



0.7% ~~>~~ 3.1%

Why climate change is harder than you think

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DISSCRS V Symposium
Saguaro Lake Ranch
13-20 March 2010

The cause of climate change



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The cause of climate change



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The cause of climate change



- I chose to have children and have two
- I want them to have a better life than me
- I ask for raises
- When I receive them, I spend them
- I drive 220 miles roundtrip to work and do so at 80 mph (130 kph)

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What I want you to know when I am done

- The first rule of human institutions
- The climate change problem is harder than you think (0.7% ~~→~~ 3.1%)
- There are three drivers of emissions
- We are not addressing two of them
- There are ways to address them but they may not involve government policy

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The first rule of human institutions

- The best prediction of what ANY person, bureaucracy, government, or other human institution will do tomorrow is ...

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The first rule of human institutions



- The best prediction of what ANY person, bureaucracy, government, or other human institution will do tomorrow is ...


what they did yesterday!

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The climate change problem is harder than you think

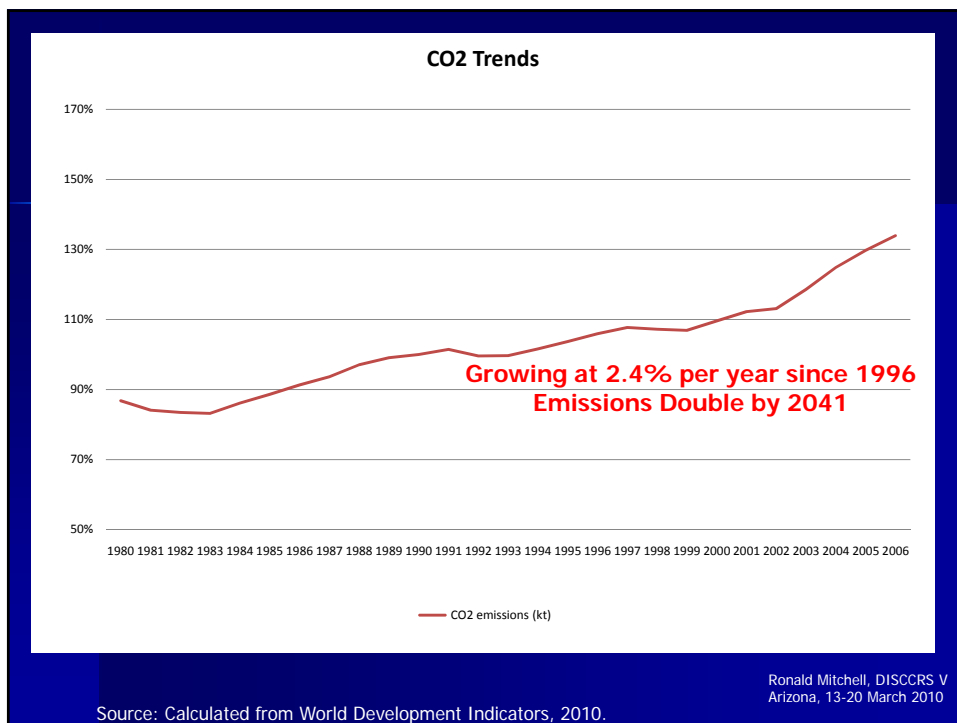


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Our emissions

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There are three drivers of emissions

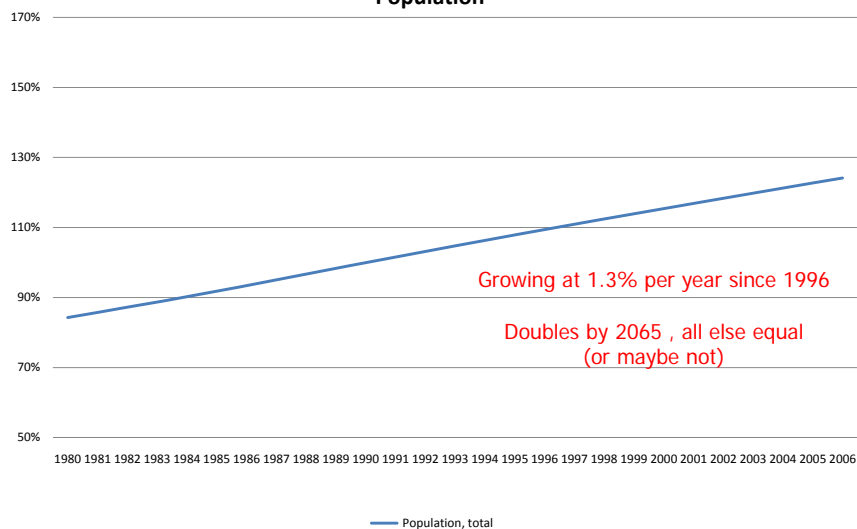
■ IPAT

$$\text{Impact} = \text{Population} * \text{Affluence} * \text{Technology}$$

- Impact: environmental harm
- Population: # of people
- Affluence: \$ per person (income)
- Technology: impact per \$ (carbon intensity)

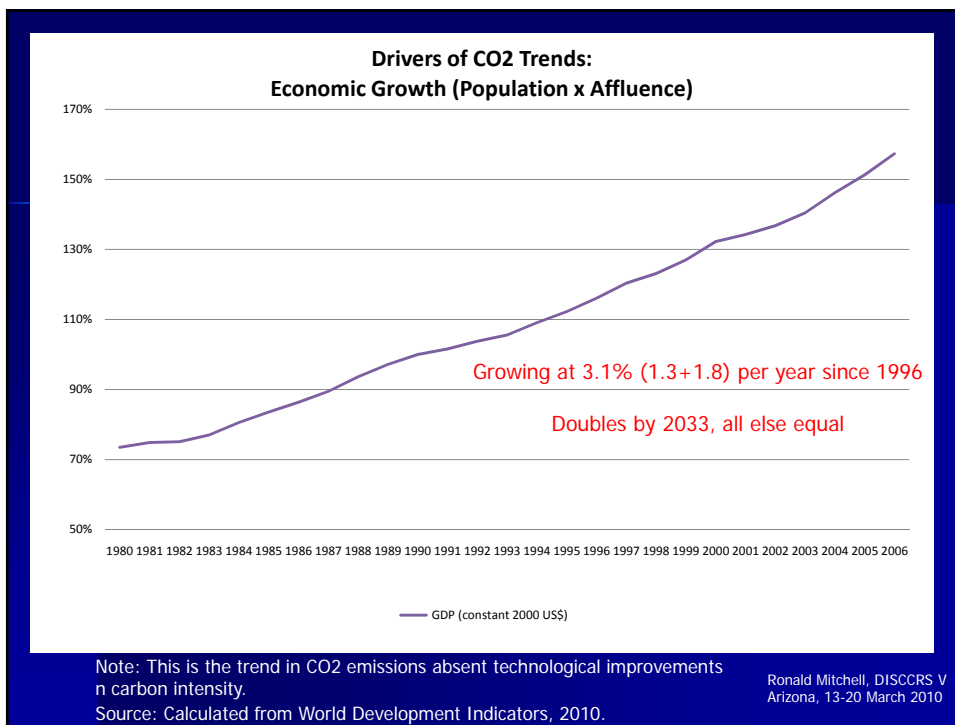
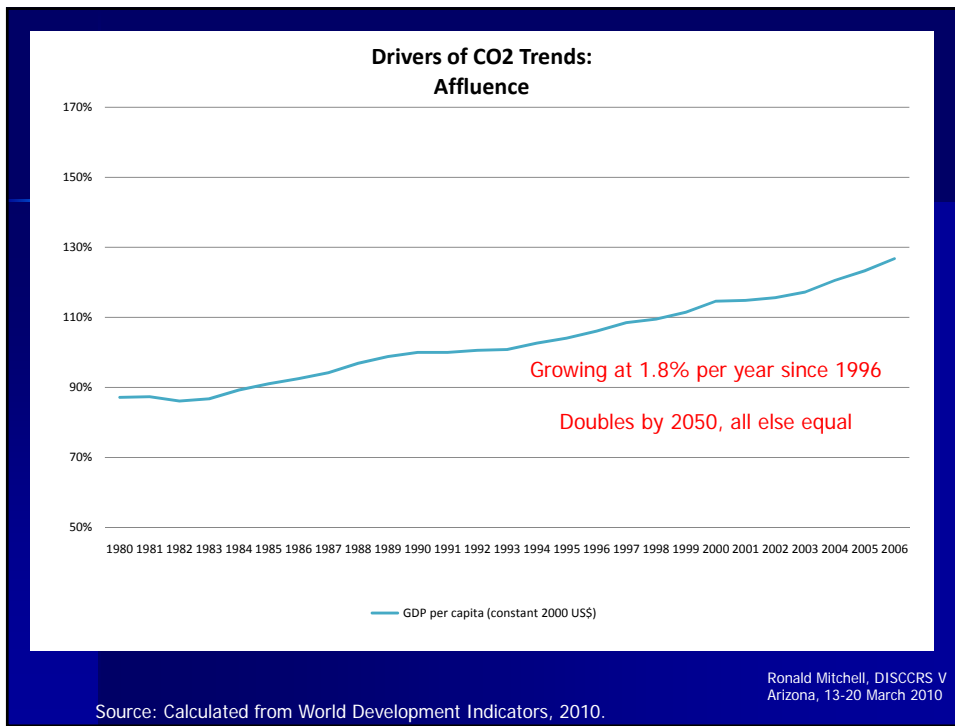
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Drivers of CO2 Trends:
Population



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Source: Calculated from World Development Indicators, 2010.



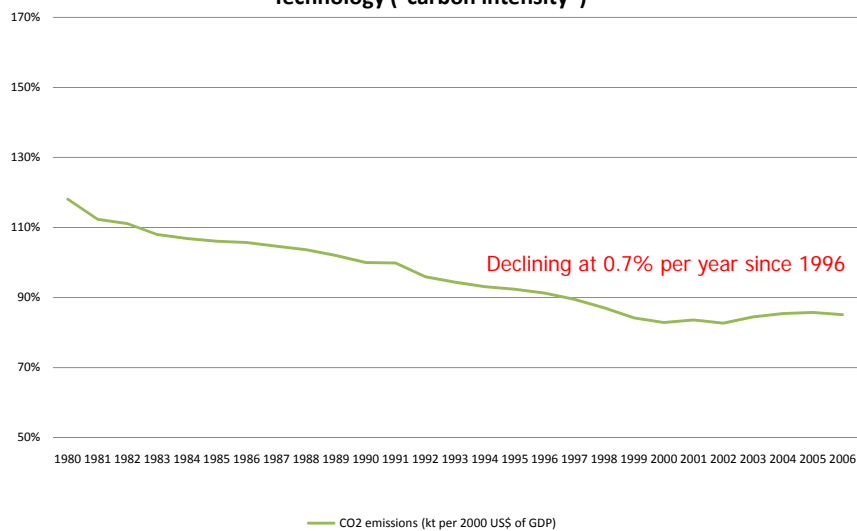
Doubling CO2 emissions



- We will double CO2 emissions by
 - 2033: assuming current population & affluence growth rates (3.1%) continue
- To reduce emissions requires technology improvements that are greater than 3.1% per year
- So, what about technology?

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**Drivers of CO2 Trends:
Technology ("carbon intensity")**



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Source: Calculated from World Development Indicators, 2010.

Cutting CO2 emissions in half

- We will double CO2 emissions by
 - 2033: assuming current population & affluence growth rates (3.1%) continue
- With NO population OR affluence growth, we will cut emissions in half by:
 - 2110: assuming current carbon intensity improvement rates (0.7%) continue
 - 0.7% is NOT greater than 3.1% per year

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We are not addressing two of these drivers

- Population - No
- Affluence - No
- Technology – Yes
- I don't think improving technology alone can get us there
 - Can we invent new technology?
 - If we do, can we get people to use it?

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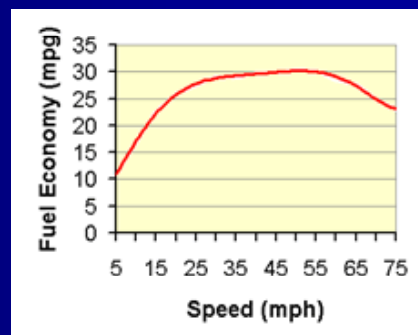
Changing Behavior: How Hard Can It Be?

- If I told you I had a new technology that could increase your car's fuel efficiency by 20% and reduce your CO2 emissions by 20%, would you use it?
- How much would you pay for it?

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Changing Behavior: How Hard Can It Be?

- It's the gas pedal
- Most people drive 75 mph on freeways
- Slowing to 65 mph decreases emissions by ~10%
- Slowing to 55 mph decreases emissions by ~20%
- No law is required!



Source: <http://www.fueleconomy.gov/feg/driveHabits.shtml>

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Changing Population Growth

- Some policies do influence population size, fertility
 - Educating women
 - Chinese one child policy (China 1.7/woman)
 - French pro-natalist policy (France 1.98/woman vs. UK 1.66/woman)
 - Catholic position on contraception
- So do social norms
 - “When are you going to have kids?”
 - “I wonder why they don’t have any kids?”
 - “Congratulations on your new baby!”
 - “I want to live a nice long life.”
- Yet population appears “off limits” politically (not mentioned at Copenhagen)

Sources: <http://newdexcalgeography.blogspot.com/2008/01/france-pro-natalist-policy.html>
http://www.vatican.va/holy_father/paul_vi/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae_en.html

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Changing Affluence Growth

- Some policies do influence consumption patterns
 - Buddhist monks
 - Jewish observance of Shabbat
 - Mormon tithing
 - Voluntary simplicity: “frugality of consumption”
- So do social norms
 - “More, More, More said the baby.”
 - “I want a better life for my kids.”
 - “I need a raise.”
 - “I need a vacation.”
- Yet affluence also appears “off limits” politically (though see “Confronting Consumption”)

Source: http://www.simpleliving.net/voluntary_simplicity_part_1.asp

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Population and affluence: the role of government

- Population and affluence reflect deep-seated values
- Democracies usually see values as inputs to government policy not targets of government policy
- Democracies tend NOT to see “shaping values” as an appropriate role for government

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Population and affluence: alternatives to government

- Most people DO see “shaping values” as an appropriate role for other institutions
 - Religions
 - Families
 - Corporations
 - Social movements
 - Conscious communities

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What I hope you now know



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