How do we define fossil fuel subsidies, and why do they matter?

Burning money…

…and the planet

Harming health…

…and environment

What are the different types of fossil fuel subsidy?

How are subsidies defined?

Subsidies are defined as:

- IEA defines energy subsidies as “any government action that concerns primarily the energy sector that lowers the cost of energy production, raises the price received by energy producers or lowers the price paid by energy consumers.”

- WTO defines a subsidy as being a financial contribution by a government or public body, incl. direct transfer of funds or liabilities, foregone revenue (ie. tax credits), government provision of goods or services other than general infrastructure, or price support.

- IMF definition includes “pre-tax” and “post-tax” subsidies, with post-tax including consideration of appropriate Pigouvian tax and consumption tax levels

What are the types of fossil fuel subsidies?

Fossil fuel subsidies vary by:

- Energy source (oil, gas or coal)
- Target beneficiary (consumer vs. producer)
- Stage of development (upstream/midstream/downstream - exploration, development, production, sale)
- Subsidy source (tax breaks, direct spending, unpriced externalities)

What fossil energy sources receive subsidies?

Coal

Oil

Natural gas

Consumer subsidies

- Consumer subsidies target the end consumer of fossil fuels
- Stated objective is often to increase affordability of fuels for the poor
- Historically, most research, reform efforts, and campaigning attention has focused on consumer subsidies rather than producer subsidies
- Consumer subsidies can take the form of:
    - Price controls
    - Tax exemptions
    - Rebates
    - Free provision of fuels
    - Etc.

Producer subsidies

- Producer subsidies target companies that develop or produce fossil fuels or fossil fuel infrastructure
- Stated objectives are often to support domestic industry and increase energy security
- Producer subsidies can take the form of:
  - Tax breaks
  - Direct support payments from governments to companies
  - Government provision of industry-specific infrastructure

Exploration subsidies

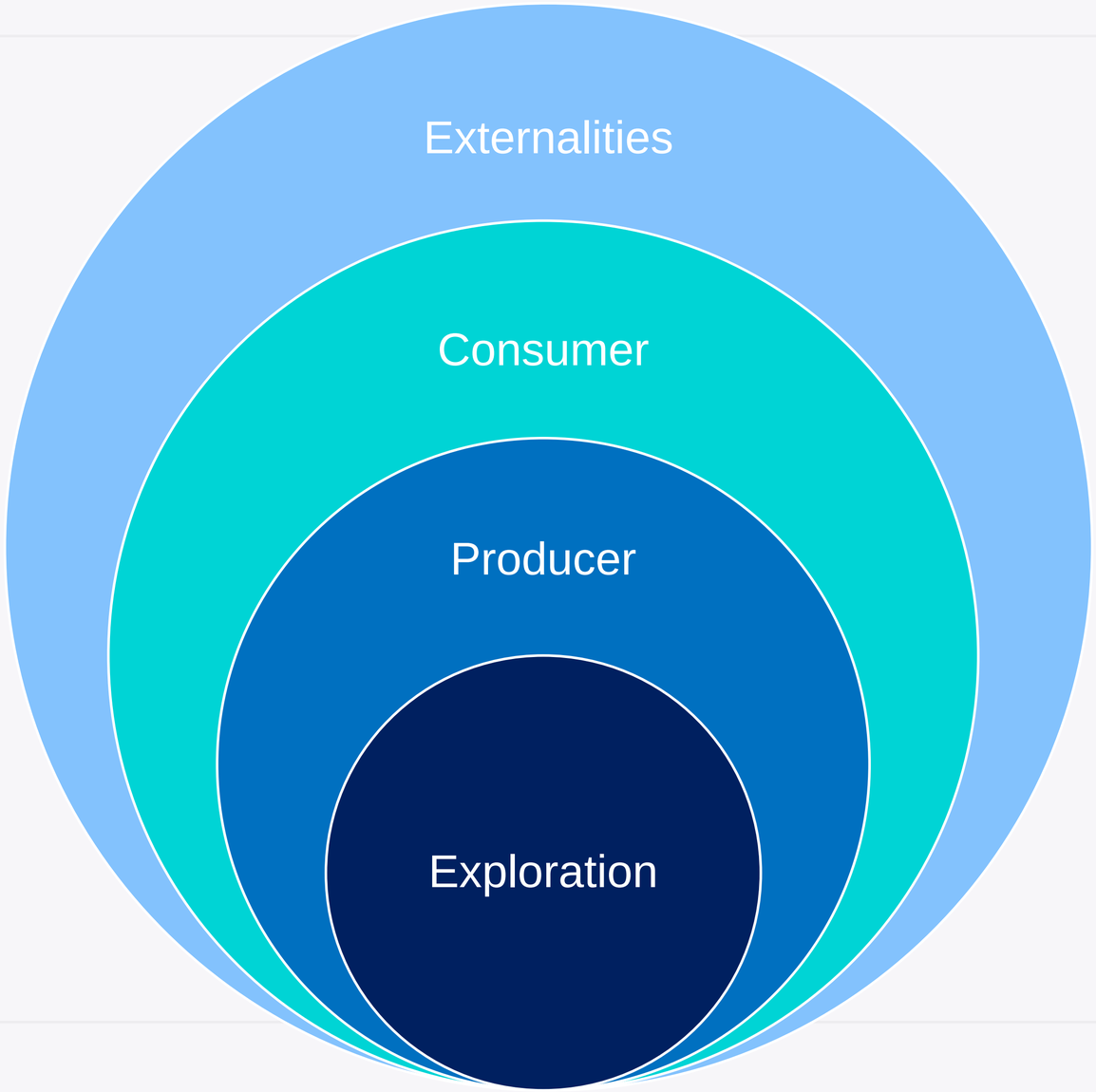
- Exploration subsidies are a subset of producer subsidies that are specifically focused on exploration for new fossil fuel reserves
- Stated objectives are usually the same as for broader producer subsidies – to spur growth of domestic industry and increase energy security

Externalities

- Vigorous debate about whether these should be considered subsidies at all (IMF has labelled them subsidies, while many others disagree)
- Order of magnitude larger than other subsidy types due to broad scope

How big are the different types of subsidies?

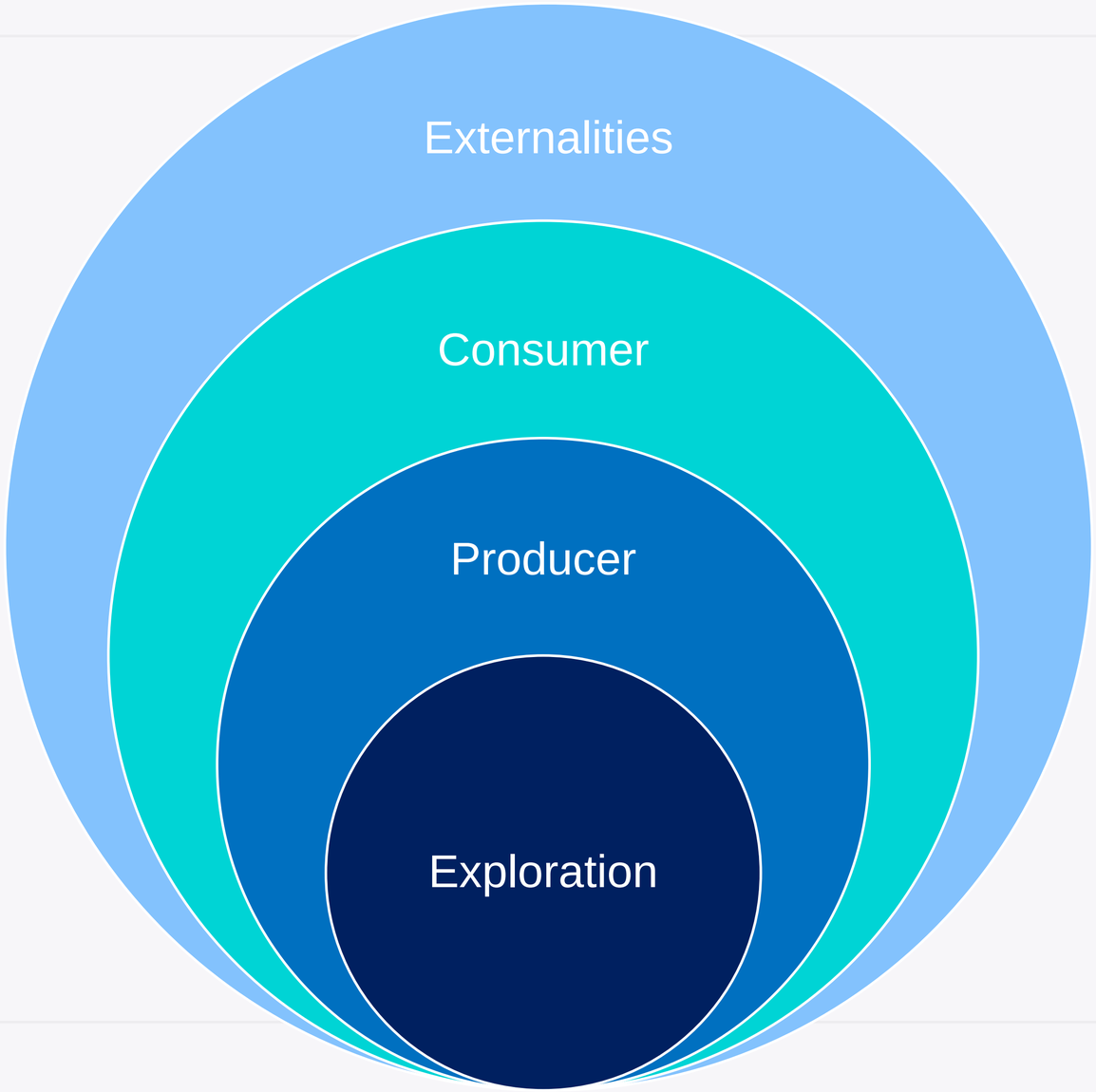
What are the different types of fossil fuel subsidies, and how big are they relative to one another?



Estimated annual value by subsidy type

- **$4.5 trillion +**
- **$600 billion**
- **$150-250 billion (?)**
- **$88 billion (G20 only)**

And what does Germany spend? (best estimate)



Estimated annual value by subsidy type

- **$50 billion +**
- **$6 billion +**
- **$2 billion + public finance**
- **$344 million (ca. 2011)**

What are the characteristics of the different subsidy types?

How do characteristics of various subsidy types differ?

Producer subsidies

- Can entrench political / economic interests that resist climate policy
- May foster corruption
- Can undermine clean energy options on the supply side

Consumer subsidies

- Create an equilibrium trap that makes reform nearly impossible
- Can undermine clean energy competitiveness in consumer choice
- Generally highly inequitable – vast majority of benefits accrue to the rich despite claims to the contrary

How do characteristics of various subsidy types differ?

Externalities

- Can be “invisible” compared to other subsidies
- Pervasive – comes in many different shapes and sizes

Exploration subsidies

- Unlocks more carbon that can never be burned, in a world where the vast majority of already-proven reserves must stay in the ground

Where do subsidies come from?

National and subnational budgets

Tax expenditures & direct spending

Public finance

Domestic & int'l; a range of instruments (debt, equity, guarantee, etc.)

State-owned enterprises

Budget support for national oil and gas companies, and state-owned utilities

Market price support and transfers

e.g. purchase obligations, regulated pricing

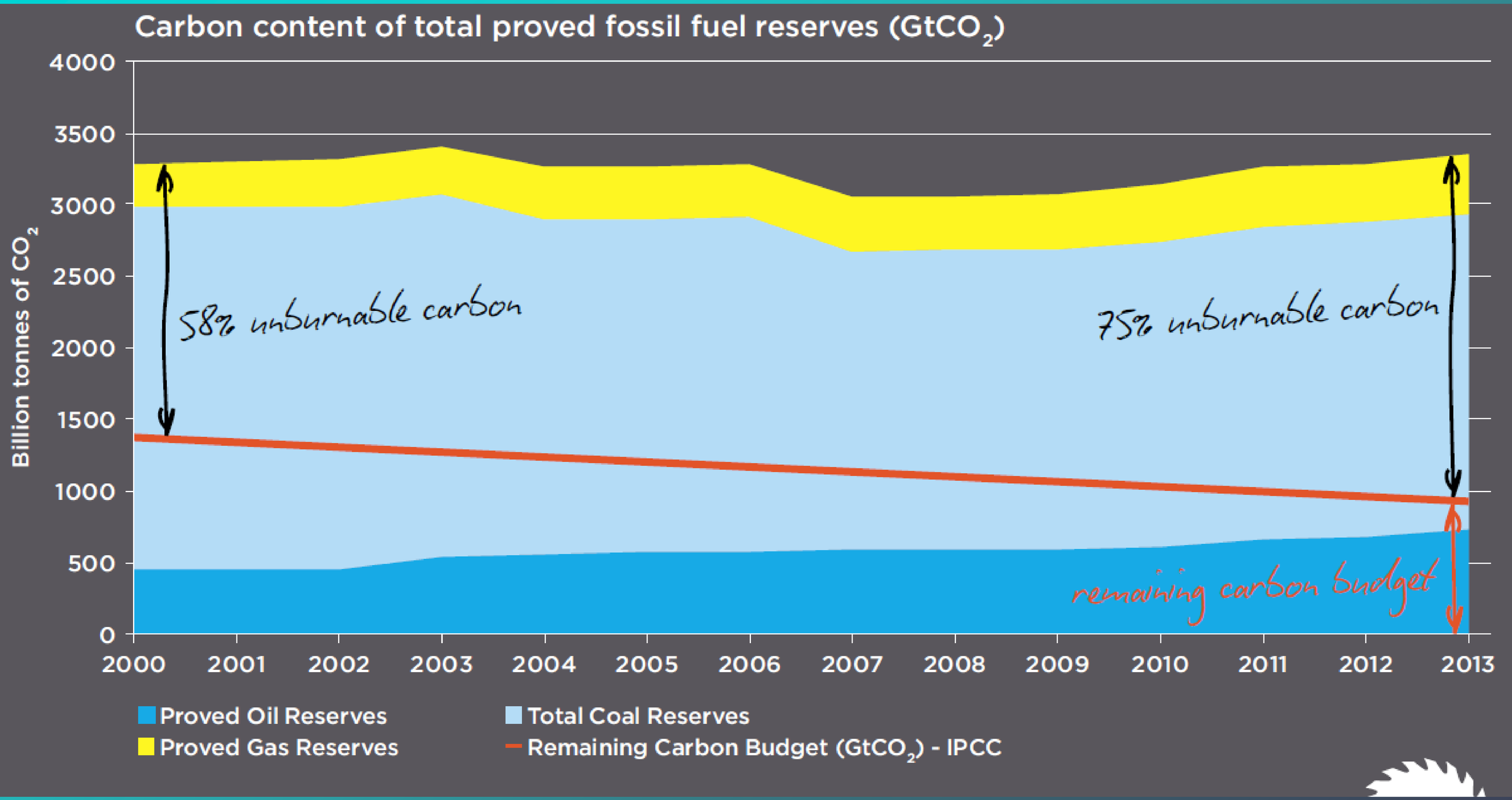
Provision of services below market rates

e.g. land, water, licenses, infrastructure

Why are exploration subsidies particularly dangerous?

Exploration subsidies

- The best available science says we must leave at least two thirds of existing proven reserves of oil, gas, and coal in the ground if we have a hope of meeting a 2 degree C target (likely that 75%+ must stay in the ground)
- Despite this fact, governments continue to invest scarce public resources in the expansion of “unburnable” fossil fuel reserves
- Government support for exploration makes up a huge portion of the total


Carbon content of total proved fossil fuel reserves ($GtCO_2$)
Billion tonnes of CO_2
4000
3500
3000
2500
2000
1500
1000
500
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
58% unburnable carbon
75% unburnable carbon
remaining carbon budget
Proved Oil Reserves
Total Coal Reserves
Proved Gas Reserves
Remaining Carbon Budget ($GtCO_2$) - IPCC

G20 GOVERNMENT SUPPORT

US$88 BILLION

- Investment by state-owned enterprise: **US$49 BILLION**
- National subsidies: **US$23 BILLION**
- Public finance: **US$16 BILLION**

PRIVATE COMPANY INVESTMENT

By top 20 global oil and gas producers

US$37 BILLION

FOSSIL FUEL EXPLORATION

Source: ODI and Oil Change International, Rystad Energy (2014). Figures in US$ for 2013.

What damage do subsidies really cause (besides wasted public resources)?

Climate impacts of subsidies

Models find between 6-13% global emissions reductions by 2050 (NCM/GSI) and 23% reductions with removal of subsidy **and** appropriate taxation of fossil fuels (IMF)

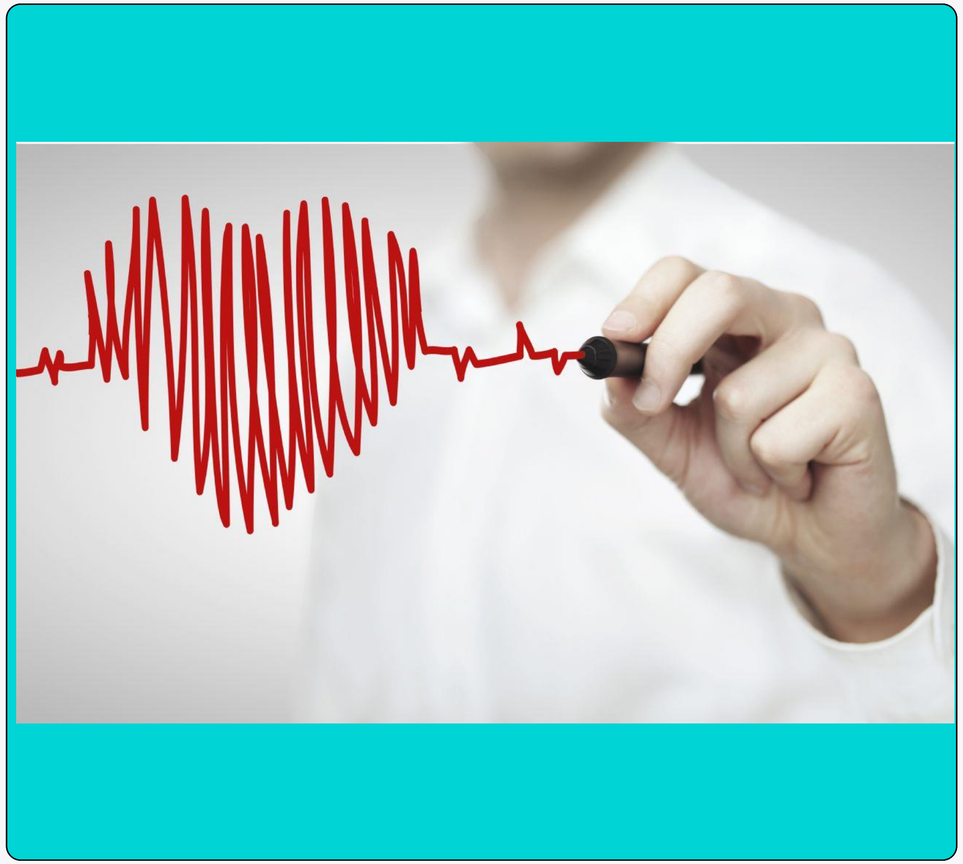
Other methods estimate that fossil fuel subsidies contributed up to 36% of global emissions between 1980 and 2010 (Stefanski)

Budgetary impacts of subsidies

Fossil fuel subsidies equal 6.5% of global GDP if externalities included

IMF estimates Germany’s subsidies, including externalities, will be 1.4% of GDP in 2015

Health impacts of subsidies



Increased consumption and production driven by subsidies also causes damage to health

Other environmental impacts of subsidies

Damage to soil, waterways, ecosystems, etc. from pollution due to extra consumption and production spurred by subsidies

Producer subsidies encourage extreme fossil fuels production – often difficult to remediate spills/accidents (ie. Arctic, offshore – Deepwater Horizon; Canadian tar sands – no ay to remediate liquid tailings)

Yes – subsidies really matter!