Advancing Technology for Humanity

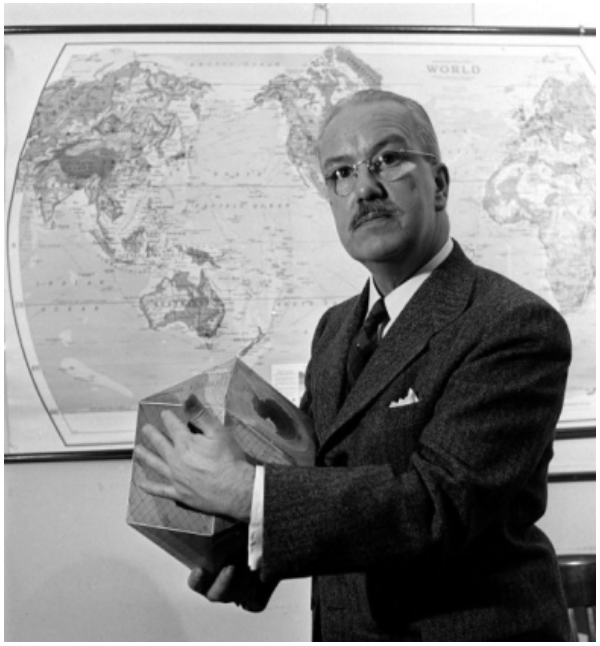
The Good News
The Bad News
What we can do about it

IEEE Mission: to foster technological innovation and excellence for the benefit of humanity.

IEEE Vision: be essential to the global technical community and to technical professionals everywhere, and be universally recognized for the contributions of technology and of technical professionals in improving global conditions.

How do we make the world work
for 100% of humanity
in the shortest possible time
through spontaneous cooperation
without ecological damage
or disadvantage to anyone.

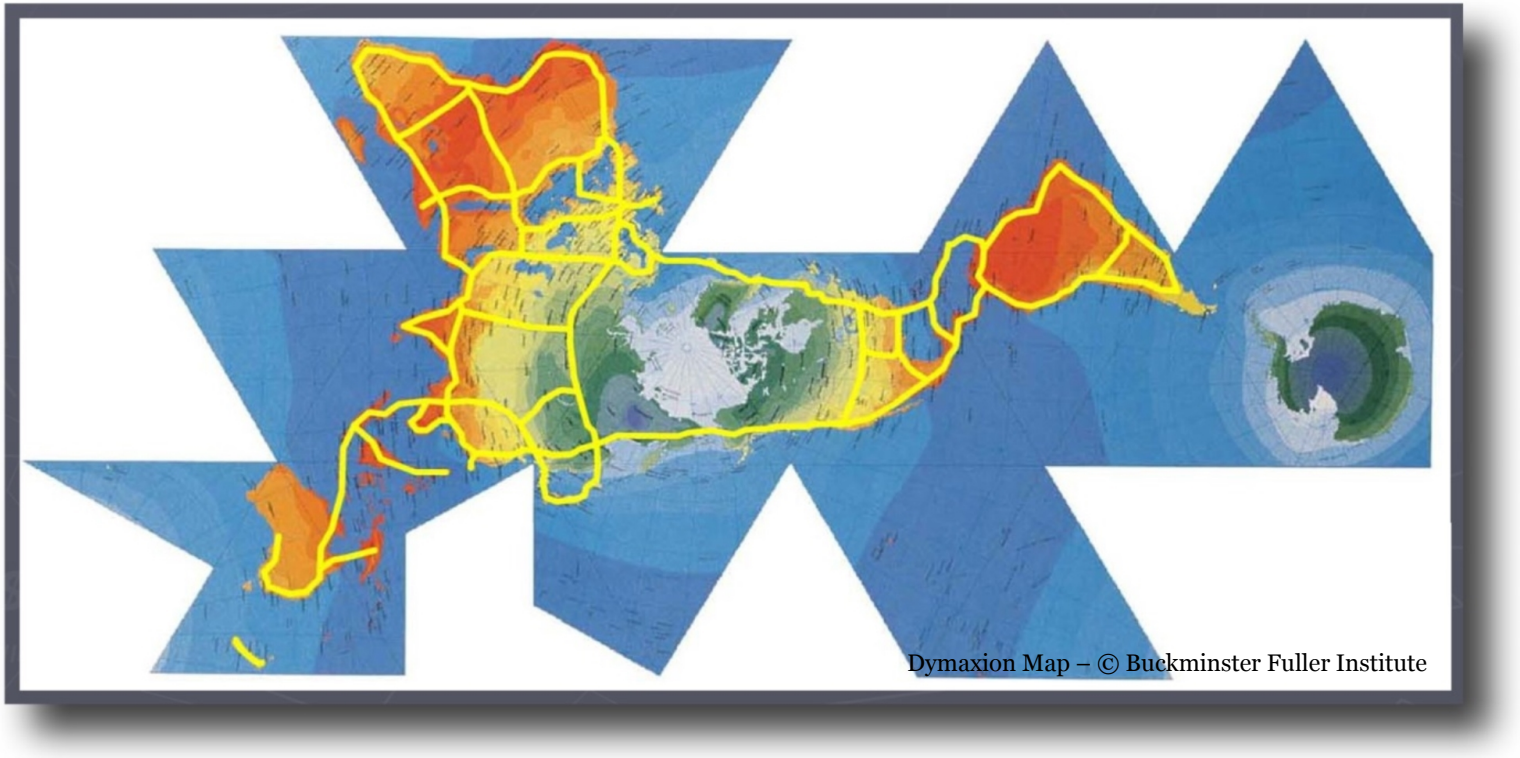
World Game™ mission



Buckminster Fuller 1895 -1993

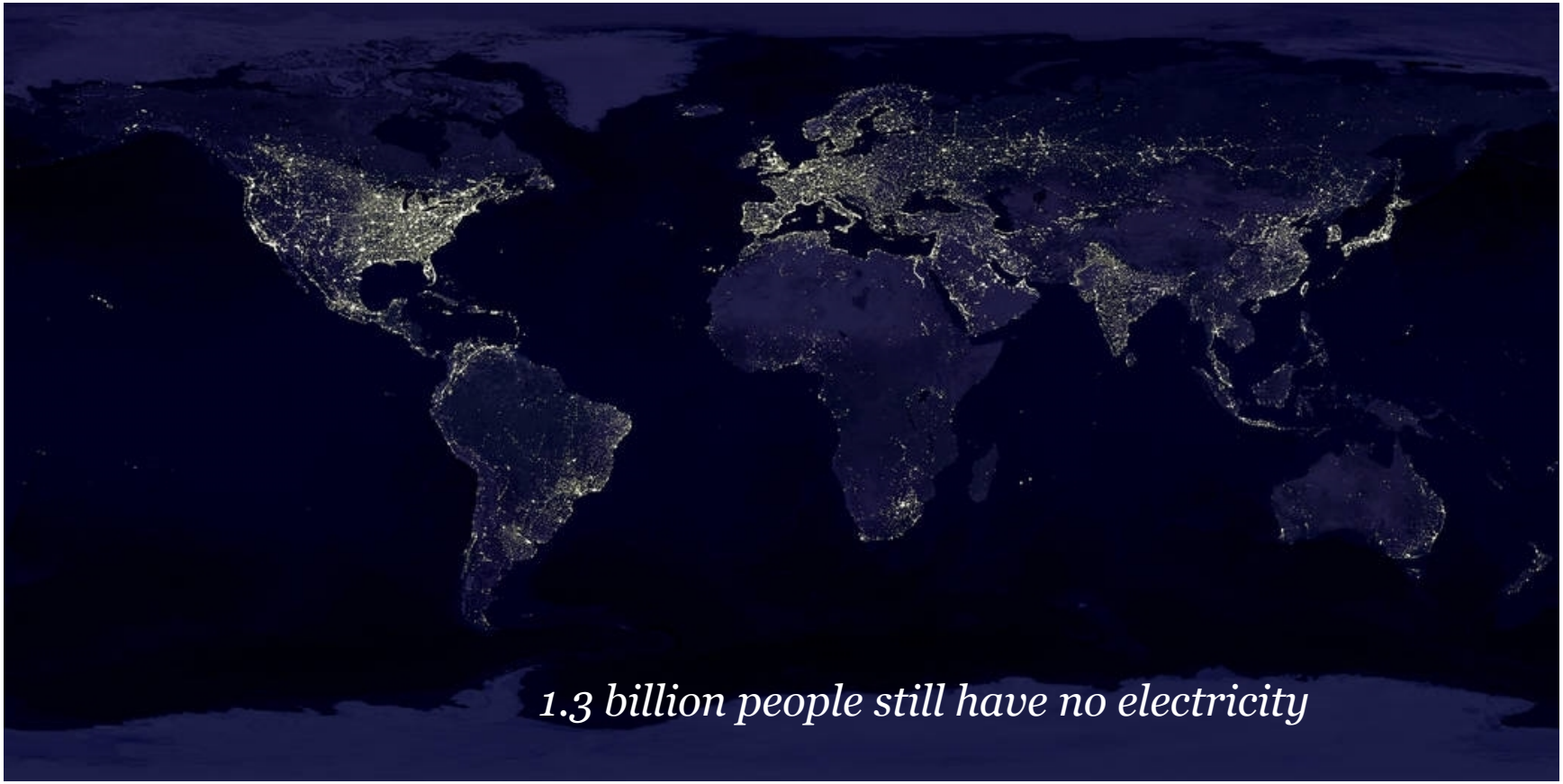
This question is the foundation for
the work of GENI and the SIMCenter

"Highest priority objective" – tap abundant renewable energy resources around the world and link grids via high-voltage transmission.



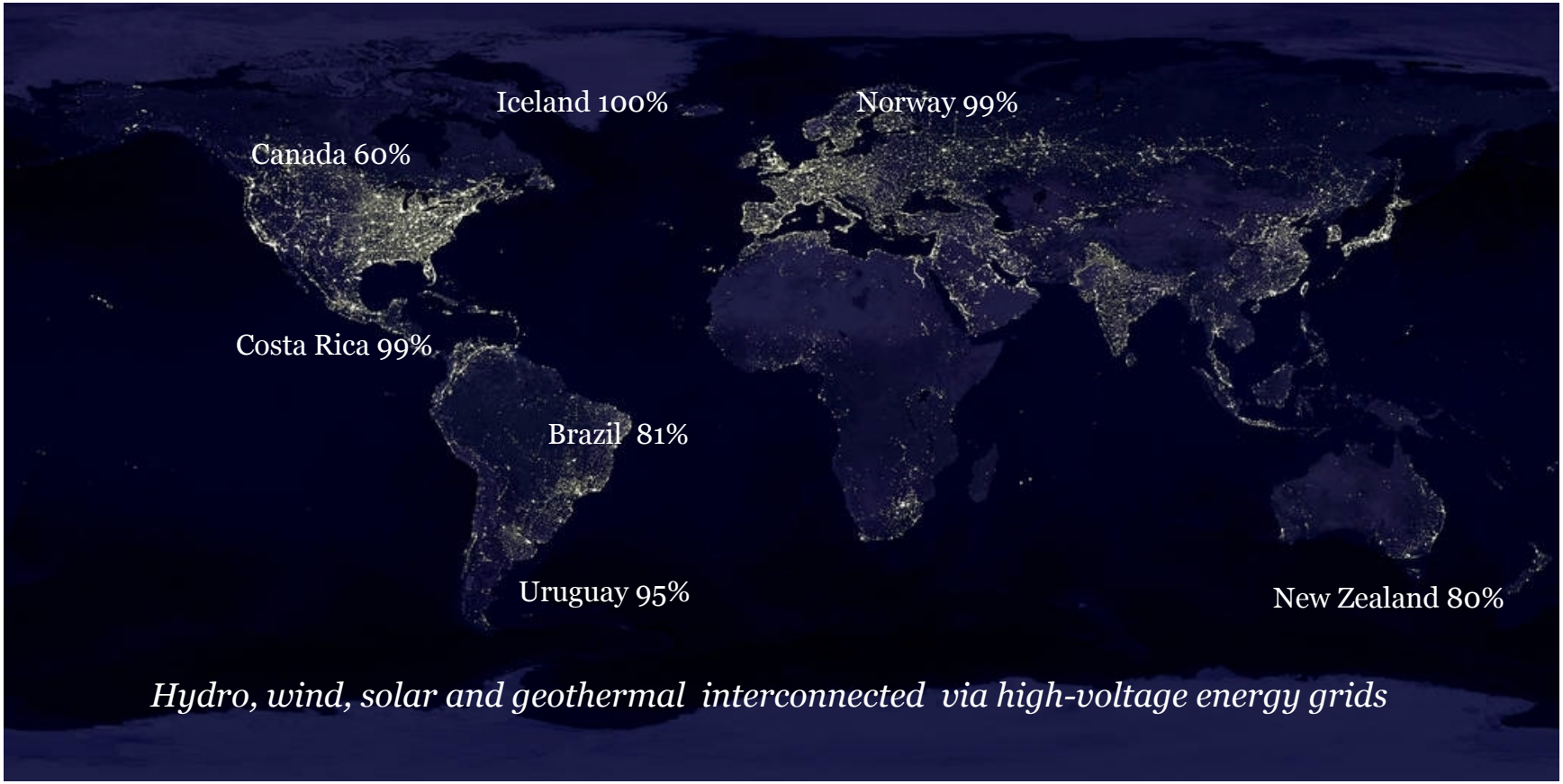
Earth from Space

Wealthy vs. Poor

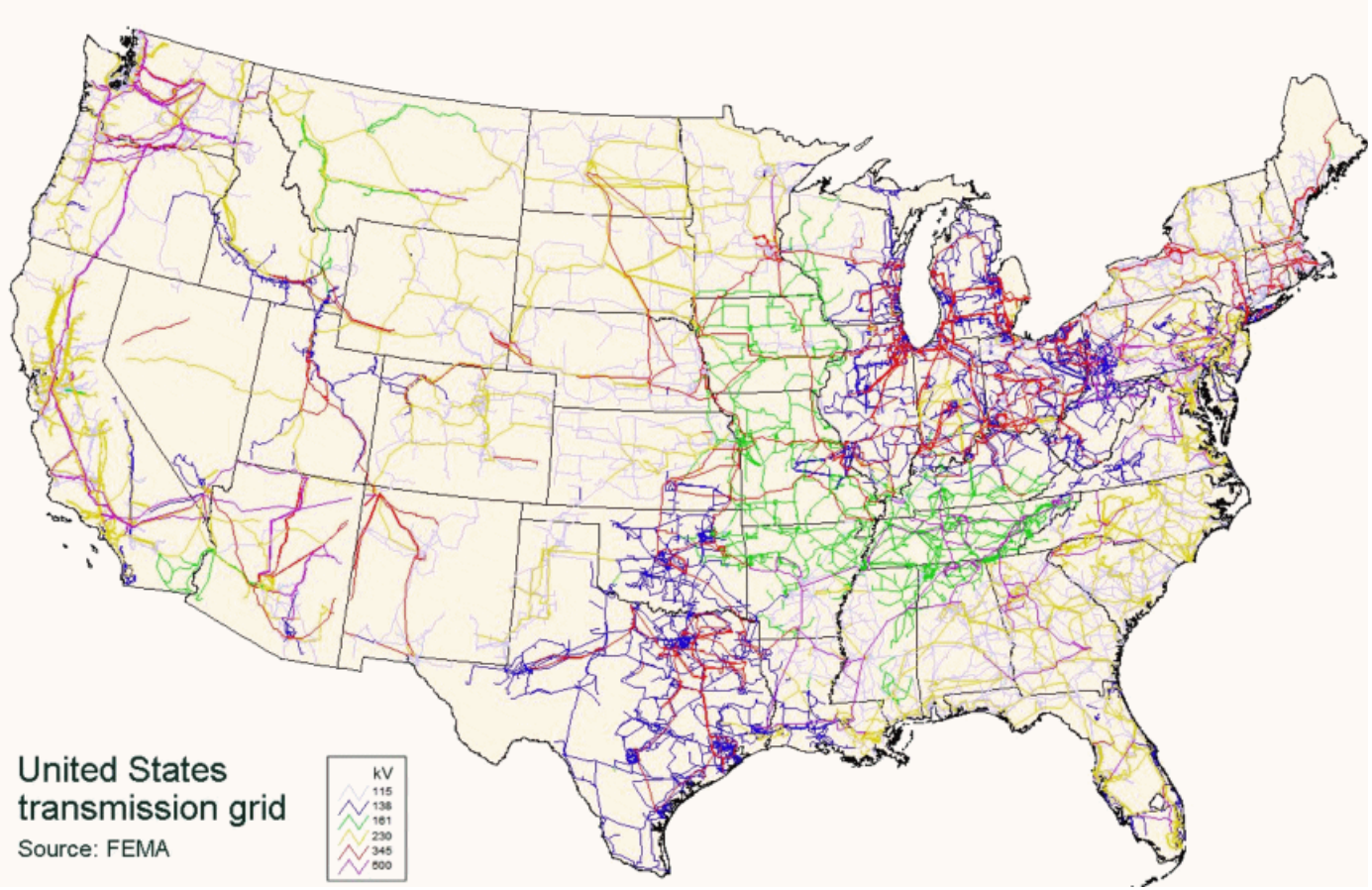


Key Distinctions

Renewable Energy leadership

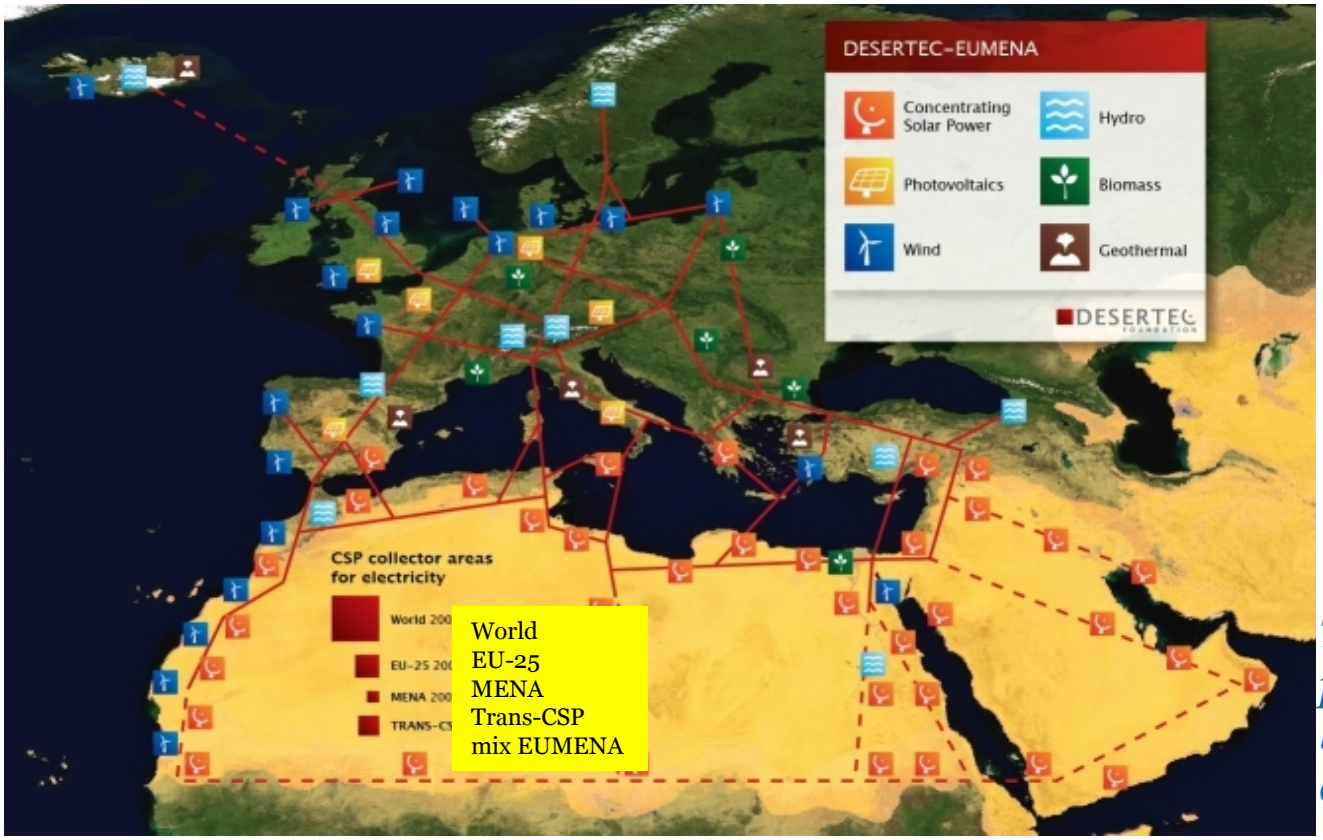


High-voltage transmission networks in U.S. Western, Eastern and Texas



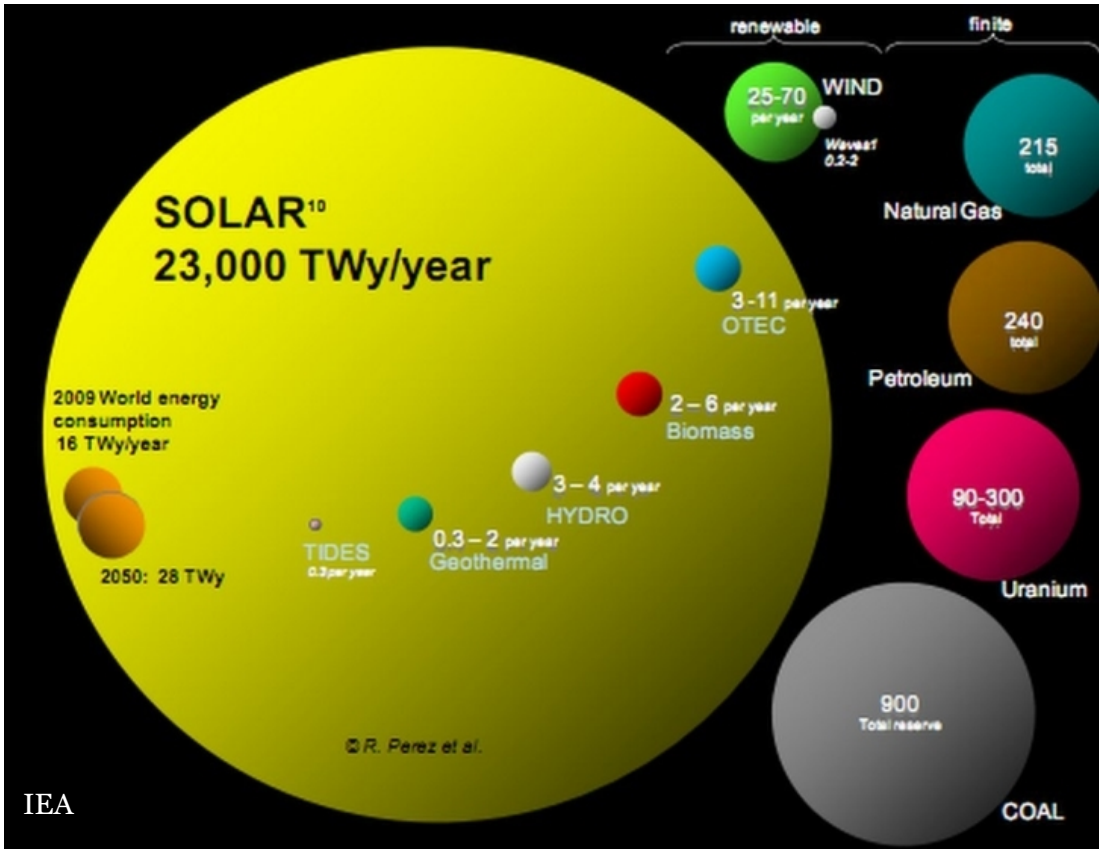
100% Renewable Energy . . .

is there enough?



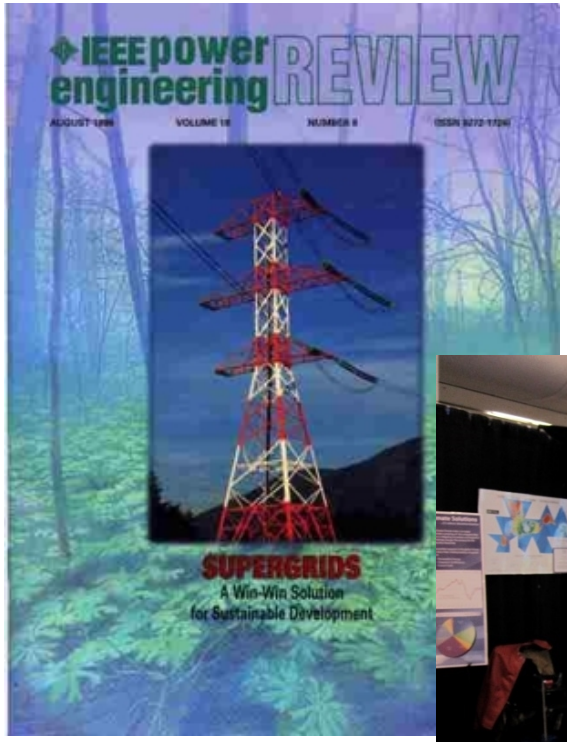
There's solar potential beyond our dreams

The Renewable Energy Potential of our planet is 1,500x our needs

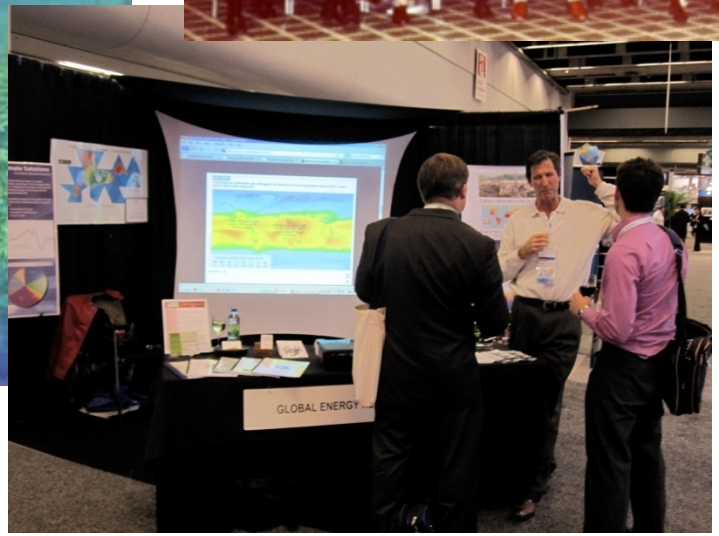


The amount of sunlight received in one hour, if converted to electrical energy, would meet the world's power demand for one year!

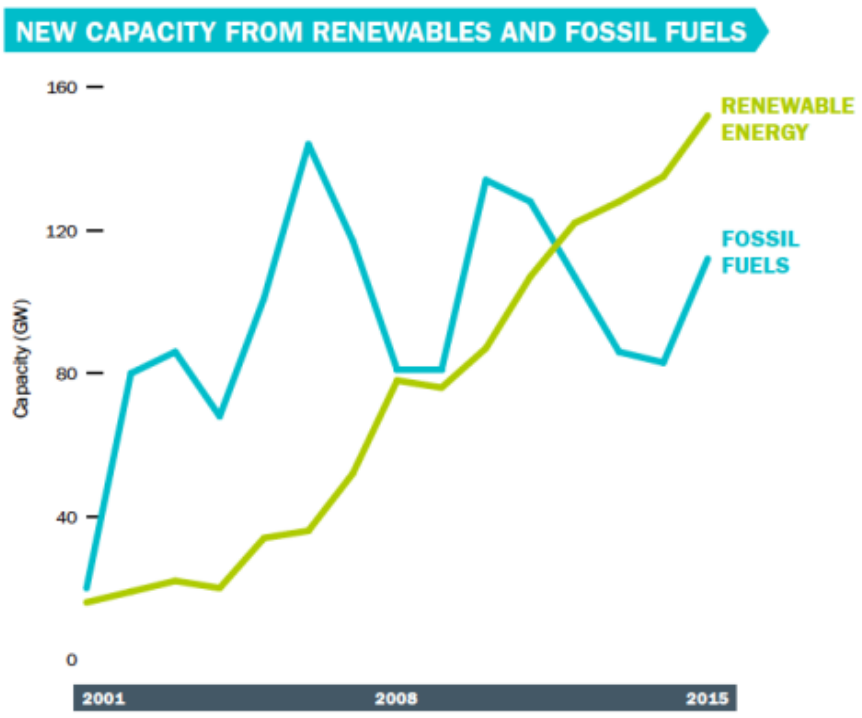
IEEE panels, CIGRE exhibit, Magazine features, World Energy Congress



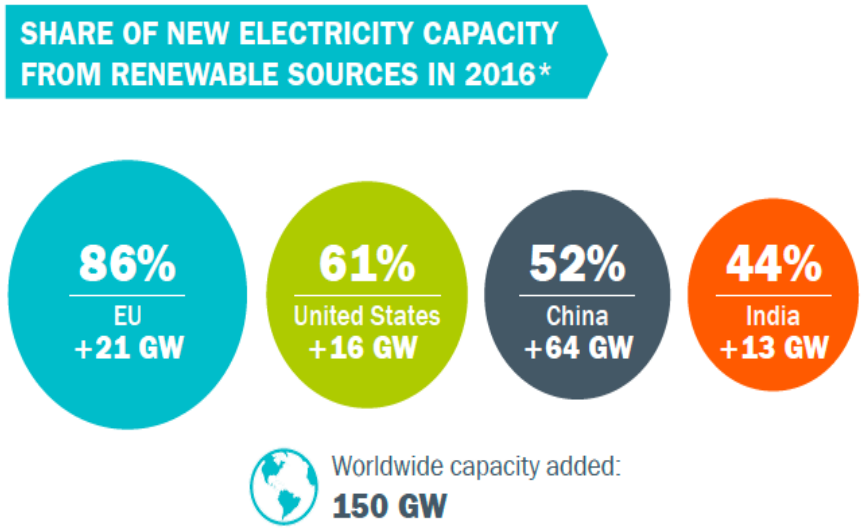
GENI *pushed this initiative around the world.*



Renewables are now capturing *lion's share of new energy generation capacity*



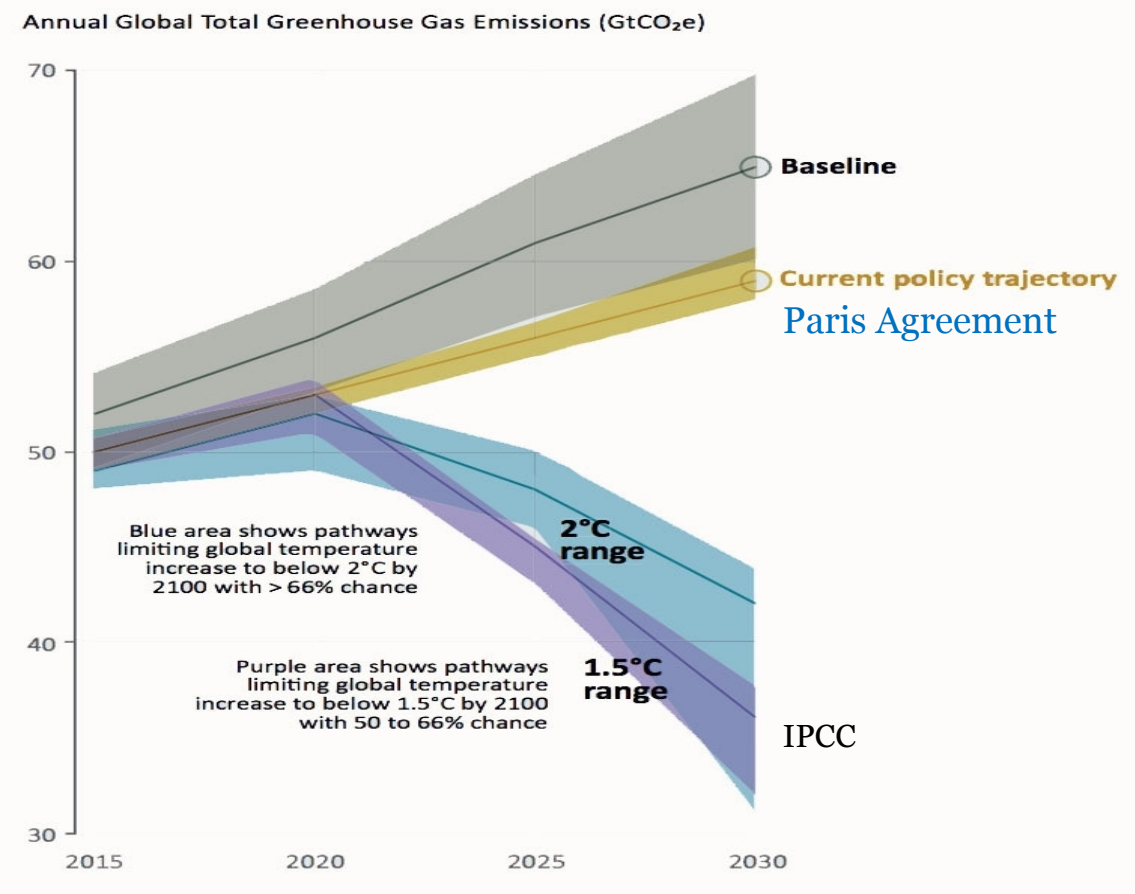
Source: Data from Bloomberg New Energy Finance



*Data not yet available for Canada or globally.

Source: Wind Europe; U.S. Energy Information Administration; China Electricity Council; Government of India, Ministry of Power, Central Electricity Authority

So what's the problem?



1992:
87% of primary energy from fossil fuels

2017:
85% of primary energy from fossil fuels

Only a 2% gain in 25 years! Renewable uptake is way too slow.

What are the consequences now?

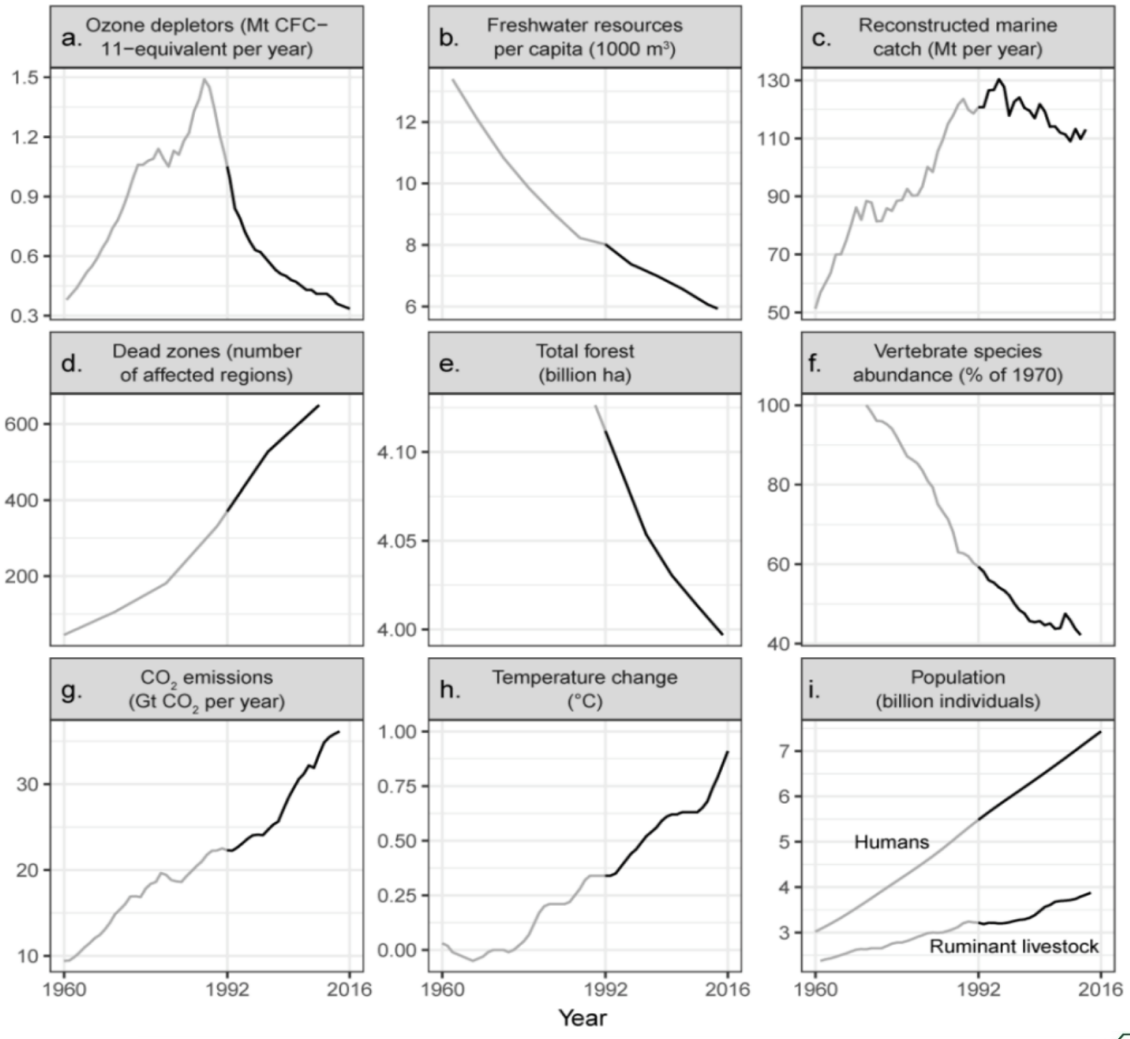
Thomas Fire

Montecito Flood

Lake Oroville 2014

How are engineers doing?

World Scientists' 2nd Global Warning to Humanity



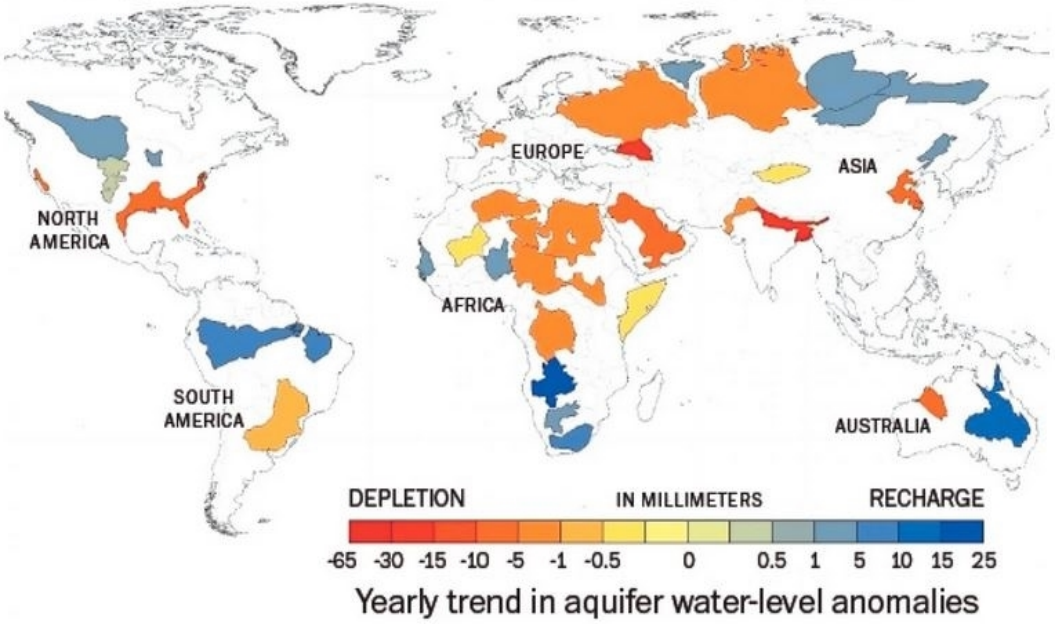
From 1992 to 2016: *8 of 9 threats have gotten worse in the past 25 years*.

Alliance of World Scientists
William J. Ripple et al

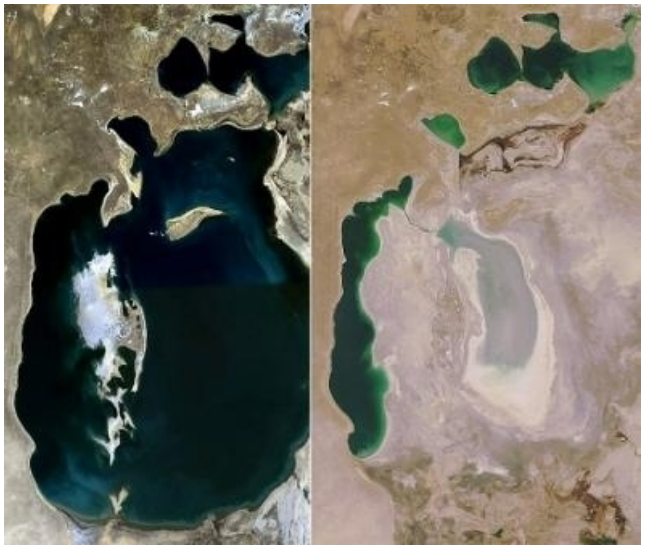
Aquifer Depletion

Satellite system flags stressed aquifers

More than half of Earth's 37 largest aquifers are being depleted, according to gravitational data from the GRACE satellite system.

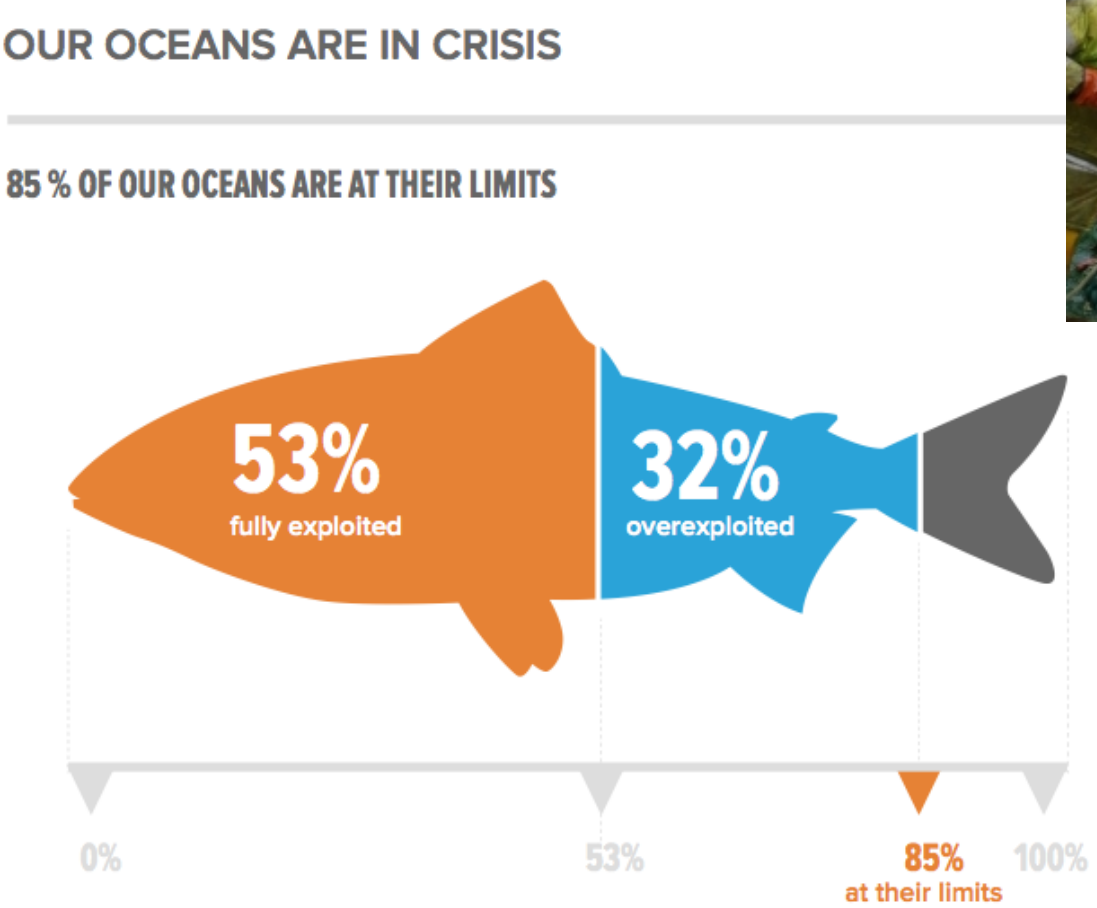


SOURCE: Water Resources Research PATTERSON CLARK / THE WASHINGTON POST



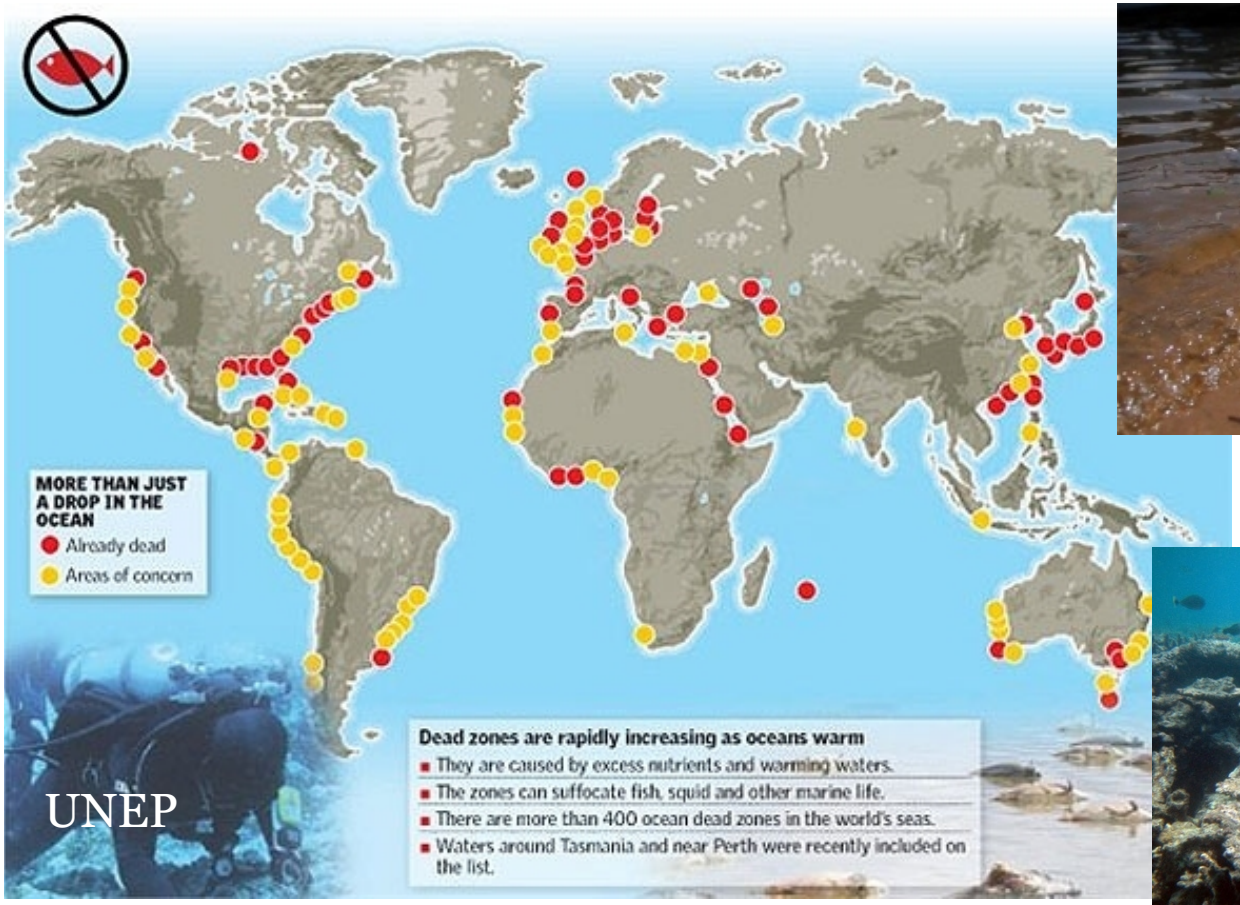
Aral Sea

Fishery Depletion



Factory fishing ships

Dead Zones increasing

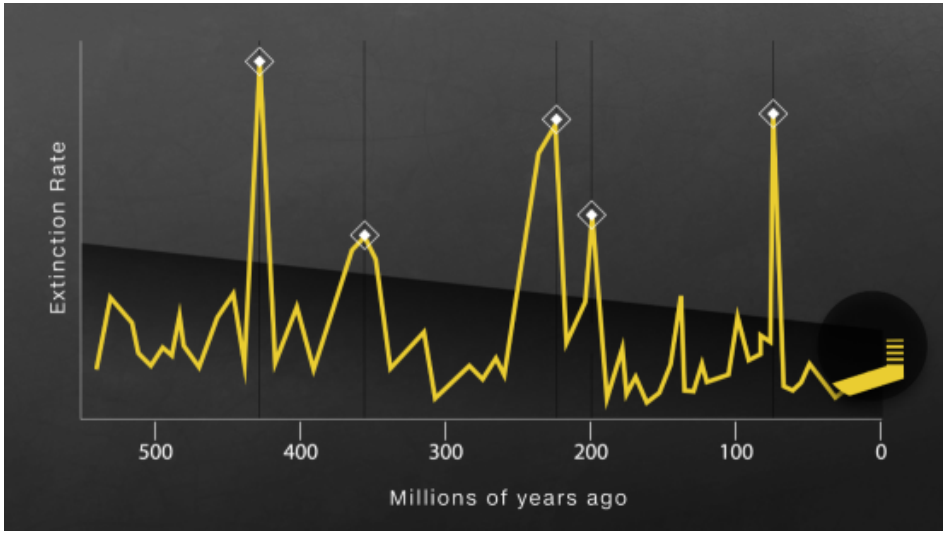


Chesapeake Bay

Great Barrier Reef

Deforestation

Species extinction



60% lose of invertebrate species since 1970 … caused by us.

CO_2 Emissions

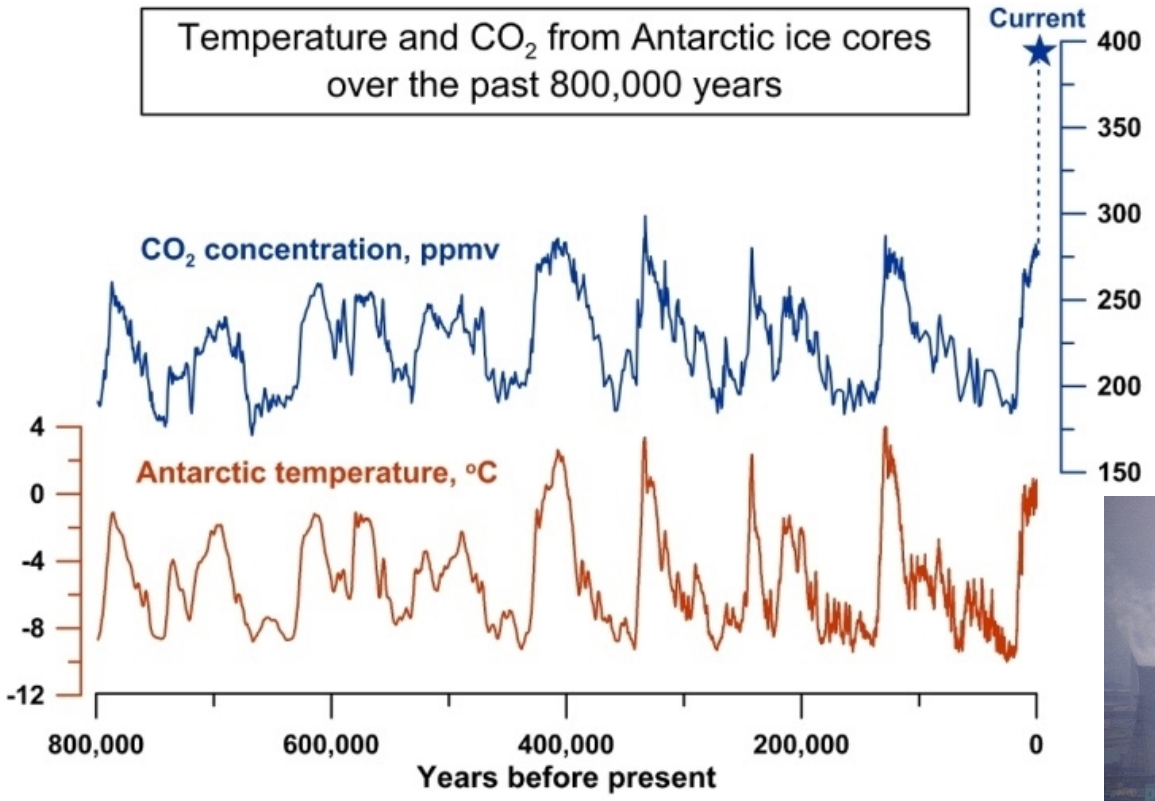
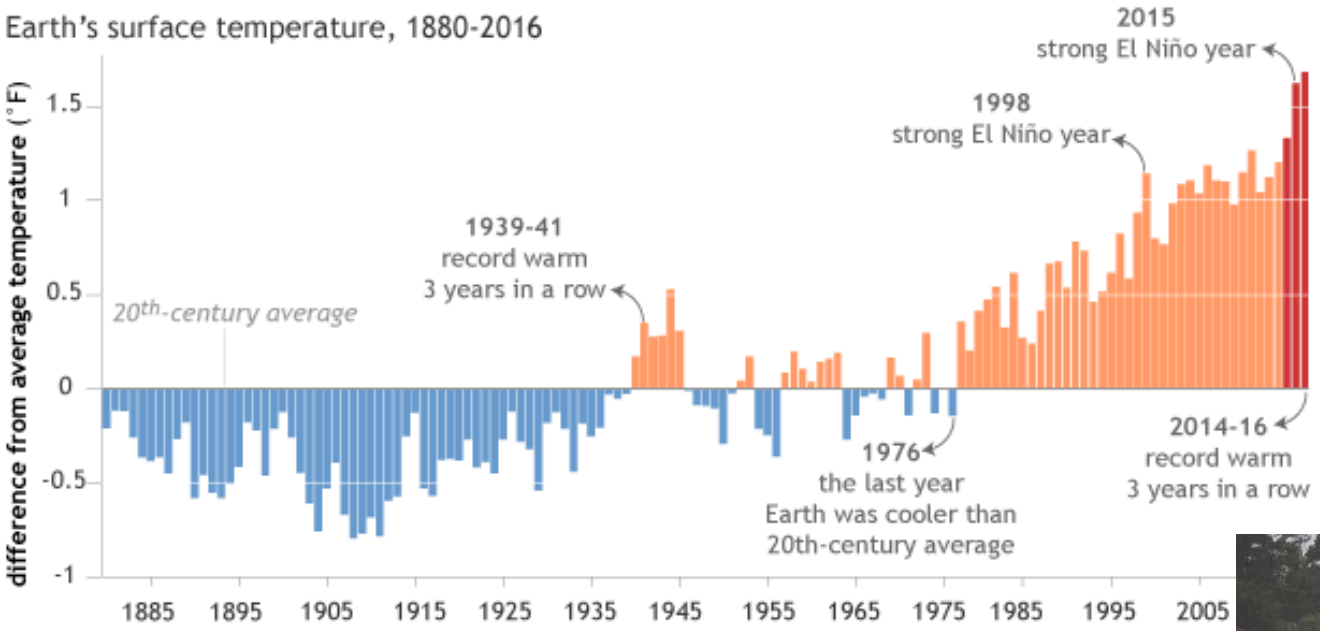
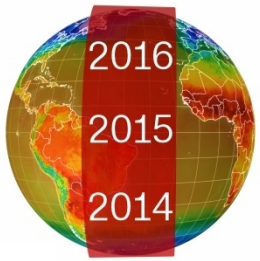


Image: Jeremy Shakun/Harvard University

China pollution affects us all

Temperatures increasing





Hottest years in modern record

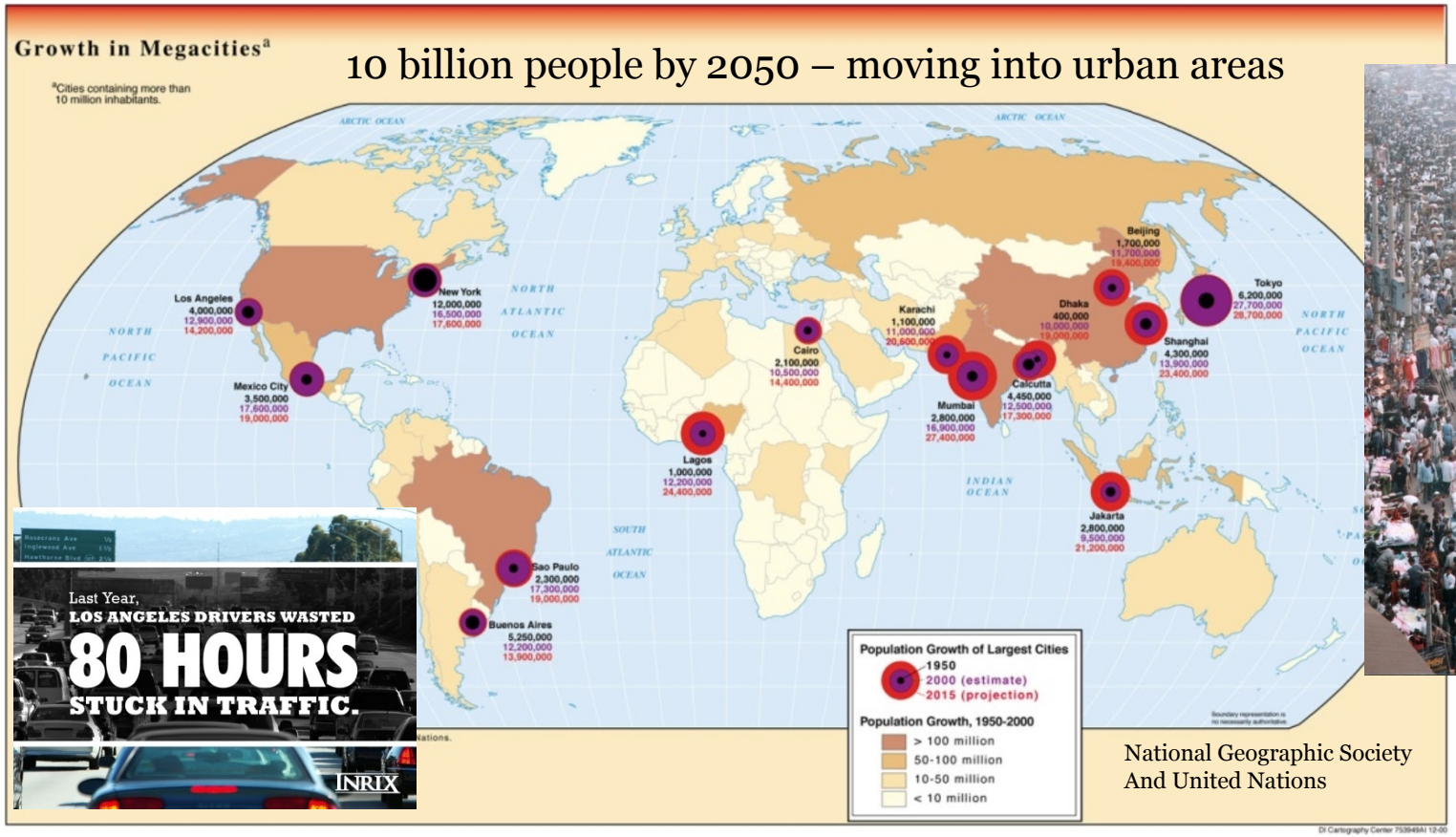
16 of the top **17** have occurred since **2000**

GISS Surface Temperature Analysis, NASA

Iowa

New Orleans

Population growth



Dhaka

Our problems are growing faster than our collective ability to solve them

- What's missing?

Scale

Speed

Optimal design

Across all nations

Where do we go to grapple with the most challenging issues of our time?

We need an *accelerator*

- Visualize past trends and future projections
- Provides immersive experience
- Collaborative problem solving
- Interconnected – *we learn faster together*.
- For researchers, engineers, economists, educators, business leaders and policy makers *to design, fund and build solutions quicker*.

We have control rooms for space

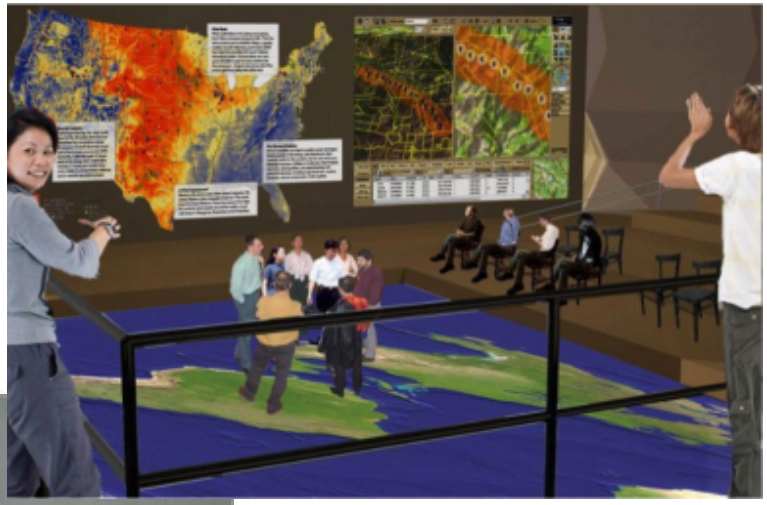
Control rooms for war

Control rooms for business

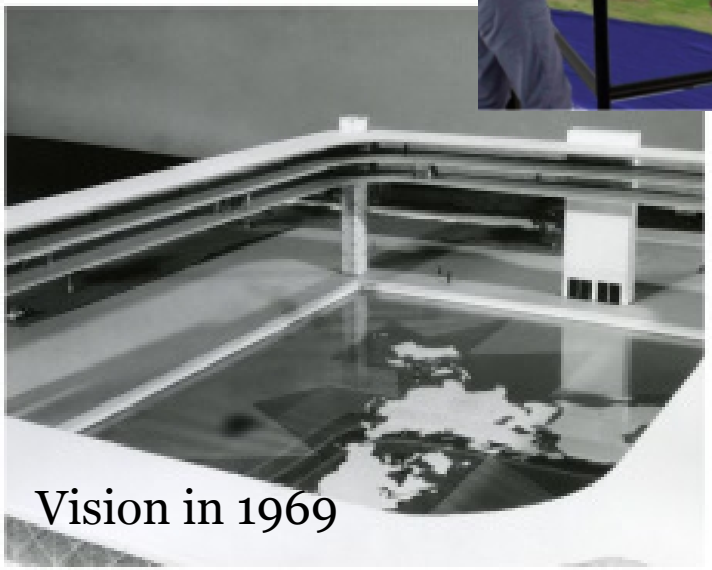
Why not a Mission Control for global sustainability?

where we can visualize solutions, share strategies and measure results

San Diego demo



What's needed today



Vision in 1969

The SIMCenter was originally proposed for the Montreal Dome in 1967

World Resources Simulation Center

Visualizing sustainable solutions
to global and local problems
so society makes
informed choices quicker

…. because we are running out of time!

We have control rooms for space, war and business -- why not for global sustainability?

How do we get it done? What's needed:

- Space – on university or corporate campuses 5,000–20,000 sq. ft.
- Technology – latest visualization tools, digital floor, simulation and communication software
- Funding - $2 million/year for staff & operations
- Institutional Partners, Smart people – committed engineers, regional planners, GIS mappers, IT developers, sustainability researchers and students.

Why are we here:

- to foster technological innovation and excellence for *the benefit of humanity*.
- to be essential to the global technical community *everywhere in improving global conditions.*
- *to solve problems.*

Thank you!

Join us in making a global impact:

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