



Carbon offsets and market mechanisms to reduce greenhouse gas emissions

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ClearSky Project Development Services

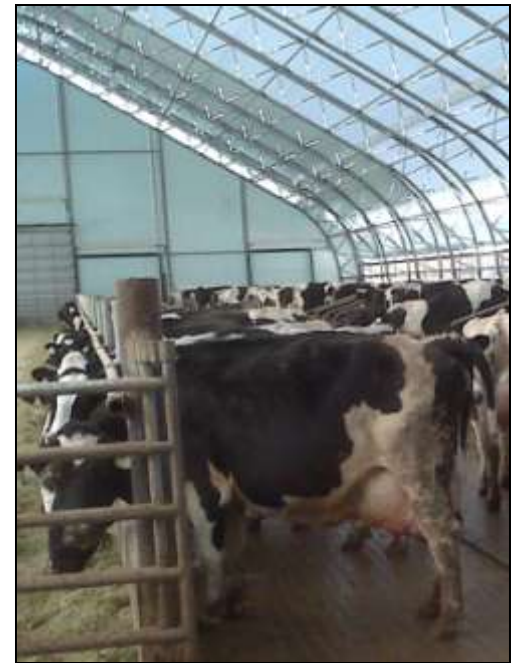
Forest Conservation



Reforestation



Methane Capture





ClearSky Greenhouse Gas Consulting Services



The Resort at
PAWS UP
THE LAST BEST PLACE

WeddingMuseum  .com



PIONEER!



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Climate Change Re-cap

NewStatesman

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Has global warming stopped?

David Whitehouse

Telegraph.co.uk

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There IS a problem with global warming... it stopped in 1998

The Inhofe EPW Press Blog

BREAKING NEWS:

'Global Warming Will Stop,' New Peer-Reviewed Study Says

Right Side News

The Right News for Americans

UN Data Shows Global Warming has Stopped



Written by EPW Blog

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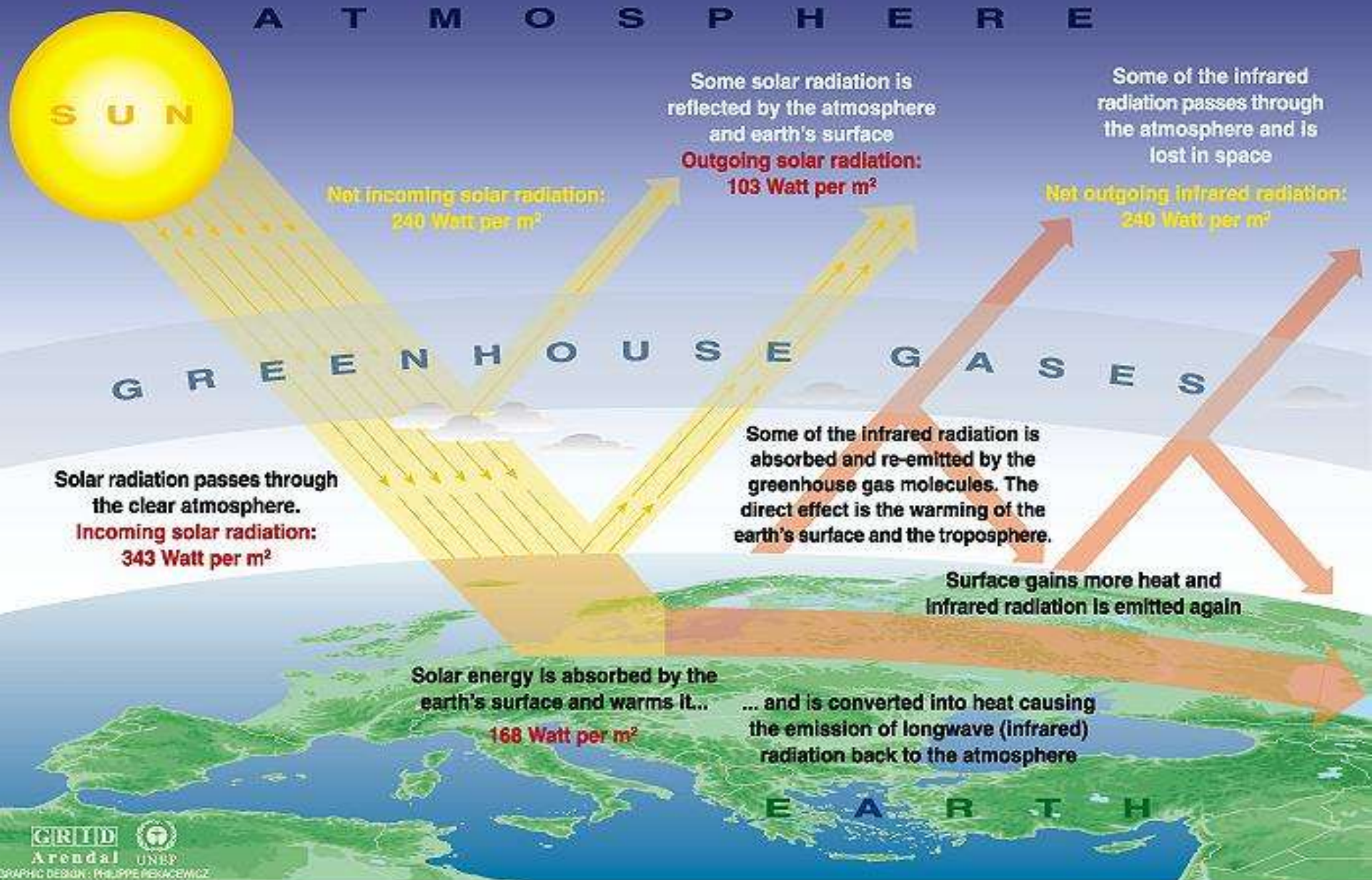
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The Greenhouse effect



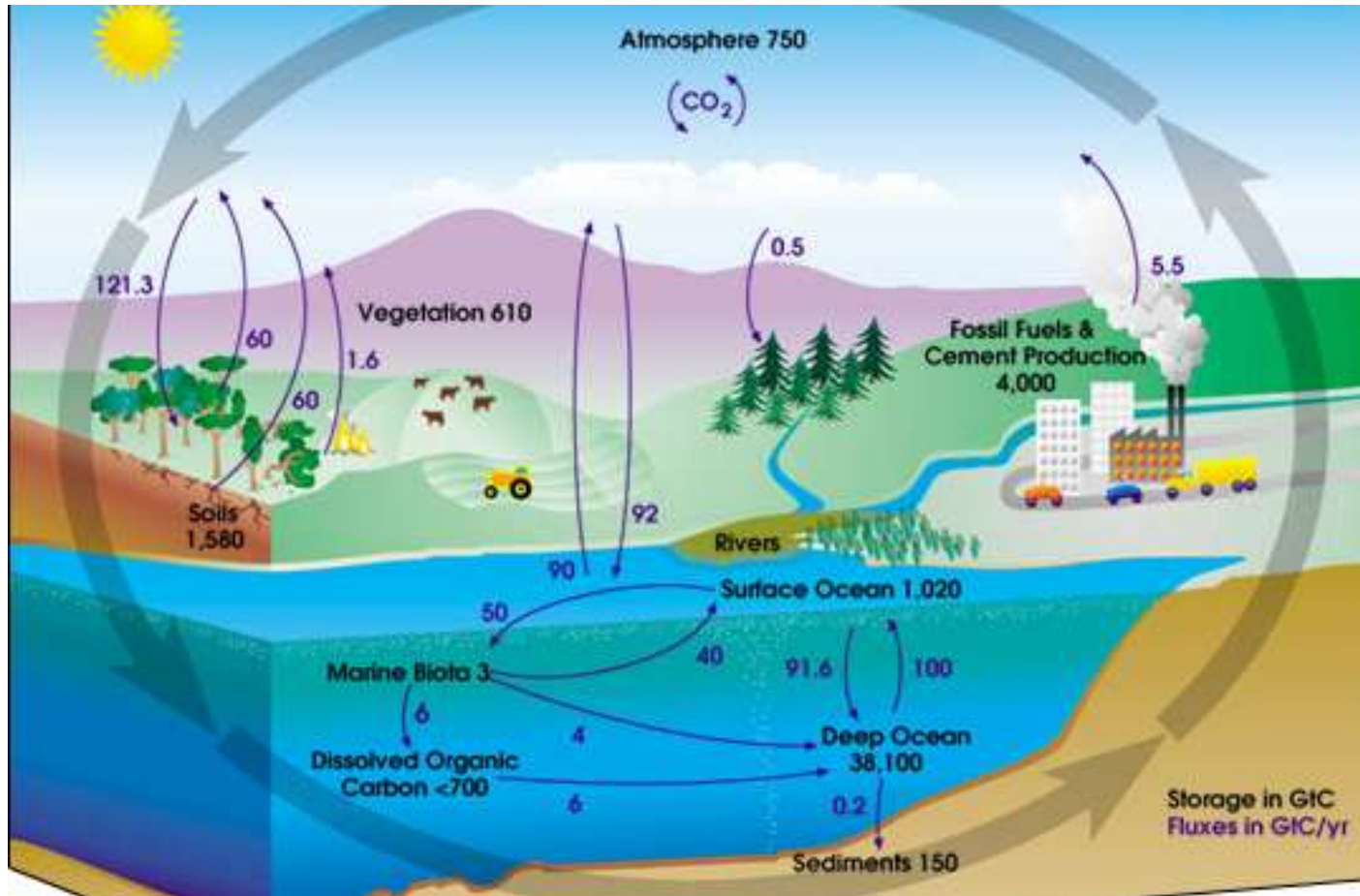
GRID
Arendal
UNEP
GRAPHIC DESIGN: PHILIPPE PERACEWICZ

Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.



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Source: http://earthobservatory.nasa.gov/Library/CarbonCycle/Images/carbon_cycle_diagram.jpg

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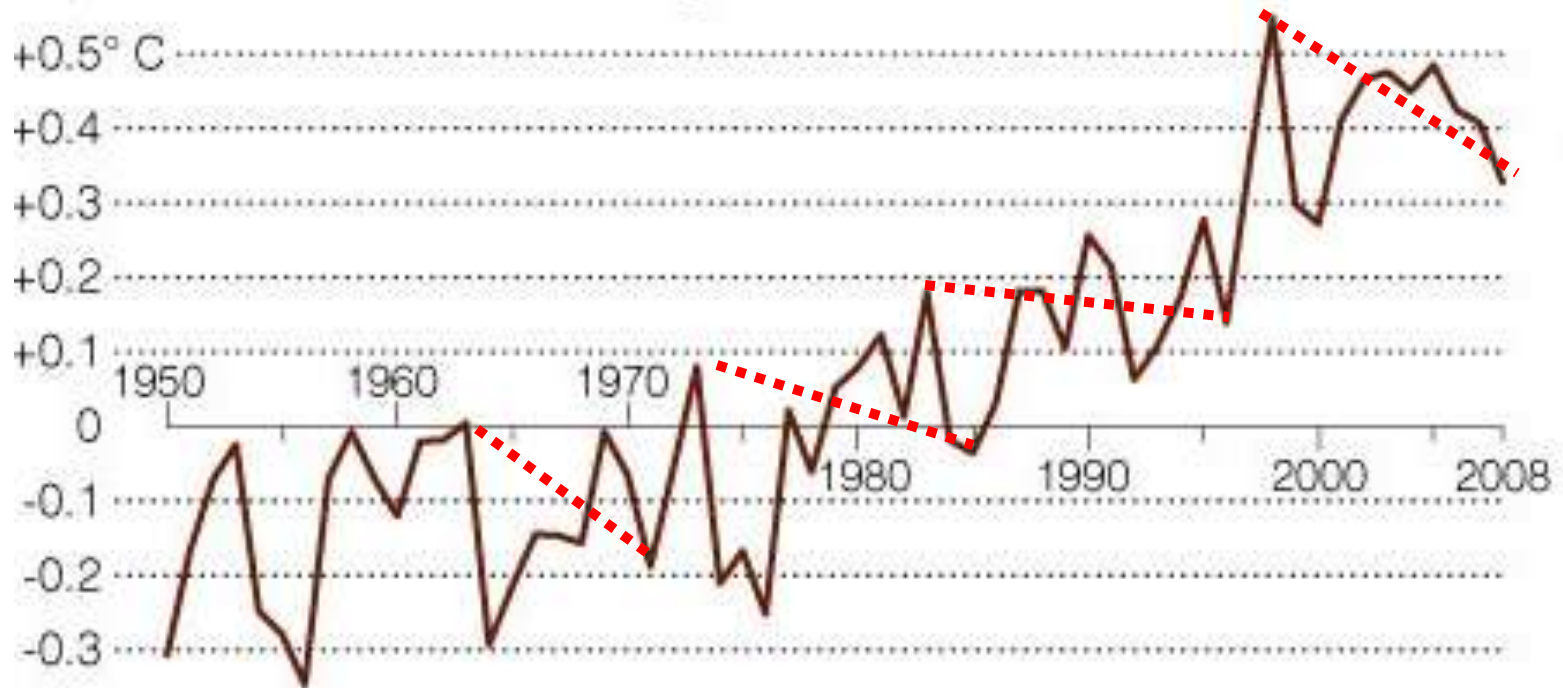
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Average Global Temperature Anomaly
Departure from 1961-1990 average



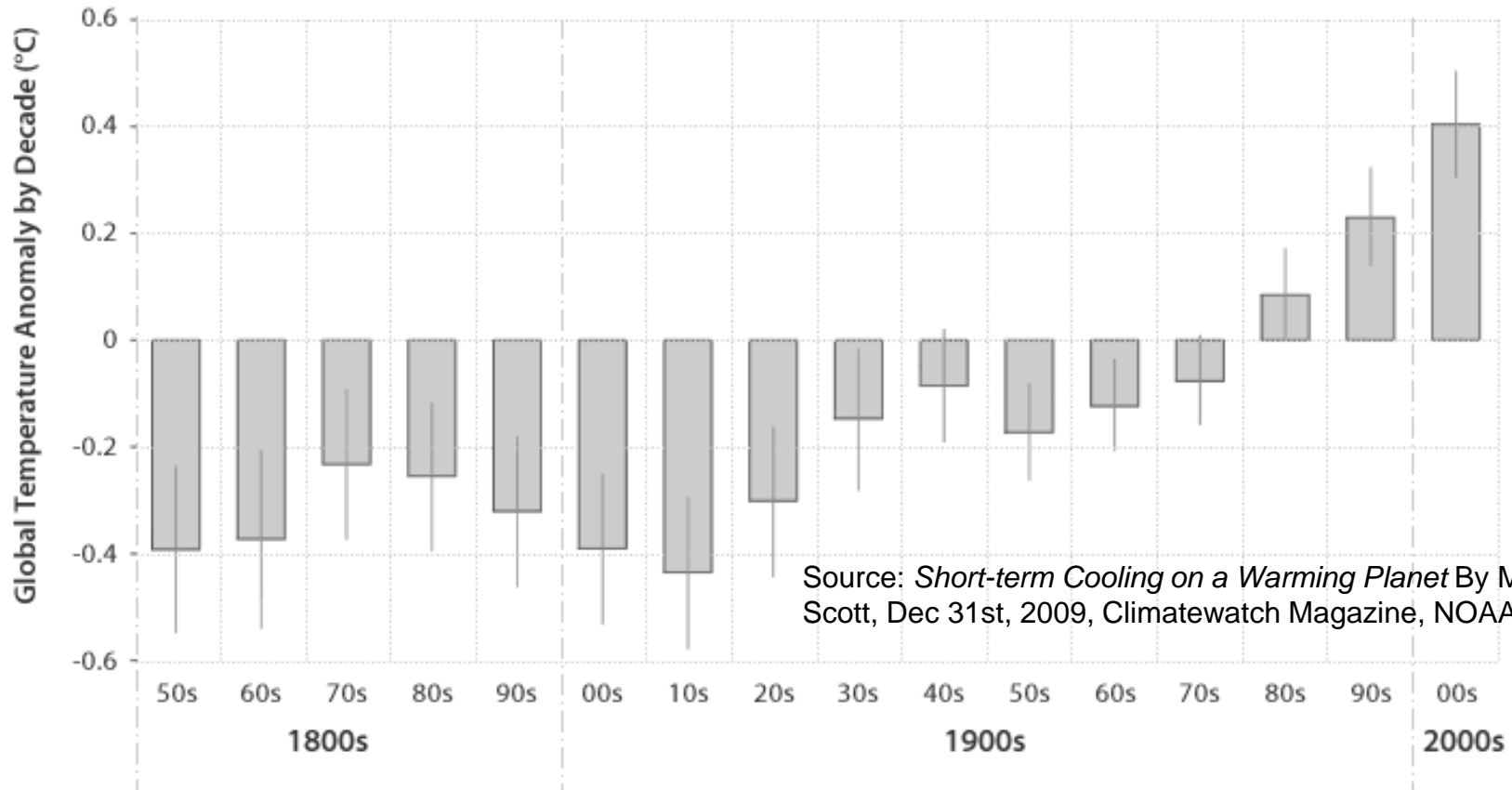
Source: Hadley Center for Climate Prediction and Research.

THE NEW YORK TIMES

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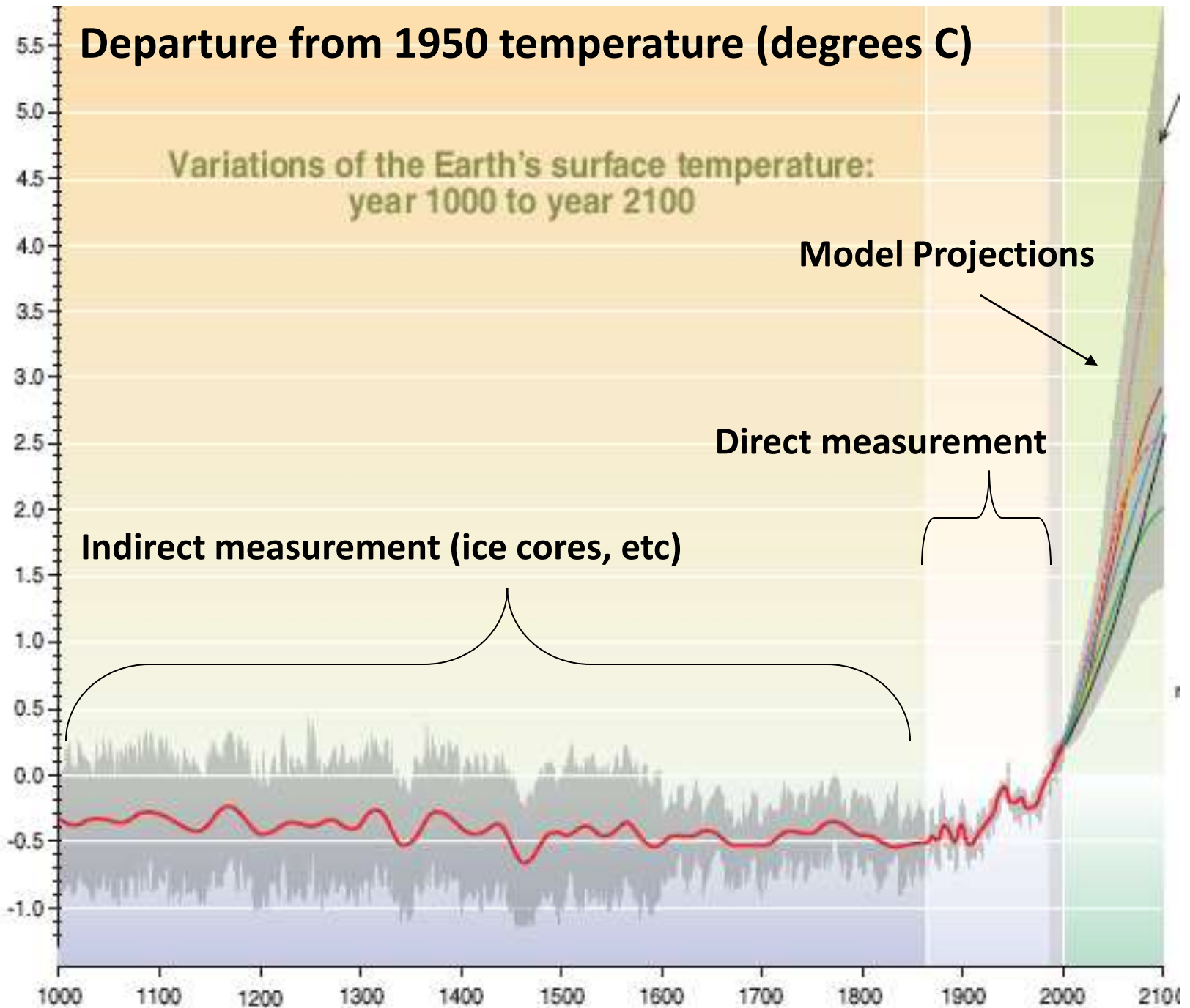
Climate Change Re-cap



Source: *Short-term Cooling on a Warming Planet* By Michon Scott, Dec 31st, 2009, Climatewatch Magazine, NOAA

Departure from 1950 temperature (degrees C)

Variations of the Earth's surface temperature:
year 1000 to year 2100





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Climate Change Re-cap

SimpleUtahMormonPolitics.com

Politics is seldom simple. But the truth usually is.

Monday, May 05, 2008

Aw, Crap! Global Warming Has Stopped!!!

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Market-based solutions

- Place a value on something that was previously unvalued, and market interests will respond
- Ecological Services = resources and processes that are provided (free of charge) by healthy, functioning ecosystems

Market-based solutions: cont'd

- Need to place a value on GHG pollution!
- What would you pay for clean air, preservation of natural ecosystems, future safety, etc?





Two good options for global warming:

- **Carbon tax** = each metric ton of CO₂ emitted is taxed



Two good options for global warming:

- **Carbon tax** = each metric ton of CO₂ emitted is taxed

UP TO THIS POINT = POLITICAL SUICIDE

Two good options for global warming:

- Carbon tax
- **Cap and trade system** = the overall amount of GHG emissions is capped by issuing permits equal to a fixed level of pollution. All over-budget emissions are penalized heavily, and all parties can trade permits.

Cap and Trade

Total cap = **100** tonnes CO₂e

20 A

30 A

30 A

20 A



Year 1

Cap and Trade

Total cap = **96** tonnes CO₂e

19 A

29 A

29 A

19 A



Year 2

Cap and Trade

Total cap = **100** tonnes CO₂e

20 A

30 A

30 A

20 A



20



30



20



30

= 100

Cap and Trade

Total cap = **100** tonnes CO₂e

20 A 30 A 30 A $\xrightarrow{10 A}$ 20 A



20



30



20



30

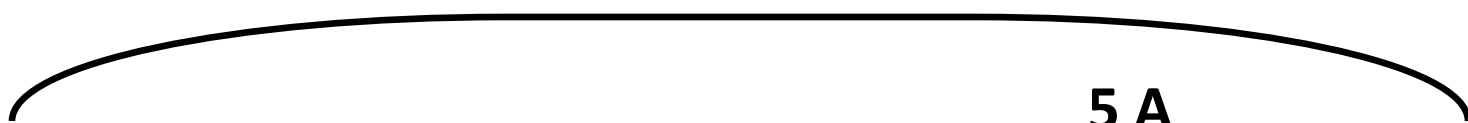
= 100

Cap and Trade w/ Offsets

Total cap = **100** tonnes CO₂e



50

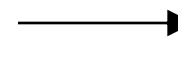


20 A

30 A

30 A

5 A



20 A



20



30



20



30

= 100

Cap and Trade

- Acid rain – SO_x and NO_x markets in the US
- Kyoto Protocol
- European Union Emissions Trading Scheme
- Regional Greenhouse Gas Initiative
- Western Climate Initiative
- Chicago Climate Exchange
- Climate Action Reserve (85% of the State's economy w/ offsets at 8%: urban forestry, industrial gas, landfill gas, North America Forestry)



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Carbon Offsets

- Used in all of the current regulatory markets
- Also used in situations where there is no mandatory market = right now in the USA
- Why are people buying offsets voluntarily?



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Voluntary Action is the Key for 2010!

- Corporate social responsibility (CSR)
- Green marketing/branding
- Preparing for compliance
- Easier than direct reductions
- To save money and reduce operating costs
- Reputational and commercial risk

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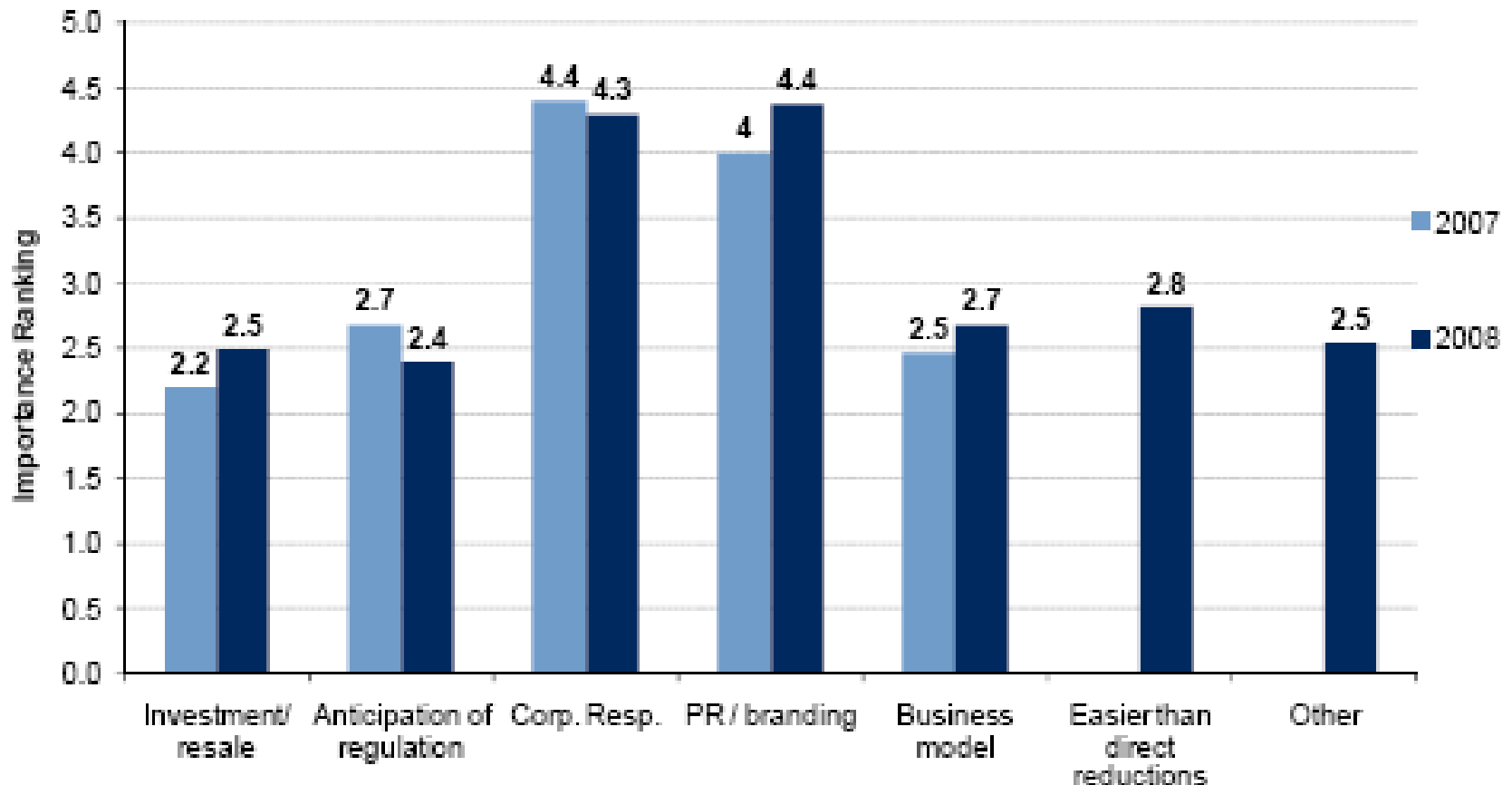
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Voluntary Action

Figure 34: Customer Motivations¹



Source: Ecosystem Marketplace, New Carbon Finance. (1)Based on 136 survey respondents



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The State of the Voluntary Carbon Market 2009

Transaction Volumes and Values, 2006, 2007, 2008 Markets

	<i>Volume (MtCO₂e)</i>			<i>Value (US million)</i>		
	2006	2007	2008	2006	2007	2008
Voluntary OTC Market	14.3	42.1	54.2	58.5	258.4	398.0
CCX	10.3	22.9	69.2	38.3	72.4	306.7
Total Volun. Markets	24.6	65.0	123.4	96.7	330.8	704.8
EU ETS	1,1044	2,061	2,982	24,436	50,097	94,972
Primary CDM	537	551	400	6,887	6,887	6,118
Secondary CDM	25	240	622	8,384	8,384	15,585
Joint Implementation	16	41	20	141	495	294
New South Wales	20	25	16	225	224	177
Total Regul. Markets	1,702	2,918	4,146	40,072	66,087	117,582
Total Global Market	1,727	2,983	4,270	40,169	66,417	118,287

Source: Ecosystem Marketplace, New Carbon Finance, World Bank

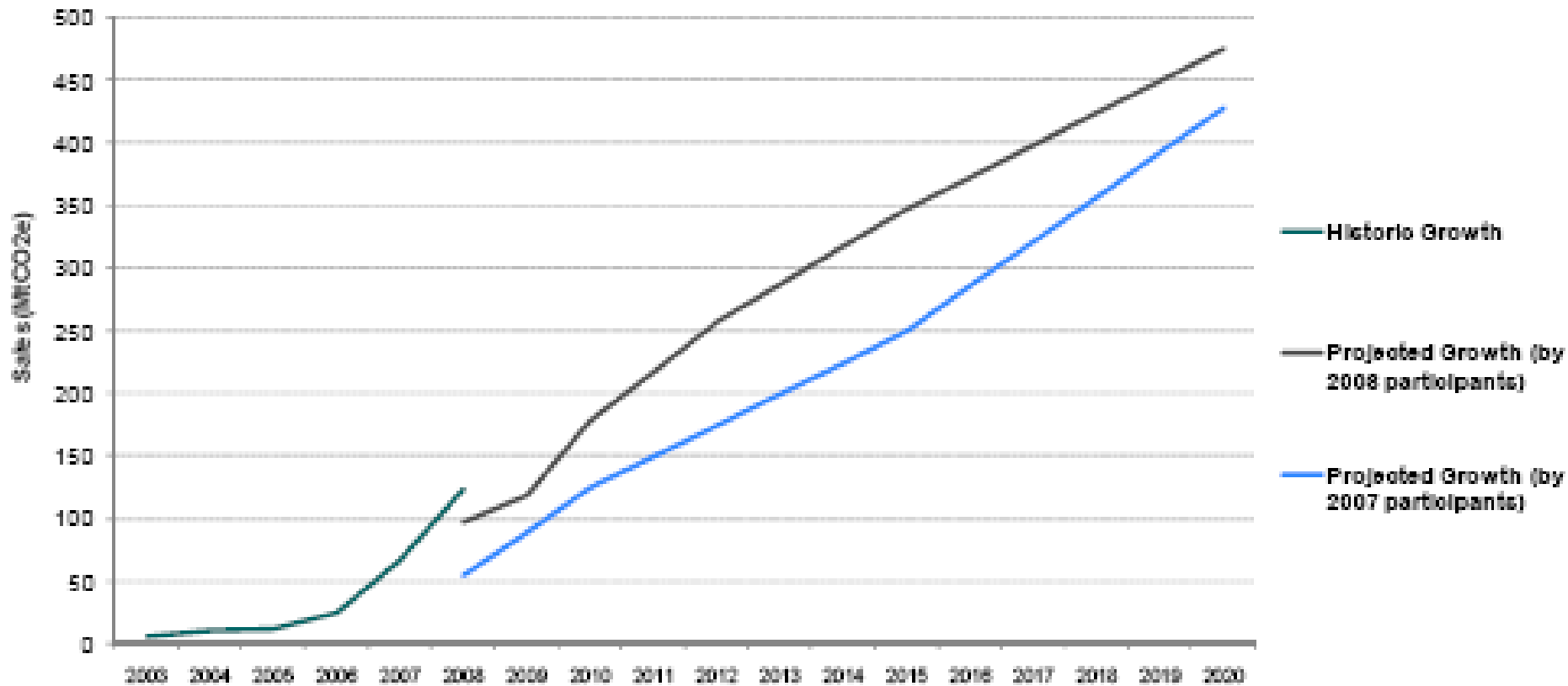
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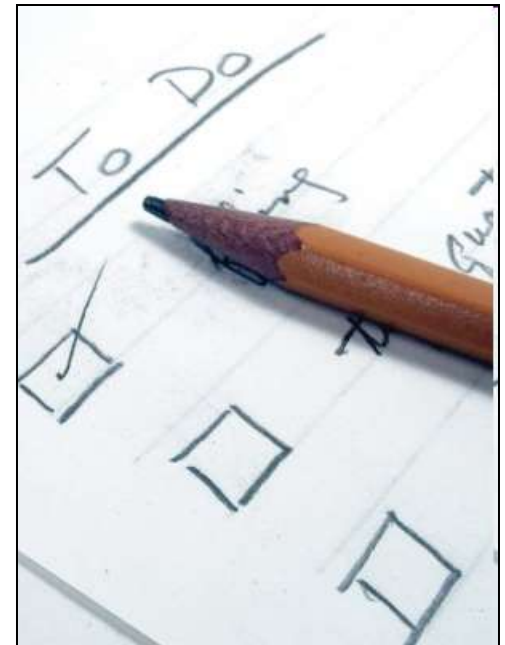
Figure 35: Supplier-Projected Growth in the Voluntary Carbon Markets¹



Source: Ecosystem Marketplace, New Carbon Finance. (1) Based on 136 survey respondents

Carbon Offsets

- A high quality carbon offset can demonstrate:
 - Additionality
 - Permanence
 - Ownership
 - Leakage control
 - Monitoring and Verification
 - Registration



Carbon Offsets

- A high quality carbon offset can demonstrate:
 - **Additionality** = above and beyond “business as usual”

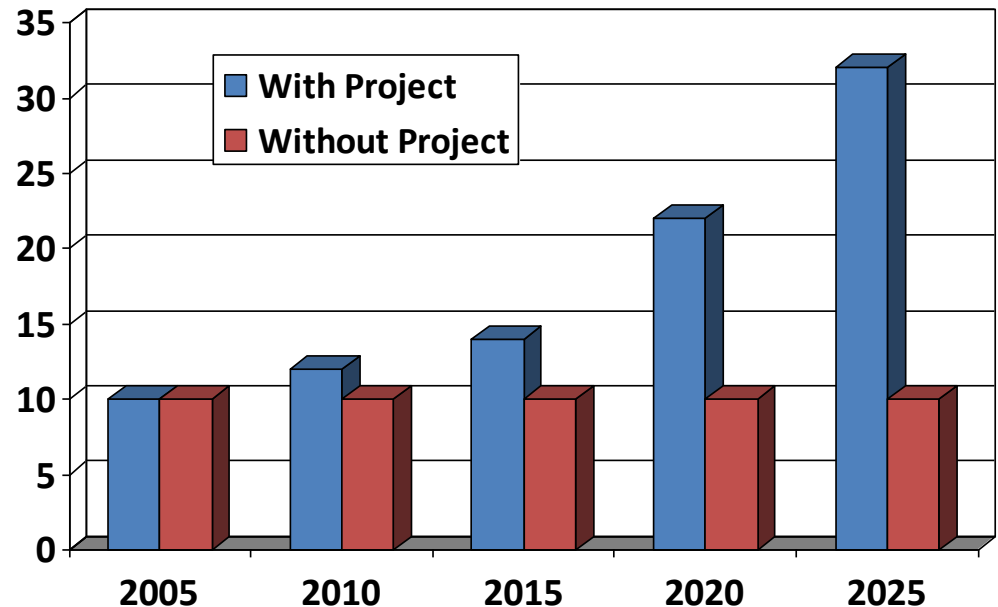
What would happen without the project?



Carbon Offsets

- A high quality carbon offset can demonstrate:
 - **Additionality** = above and beyond “business as usual”

Carbon stocks
with and without
the project?



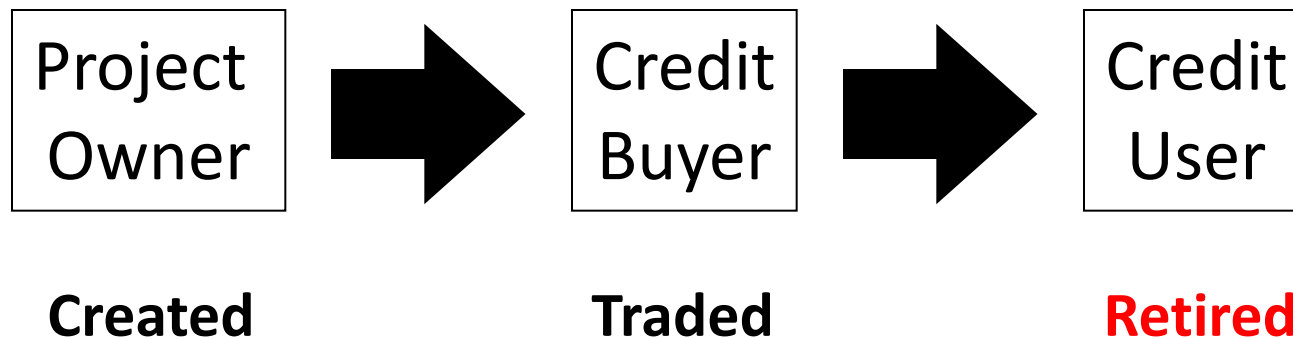
Carbon Offsets

- A high quality carbon offset can demonstrate:
 - **Permanence** = are emissions reductions going to be preserved over time?



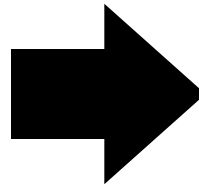
Carbon Offsets

- A high quality carbon offset can demonstrate:
 - **Ownership** = clear title and chain of custody



Carbon Offsets

- A high quality carbon offset can demonstrate:
 - **Leakage control** = does this project shift just shift emissions to another place?



Carbon Offsets

- A high quality carbon offset can demonstrate:
 - **Registration** = traded on a public platform

Projects							
Project ID ▲▼	Project Developer ▲▼	Project Name ▲▼	Verifier ▲▼	Project Type ▲▼	Status ▲▼	Project Site Location ▲▼	Project Site State ▲▼
CAR411	TerraPass	Beulah Municipal Landfill (Dorchester County, MD)		Landfill Gas Capture/Combustion	Listed	Hurlock	MD
CAR408	The Conservation Fund	Big River / Salmon Creek Forests	Scientific Certification Systems (SCS)	Conservation-Based Forest Management	Registered	Mendocino County, CA	CA
CAR403	Black Warrior Solid Waste Disposal Authority	Black Warrior Solid Waste Facility	First Environment, Inc.	Landfill Gas Capture/Combustion	Listed	Coker	AL
CAR423	Timberline Energy, LLC	Butler County Landfill Pipeline Project	SCS Engineers	Landfill Gas Capture/Combustion	Listed	David City	NE

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Panama Re-forestation Project

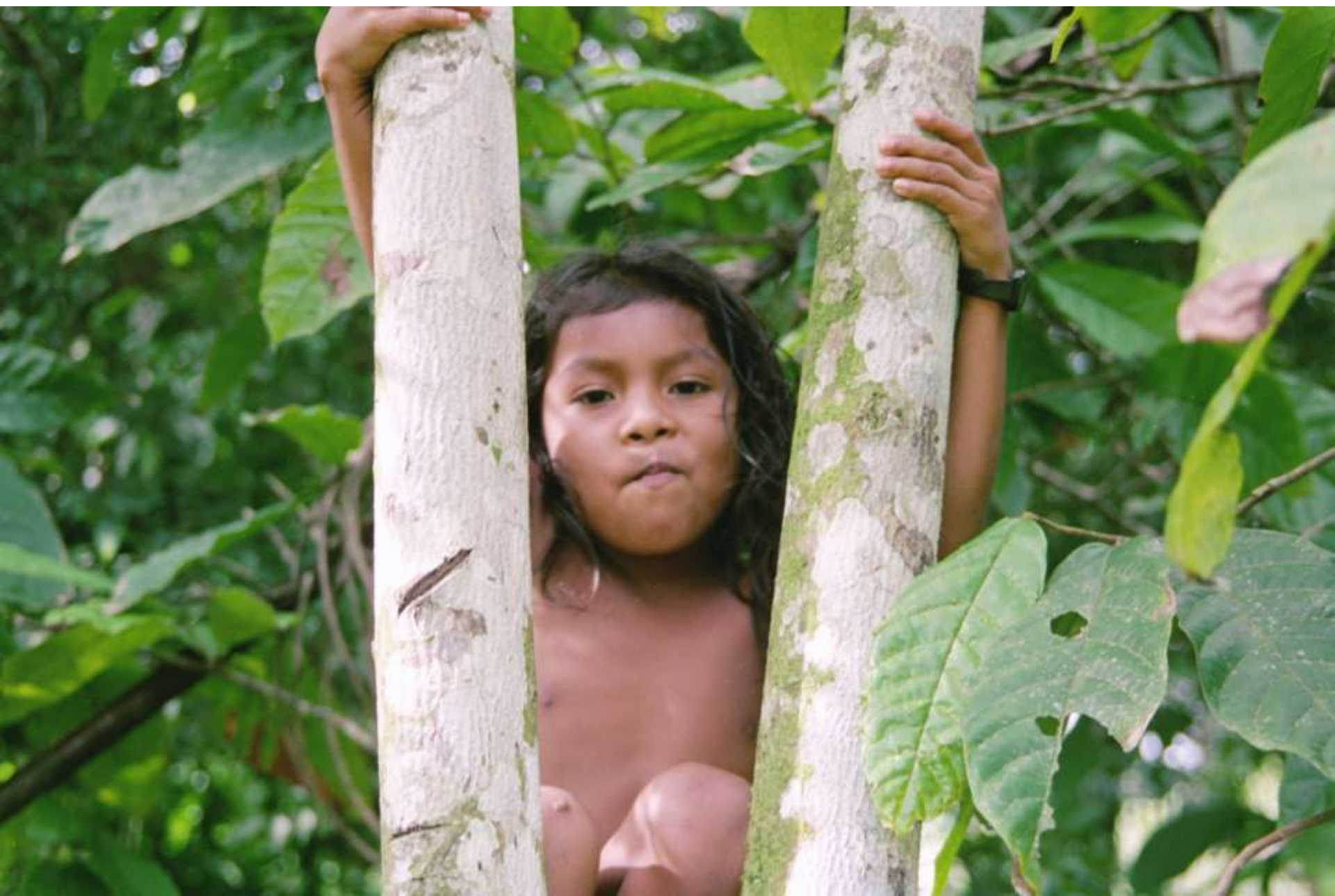
- Re-planting native rainforest trees on degraded land
- Annual measurement
- High biodiversity benefits
- Positive social impacts
- Certified carbon offsets













































































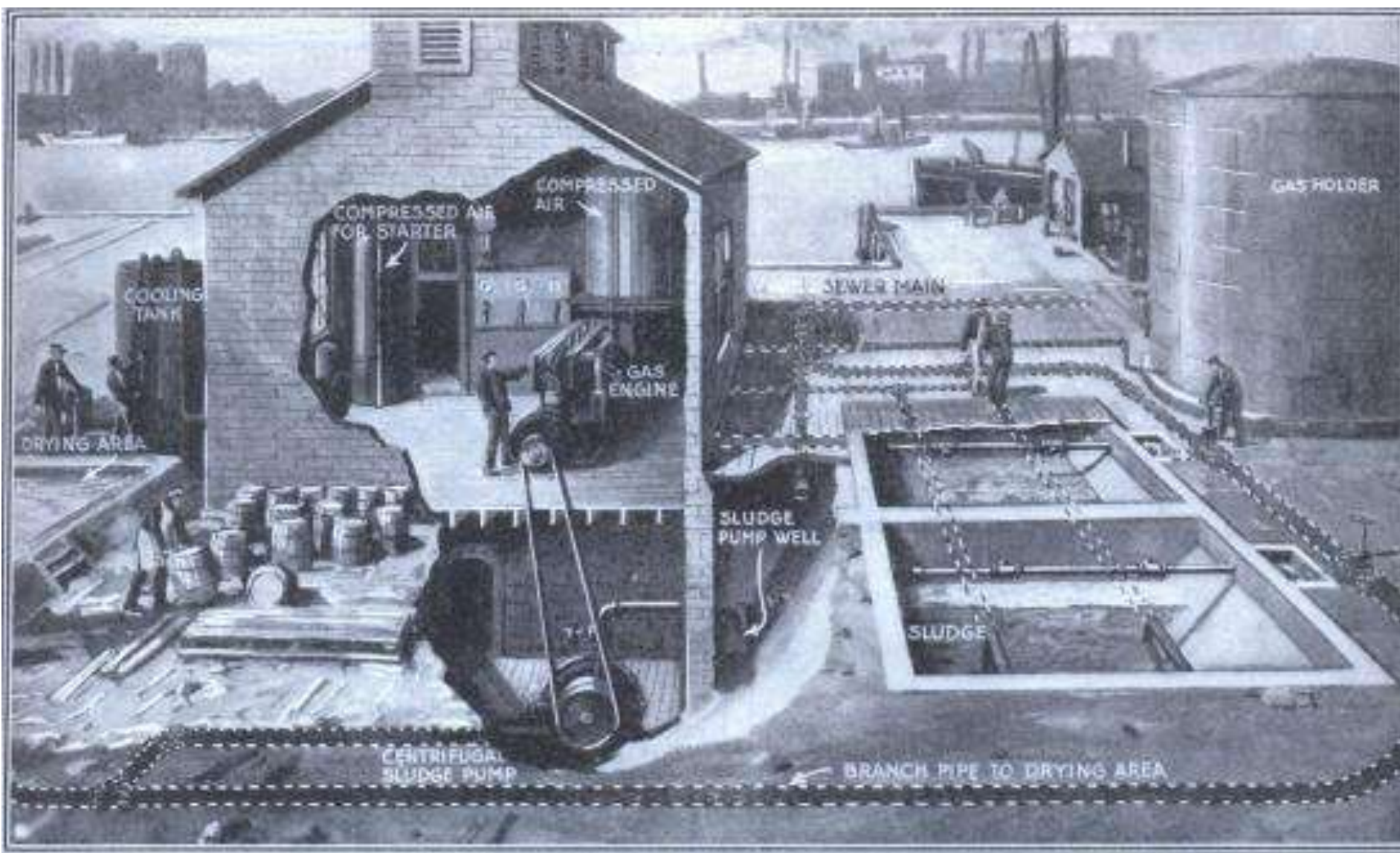
THERE IS NO PLANET B

KLIMAT AKTION

BLA BLA BLA...
ACT NOW







COOLING TANK

DRYING AREA

COMPRESSED AIR FOR STARTER

COMPRESSED AIR

GAS ENGINE

SEWER MAIN

GAS HOLDER

SLUDGE PUMP WELL

SLUDGE

CENTRIFUGAL SLUDGE PUMP

BRANCH PIPE TO DRYING AREA













A photograph of a metal pipe in a utility room. The pipe is horizontal and has a white label with the word "Manure" written in green. The pipe is connected to a larger metal fitting on the right. In the background, there are yellow stairs with black grates and white structural beams. The floor is concrete with a metal grate in the foreground.

Manure







CONTROL POWER ON

CONTROL POWER

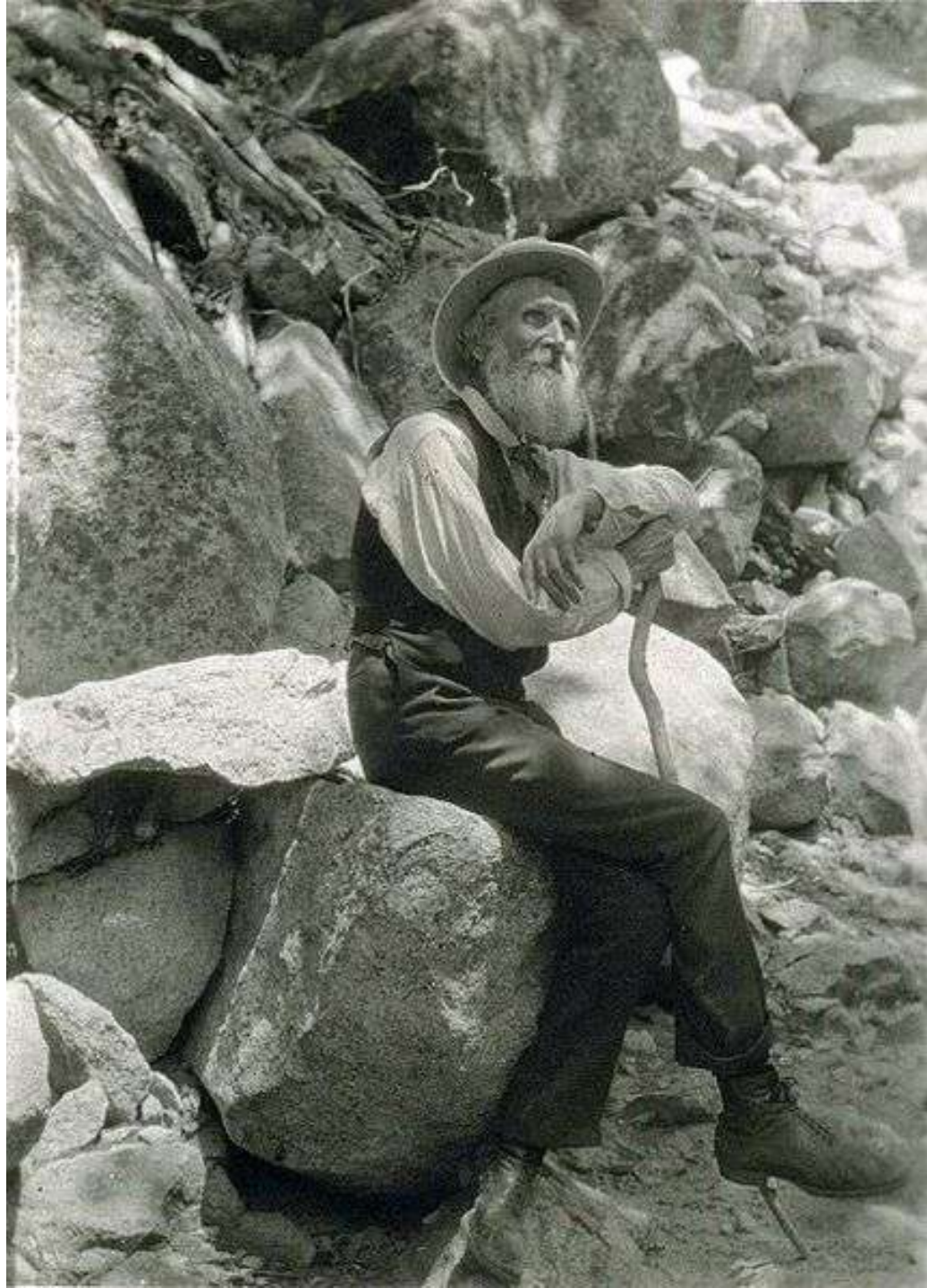












← MARSHALL CREEK RD.
← DEER CREEK RD.
← SEELEY LAKE























