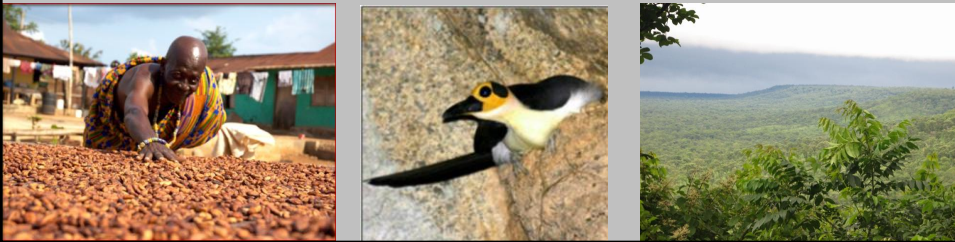


State of Ecosystem Services & Introduction to Climate Change



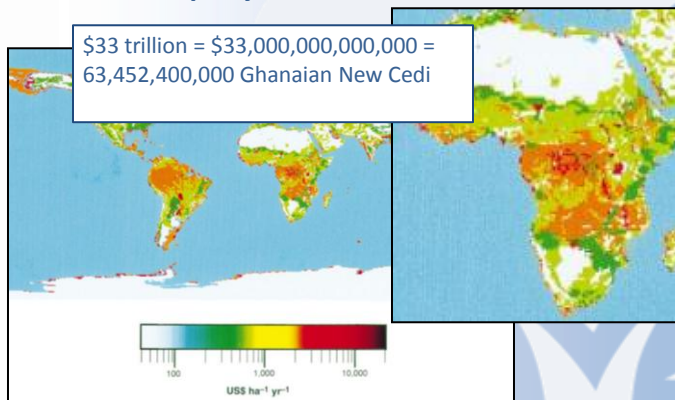
Rebecca Anzueto
 Manager, Community and Markets Initiative
 Forest Trends
 18 April 2013



Value of Ecosystem Services

- Estimated value of ecosystem services is **more than \$33 trillion per year!**

\$33 trillion = \$33,000,000,000,000 =
 63,452,400,000 Ghanaian New Cedi



Source: Costanza R et al (1997) "The value of the world's ecosystem services and natural capita." *Nature*. 387 (15 May 1997) pp. 253-260.



But ecosystem services are declining...

- 60-70% of ecosystem services are being used unsustainably or are degraded

Why?


- Their value is underestimated
- Considered a “public good”
- Unsound economic development practices
- What isn’t valued is overused




Some results of ecosystem service degradation


- Livelihoods - no or difficult access to fuel wood
- Health - more disease
- Economic - job losses
- Greater poverty
- Cultural change



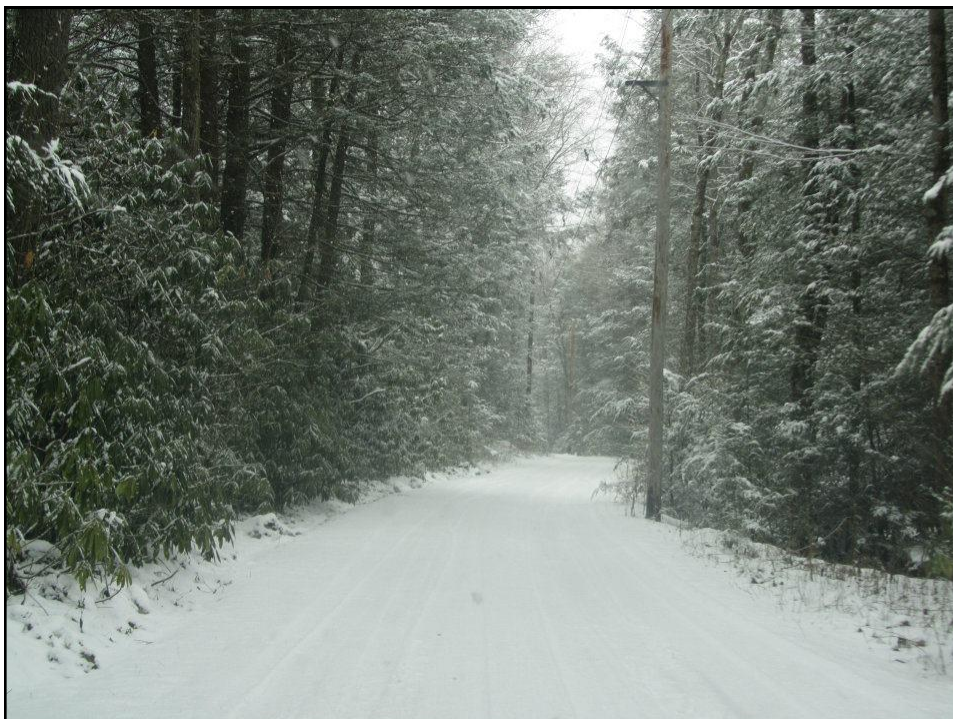
 Global warming



The Earth's temperature should be -18°C ! That's like standing inside of a freezer! (The average temperature in Ghana is $+26^{\circ}\text{C}$.)

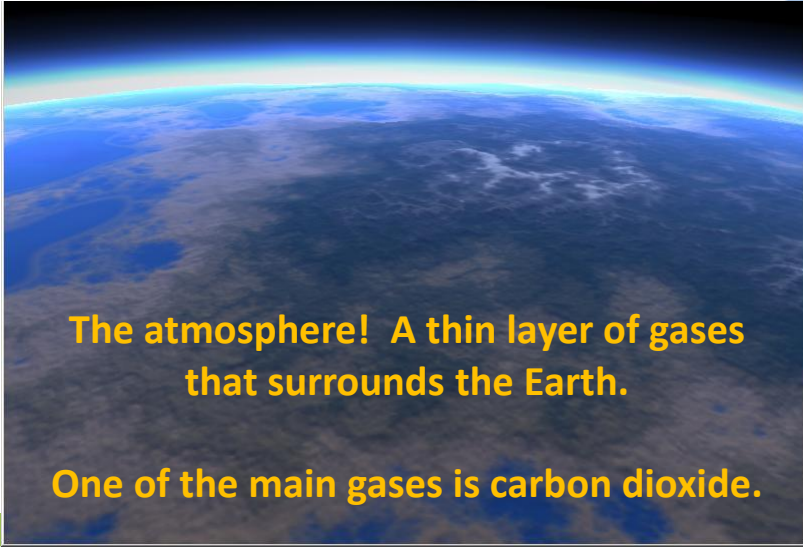


FOREST TRENDS





Why isn't the Earth that cold?



The atmosphere! A thin layer of gases that surrounds the Earth.

One of the main gases is carbon dioxide.



What is carbon?

The diagram illustrates the carbon cycle. On the left, a lush green forest represents a carbon sink. On the right, a pile of wood is shown being processed into charcoal, with smoke rising from it, representing carbon release. Below the charcoal, three bowls filled with charcoal are shown. A central blue box contains the text "Carbon dioxide" in white, with red arrows pointing from the forest to the charcoal and from the charcoal to the "Carbon dioxide" box.

FOREST TRENDS

A collage of three images illustrating sources of carbon dioxide. The top-left image shows a forest fire with thick black smoke rising into the sky. The top-right image shows a busy multi-lane highway with many cars and trucks. The bottom-left image shows a deforested area with a large pile of charred wood and smoke rising from it. A central white box contains the text "Carbon dioxide" in black, with red arrows pointing from each of the three images to the box.

 Carbon dioxide (and other “greenhouse gases”) make the atmosphere thicker,



 causing the Earth’s temperature to increase.





Other important greenhouse gases

- methane
- nitrous oxide



mining



landfills



livestock



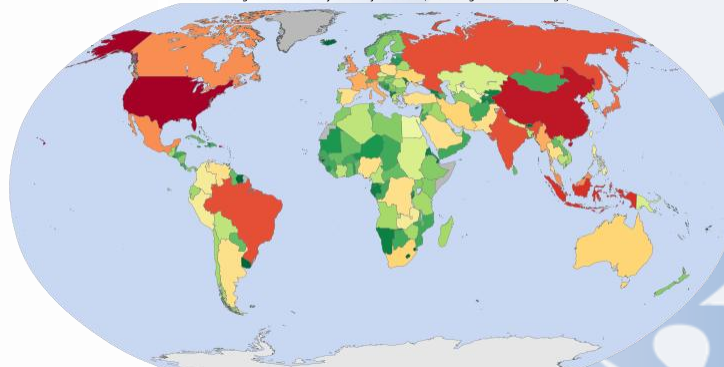
agricultural practices



http://1.bp.blogspot.com/_aiRjvoutd04/TKL8zRMLqC/AAAAAAAAADo/C7hzIRAH_5w/s1600/IMG_4098.JPG; <http://graphic.com.gh/images/stories/cattle.jpg>; <http://www.climaloop.com/wp-content/uploads/DSC00550.jpg>; http://www.ara-ghana.de/Pics/cat11_sol108.jpg



Greenhouse gas emissions by country in 2000 (including land-use change)



Data: World Resources Institute, CMI
Map: www.climaloop.com

no data 0

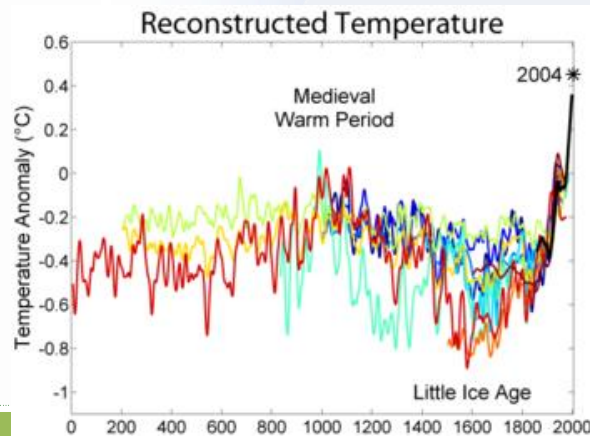
6,469 megatonnes CO₂e





So what does this mean?

- The Earth's average temperature is increasing – global warming.





Global warming produces local impacts referred to as **climate change**.




These impacts differ by region.



What effects of climate change have you felt in your village?

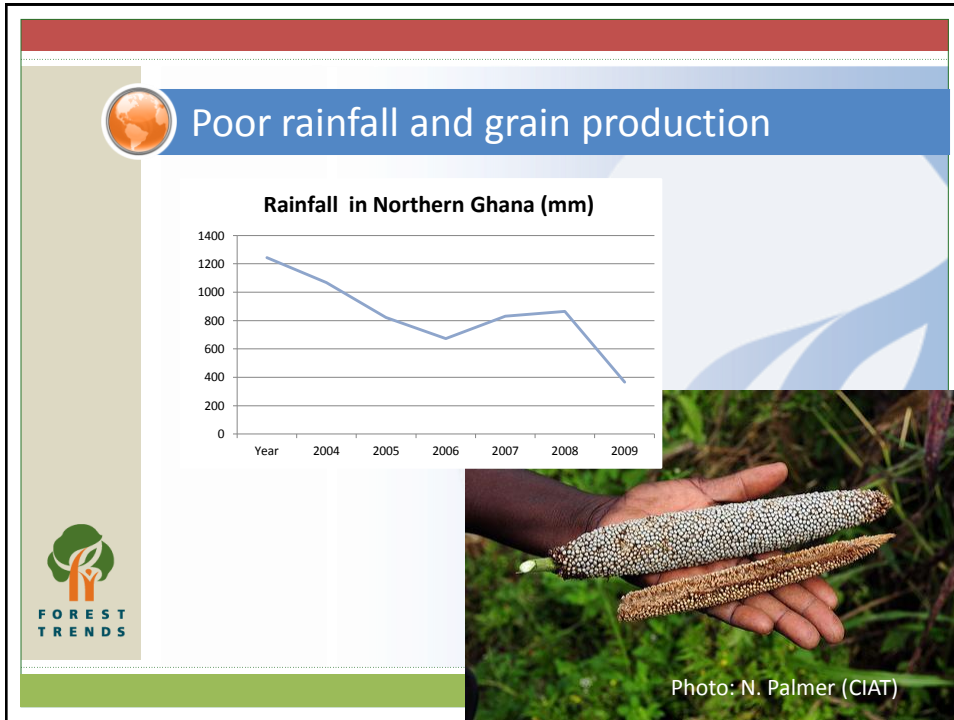


Floods in Northern Ghana 2007



Jane Hahn Photography







Decline in fisheries



So what do we do?

SUFFER

ADAPT

MITIGATE





Adaptation

- Use indigenous knowledge to determine when rainy season is due.
- Different intercropping strategies (millet-groundnut in years with poor rainfall or maize-millet with moderate rainfall)
- 'Zai' planting methods to increase moisture
- Using traditional crop varieties



Mitigation- Reduce size of problem

Valuation of ecosystem services



