FISCAL AFFAIRS

IMF Fossil Fuel Subsidies Data: 2023 Update

ASK AN EXPERT WEBINAR, PLATFORM FOR COLLABORATION ON TAX , SEPTEMBER 27, 2023

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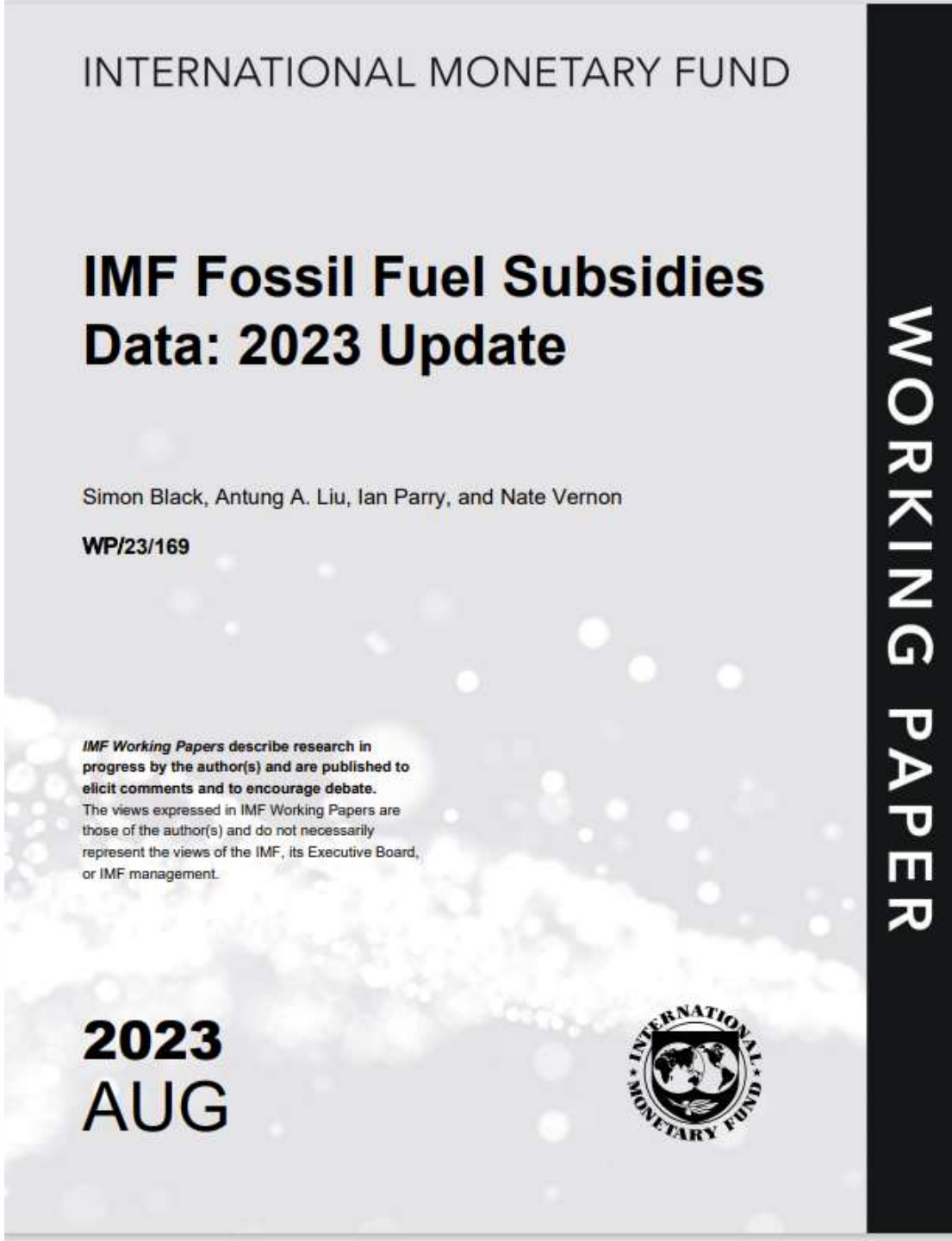
Structure

1. Concepts and methodology
2. Results
3. Impacts of reform
4. Conclusion



Concepts and Methodology

Defining Efficient Prices/Subsidies

Efficient fuel price

- [supply cost + unit environmental cost] × [1 + general cons. tax rate, if applicable]
- Environmental costs: CO_2, local air pollution, broader road externalities

Underpricing fossil fuels

- Undermines environmental objectives, sizable fiscal cost, inefficient way to help the poor

Explicit subsidy

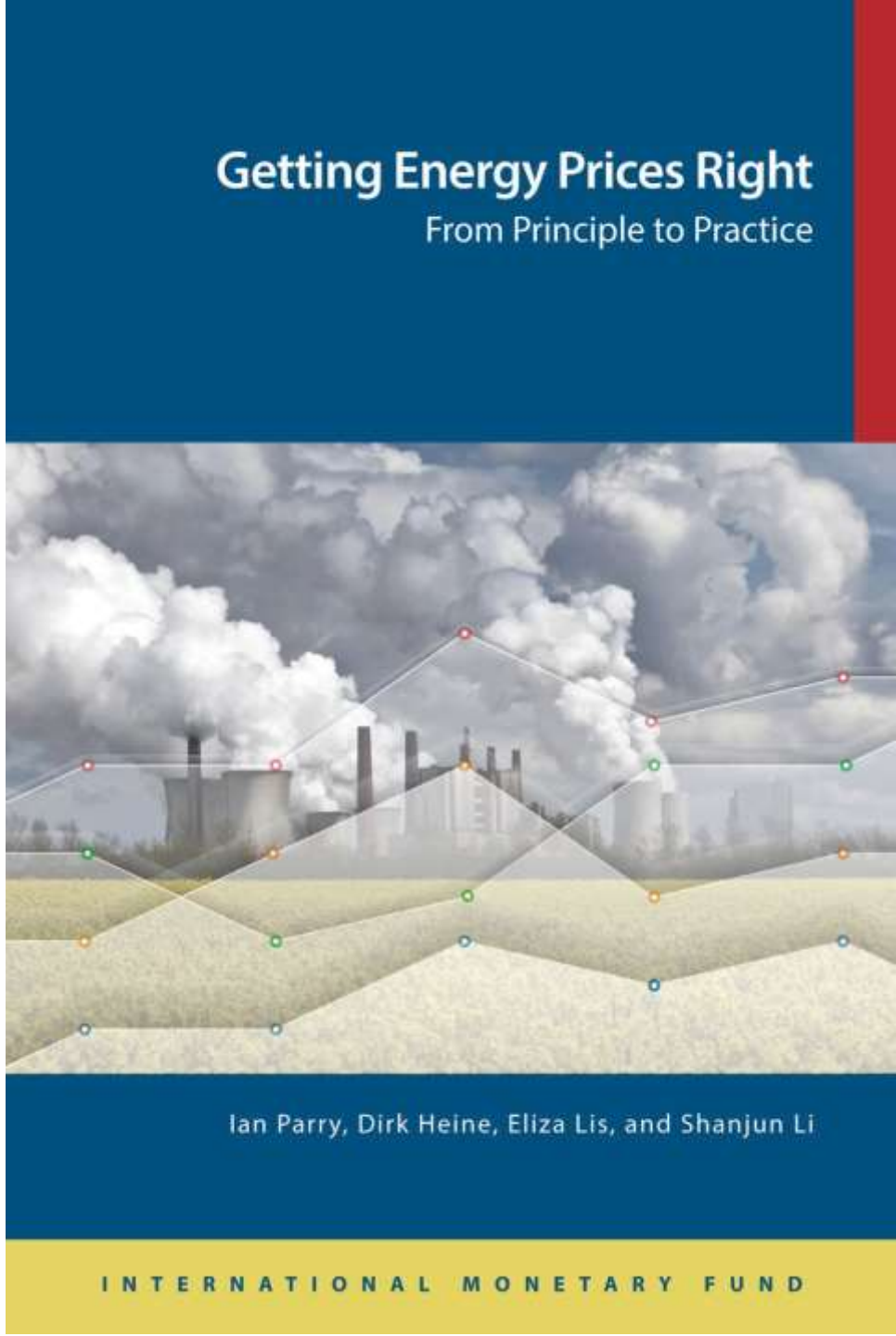
- [supply cost – fuel user price] × [fuel consumption]

Total subsidy (explicit + implicit)

- [efficient fuel price – fuel user price] × [fuel consumption]

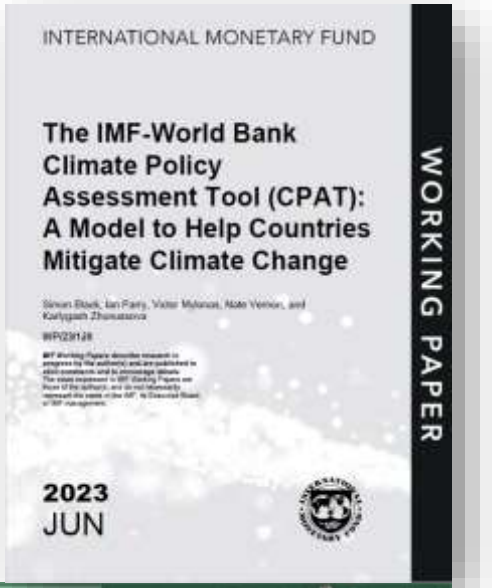
Measuring externalities

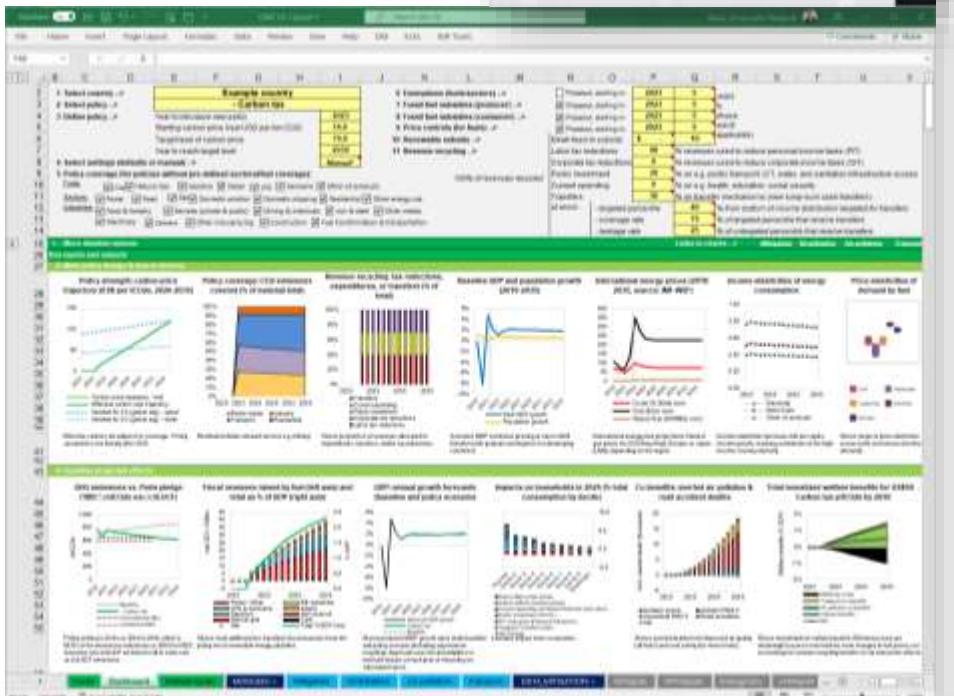
- **Carbon prices:**
  - $60/tonne in 2020 → $75 in 2030 (conservative)
- **Local air pollution costs:**
  - Country-level data on: population exposure, air emissions rates, baseline mortality rates, value of statistical life
- **Marginal external cost from congestion/accidents**
  - Country-level data on: average travel delays, fatalities (split into external/internal risks), and extrapolations of other costs (non-fatal injury, third party property/medical)



Analysis uses Climate Policy Assessment Tool (CPAT)

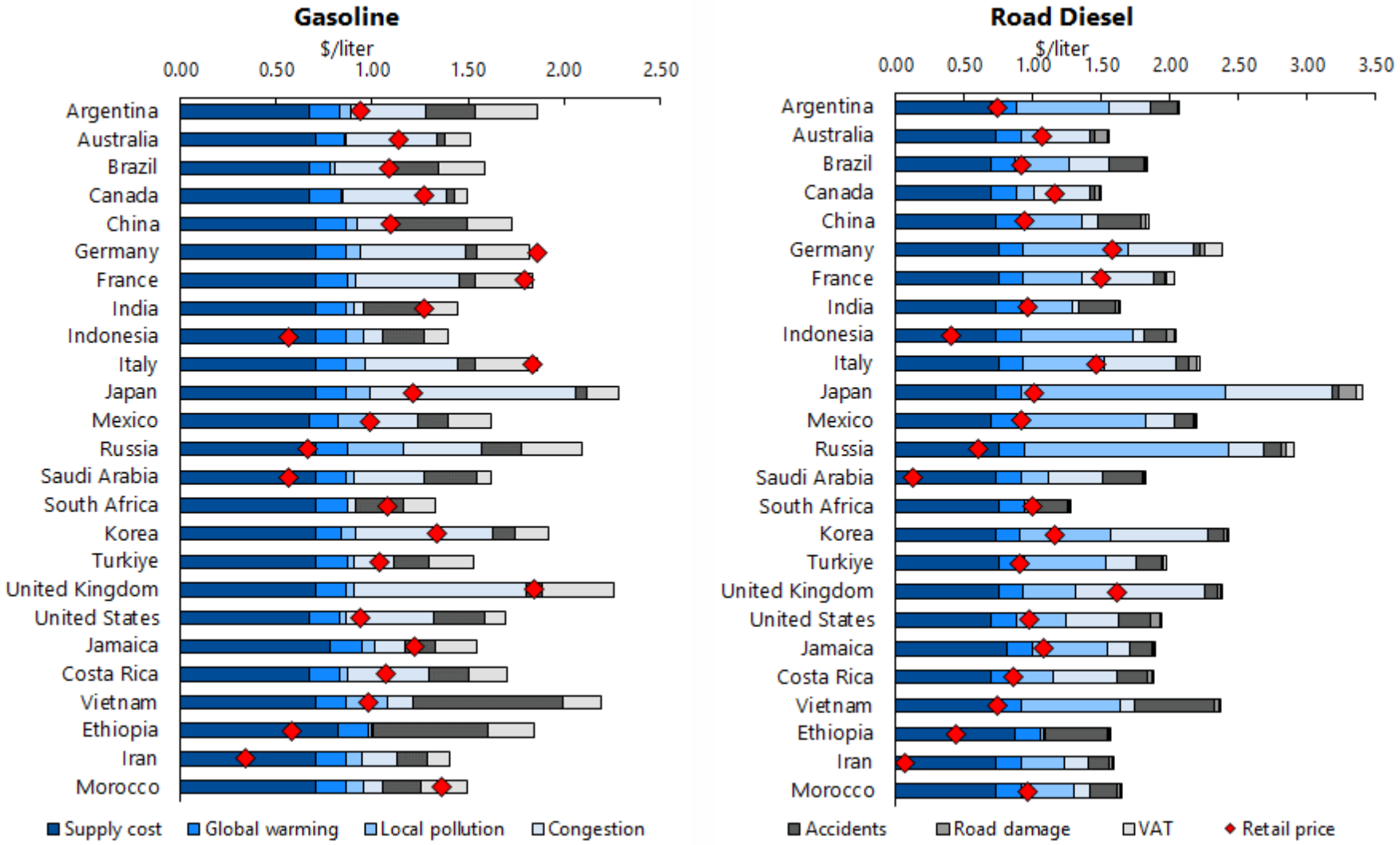
- Projecting fuel use by sector/country
  - GDP, income elasticities for energy products, autonomous rates of technological improvement, future energy prices
- Impacts of fuel price and other policy reforms
  - Emissions, mortality, revenues, welfare costs
- CPAT provides ‘unbiased’ estimates
  - Elasticities based on synthesis of econometric evidence
  - Emissions projections/behavioral responses sense checked against energy modelling literature





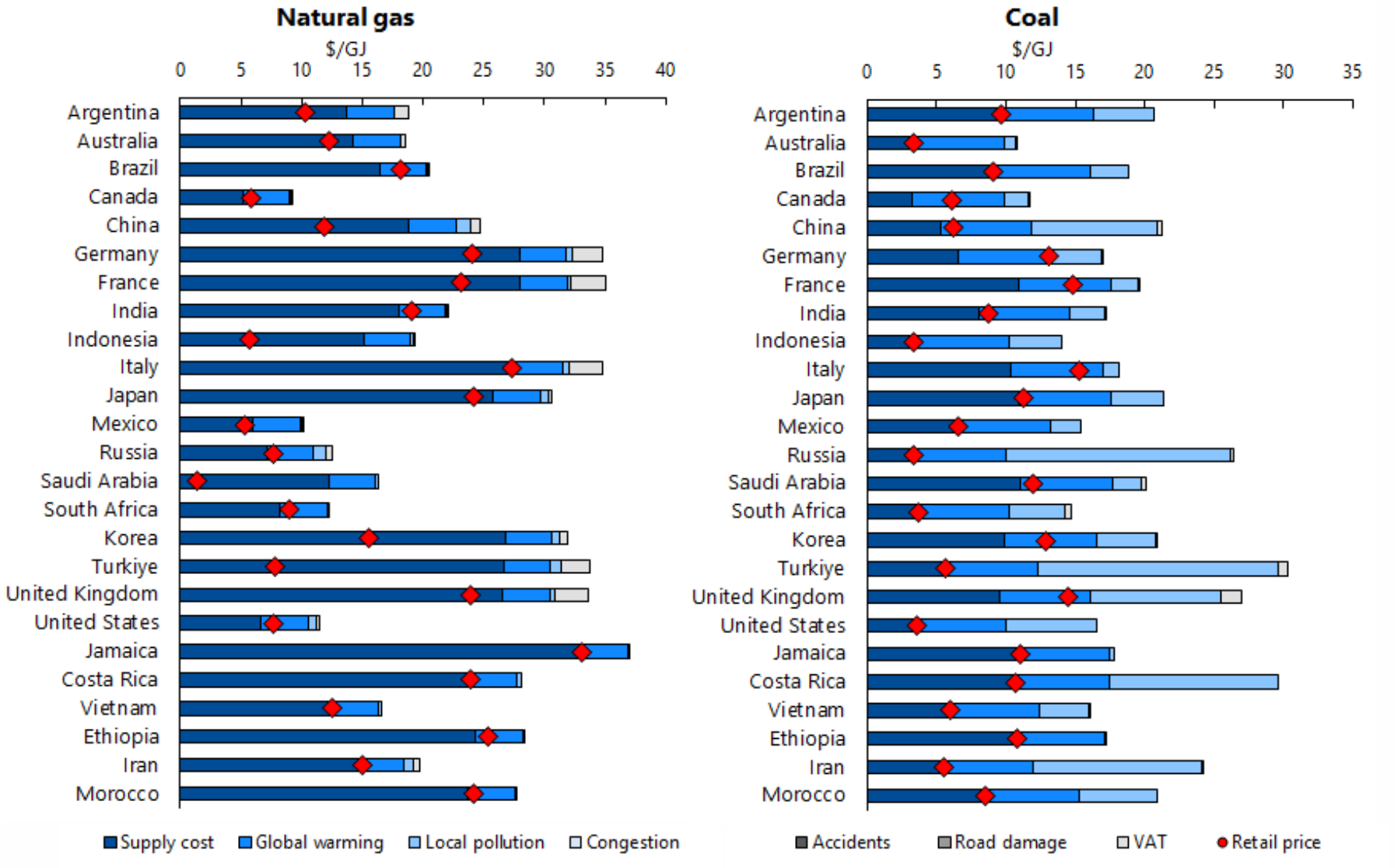
2. Results

Countries are still not getting energy prices right…



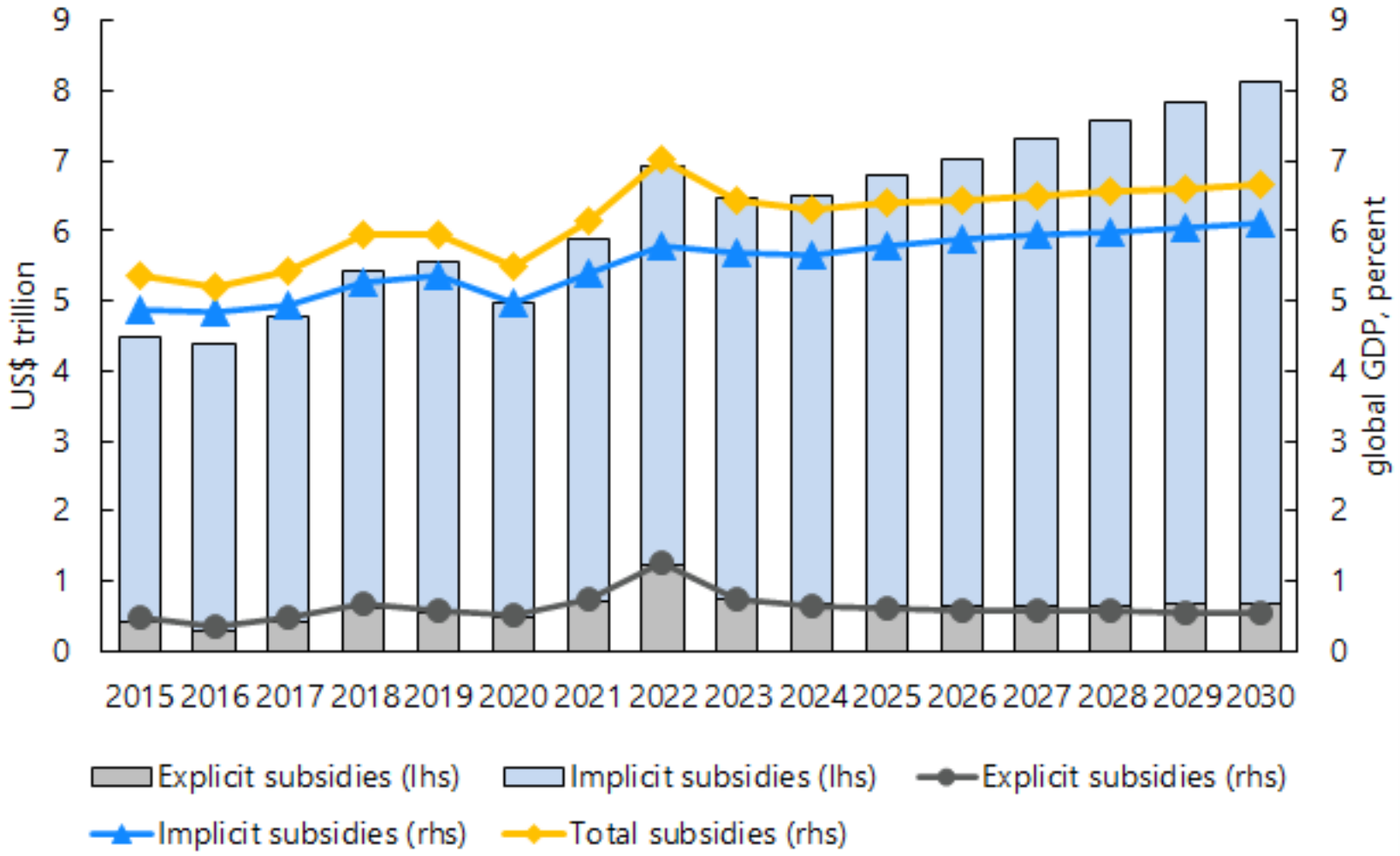
Source: Parry, Black, Liu and Vernon (2023). Note: average of 2021 and 2022.

Energy price gaps persist across countries…



Source: Parry, Black, Liu and Vernon (2023). Note: average of 2021 and 2022.

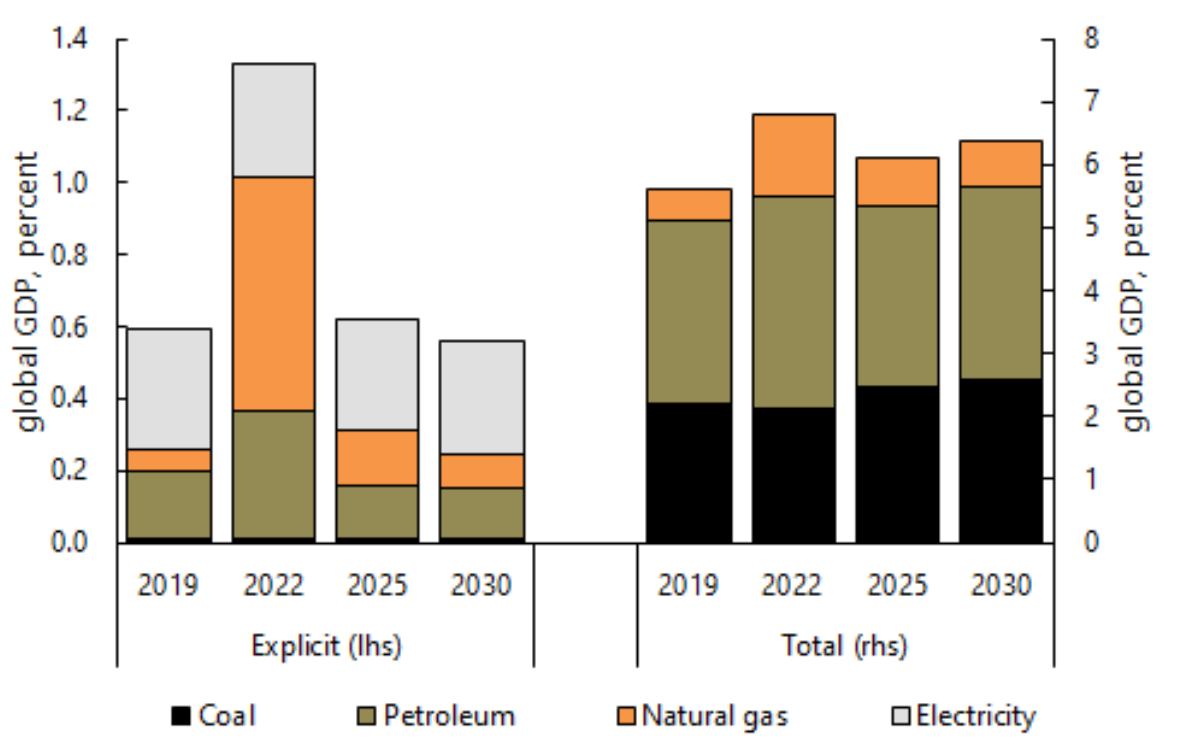
Global fossil fuel subsidies increased to $7 trillion in 2022 (7% of global GDP)



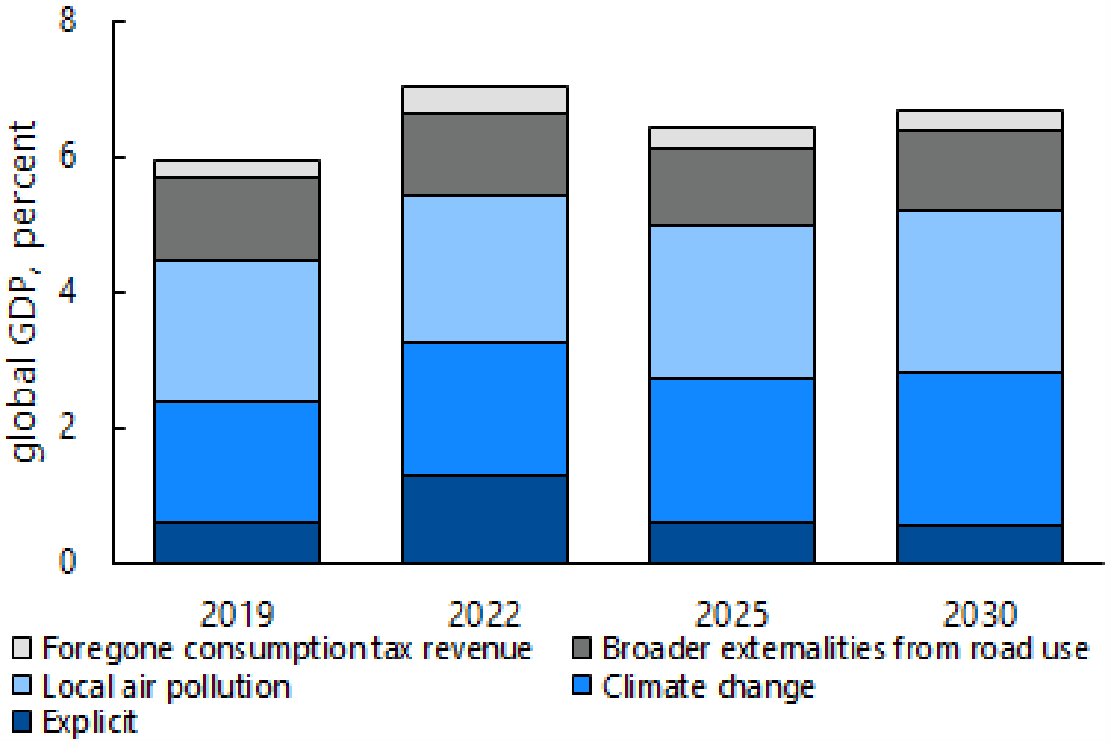
Source: Parry, Black, Liu and Vernon (2023)

Significant variation across subsidy component and fuels…

Total Global Fossil Fuel Subsidies by Component



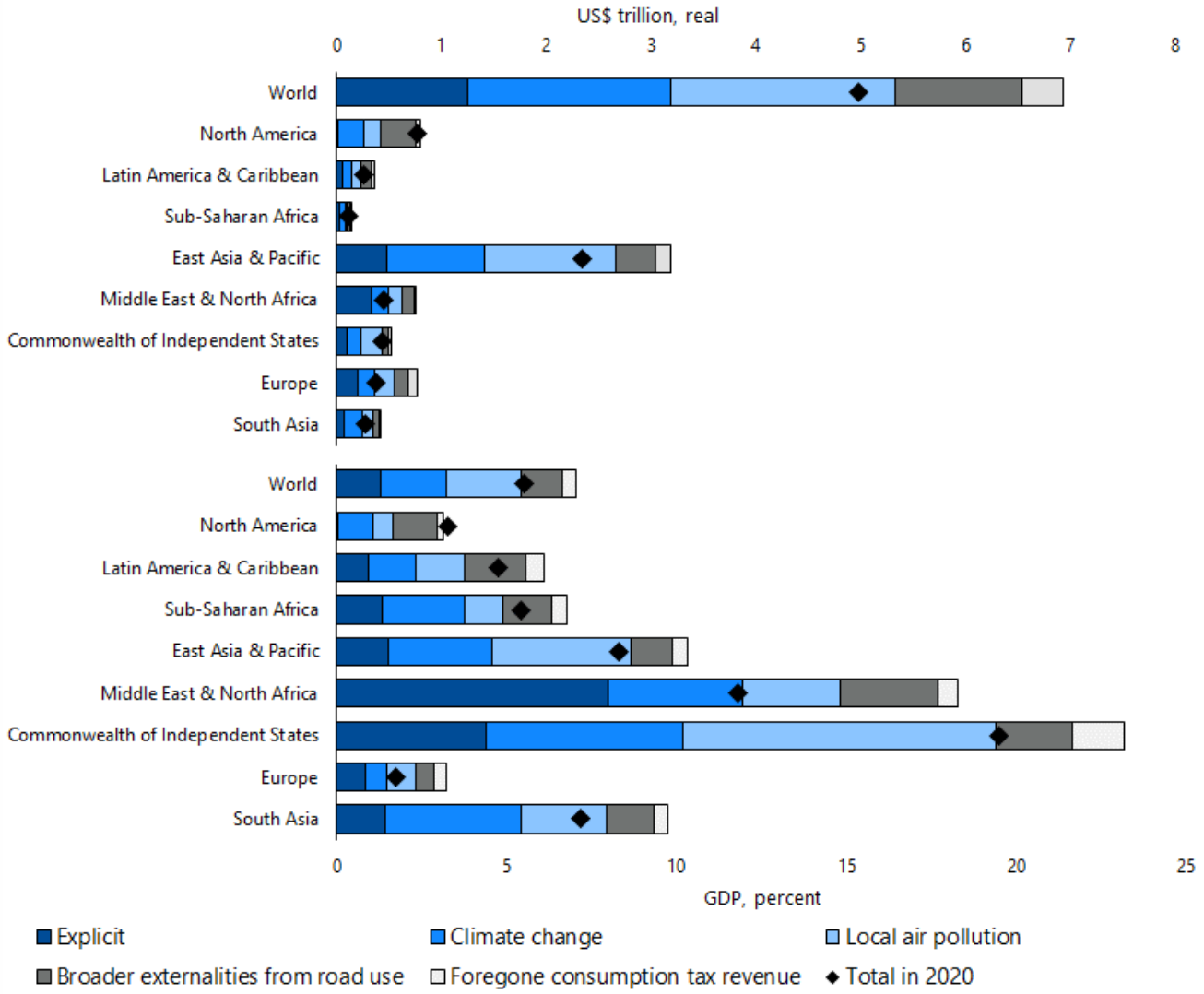
Explicit and Implicit Global Fossil Fuel Subsidies by Fuel



Source: Parry, Black, Liu and Vernon (2023)

...and across regions

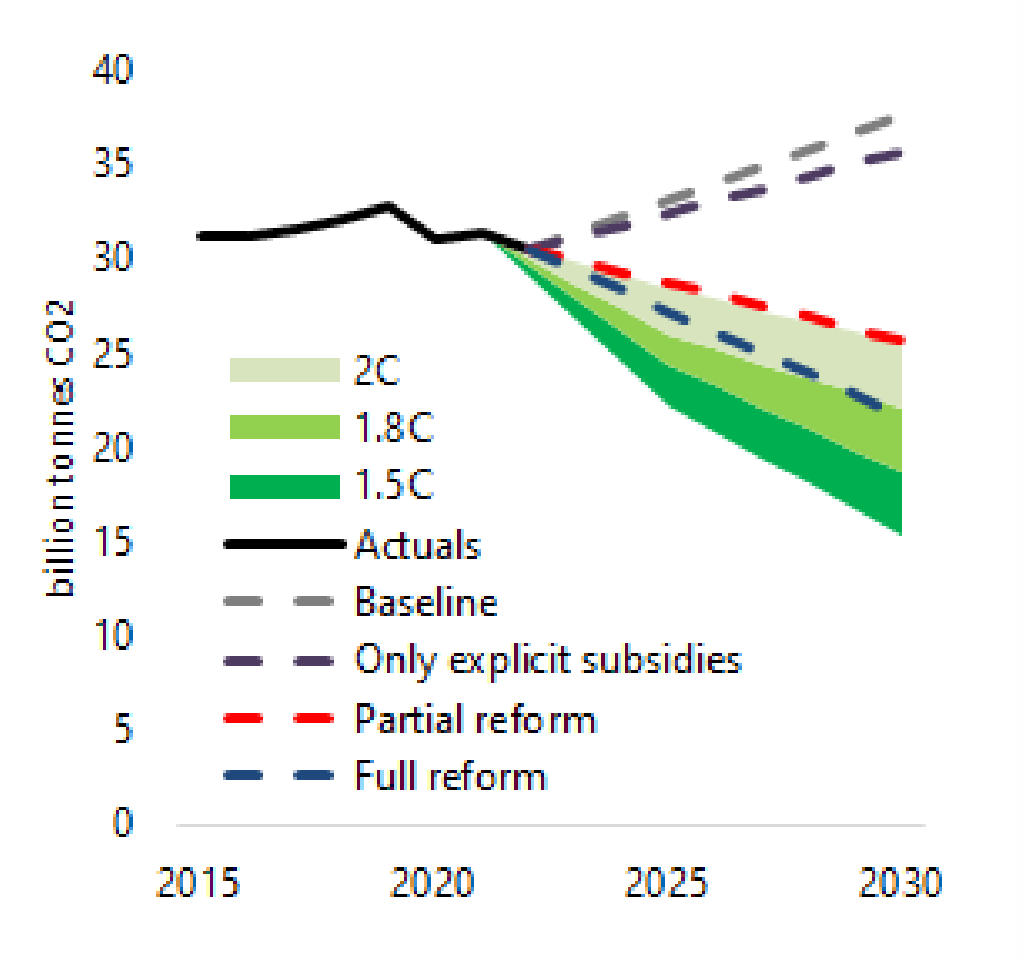
Global Fossil Fuel Subsidies by Component, 2022



Source: Parry, Black, Liu and Vernon (2023)

3. Impacts of reform

Full subsidy reform would put the world on track to achieve warming targets

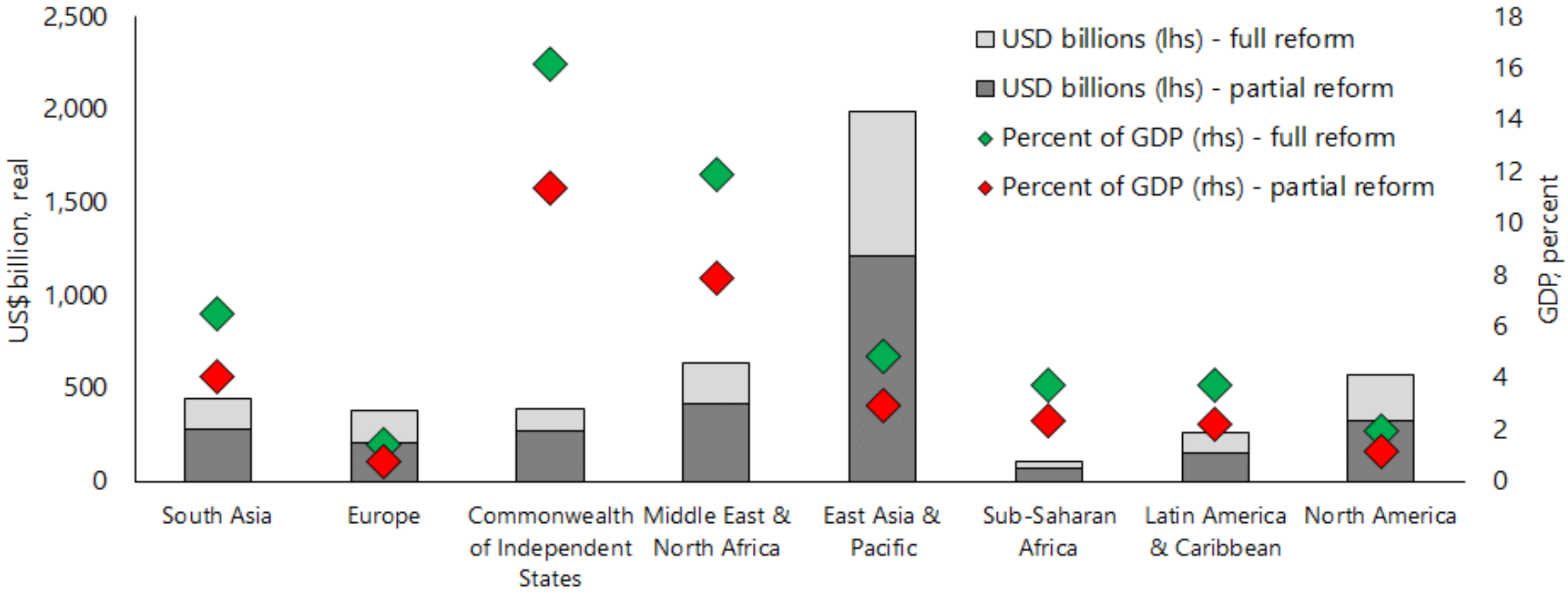


Source: Parry, Black, Liu and Vernon (2023)

Under full price reform

- **43% reduction in CO2 emissions** vs. BAU by 2030 and 34 percent below 2019 levels under full price reform
- **1.7 million premature deaths** averted annually by 2030

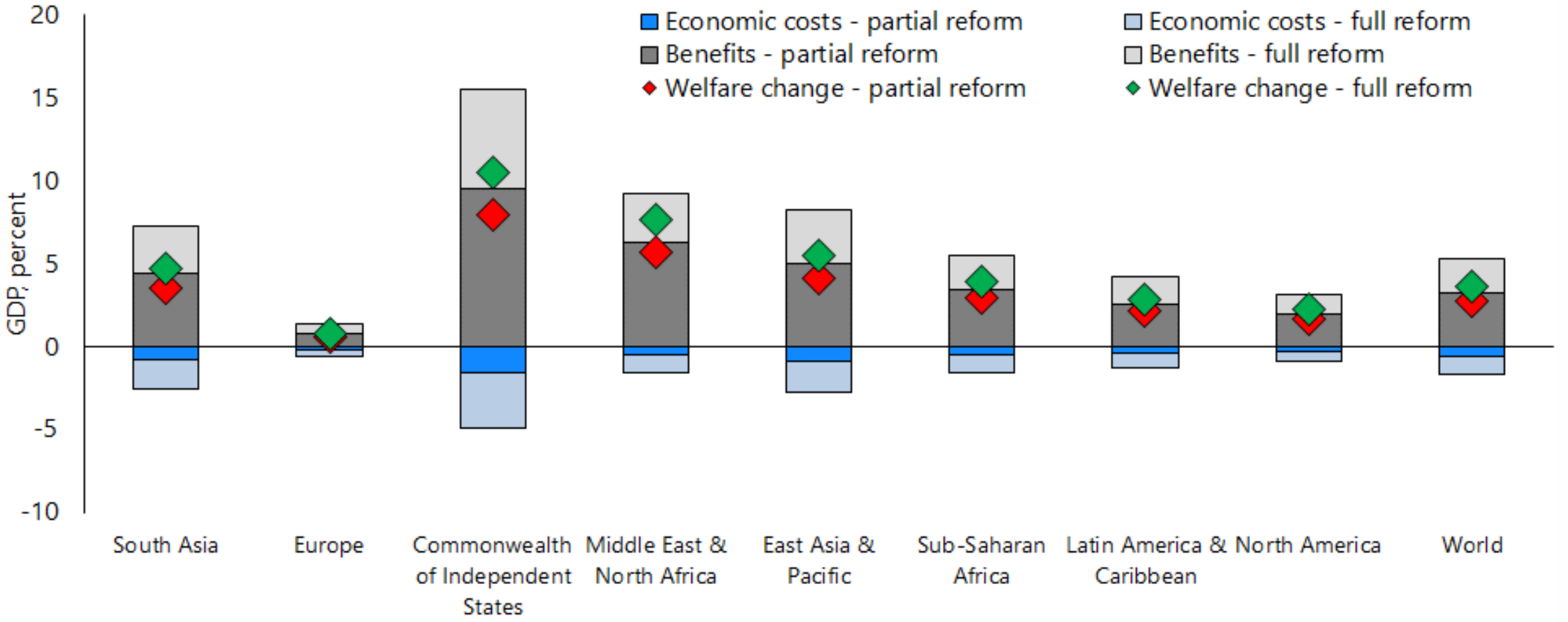
...and raises significantly revenue...



Source: Parry, Black, Liu and Vernon (2023)

3.6% of GDP raised by 2030 over BAU levels under full price reform

…welfare would increase on average due to co-benefits



Source: Parry, Black, Liu and Vernon (2023)

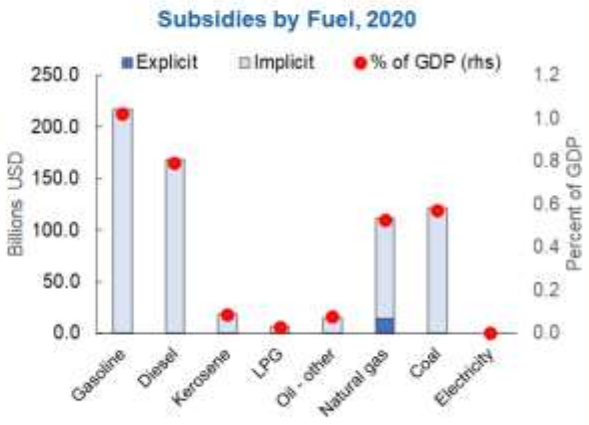
3.6% of GDP increase in welfare under full price reform

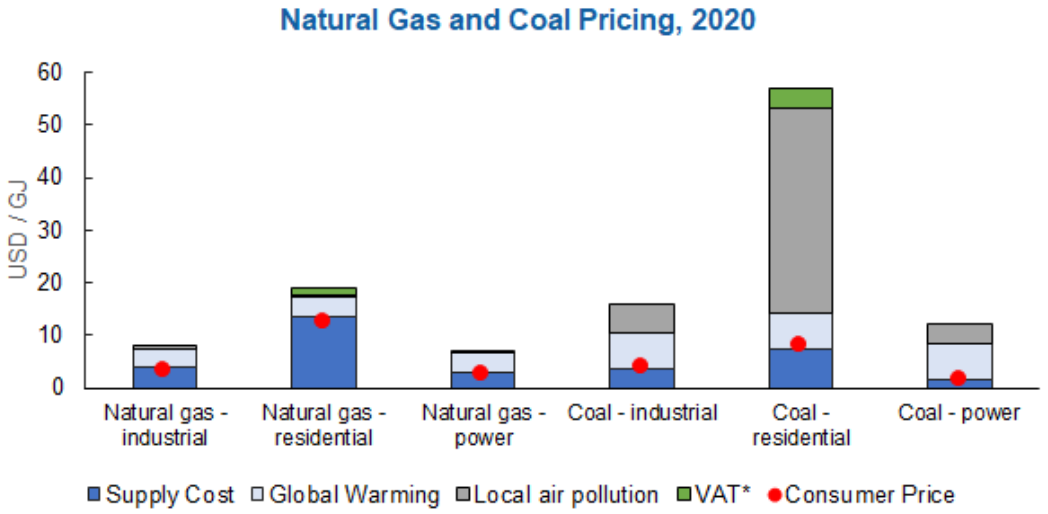
There is a spreadsheet with country-level and global subsidy estimates and energy prices

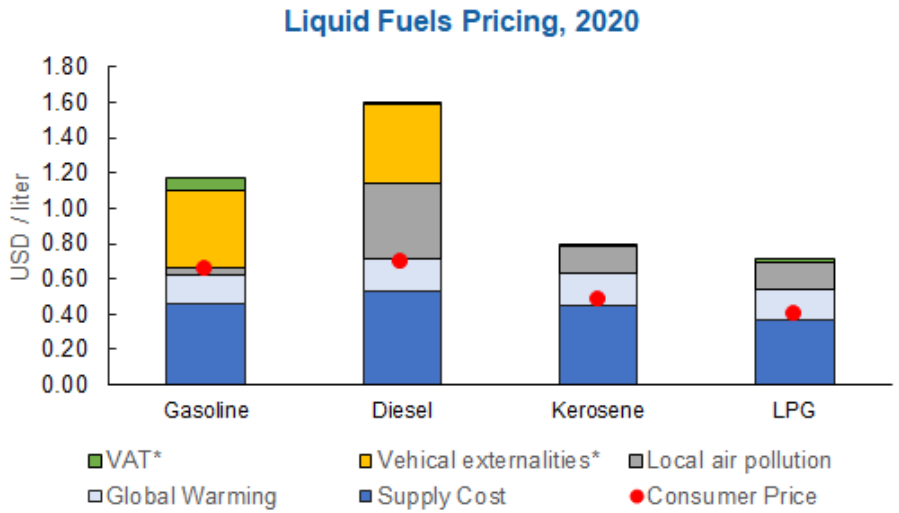
Inputs		Other	Unit	Value
Select country	United States	Population	Millions	330
Select year	2020	GDP	Billions USD	21,314
Unit	Billions	Exchange rate	LCU / USD	1
Currency	USD	Scale	#	1

Total subsidies - selected country

	Unit	Producer	Explicit	Implicit	Total	% of GDP	Per capita
Gasoline	USD Billions	NA	0.0	217.2	217.2	1.0	658.0
Diesel	USD Billions	NA	0.0	169.0	169.0	0.8	512.1
Kerosene	USD Billions	NA	0.0	18.7	18.7	0.1	56.6
LPG	USD Billions	NA	0.0	6.3	6.3	0.0	19.1
Oil - other	USD Billions	1.4	0.0	15.2	16.6	0.1	50.4
Natural gas	USD Billions	0.4	13.8	98.1	112.3	0.5	340.1
Coal	USD Billions	0.5	0.0	121.5	121.9	0.6	369.4
Electricity	USD Billions	0.0	0.0	0.0	0.0	0.0	0.0
Total	USD Billions	2.3	13.8	646.0	662.1	3.1	2,005.7







4. Conclusion

Conclusion

- Subsidies are roughly 7% of GDP and not expected to decrease without additional policies.
  - Clear conceptual case for pricing externalities; country-level assessments → mispricing of energy is pervasive; large benefits from reform
- Opposition from impacted groups → comprehensive approach needed
  - Productive/equitable use of new revenues, just transition measures, public investment in clean technology infrastructure networks, outreach to stakeholders and public
  - Balance between price reform and non-pricing instruments (less efficient but more acceptable) like feebates/tradable performance standards
- Analytical framework provides guidance on design of reforms, their impacts, and trade-offs between policy options

Weblinks

Paper:

www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281

Spreadsheet:

www.imf.org/-/media/Files/Topics/energy-subsidies/EXTERNALfuelsubsidiestemplate2023new.ashx

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Reserve Slides

Justifying the Approach

Energy price surge was not a substitute for tax/subsidy reform

- Got price of coal/natural gas wrong
- Prices receding from peaks—carbon price should be ramping up over time

Fine-tuned instruments more efficient (e.g., congestion/local air emissions fees)

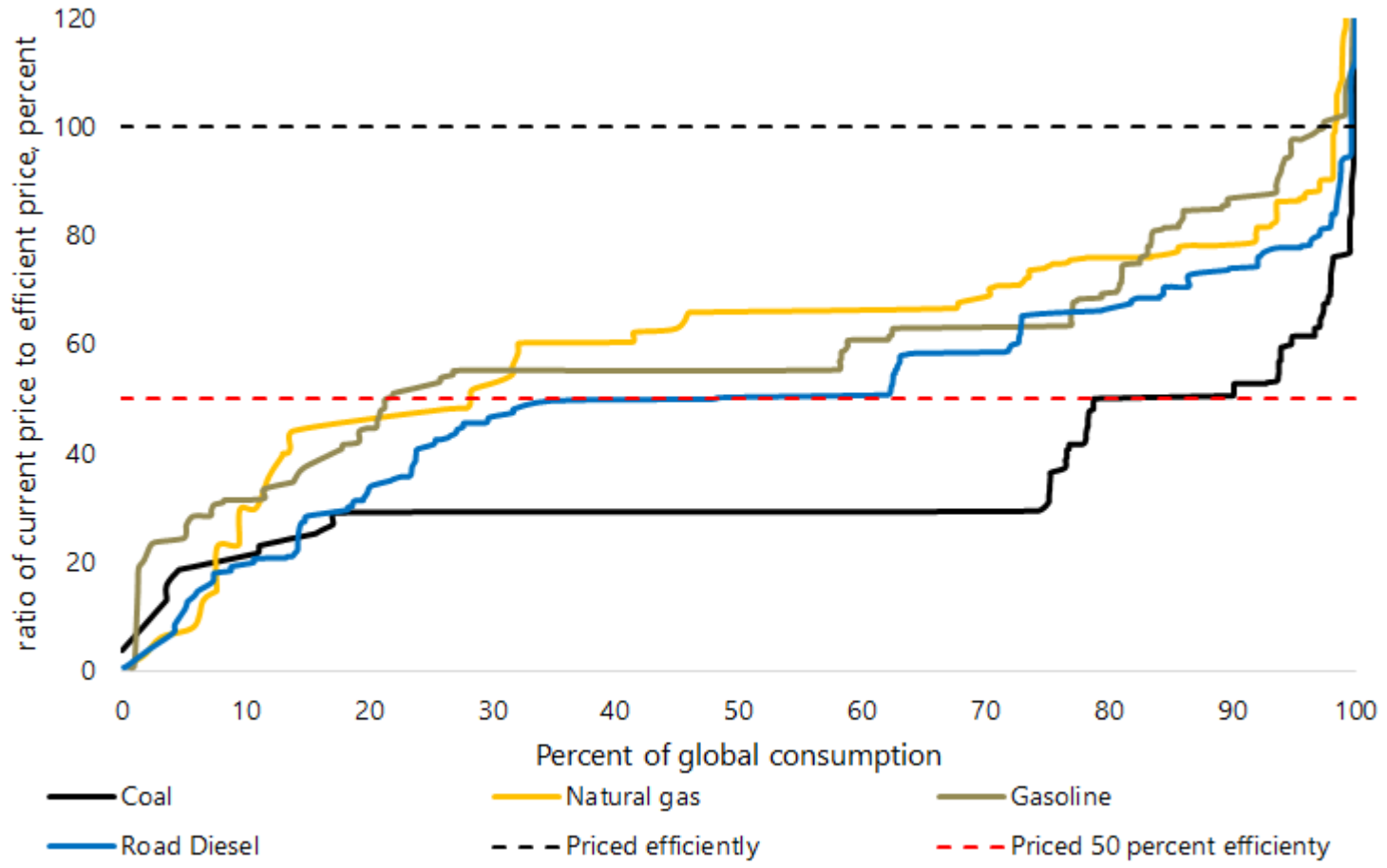
- Approach estimates efficient levels for first-best approaches (e.g., air emission fees)
- But approaches may not be practical → fuel tax reform is appropriate second-best response
- Fuel taxes may be combined with other measures to mimic effects of first-best policy (e.g., coal tax + rebates for downstream adoption of SO_2 scrubbers)

Non-pricing policies often used (e.g., feebates, emission rate standards, subsidies)

- Guides design of other approaches (e.g., implicit price signals)
- Provides benchmark for assessing trade-offs (environmental, health, economic, fiscal) between pricing and non-pricing reforms

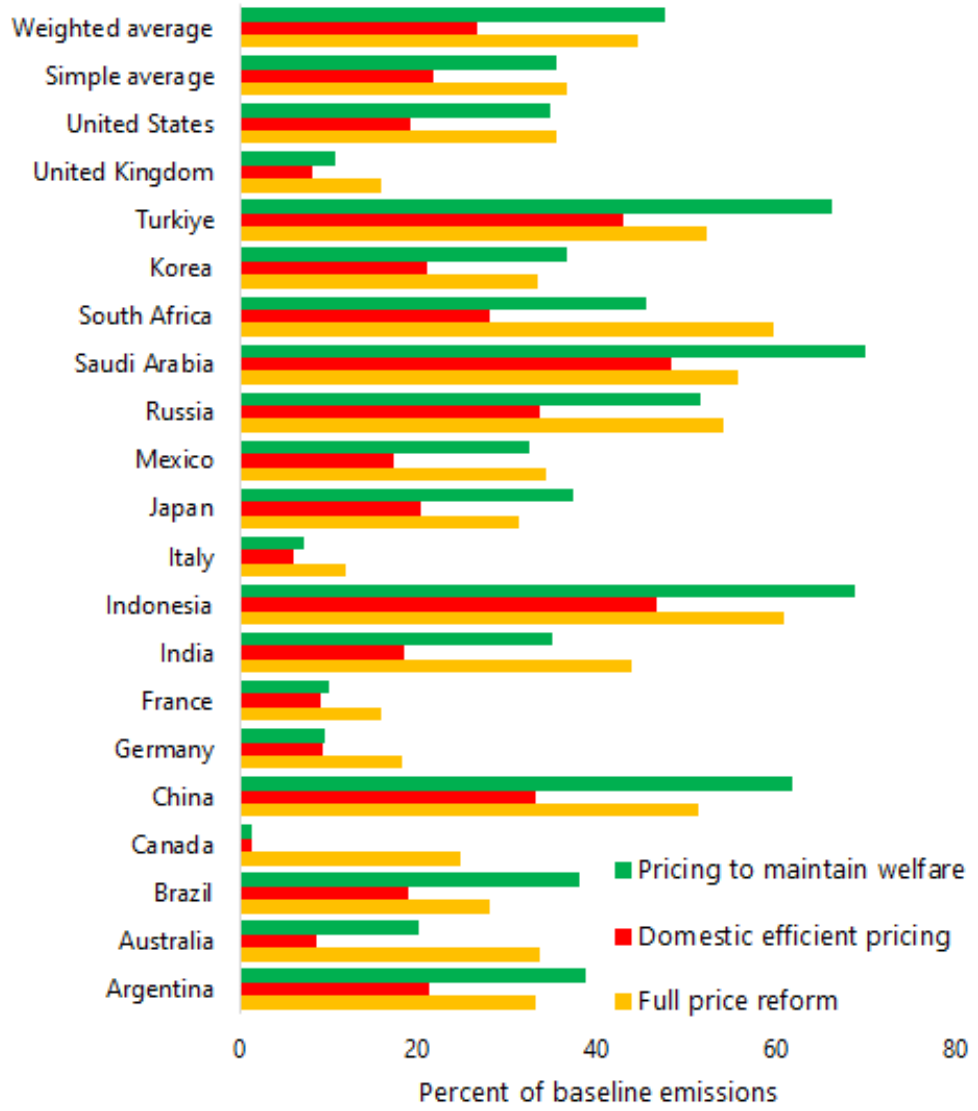
Coal is the most pervasively underpriced fuel, and few fuels are priced efficiently

Fossil Fuel Pricing and Consumption Relative to Efficient Price, 2022



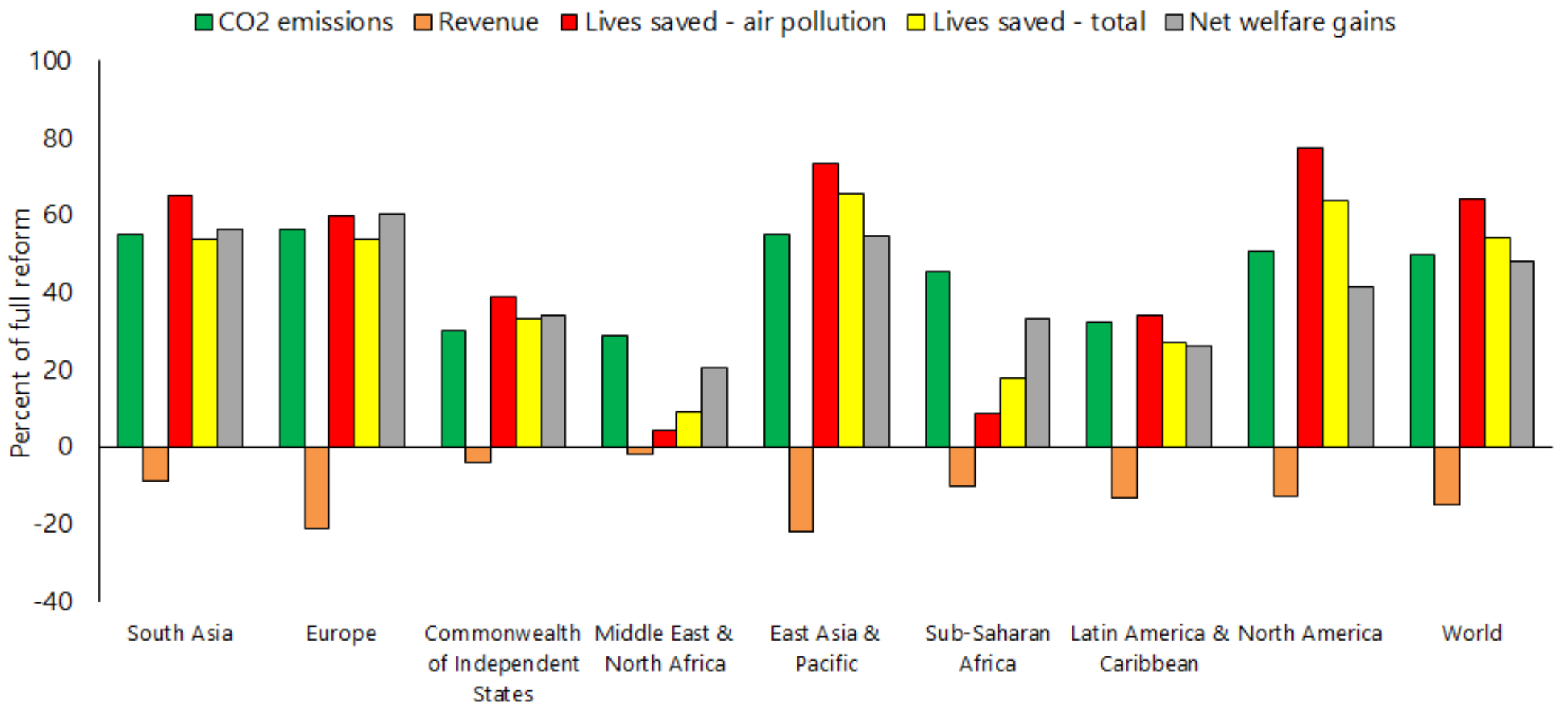
Source: Parry, Black, Liu and Vernon (2023)

Emissions reductions are significant even when price reform does not consider global damages



Source: Parry, Black, Liu and Vernon (2023)

Non-pricing reform is about half as efficient but fiscally costly



Source: Parry, Black, Liu and Vernon (2023)

Other Data

Fuel use: IEA supplemented with other sources

Supply costs

- Oil, gas: import or export price adjusted for domestic margins
- Electricity: domestic production costs
- Coal: average over domestic and international prices

Retail fuel prices: average Eurostat, IEA, World Bank, Global Petrol Prices, Enerda

Fuel tax/subsidy = retail price – supply cost (includes excise, carbon pricing, VAT)

Future fuel prices

- Current price + change in international price × estimated pass through (60-100%)
- International prices average IMF/Bank projections