

# Obstacles to International Cooperation on Climate Change

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## CO2 emissions are rising rapidly due to growing population and affluence

- Current CO2 emissions will cause major, and perhaps irreversible, impacts.
- Getting emissions to 80% of current levels by 2100 requires reducing emissions by 1.8% per year.
- But emissions are *increasing* by 2.4% per year.
- Emissions result from three major “drivers” identified in IPAT (or Kaya) Identity: (Ehrlich and Holdren, 1971; Kaya and Yokobori, 1997)

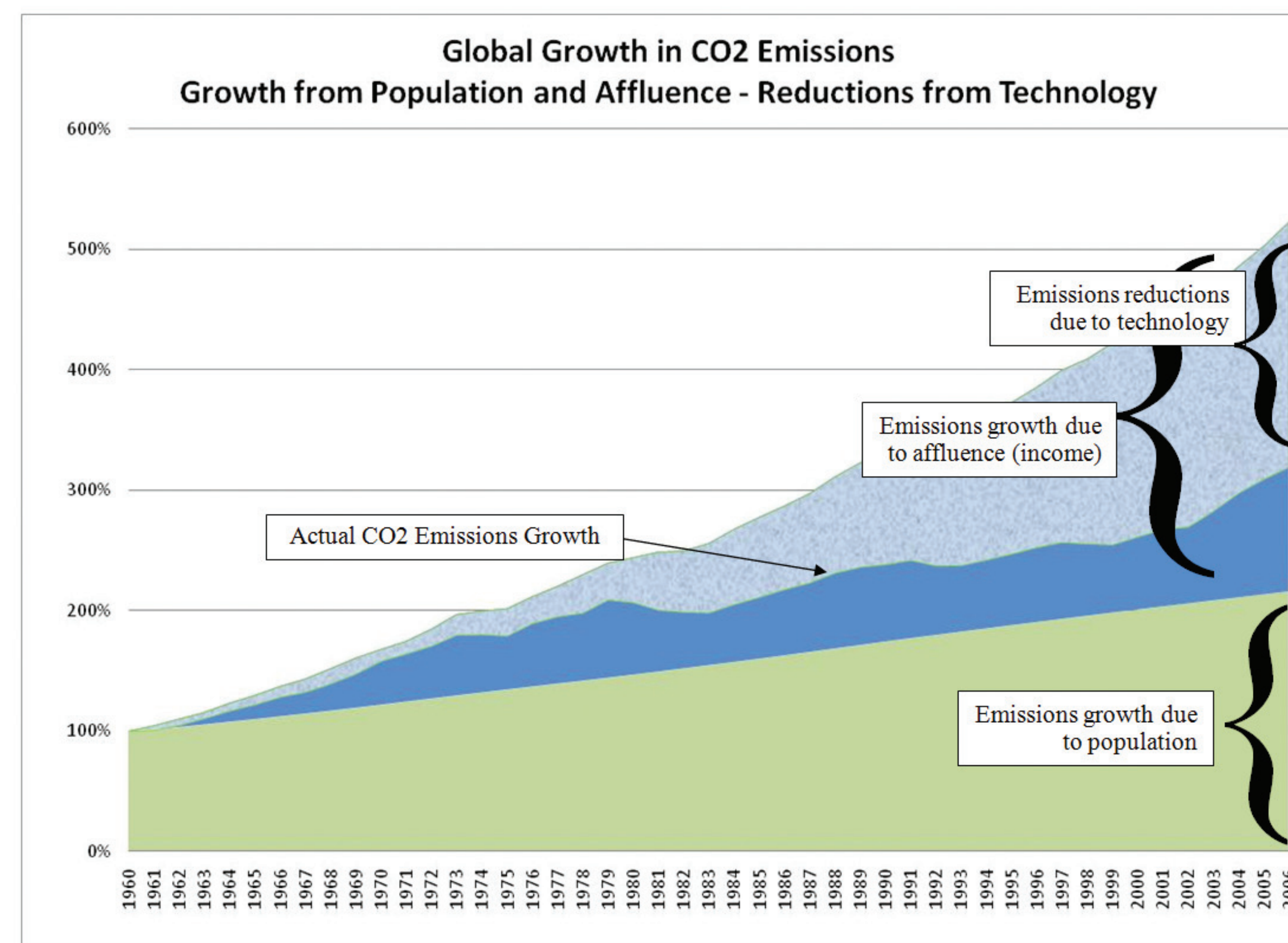
Impact =

Population \* Affluence \* Technology

I = P * A * T	Annual growth rate (1996-2006)	Influence of each driver on CO2 emissions
Impact ( <i>desired</i> CO2 emissions)	↓ -1.8% per year	80% <i>decrease</i> by ~2100
Impact ( <i>actual</i> CO2 emissions)	↑ 2.4% per year	100% <i>increase</i> by ~2040
Population (# of people)	↑ 1.3% per year	100% <i>increase</i> by ~2065
Affluence (\$GDP/person)	↑ 1.8% per year	100% <i>increase</i> by ~2050
Economic growth (\$GDP: P*A)	↑ 3.1% per year	100% <i>increase</i> by ~2035
Technology (CO2/\$GDP)	↓ -0.7% per year	50% <i>decrease</i> by ~2110

## Population and affluence drive CO2 emissions but are not open for political discussion

- Global GDP of 3.1% per year reflects 1.3% from population and 1.8% from affluence.
- Population considered as *inappropriate* for government to limit.
- Affluence (income) growth considered as *undesirable* for government to limit.



## “Technological” solutions dominate debate but are not enough

- Technology already helps reduce emissions by 0.7% per year but this is not enough.
- Stabilizing emissions growth due to population and affluence requires technology improvements of 3.1% per year.
- *Reducing emissions by 80% of current levels by 2100* requires another 1.8% per year, a total of 4.9% per year.
- *High and sustained* technological improvements are unlikely.

Past technological improvements go unused or have “perverse” effects:

- Driving 55 vs. 75 mph reduces CO2 emissions and gas costs by 20%.
- The “Paperless Office”? North American paper use *per capita* has grown 25% since 1981.

## Political institutions: why they won’t work

- *Knowledge*: Contested whether climate change is likely.
- *Norms*: Contested whether averting climate change is desirable.
- *Incentives*: large costs with uncertain and future benefits. Beneficiaries are from other countries and future generations.
- *Strategic interactions*: international cooperation requires cooperation but not all states are concerned.
- *Implementation*: monitoring is challenging and sanctions for violations are unlikely and ineffective.

Structural disadvantages of political institutions:

- Discourse of politics is interests but addressing climate change seems to run counter to our interests.
- People expect democratic governments to *reflect their values not influence them*.

## Value-based institutions: why they might work

Structural advantages of value-based institutions:

- Discourse of religion and other value-based institutions is values and “right and wrong.”
- People expect religious institutions to *guide and inform their values*.
- People *sacrifice* more and are more *altruistic* in value-based institutions.
- Religions *do and can* influence population and consumption choices.

## Conclusions

- Technology alone will not be enough to stop climate change.
- Population and affluence must be “in the mix.”
- Political institutions are unlikely to address population and affluence.
- Value-based institutions may do so and deserve more research attention.

## Sources

- Ehrlich, P.R., Holdren, J.P., 1971. Impact of population growth. *Science* 171, 1212-1217.
- Kaya, Y., Yokobori, K., 1997. *Environment, energy, and economy: strategies for sustainable development*. United Nations University Press, Tokyo; New York.

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