Green Infrastructure and the Future of Conservation Finance

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Harvard University Center for the Environment
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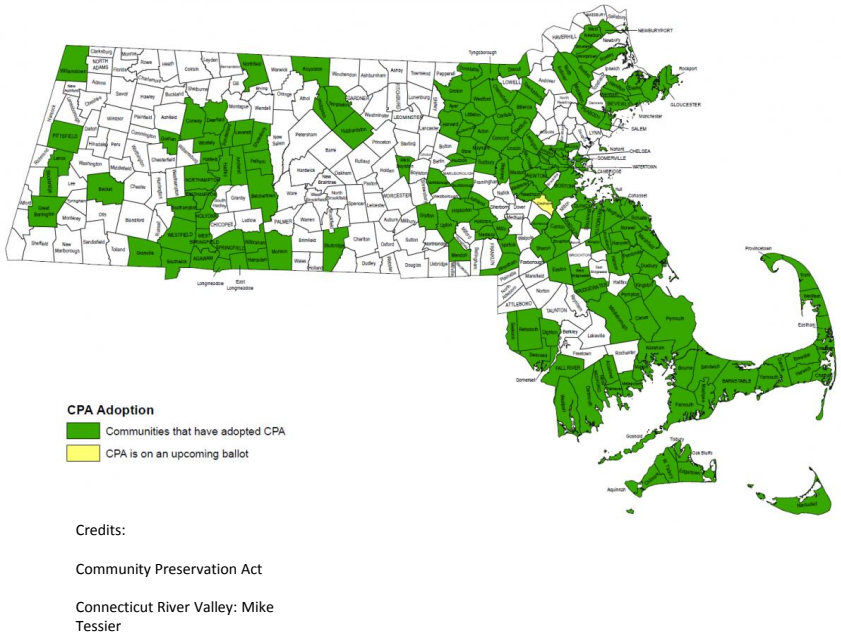
In April 2006, many of us met here for the
Wildlands & Woodlands Conservation Finance Roundtable

We considered seven categories of potential initiatives

1. Public Budgets, Bonds and Ballot Measures
2. Tax Incentives
3. Philanthropic Initiatives
4. Emerging Ecosystem Service Markets
5. Enhanced Forest-Based Economies
6. Limited Development
7. Settlement Funds from Legal Proceedings

We have made substantial progress on local and regional initiatives

- Since 2000, 172 towns, representing nearly 60% of the state's citizens, have adopted the Community Preservation Act; in 2016 Boston joined
- Nearly $1.75 billion has been raised for funding the CPA



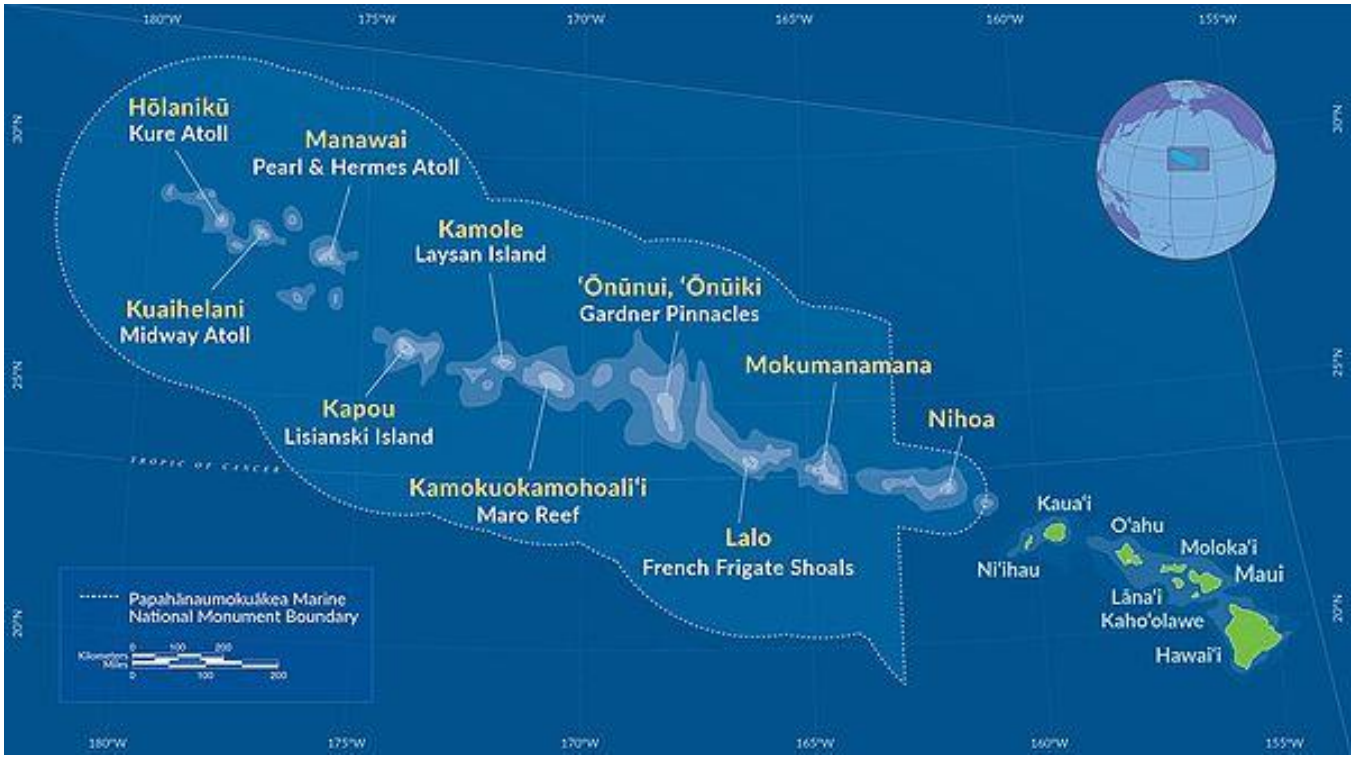
Credits:

Community Preservation Act

Connecticut River Valley: Mike Tessier

Recent progress – on protected areas in the US

- In the US, Obama just created a huge marine protected area in Hawaii – about 1.5 million km^2, or > 370 million acres (nearly the size of Alaska)



Recent progress – more than 15% of the land area of earth has been protected by 2014

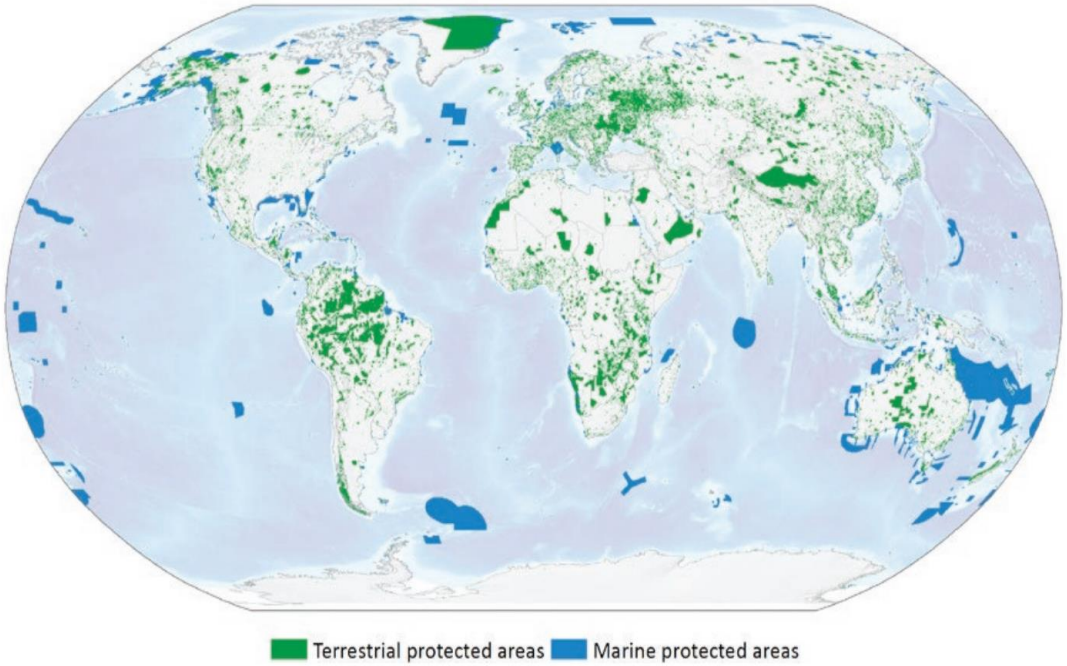
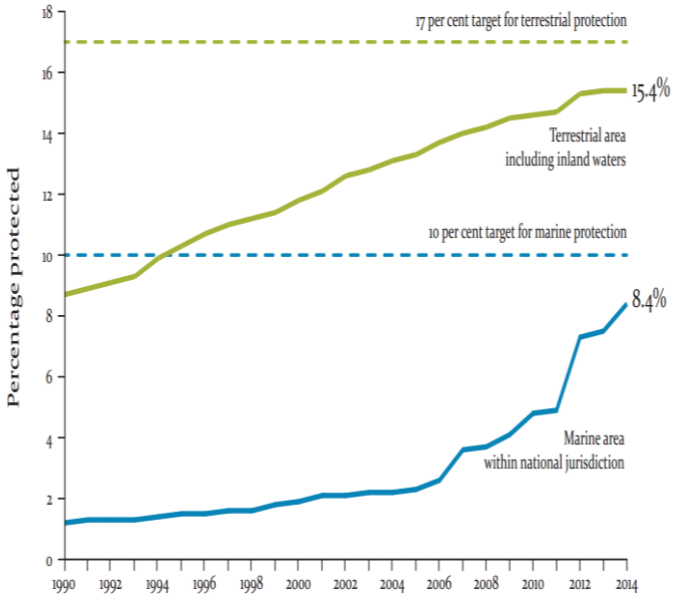


Figure 2.1 *Spatial distribution of the world's protected areas. Source: UNEP-WCMC 2014b*

2.1. TERRESTRIAL PROTECTED AREAS

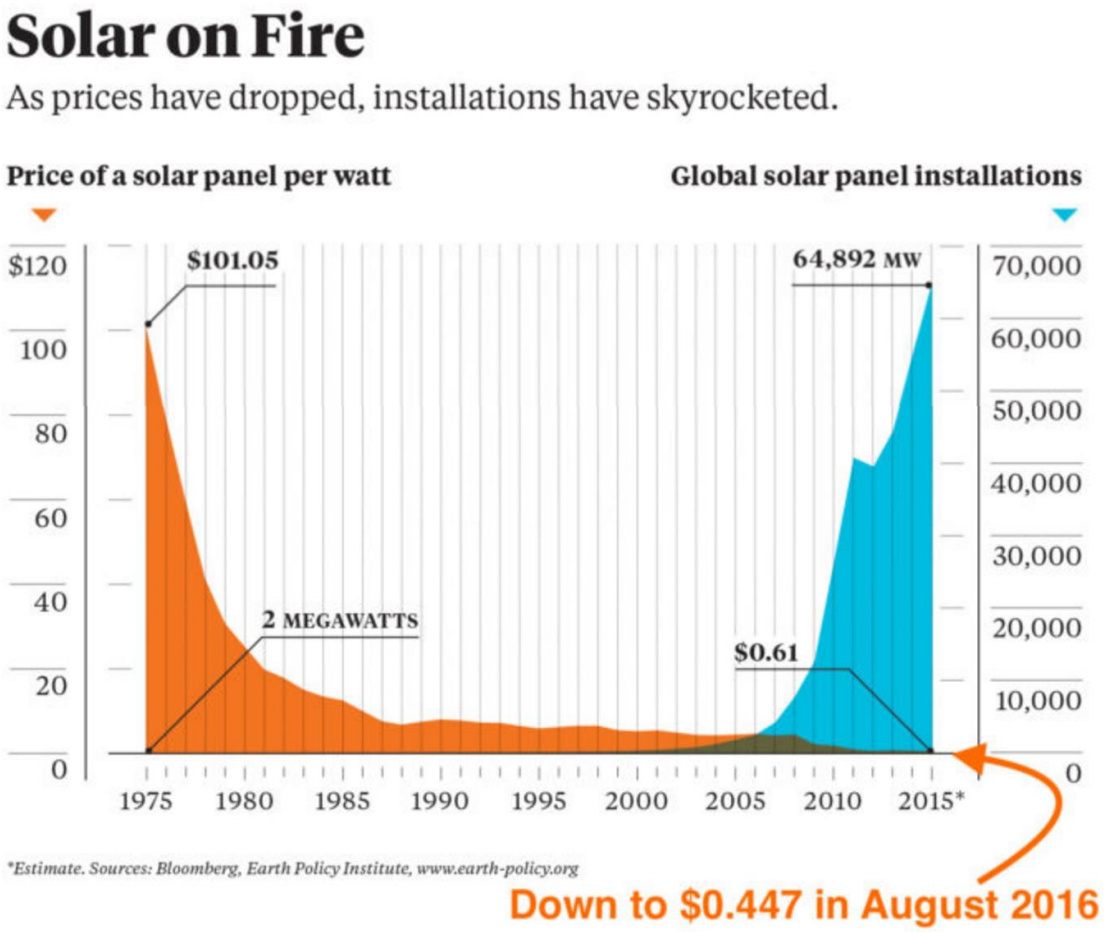
Terrestrial protected area coverage has increased by about 1 million square kilometres since 2010, and 126,000 square kilometres since 2012. In total, 20.6 million square kilometres (15.4%) of terrestrial and inland water areas are now covered by protected areas (see Figure 2.2). To cover the 17% of terrestrial and inland waters, as proposed in Aichi Biodiversity Target 11, 2.2 million additional square kilometres of protected areas would be needed.



Source: Protected Planet Report 2014, UNEP/WCMC

Progress since 2009 – the Paris climate accord was reached, and global solar electric use has soared

In 41 years, a price decline of more than 200 times, and an installation increase of more than 32,000 times. Source: CleanTechnica.com



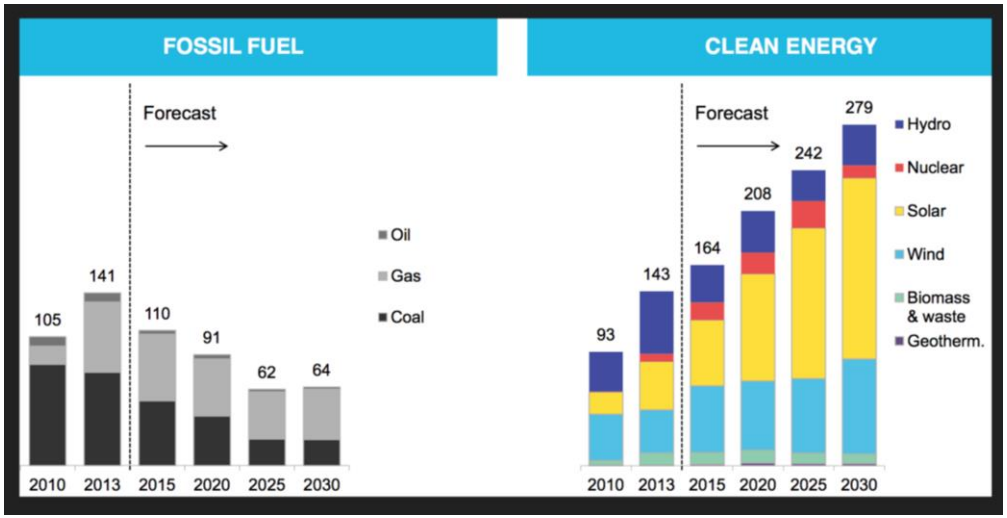
Over the past decade, we have seen two new presidents inaugurated

We still face enormous challenges and ecological disruptions in the decades ahead

Chile's president Michelle Bachelet cuts the ribbon on the 100MW Amanecer PV plant in the Atacama Desert

Office of the President of Chile

Huge renewable energy plants will be installed …and require mitigation for environmental impact

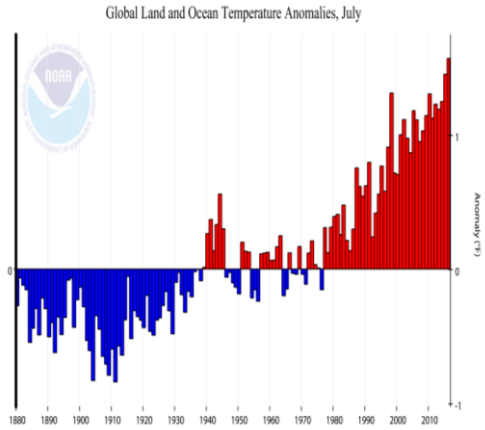


Gigawatts of electric power expected to be added worldwide

Source: Bloomberg.com, April 14, 2015, "Fossil Fuels Just Lost the Race Against Renewables"

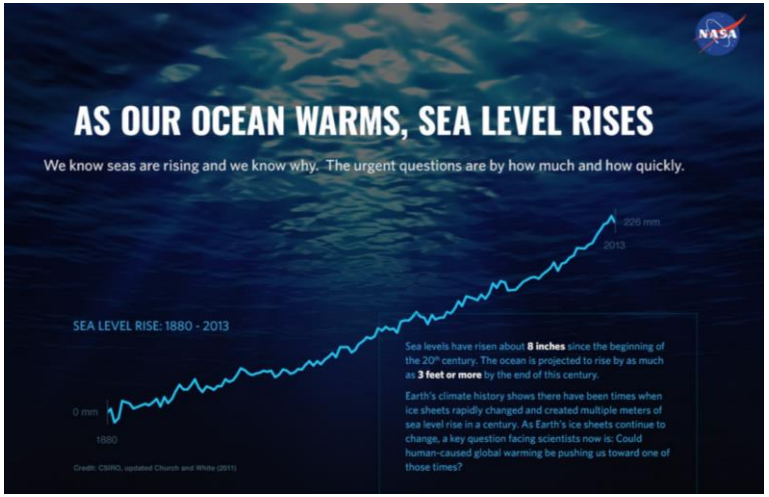
Global average temperatures continue to increase, droughts deepen, and fresh water supplies shrink…

https://www.climatecentral.org/news/see-earths-temperature-spiral-toward-2c-20332



Sea-levels continue to rise, with increasing "sunny day flooding"…

"Do fish swim in the streets of Miami? Answer – sometimes."



http://oursantaferiver.org/do-fish-swim-in-the-streets-of-miami-at-high-tide-answer-sometimes/

Hurricanes and "superstorms," will continue to overcome many communities with wind and stormwater

The 5 Costliest U.S. Hurricanes (source: NOAA, updated through 2010; 5 of 6 most costly storms have occurred since 2004)

Rank	Name	Year	Category	Estimated Damage
1.	Katrina	2005	3	$105.8 billion
2.	Andrew	1992	5	$45.6 billion
3.	Ike	2008	2	$27.8 billion
4.	Wilma	2005	3	$20.6 billion
5.	Ivan	2004	3	$19.8 billion

(Note: Superstorm Sandy in New York (2013), not technically a hurricane, is estimated to have caused $65 billion in damage)

In the context of all of this information, the world appears to have our huge infrastructure needs over the next 15 to 30 years

The New York Times

The Opinion Pages | OP-ED CONTRIBUTOR

How to Raise Trillions for Green Investments

By HENRY M. PAULSON Jr. SEPT. 20, 2016

CreditMikel Jaso

SAVING our planet from the worst effects of climate change won't be cheap. A new report from the United Nations says that the world will need to **mobilize $90 trillion in public and private capital over the next 15 years**....

The challenge: how can we prudently channel a share of that infrastructure investment to conserve natural capital?

Infrastructure: "a range of the basic physical structures and facilities (such as buildings, roads, power plants) needed for the operation of a society"

Gray Infrastructure: the built environment; e.g., concrete and steel structures buildings, bridges; not necessarily "climate friendly"

Green infrastructure (or "climate-friendly infrastructure") includes climate-friendly structures (e.g., solar power plants) as well as "natural capital"

Conservation Infrastructure (or "natural capital"): the wild and working landscapes, waterscapes and skies that provide the foundation for life on earth

For example, consider this headline (Boston Globe, 2/17/2017):
"As seas rise, city mulls a massive sea barrier across Boston Harbor"

This "sapphire necklace" option is one of four potential options being considered in the City of Boston's "Climate Ready Boston" final report

There is little clarity about **how much**
an outer harbor barrier **might cost**

- Estimates range from "the low billions of dollars " to "tens of billions of dollars" (let's say $5 to $30 billion)

- At 1% for green infrastructure = $50 M to $300 M
- At 3% for green infrastructure = $150 M to $900 M, and so on.

- Across numerous projects, that could have a very significant impact on land conservation in New England
- The impact of green infrastructure on land conservation is of particular interest to the Lincoln Institute of Land Policy

In responding to the challenge, we must advance our efforts to nurture and grow **the next generation** of conservation finance innovations…