

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

Dr. Lawrence Jones
Vice President
Regulatory Affairs, Policy and Industry Relations

Keynote Presentation at WinterWind
International Wind Energy Conference
February 12, 2013
Ostersund, Sweden

We are shaping the future

ALSTOM

Fact or Fiction - How Much Longer Before We are Visited by NEMO's Bigger Sibblings?



GRID

ALSTOM

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

How Resilient are Our Infrastructures?

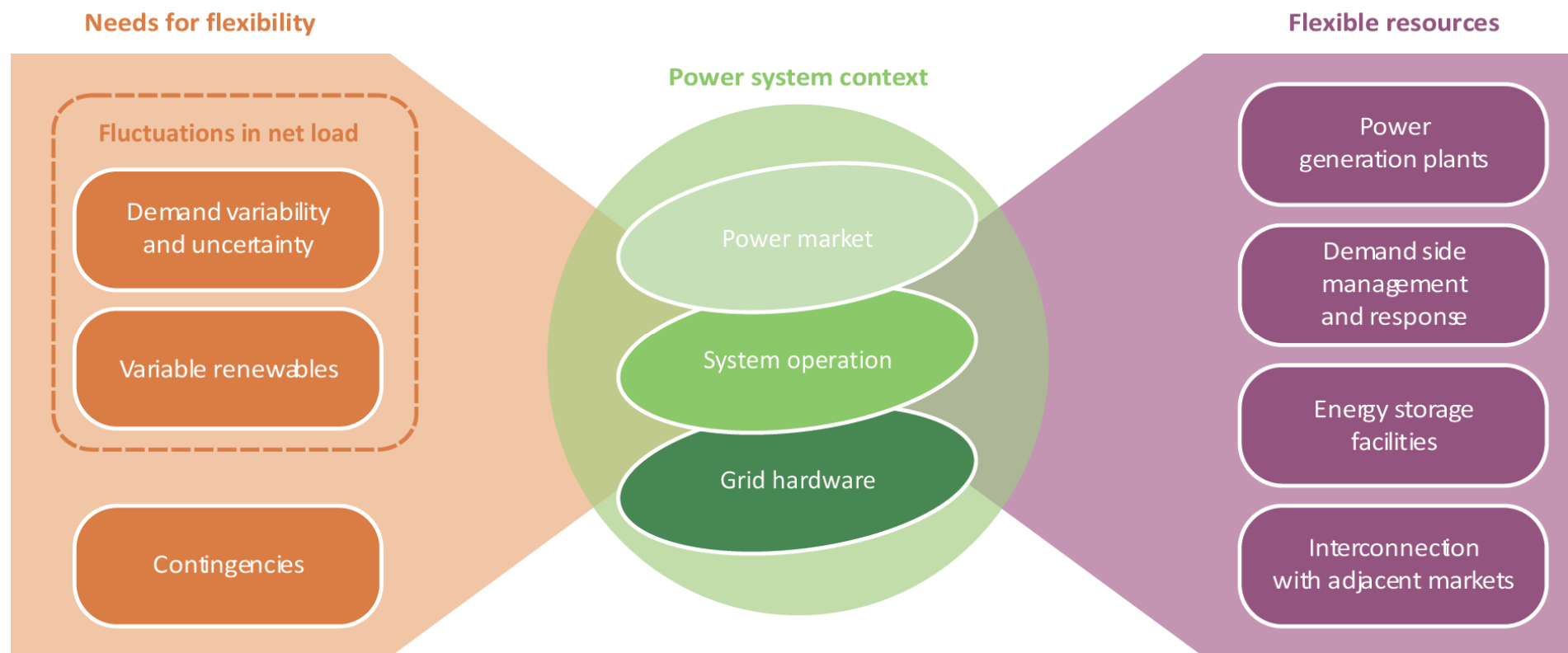


Increase Access to Drinking Water: New Value Streams for Clean Energy



Courtesy of Prof. Gustaf Olsson, Sweden

Producing and Exporting Flexibility for Managing Renewable Generation



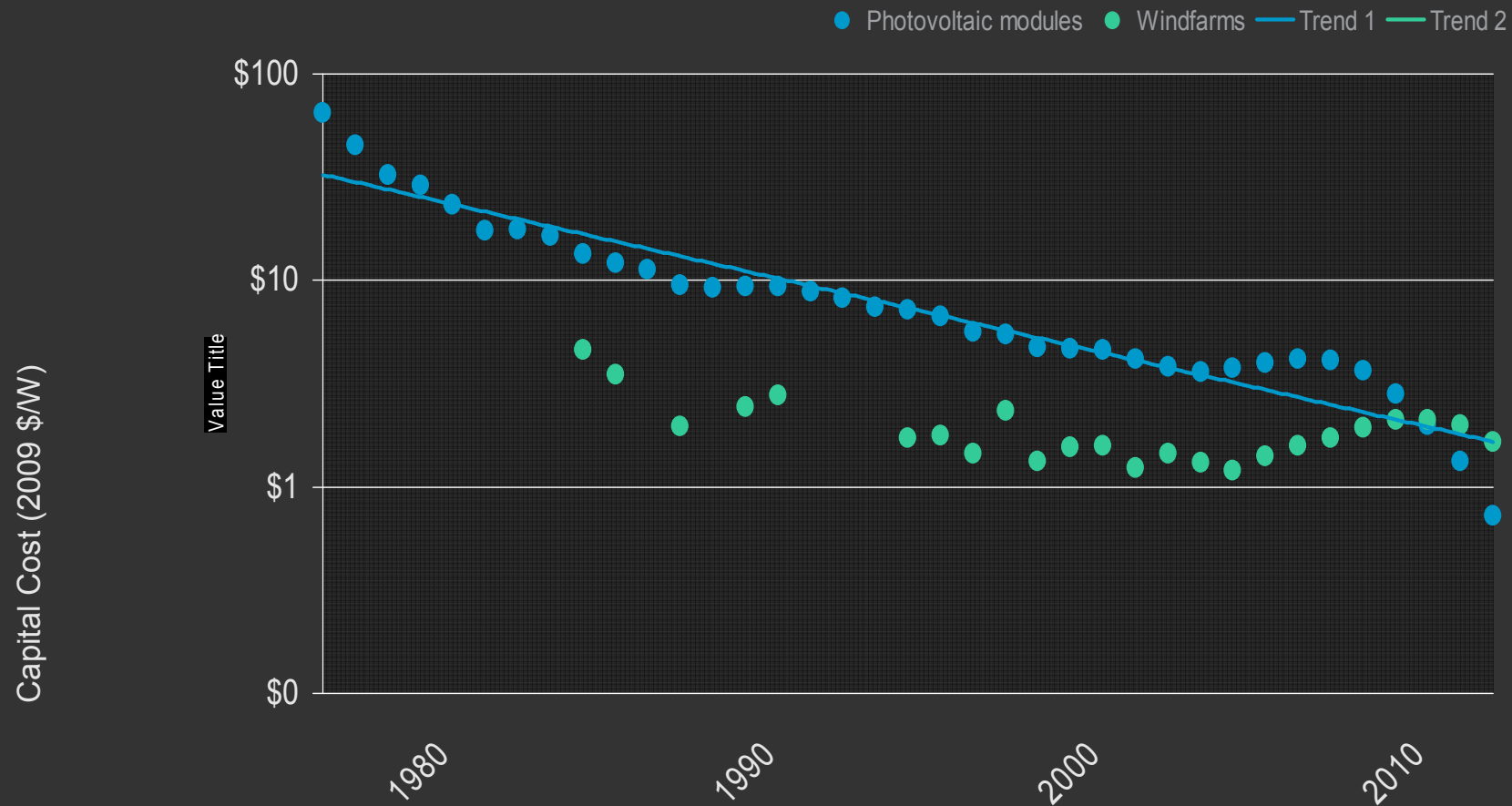
Existing and new flexibility needs can be met by a range of resources in the electricity system – facilitated by power system markets, operation and hardware.

Mainstreaming Cold Climate Wind Energy by Creating and Communicating VALUE to Stakeholders



Renewable Energy's Costs Continue to Plummet

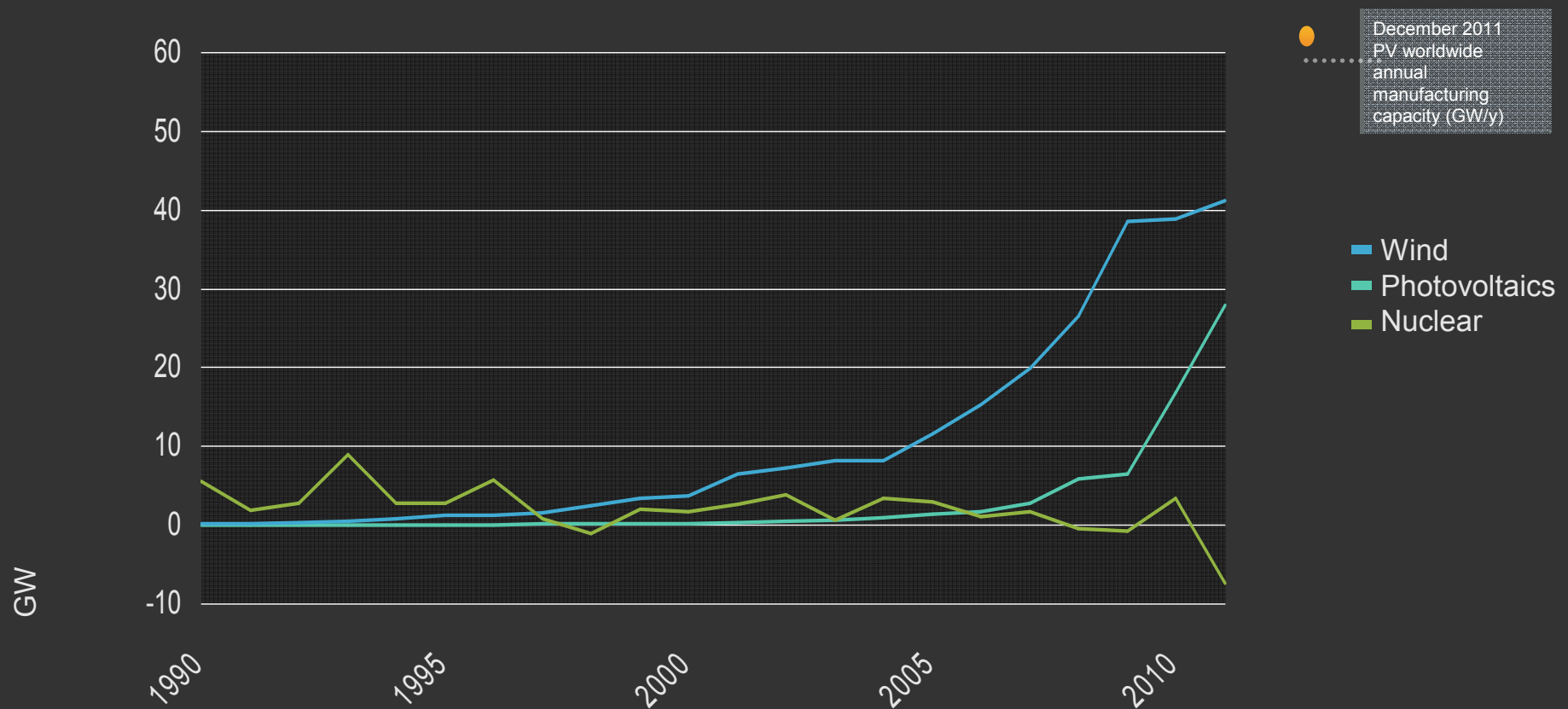
Wind and photovoltaics: U.S. real capital cost trends



Courtesy of Amory Lovins, Rocky Mountain Institute, 2013

Global Markets are Shifting to Distributed Renewables

Global generating capacity: annual net additions, 1990–2011

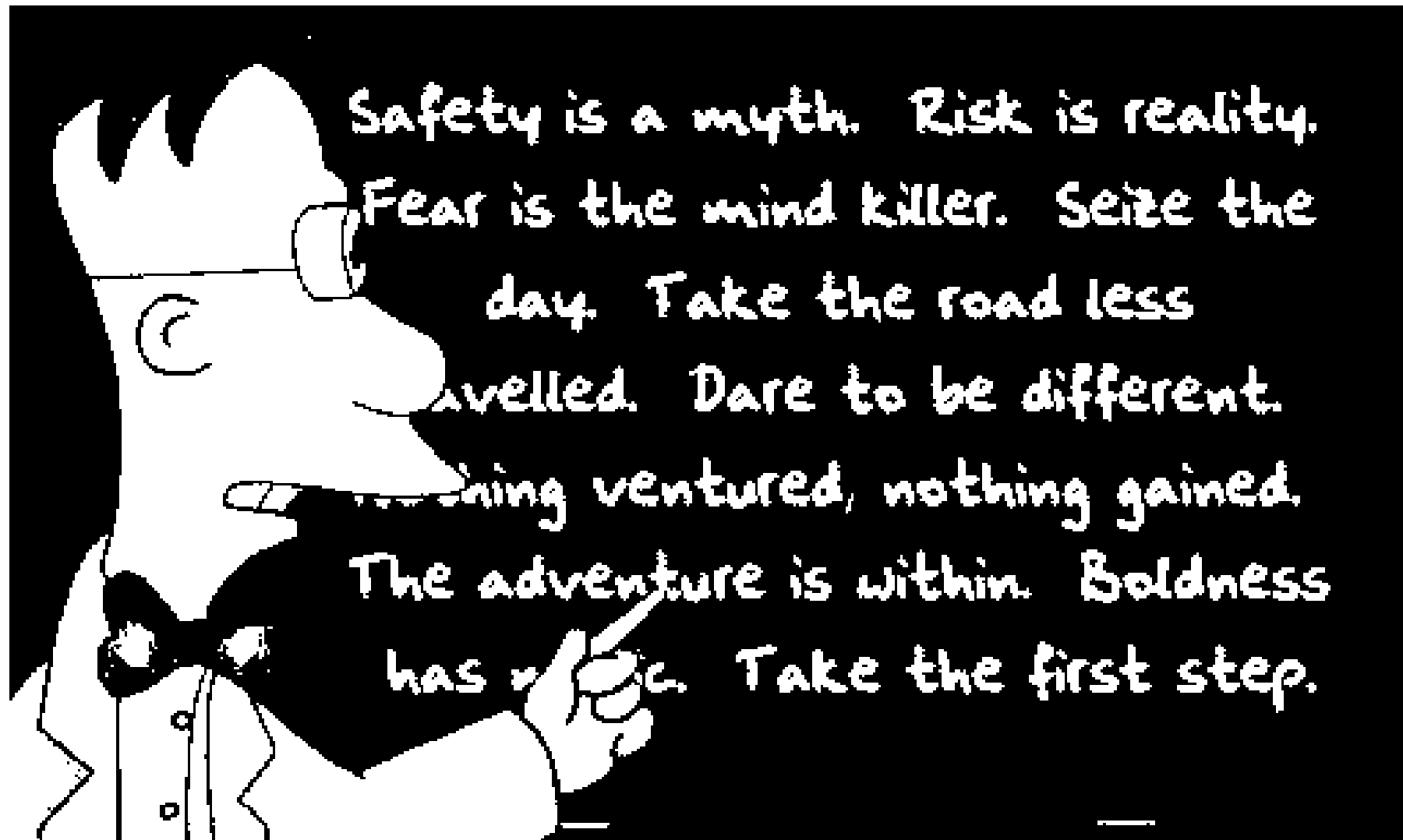


Courtesy of Amory Lovins, Rocky Mountain Institute, 2013

Creating New Industry with New Technologies Requires Persistence and Resilience



Remember . . .



GRID

ALSTOM

A photograph of a sunset over the ocean. The sun is a bright orange orb on the horizon, casting a warm glow across the sky. The sky transitions from a pale yellow near the horizon to a soft purple at the top. In the foreground, a dark, rocky breakwater extends from the left side into the water. The water is dark with some whitecaps. A single wooden post is visible in the water on the right side.

THANK YOU

Dr. Lawrence Jones
Alstom Grid Inc
Lawrence.jones@alstom.com
+1 425 – 241 0649