

The Energy Transition

What Changes?

The immediate drastic reduction of CO₂ emissions to address the current climate crises is the first stage in the transformation that will fundamentally change the energy business: production, distribution and consumption.

Core Premises

- To preserve the Earth as habitat for Humanity; the emission of CO₂ and other green-house gasses must rapidly go to zero.
- The energy transition has begun and will reach zero emissions using existing technology.
- The disruptions triggered by the energy transition creates opportunities for new business and will lead to the decline of others.
- The new global energy system will provide power that is more resilient and reliable while delivering energy in larger quantities at lower cost.

A transition from scarcity to abundance

The fossil fuel energy system is a world of limited resources and conflict over access. Wind, water, and solar are abundant and can be harvested directly.

A transition like any other

Changing the technology used for energy systems is simply a transformation like many before. The scale is global, as has happened in areas like transportation and communication. Because energy is central to many segments of our society, changes to energy will also result in transitions in related parts of the economy.

In any transition, it is important to know where you are going and to measure your progress towards achieving the goals. The path and the timing will depend on factors not yet known. But you can identify key aspects and define the starting point and ending points

The Changes

The energy transition fundamentally changes energy production, distribution and business and impacts other businesses as they adopt to the changing environment.

Before	After
Limited Supply Coal, oil, gas, and uranium deposits are limited in number and location.	Abundance The sun provides much more energy than humanity consumes.
Exploration Dependent Endless location and development of large quantities of fossil/mineral ores.	Ubiquitous Solar energy and wind are available globally.
Extraction and Transportation Ore/oil/gas must be extracted and transported from remote locations.	Harvesting Solar and wind can be harvested practically everywhere.
Refining and Processing Ore/oil/gas must be processed and refined before it can be used.	Direct Electric Generation Solar and wind generate electricity directly.
Massive On-going Pollution Extraction, refining, and transport result in never ending pollution of air, water, and earth.	Zero On-going Pollution No fuel is consumed. No pollution is generated from extraction, refining, or transportation.
Primary Driver of Climate Change Emissions of CO ₂ and methane are the primary driver of Climate Change	Harmonious with Climate No emissions of CO ₂ or methane.
Centralized Historic energy systems rely on centralized refining, storage, and power generation.	Distributed Generation and storage are located throughout the network.
Brittle When long supply chains and centralized generation fail impacts are large, recovery slow.	Resilient With many points of generation and distributed resources, failures are smaller and localized.
Uncertain Availability of energy depends on many external factors: OPEC, Enron, WW II, Putin	Predictable Wind, water, solar have predictable outputs with no external dependencies.
Volatile Prices Prices are subject to wide swings. These include both long term and very quick changes.	Stable Prices Prices are stable for long periods..