvas of 2023's energy evolution is painted against the backdrop of heightened consciousness surrounding climate change and environmental degradation. This epoch witnesses an unyielding momentum toward sustainability, catalyzed by a profound shift in energy-sourcing paradigms. Renewable energy sources—solar, wind, hydro, and beyond—attain unprecedented prominence, not merely as alternative energy options but as linchpins of a redefined energy matrix, fostered by advancements in technology, economics, and scalability. At the nexus of this transformative energy landscape lies the realm of Energy Informatics—a domain where information technologies converge with energy systems. Smart grids, IoT-enabled devices, data analytics, and artificial intelligence orchestrate a symphony of efficiency and optimization, revolutionizing energy management, demand-response dynamics, and grid resilience. The fusion of information technology and energy infrastructures stands poised to usher in an era of unprecedented interconnectivity and adaptability. Transportation, an indispensable facet of the energy ecosystem, undergoes a metamorphosis in 2023. Electrification, hydrogen-powered vehicles, and advancements in sustainable fuels reimagine mobility paradigms, heralding a transition toward greener, more efficient transportation systems. The synergy between energy and transportation, facilitated by data-driven insights and technological innovations, propels the convergence of these domains toward a more sustainable future. Moreover, the global socio-political landscape assumes paramount significance in shaping the contours of energy dynamics. Geopolitical considerations, international collaborations, and

policy frameworks delineate the trajectory of energy infrastructure investments, trade patterns, and the realization of sustainable energy transitions on a global scale. Yet, within the narrative of progress, challenges persist. Legacy infrastructures, regulatory complexities, socio-economic disparities, and the imperative of inclusive transitions underscore the complexities inherent in reshaping the energy and transportation landscapes.
