

SEG 2023 Conference: Resourcing the Green Transition

The Green Transition Resource and Supply Chain Model: A Recipe for Global Energy Equity

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We live on the cusp of a profound transformation. Recent advances in technology have enabled more efficient harvesting of energy from primary sources, the sun's radiation and the Earth's heat, while bypassing the storage of energy in hydrocarbon molecules. For over a century, being an energy provider meant finding, extracting, refining, transporting, and using up vast quantities of a finite resource. The business was high risk, high return, and required deep pockets throughout a long investment cycle, which included the buildout of gathering and distribution infrastructure. In contrast, the distributed energy resources (DERs) available today are light on capital investment, low in risk, and lightning fast to deploy. Providing energy is changing from a commodity-based system in which value is sequestered among a few to a business that is focused on delivering the best service at the lowest cost to the most people. The resource model for converting our energy system to electricity generation and battery storage depends upon moderate quantities of recyclable metals rather than ever-increasing volumes of combustible hydrocarbons. Supply chains that support DERs can be localized and downscaled so that consumers have ownership and participate in the system. Metal ores, while limited in their global occurrence, can be readily transported to regional processing, manufacturing, installation, and recycling centers where value is created, and jobs are added. At the mine site, sustainable practices and secondary production reduce the resource footprint further. Like communication and banking, renewable energy is predicted to leapfrog traditional infrastructure to replace antiquated grids and pipelines with energy independence at the community scale. United Nations Sustainable Development Goal 7—ensuring access to reliable, affordable, sustainable, and modern energy for all—is within our grasp and offers potential for a dramatic improvement in global lifestyle driven by energy equity.