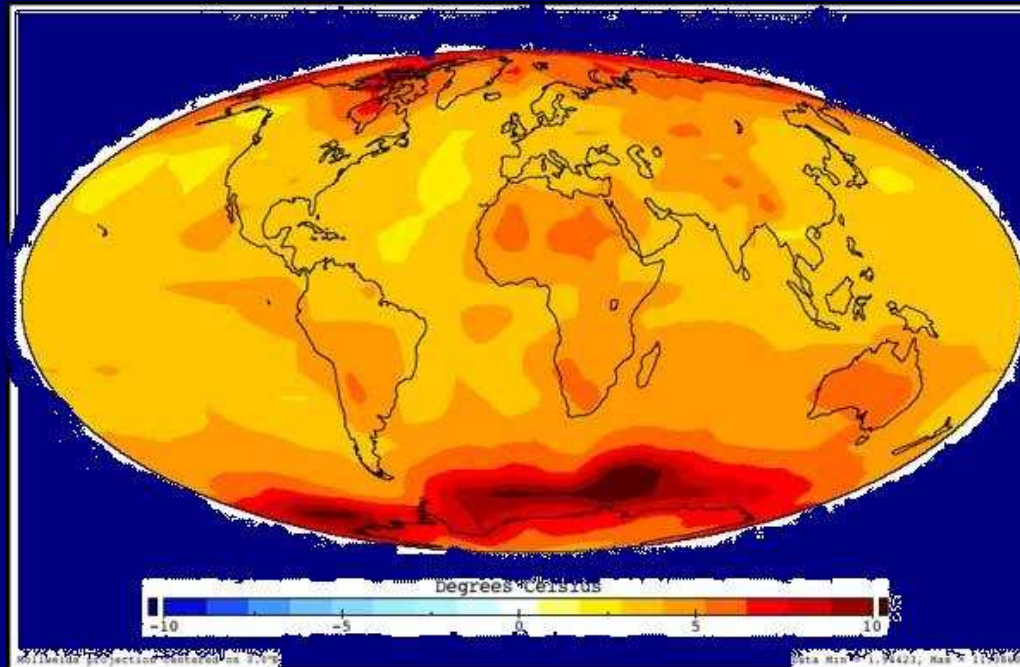


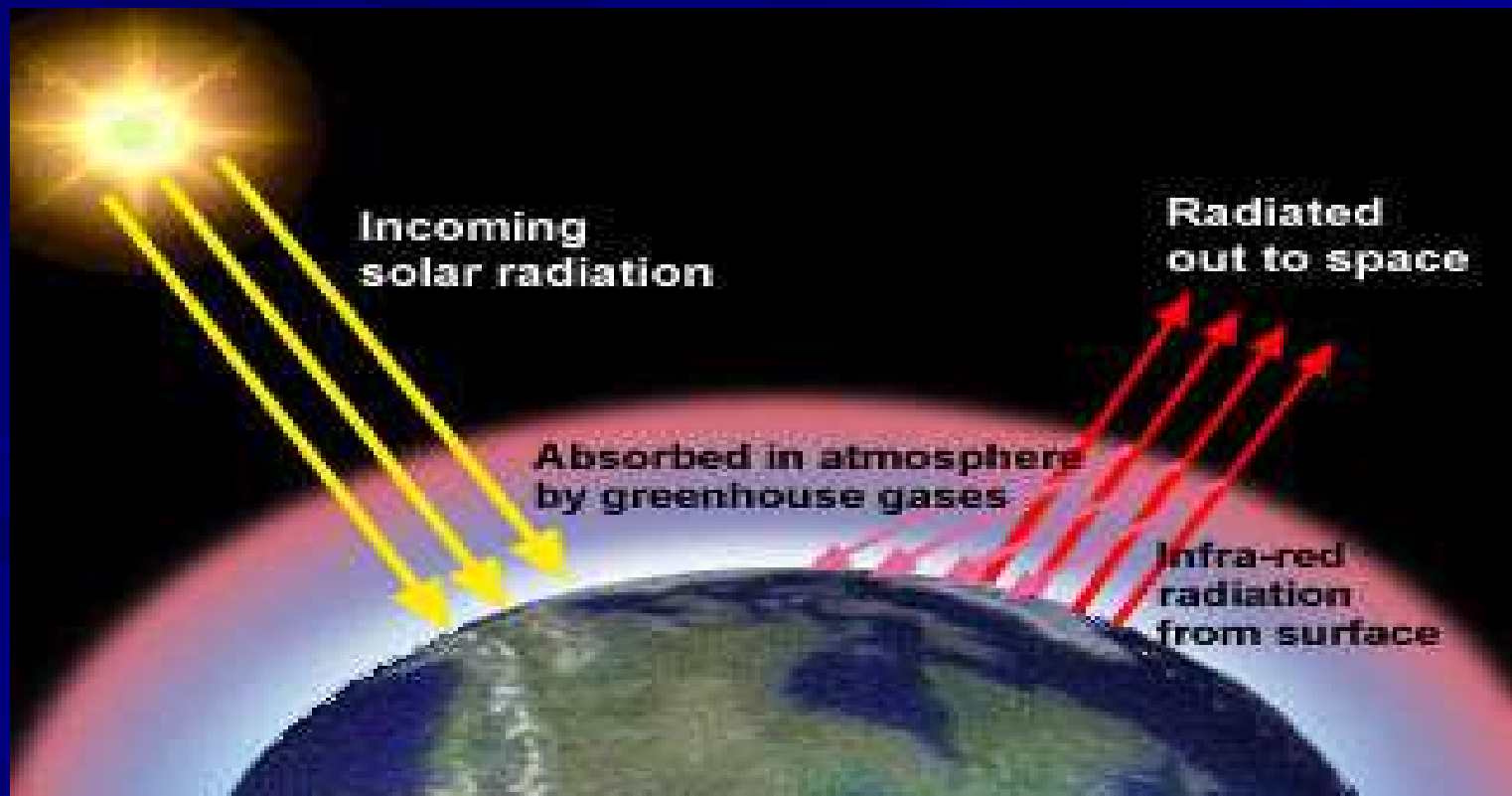
Greenhouse Gases and Transportation



By
Ali Bonakdar

What are Greenhouse Gases?

- The atmosphere contains mostly nitrogen, oxygen, argon and carbon dioxide.
- These gases regulate surface temperature
- Without gases temp would drop from 57 to 0



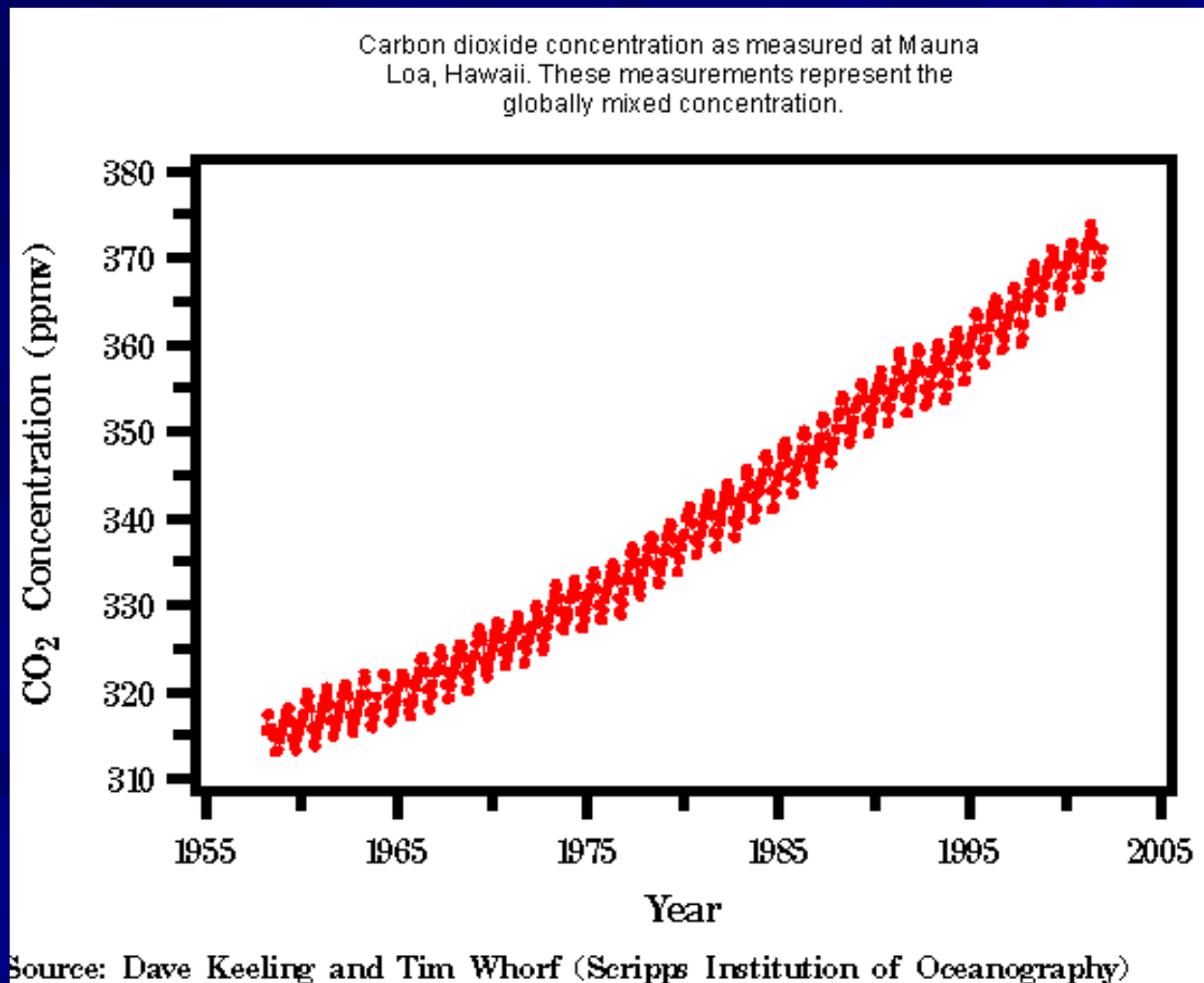
What is Wrong Now?

- Since the Industrial Revolution human has increased:
Water Vapor, CO₂, CH₄, O₃, N₂O, CFCs
- CO₂ Pre-Industrial Revolution Level = 280 ppmv;
current level = 380 ppmv
- Deforestation decreased CO₂ absorption



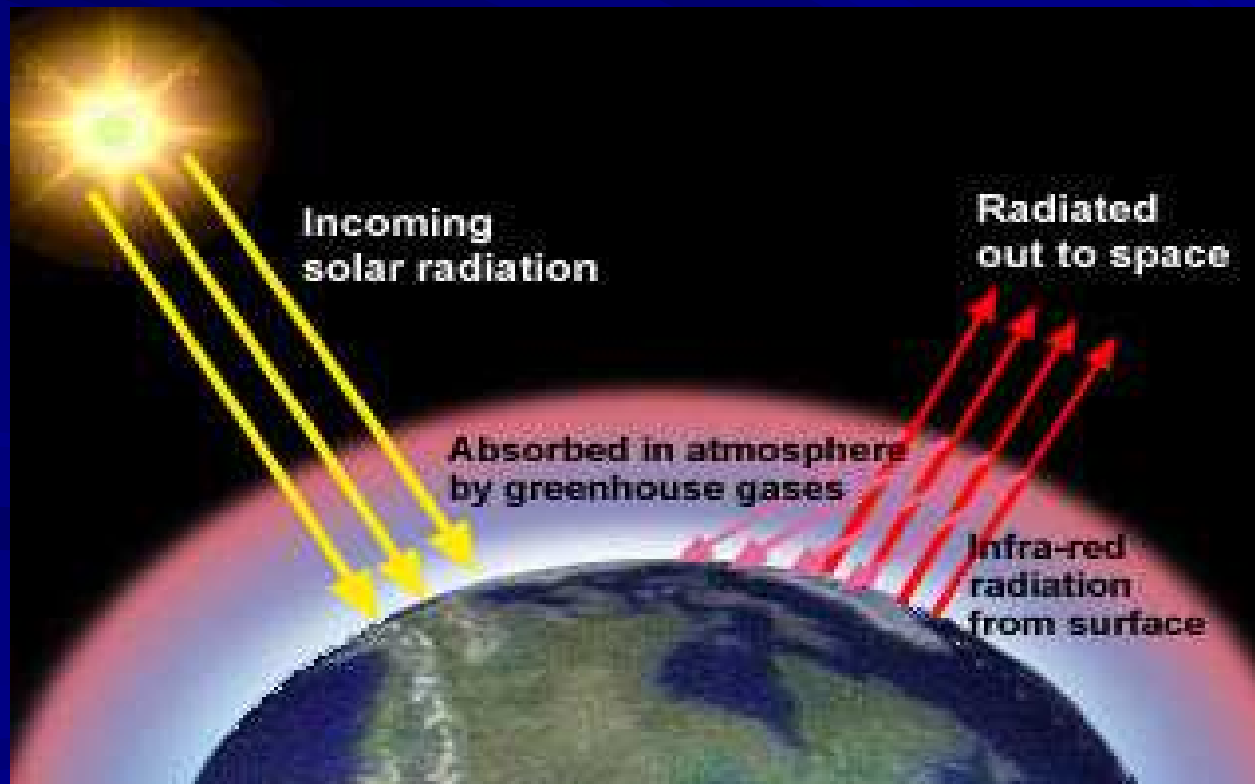
CO₂ Increases

- 1.9% CO₂ increase since 2000



What is Effect of CO₂ Increase?

- Gasses form a canopy that traps heat (GHG)
- The heat is re-radiated back to earth
- Surf. temp. increased 1.3F (1905 to 2005)



What are the Effects of Temperature Increase?

■ Environmental

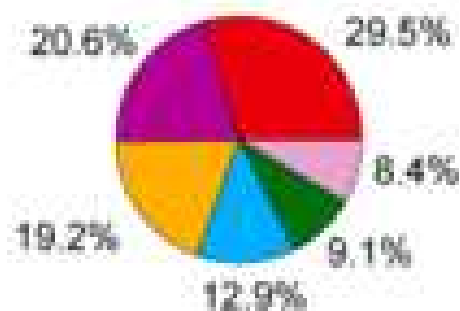
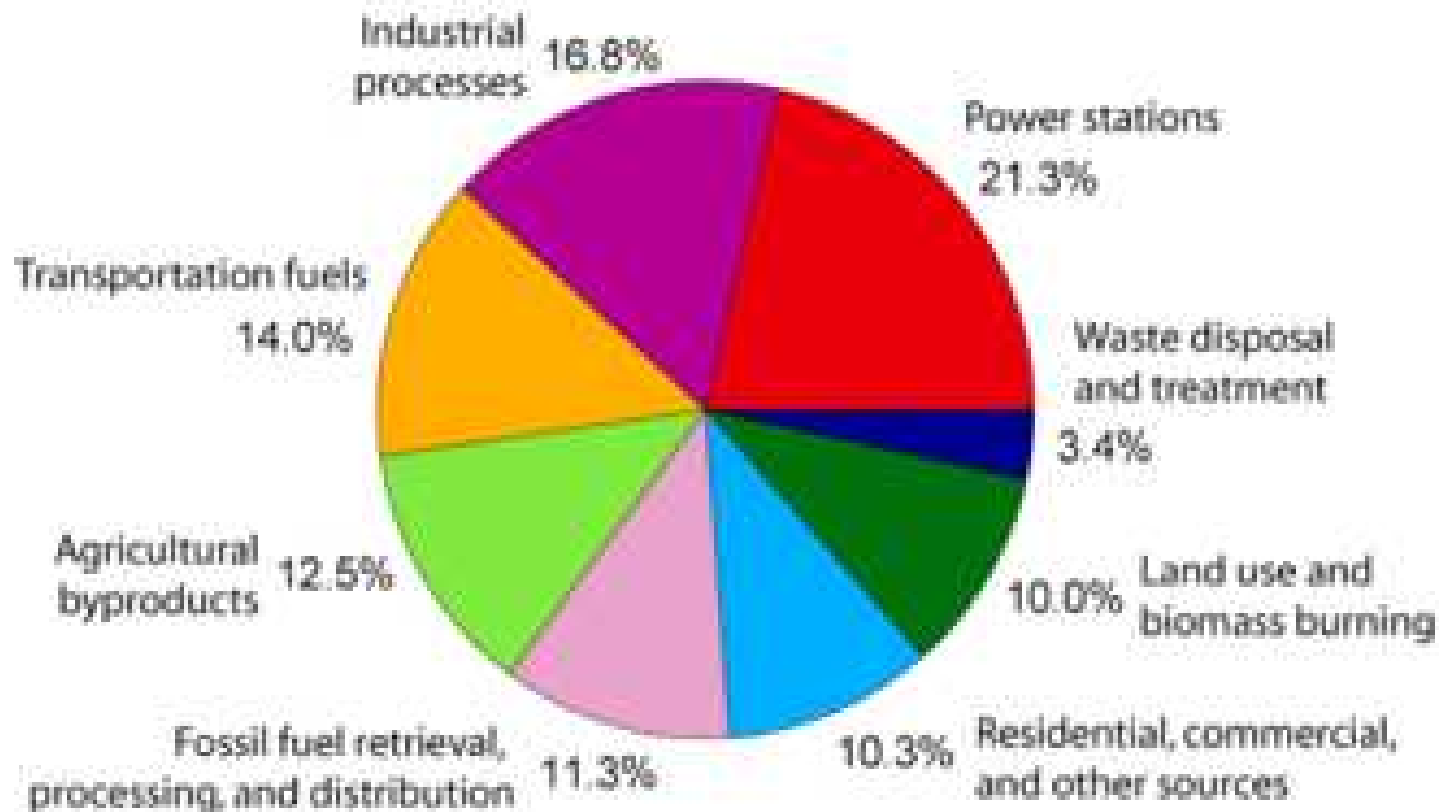
- Climate Changes, Glacier Retreat, Rising Sea Levels

■ Human Life

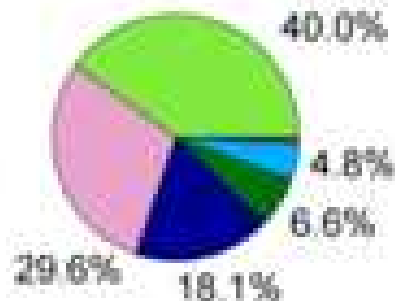
- Altered patterns of agriculture, Expansion of tropical diseases, Economic Effects



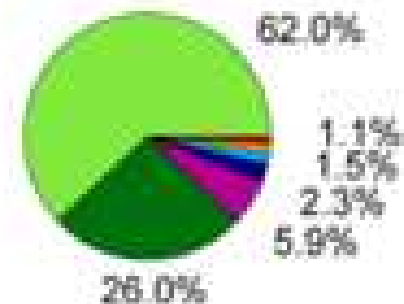
Annual Greenhouse Gas Emissions by Sector



Carbon Dioxide
(72% of total)

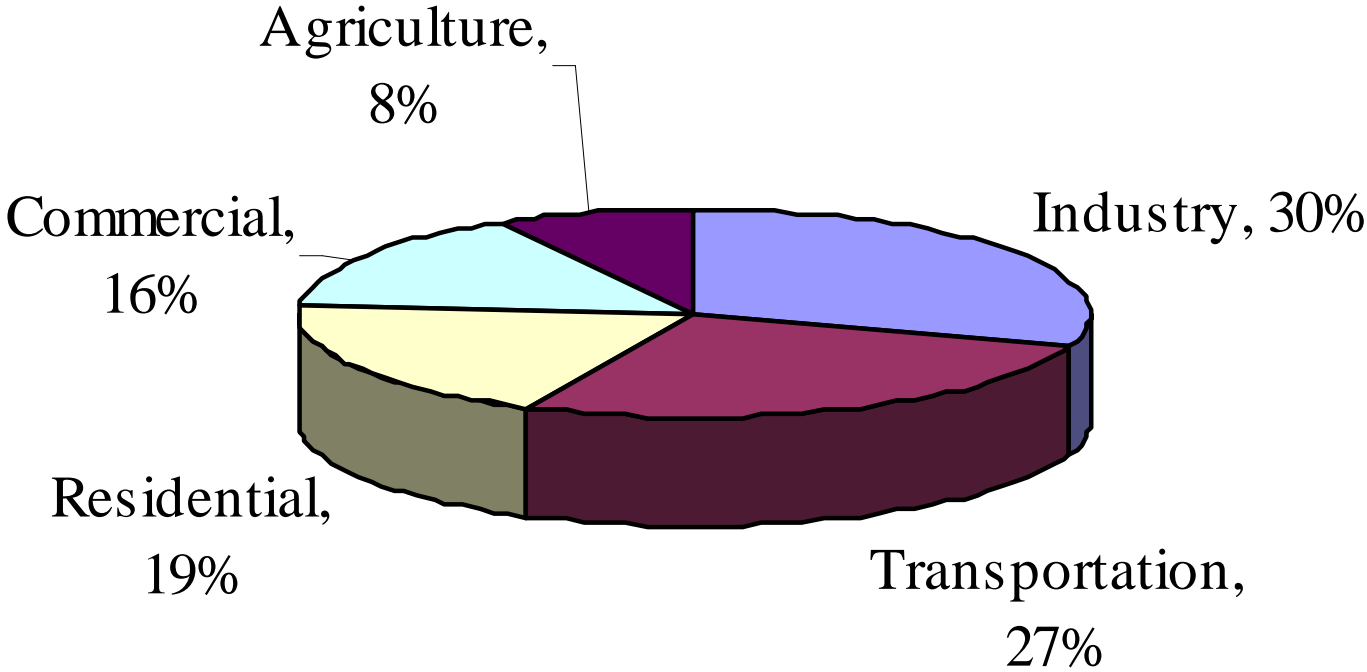


Methane
(18% of total)

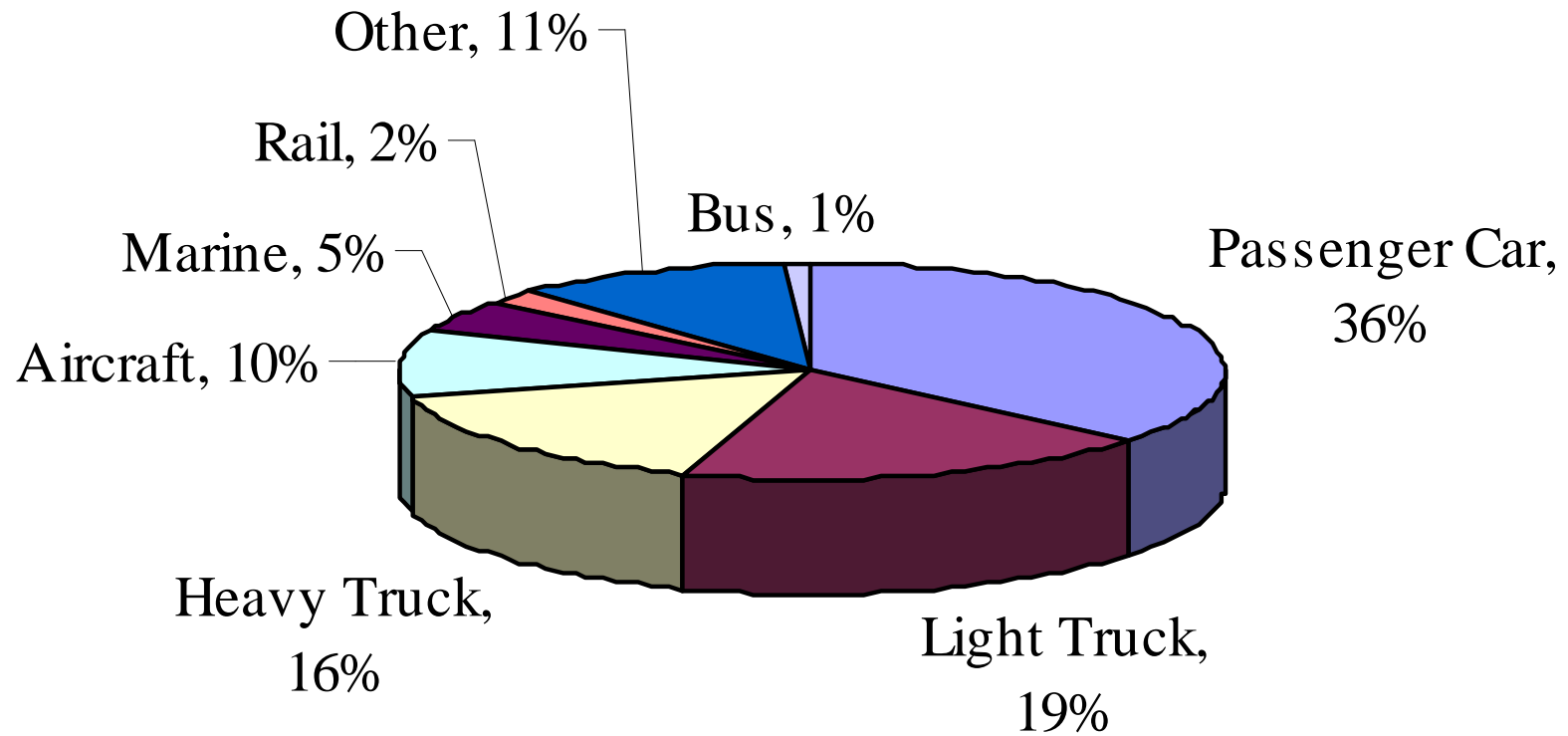


Nitrous Oxide
(8% of total)

2000 US GHG Sources



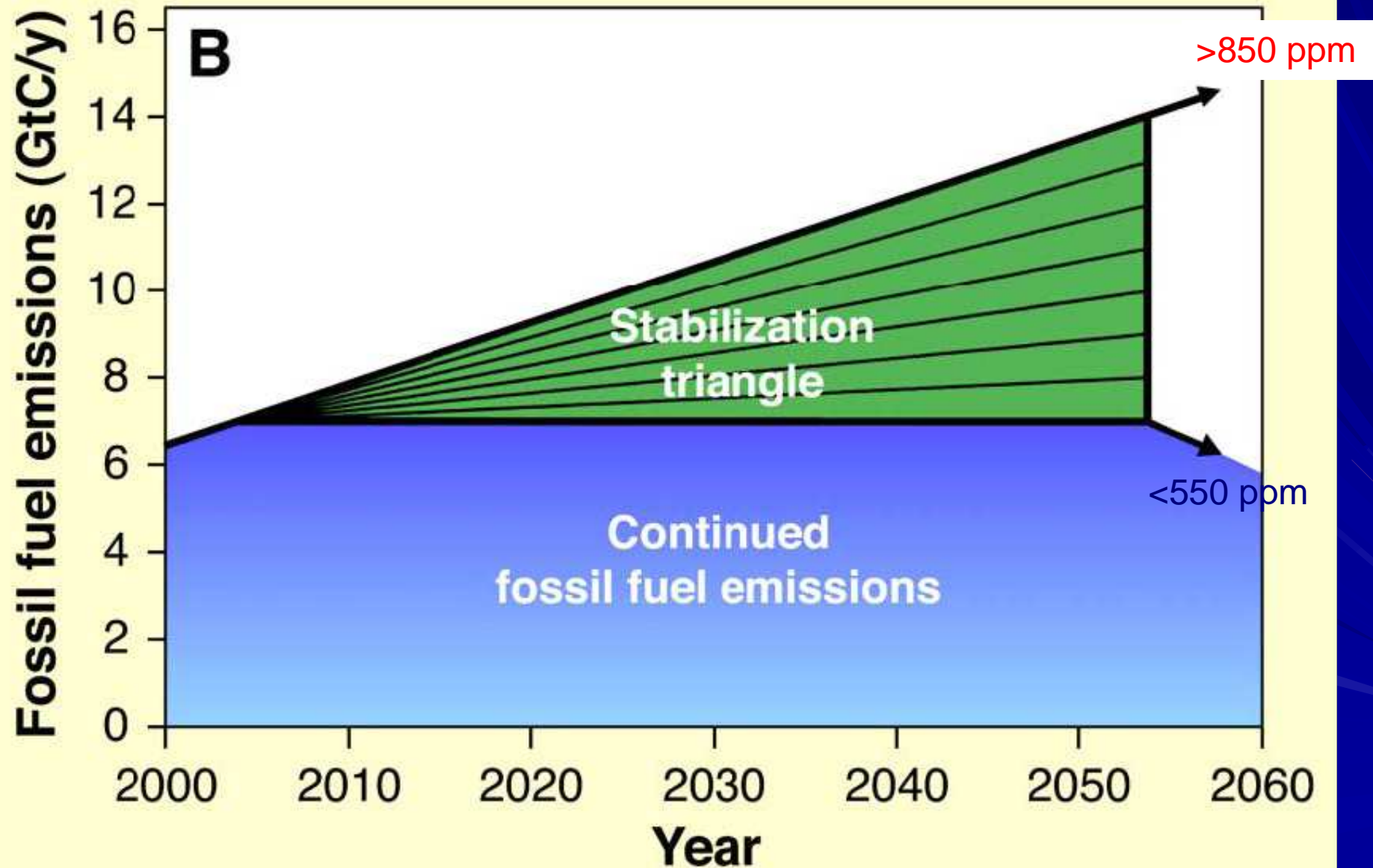
Share of Various Modes



Understanding our Share of Emissions

- With 4% of the world population, US is responsible for 25% of CO₂
- We consume 50 million ton of paper annually = >850 million trees
- US transportation is responsible for 33% of US CO₂ emissions
- OR transportation share of GHG is 38%
- 1 gal. of gas produces 8.9 kg (20 Lb) CO₂
- Each American produces 5.9 million ton (>13,000 Lb) of CO₂/yr.

Trends in GHG



EPA Regulations (CAAA)

Currently EPA requires monitoring, designation and AQ Conformity for 6 Pollutants:

1. CO
2. PM
3. O₃
4. NO_x
5. SO₂
6. Pb



Federal Requirements vs. States' Initiatives

- In 2006 CA adopted rule to reduce GHG – begin in 2009 to achieve 30% reduction by 2016
- EPA declared states lack authority to regulate emissions
- CA and 16 other states (including OR) sued EPA
- 30 + states have declared initiatives to lower GHG
- In December 2007 Congress directed EPA to require mandatory reporting of GHG
- In April 2008 EPA issued “endangerment findings”

Oregon's Initiatives

- In December 2006 Oregon adopted rules for Low Emission Vehicle (LEV) – begin in 09, all by 2016
- In Feb 2007 Governor helped form the Western Climate Initiative (15% below 2005 levels by 2020)
- In July 2007 Governor asked EQC to require GHG reporting
- In August 2007 Governor signed into law HB 3543
 - Created permanent Global Warming Commission
 - Established Reduction Goals
 - arrest increasing emissions by 2010,
 - reduce emissions to 10% below 1990 levels by 2020,
 - reduce emissions to 75% below 1990 levels by 2050.

Oregon's Initiatives Continued

- In 2008 DEQ proposed rules for mandatory reporting
- The next set of rules will require municipal point sources to report emission
- Mobile6 and other emission calculating programs are not equipped for GHG
- EPA and ODOT TPAU's offered a simplified calculation

Governor's Green Transportation

"...the largest, most strategic and greenest plan in Oregon history" in 2009.

- Low carbon fuels;
- Vehicle technology improvement, including a shift to plug in hybrid and electric vehicles;
- Reducing vehicle miles traveled, and
- Improving the transportation system's efficiency."

What Needs to Be Done

Meaningful reductions require drastic changes in:

- Technology
- Fuel
- TDM
- Ag
- Life style
- Land Use



We May Need to Re-evaluate Some of our Solutions

