

Harnessing the Potential of Cold Climate Wind Energy on 4 Degree Warmer Planet

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WinterWind
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We are shaping the future

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Is the Earth Warming Faster than Expected?

Three Global Feedback Mechanisms

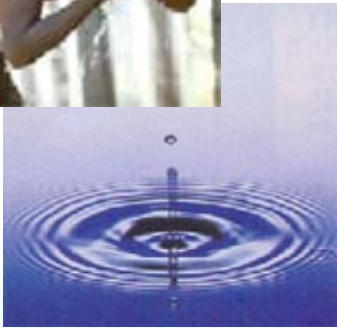
- Ice melting into the oceans, which warms surface seawater, leading to more melting.
- Thawing of permafrost, which releases carbon dioxide and methane into the atmosphere, raising the air temperature and melting more permafrost.
- Glaciers breaking up and falling into the sea, which lessens the amount of sunlight reflected into space, thereby heating the atmosphere and further degrading glaciers.



Image : Dan Saelinger



Water Security



Courtesy of Prof. Gustaf Olsson, Sweden

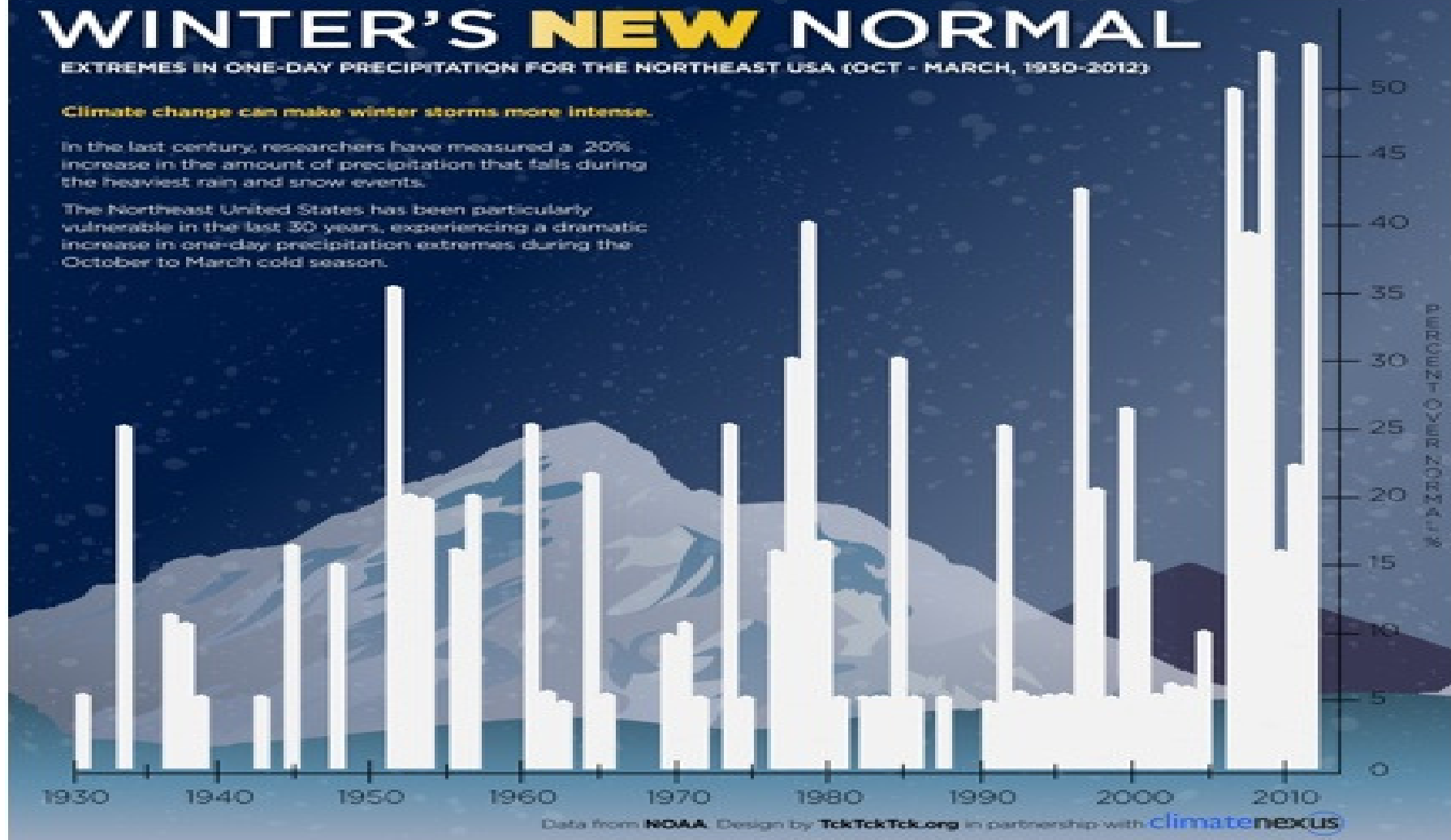
WINTER'S **NEW** NORMAL

EXTREMES IN ONE-DAY PRECIPITATION FOR THE NORTHEAST USA (OCT - MARCH, 1930-2012)

Climate change can make winter storms more intense.

In the last century, researchers have measured a 20% increase in the amount of precipitation that falls during the heaviest rain and snow events.

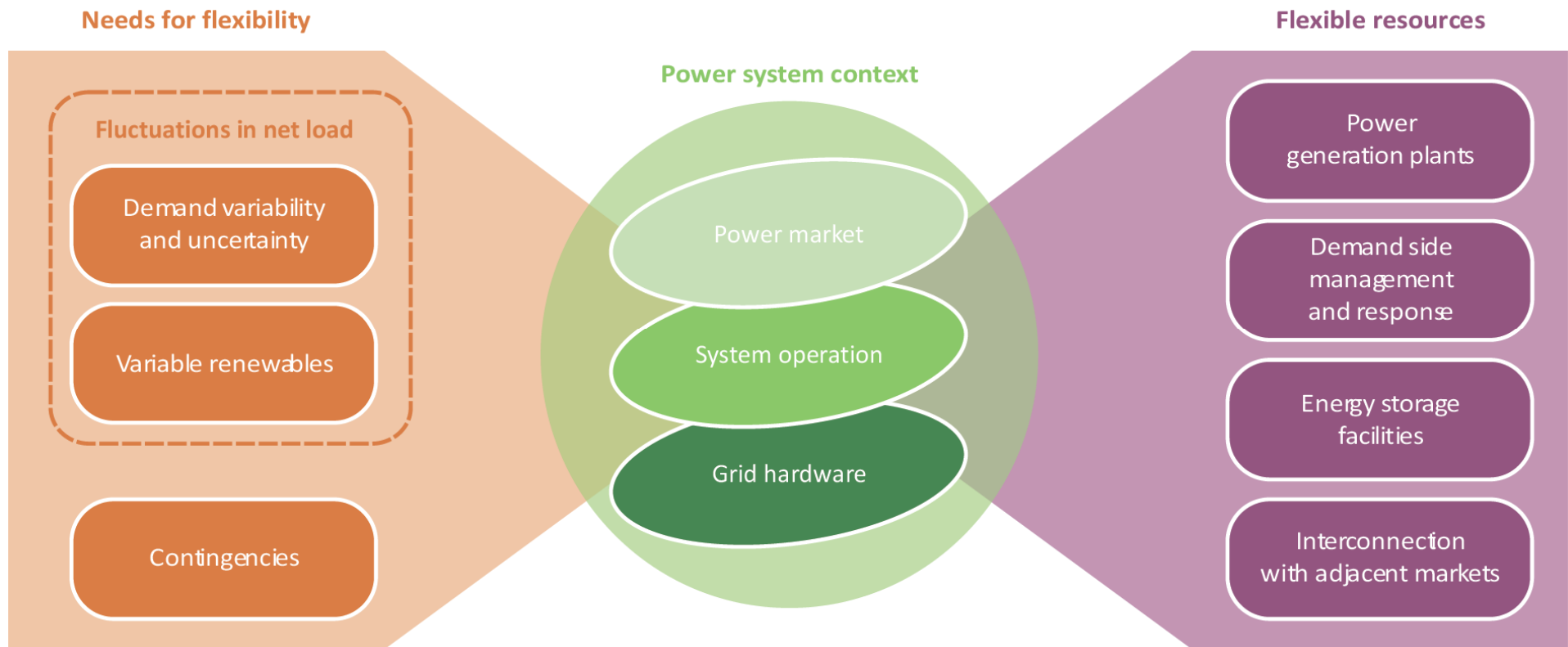
The Northeast United States has been particularly vulnerable in the last 30 years, experiencing a dramatic increase in one-day precipitation extremes during the October to March cold season.



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FLEXIBILITY is the New Deal



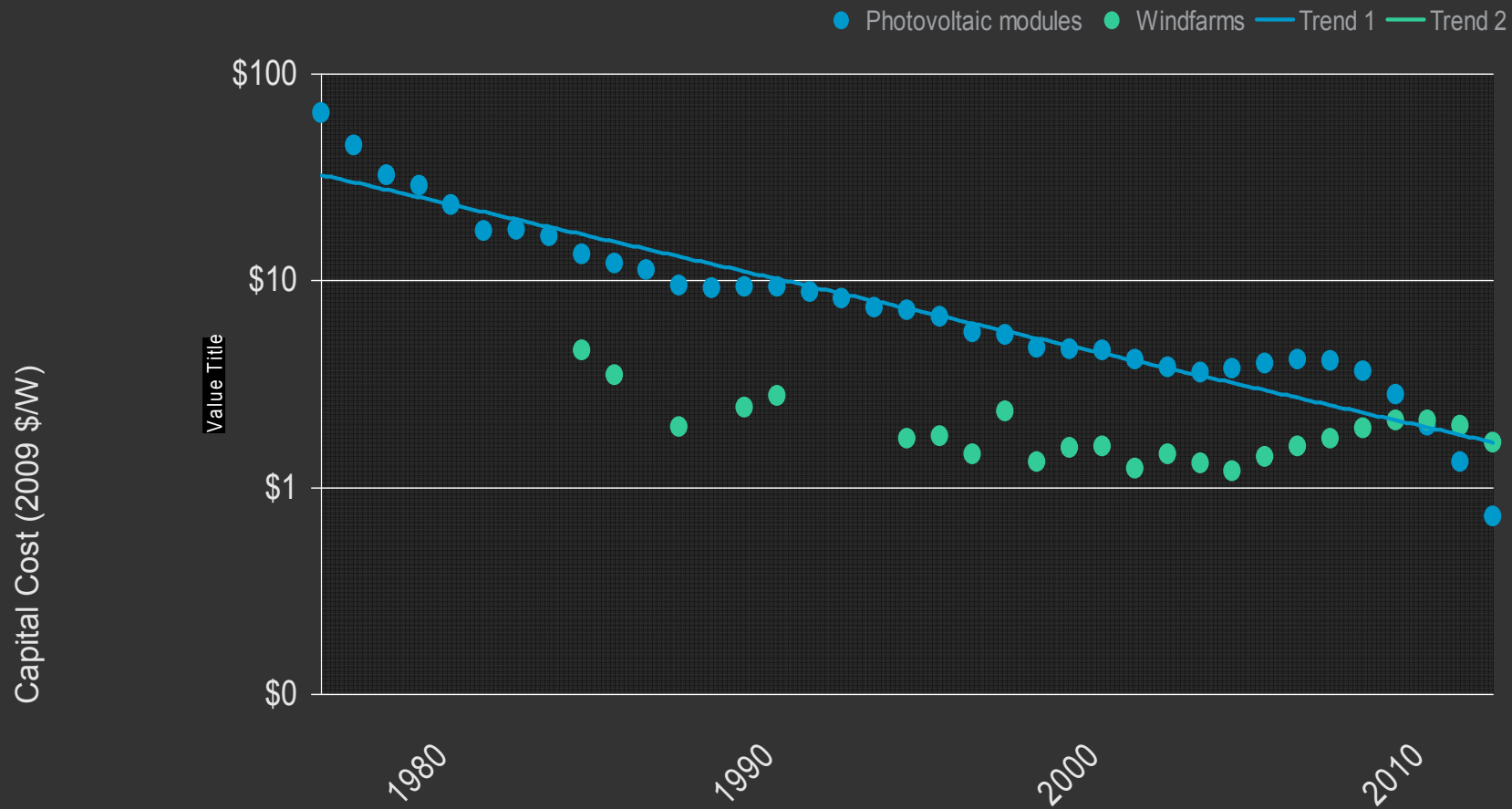
Existing and new flexibility needs can be met by a range of resources in the electricity system – facilitated by power system markets, operation and hardware.

Source: Harnessing Variable Generation, IEA, 2011



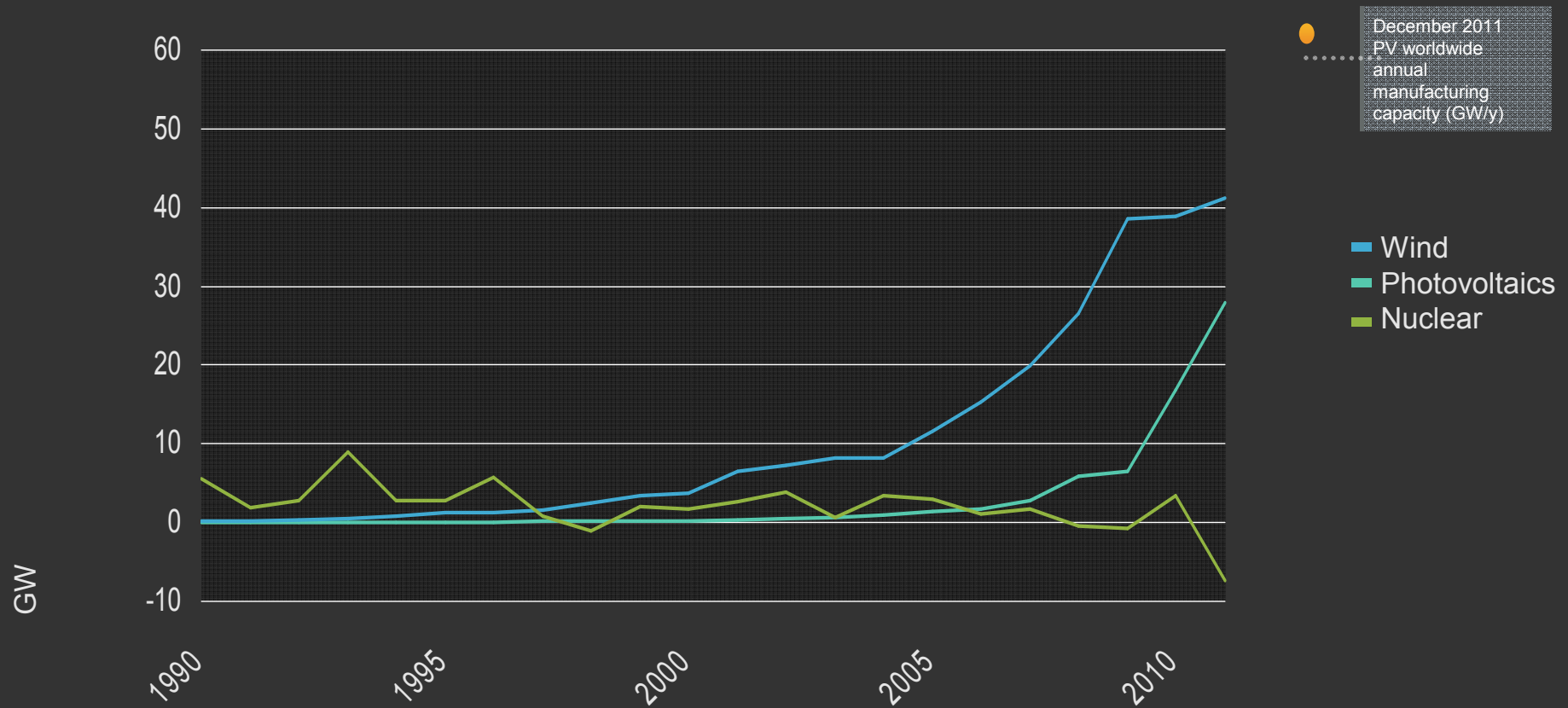
Renewable Energy's Costs Continue to Plummet

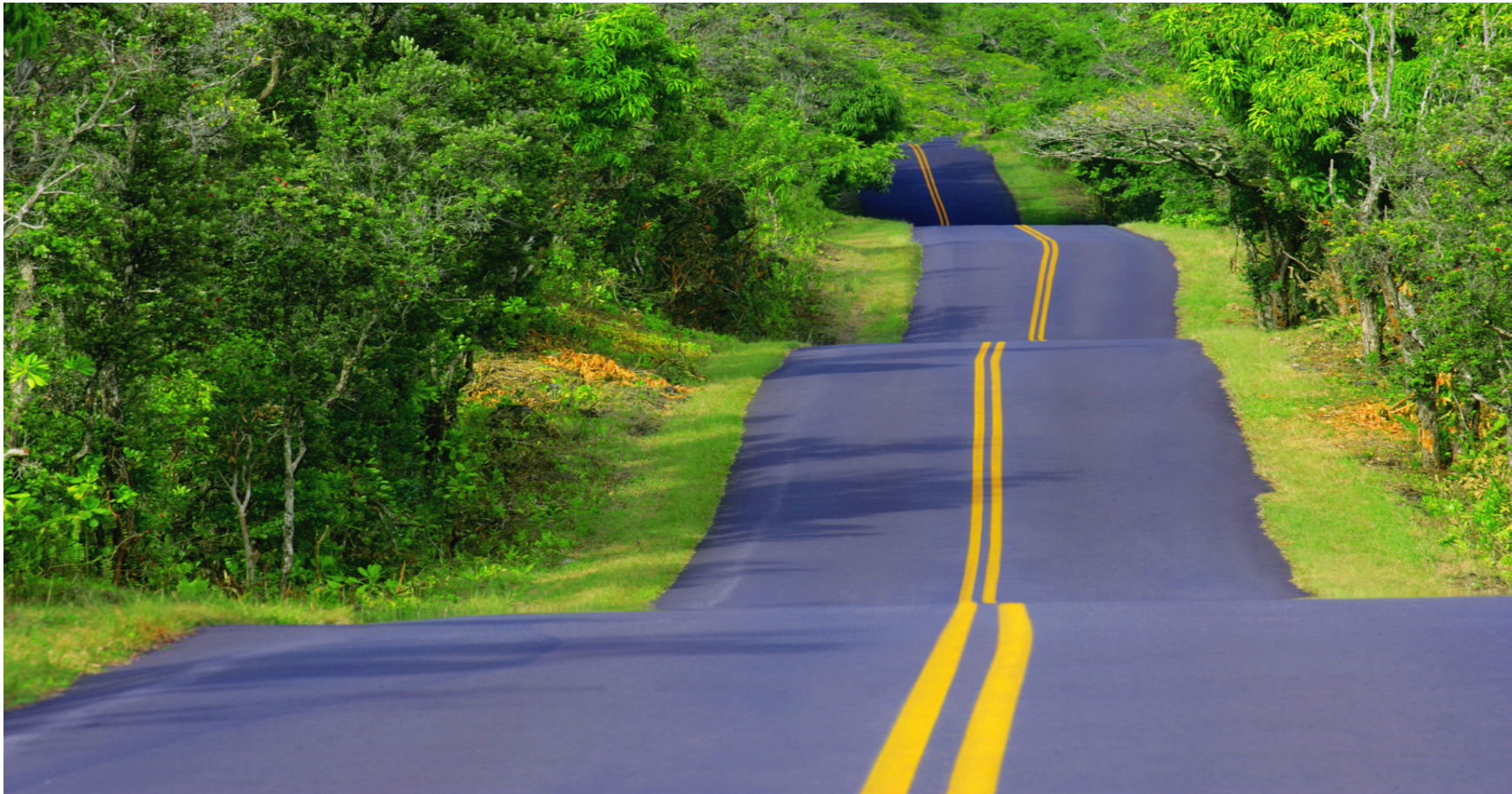
Wind and photovoltaics: U.S. real capital cost trends

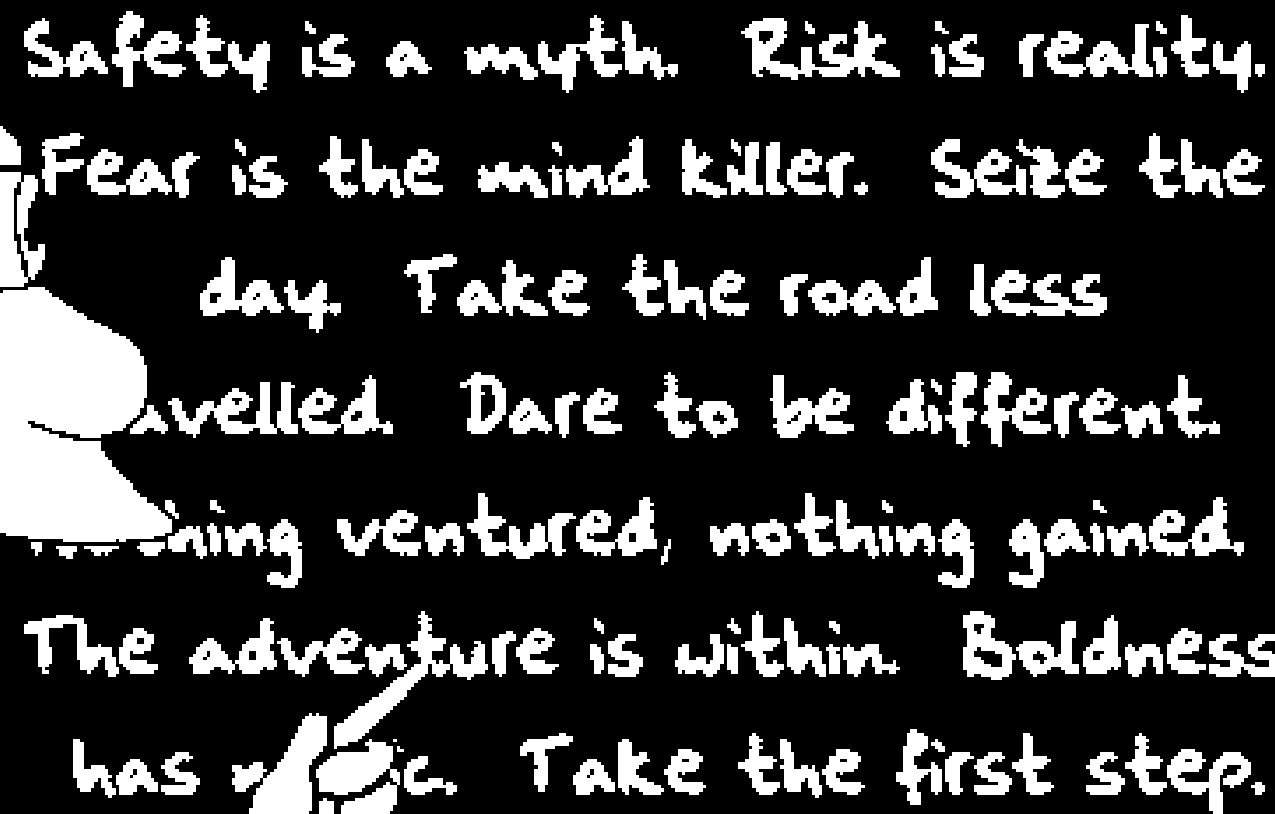


Global Markets are Shifting to Distributed Renewables

Global generating capacity: annual net additions, 1990–2011







Safety is a myth. Risk is reality.
Fear is the mind killer. Seize the
day. Take the road less
travelled. Dare to be different.
Nothing ventured, nothing gained.
The adventure is within. Boldness
has no price. Take the first step.

A photograph of a sunset over the ocean. The sun is low on the horizon, creating a warm orange and yellow glow in the sky. The water is dark with some ripples. In the foreground, there is a dark, rocky shoreline on the left and a single wooden post sticking out of the water on the right.

THANK YOU

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