



Sustainable Productivity and The Future of Food

APO Sustainable Productivity Summit 2018

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Future of Food?



<http://creator.rest/>



<http://www.msnbc.com/>



Challenges



Solutions





Resources

An aerial photograph showing a vast agricultural landscape. The foreground and middle ground are dominated by large, rectangular fields with distinct rows of crops, likely corn or soybeans. The fields are separated by dirt roads and some smaller trees. In the background, there are rolling hills and a line of trees under a clear sky. The overall scene depicts a well-organized and extensive farming operation.

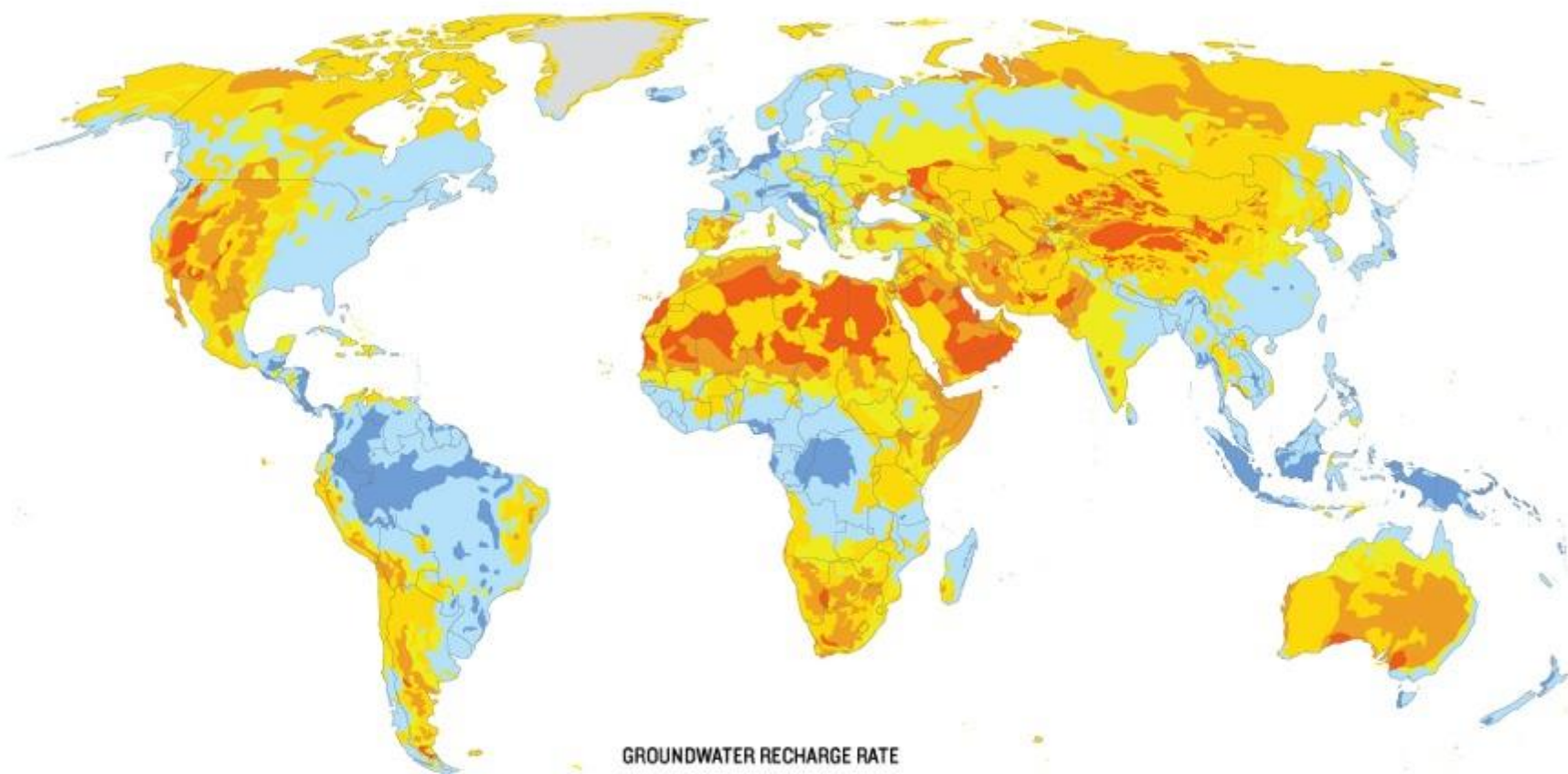
49 Million km² Farm Land

<http://www.farmlandlp.com/>



70% fresh water > agriculture





GROUNDWATER RECHARGE RATE

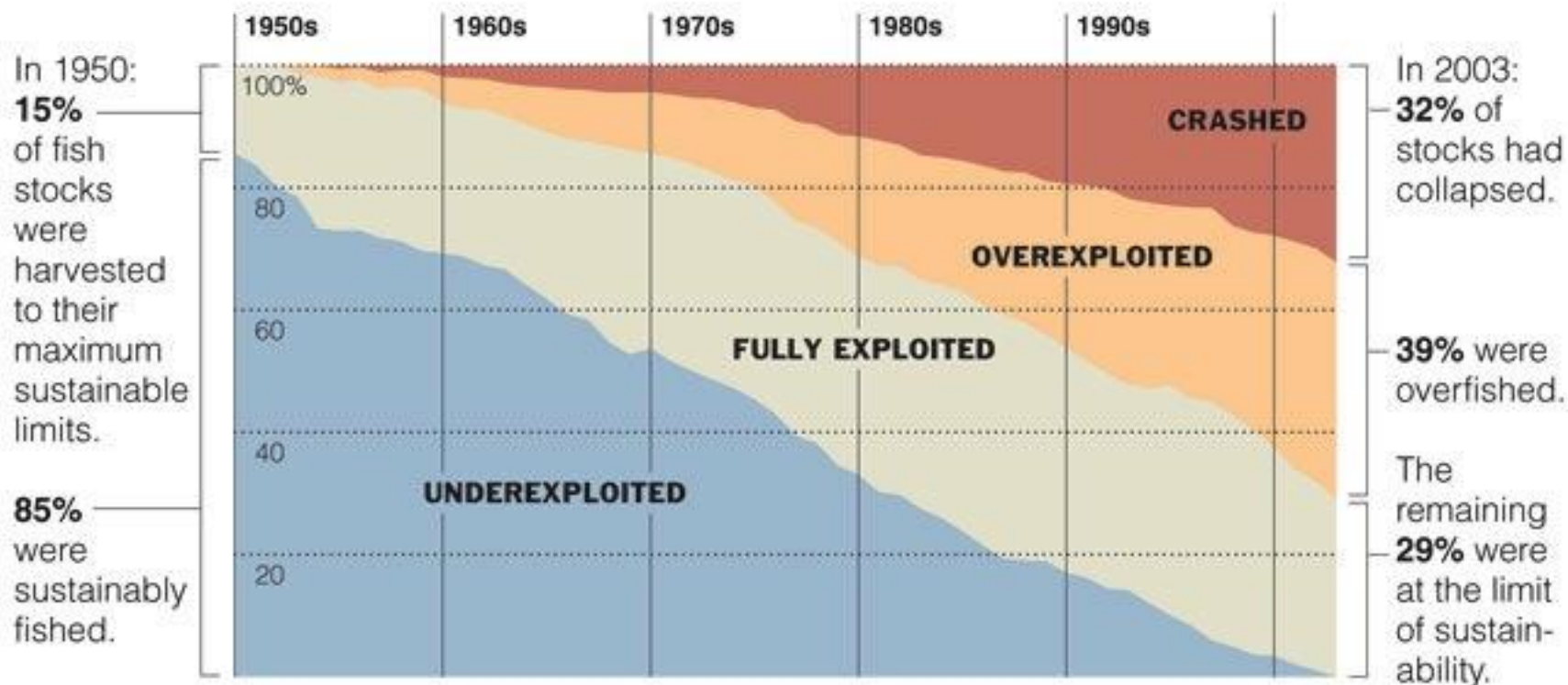




<https://www.askalender.com/>

At the Breaking Point

The condition of the world's fisheries has declined drastically because of overfishing.



Source: Sea Around Us Project (searoundus.org)

BILL MARSH/THE NEW YORK TIMES

Climate Change

A photograph of a power plant at sunset. The sky is a mix of dark, heavy clouds and a bright orange and yellow glow from the setting sun. Several large cooling towers are visible, with thick white smoke or steam billowing from them, filling much of the upper sky. In the foreground, a road with a white car driving away is visible, along with a road sign on the right side. The overall mood is somber and industrial.

<http://www.chicagotribune.com/>

Drought > Groundwater Pumping > Permanent Subsidence



An aerial satellite-style photograph of a tropical cyclone. The storm features a prominent, dark, circular eye at its center, surrounded by a dense, white ring of clouds. Multiple concentric bands of white clouds spiral outwards from the center, creating a swirling pattern over a dark blue ocean surface. The overall appearance is that of a powerful, well-developed storm system.

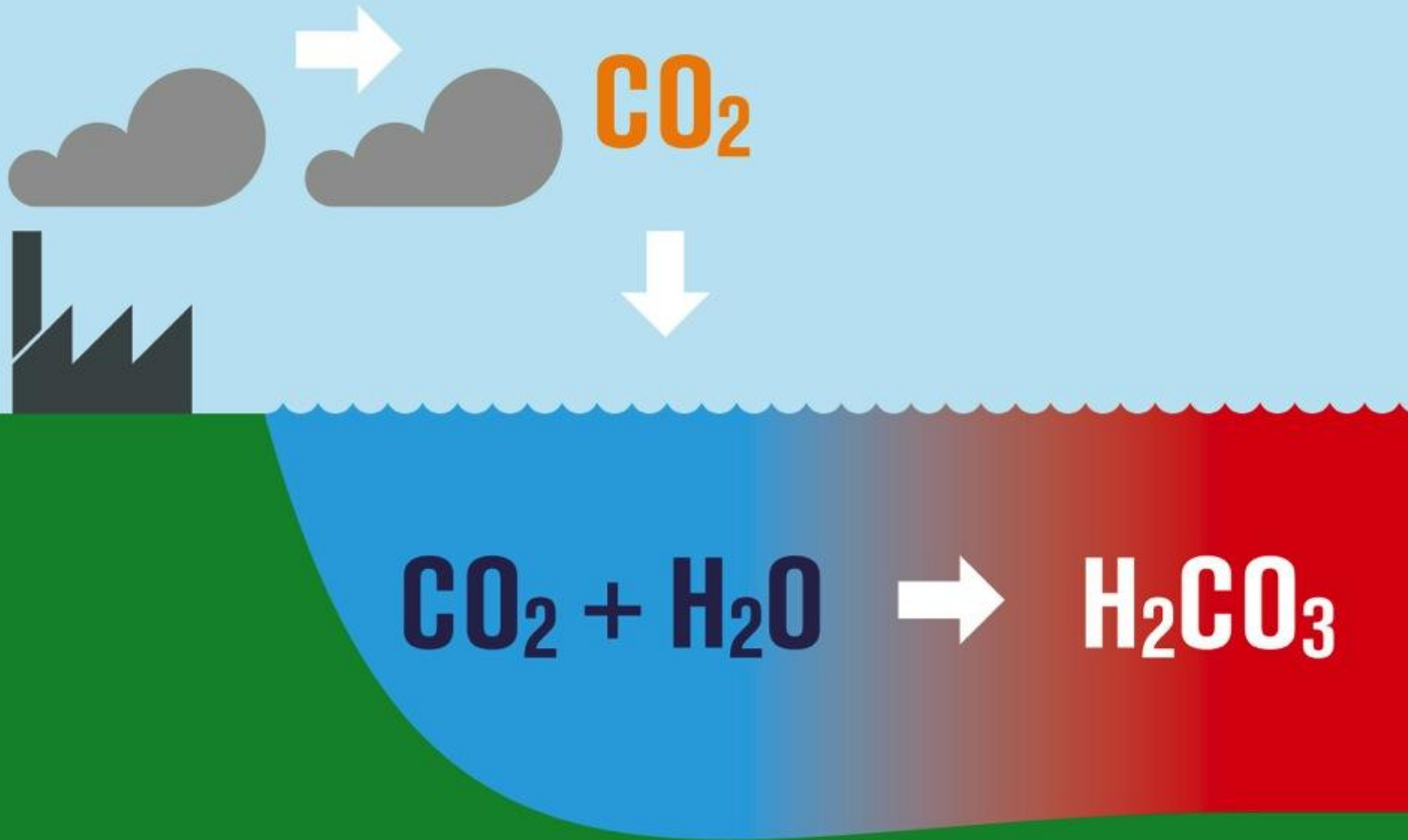
Extreme Weather

<http://clipart-library.com/>



Pests

Ocean Acidification



A photograph showing a deforested area. In the foreground, there is a field of cut logs and tree stumps, indicating recent logging activity. The ground is covered with dry leaves and twigs. In the background, a dense forest of tall trees is visible, suggesting the remaining forest. The word "Deforestation" is overlaid in white text on a dark horizontal band across the center of the image.

Deforestation



Labor

...

An aerial photograph showing a vast sheep farming operation. The image is filled with numerous rectangular pens, each containing a large number of sheep. The sheep are of various colors, including white, black, and brown. The pens are arranged in a grid-like pattern, and the ground is a reddish-brown color. The overall scene depicts a large-scale, organized animal agriculture facility.

Animal Agriculture

26% of ice-free land on earth grazed

33% of croplands grow feed for animals

Trillions of gallons of water used



242 Billion Kgs



Pets eat >15B Kgs meat per year in the USA

Animal Agriculture must be top
priority for sustainable solutions

It is possible

Optimizing Crop Production

- Precision Agriculture
- Indoor Agriculture
- Crop Genetics



A precision agriculture heatmap showing a field with varying crop health or yield. The colors range from dark green (low yield/health) to red (high yield/health). A central dark green area is surrounded by red and yellow patches. A black rectangular area is visible on the left side of the image.

Precision Ag



Plant Factories

<https://news.nationalgeographic.com/>



CRISPR

Getty Images

Reducing Livestock's Footprint

- Alternative Proteins
- More efficient feeds



IMPOSSIBLE™







Insect Protein

Pet Food



Livestock and Aquaculture Feed



<https://www.wattagnet.com/>

We face significant challenges

We must produce more with less

Animal agriculture is key



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