



Fiscal Affairs Department

# GETTING ENERGY PRICES RIGHT

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The Energy Transition, INDCs and the Post-COP21 Agenda,  
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# Outline



- Carbon pricing
- Broader energy price reform



# Carbon Pricing

# Rationale for Carbon Pricing



- Carbon pricing vs. regulatory approaches
  - Far more environmentally effective
  - Raises significant revenue
- Trading systems should look like taxes
  - Combine with taxes for uncovered emissions (e.g., road, heating fuels)
  - Auction allowances
  - Include price ceilings and floors

# Design Issues: Domestic



- Administration: ideally upstream
  - Maximizes coverage/minimizes collection points
  - Straightforward extension of fuel taxes
- Revenues: use productively
  - Cut other taxes or fund high-value spending
  - Strong case for carbon taxes in developing countries
- Price trajectories: align with INDCs based on
  - Emission projections and their responsiveness

# Design Issues: International



- Price floors more flexible than uniform prices
  - Allow countries to exceed floor (for fiscal, domestic environmental, or political acceptability reasons)
  - Precedents: EU tax floors for VAT, excises
  - Need to monitor broader energy taxes/subsidies (manageable)

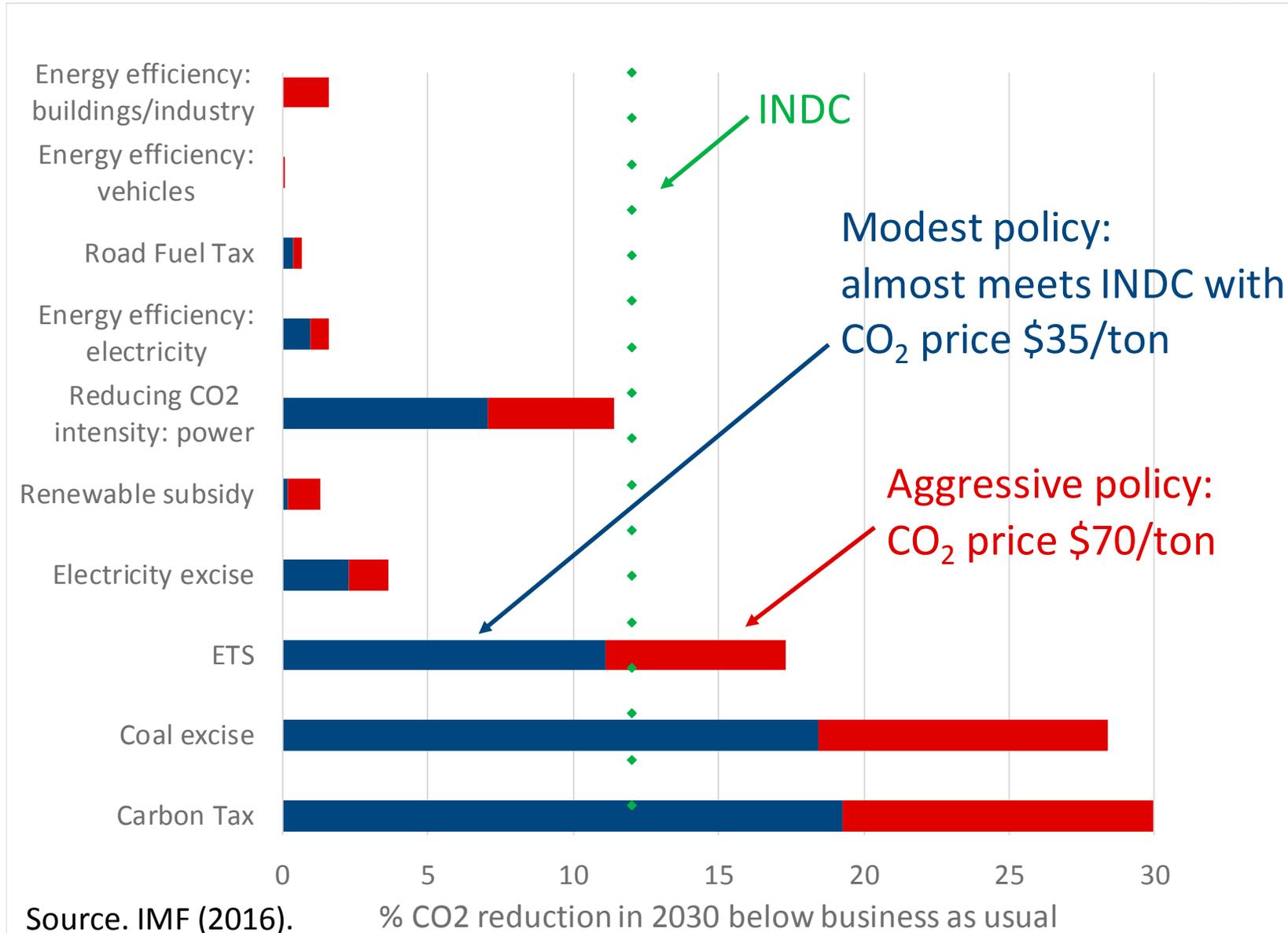
# Prices for Paris and Revenue (Preliminary)



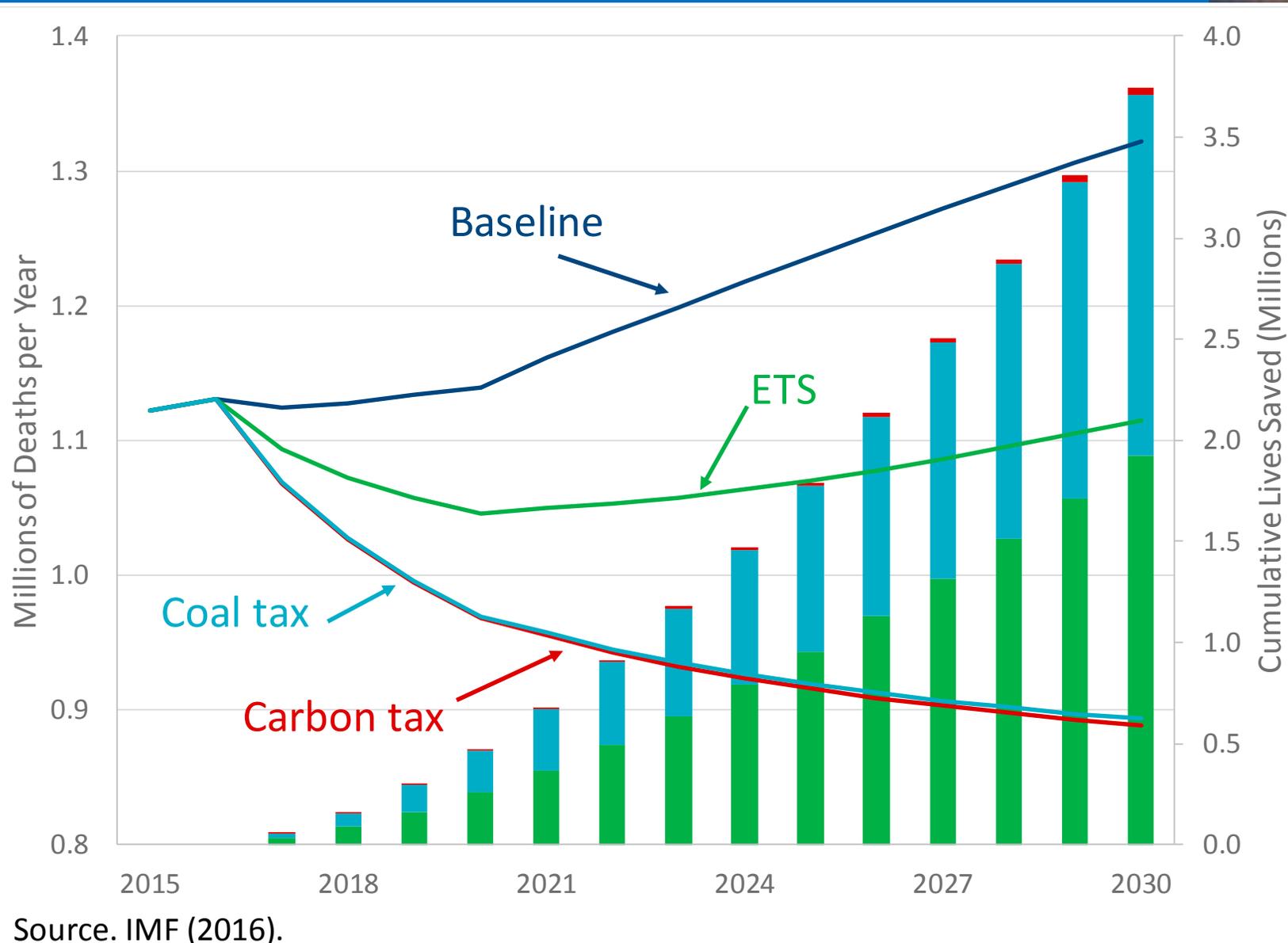
Country	Mitigation pledge: Reduce...	Share of global CO <sub>2</sub> , 2013	Required CO <sub>2</sub> price/ton in target year, \$2015	Revenue in target year, percent GDP
Argentina	GHGs 15% below BAU in 2030	0.6	7	0.3
Australia	GHGs 26-28% below 2005 by 2030	1.3	>150	>3.5
Brazil	GHGs 37% below 2005 by 2025	1.5	>150	>3.1
Canada	GHGs 30% below 2005 by 2030	1.7	>150	>3.7
China	CO <sub>2</sub> /GDP 60-65% below 2005 by 2030	29.0	39	2.0
France	GHGs 40% below 1990 by 2030	1.0	>150	>1.5
Germany	GHGs 40% below 1990 by 2030	2.5	>150	>2.3
India	GHG/GDP 33-35% below 2005 by 2030	6.0	0	0
Indonesia	GHGs 29% below BAU in 2030	1.4	>150	>4.3
Italy	GHGs 40% below 1990 by 2030	1.1	>150	>2.2
Japan	GHGs 25% below 2005 by 2030	4.0	>150	>3.3
Korea	GHGs 37% below BAU in 2030	1.8	>150	>4.3
Mexico	GHGs 25% below BAU in 2030	1.5	>150	>4.3
Russia	GHGs 25-30% below 1990 by 2030	5.0	22	2.4
S. Arabia	GHGs 130 mn tons below BAU by 2030	1.5	>150	>8.9
S. Africa	GHGs 398-614 mn tons in 2025 and 2030	1.4	42	5.0
Turkey	GHGs up to 21% below BAU by 2030	0.9	93	2.8
UK	GHGs 40% below 1990 by 2030	1.4	>150	>1.8
US	GHGs 26-28% below 2005 by 2025	16.5	116	2.3

Source: IMF (2016).

# China: Comparing Policy Effectiveness



# China: Reductions in Air Pollution Deaths





# Broader Energy Price Reform

# Other Externalities



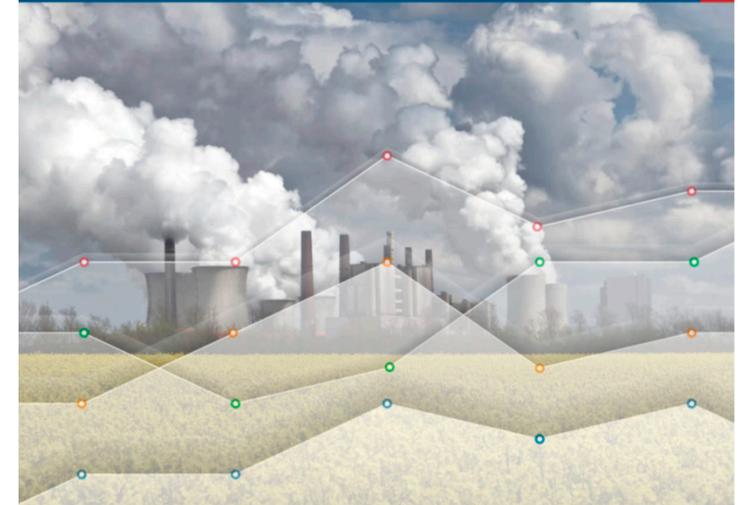
- (Outdoor) air pollution from fine particulates
  - 3.2 million deaths a year
  - Requires: tax on emissions or tax on fuel with credits for downstream mitigation (e.g., SO<sub>2</sub> scrubbers)
- Road congestion, accidents, pavement damage
  - London congestion \$40/gal., accidents kill 1.2 million
  - Requires: mileage taxes (e.g., peak period pricing)
- Fuel taxes appropriate for the interim

# Valuing Externalities: Air Pollution



- Population exposure
  - Power plant location → number of people in proximity
- Exposure → mortality
  - Evidence from GBD
- Monetize health effects
  - Evidence on WTP for health
- Damages per unit of fuels
  - Country-specific emissions factors

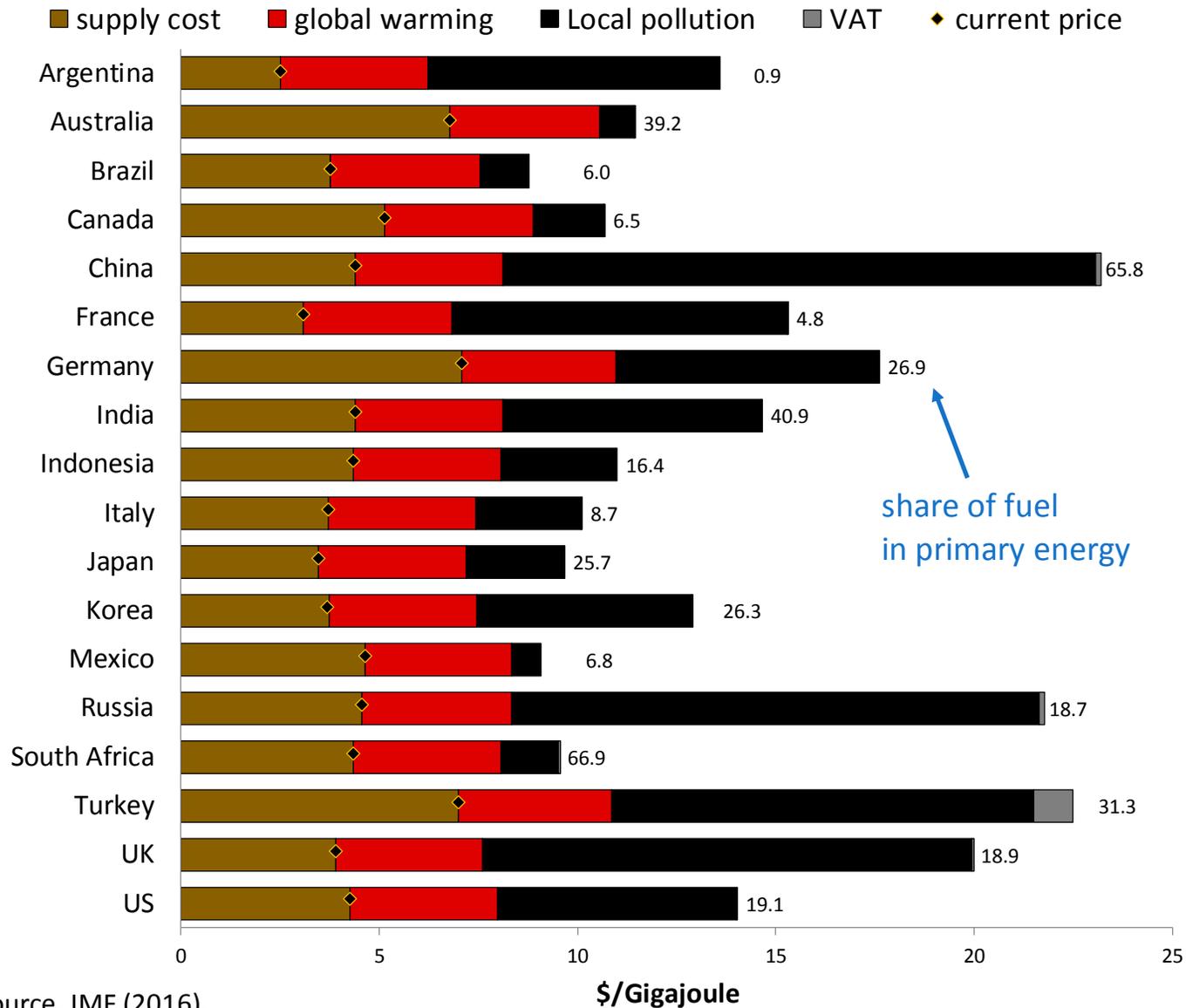
Getting Energy Prices Right  
From Principle to Practice



Ian Parry, Dirk Heine, Eliza Lis, and Shanjun Li

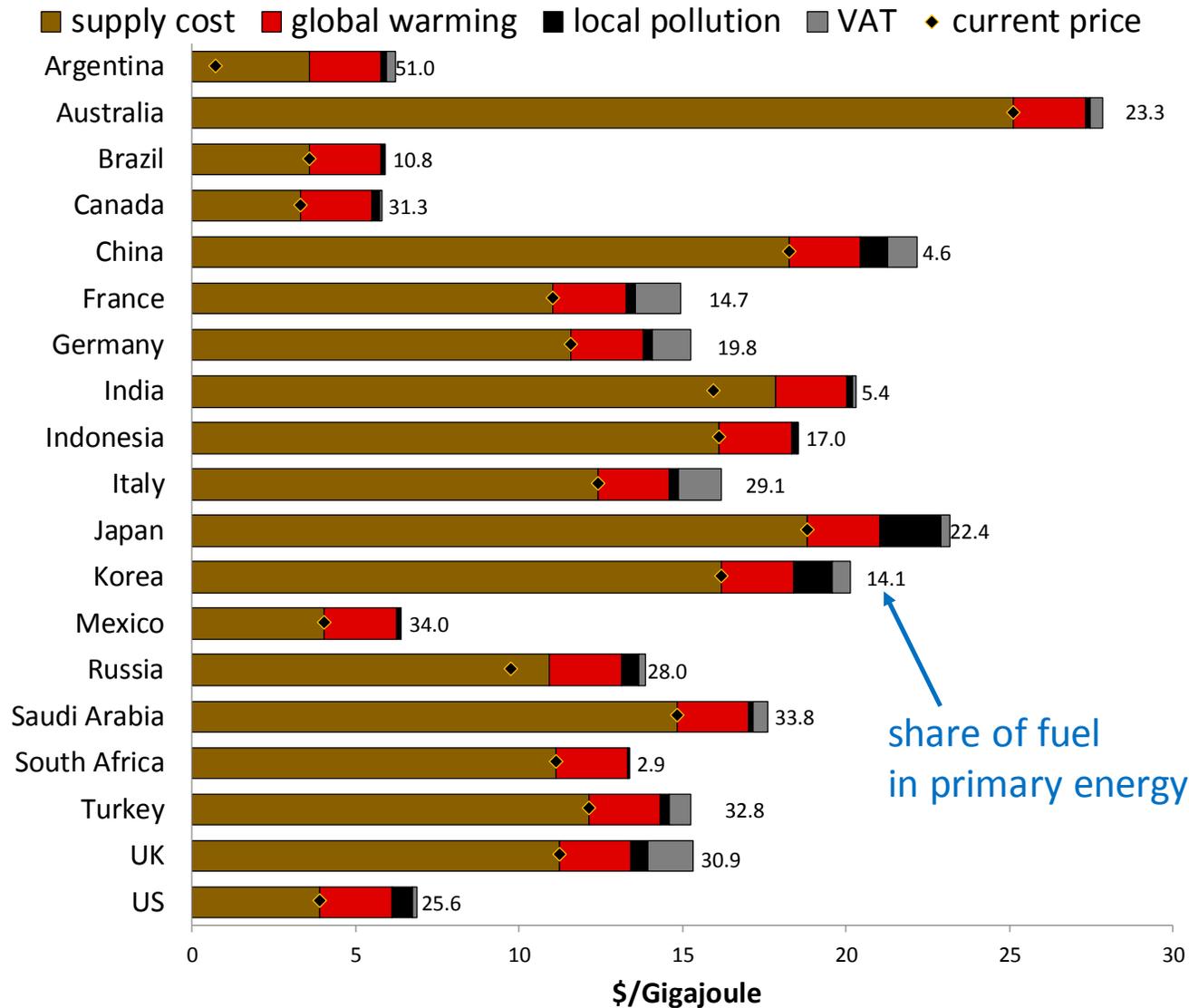
INTERNATIONAL MONETARY FUND

# Efficient Coal Prices, 2013

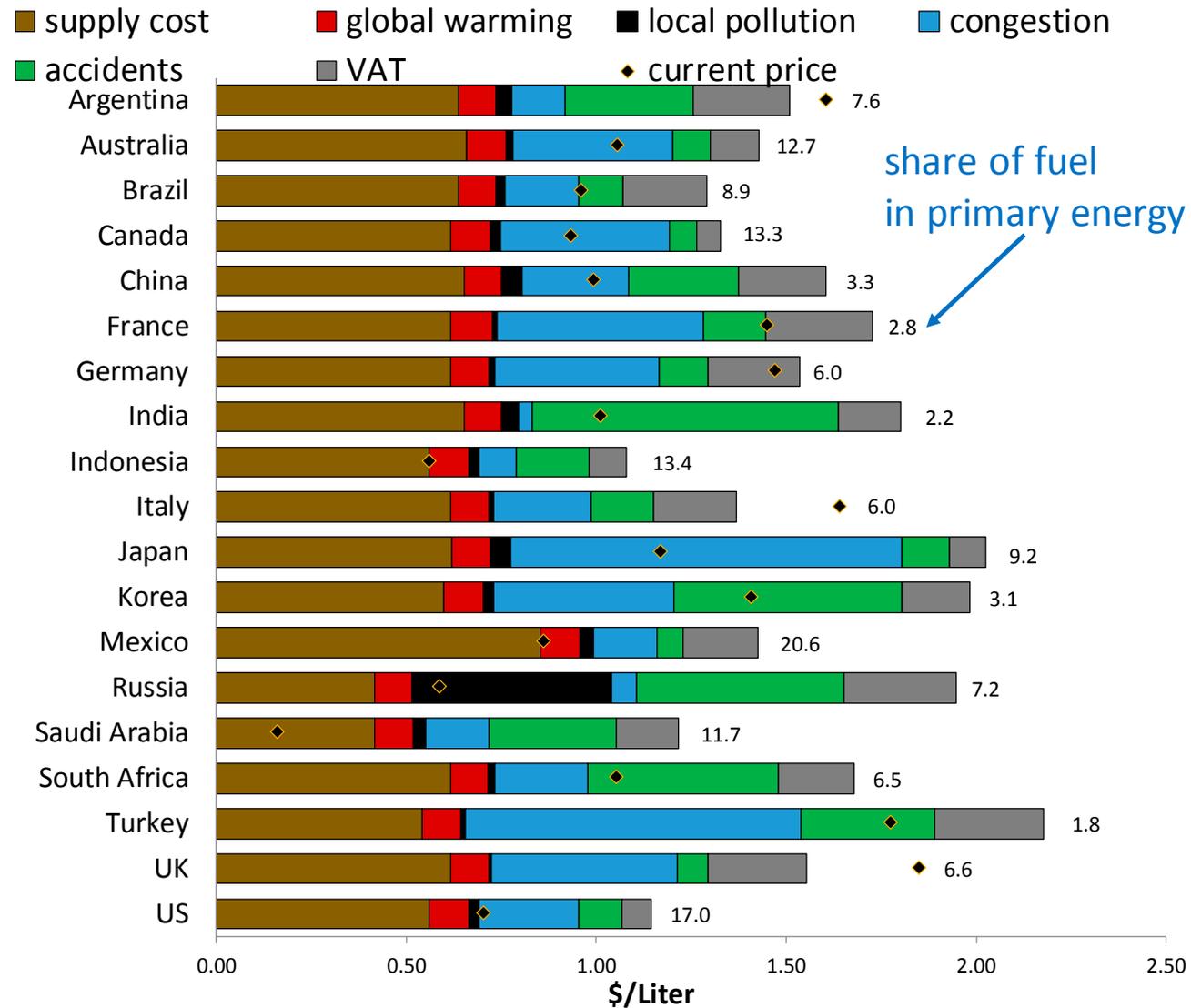


Source. IMF (2016).

# Efficient Natural Gas Prices, 2013

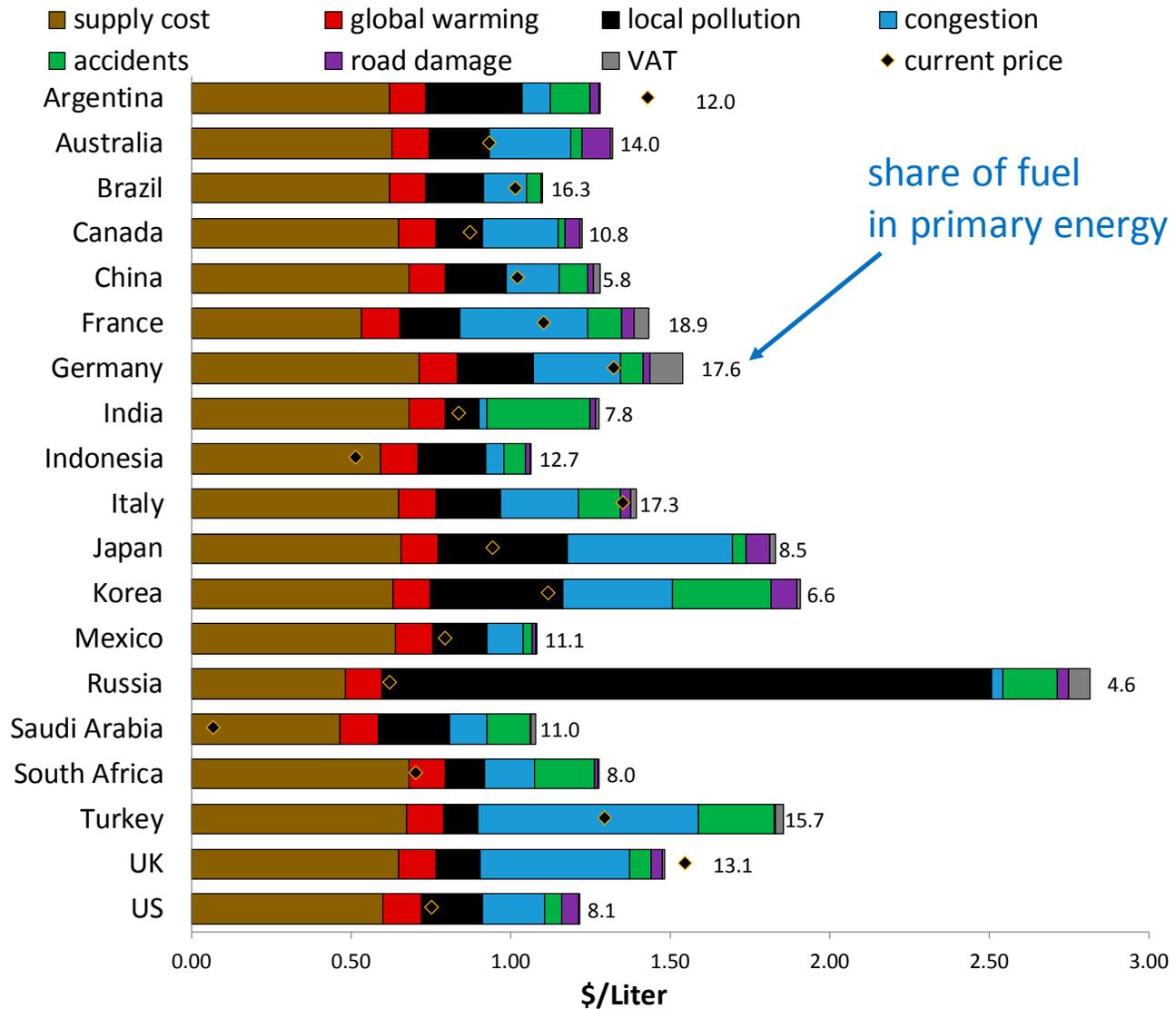


# Efficient Gasoline Prices, 2013



Source. IMF (2016).

# Efficient Road Diesel Prices, 2013



Source. IMF (2016).

# Large Benefits from Reform, 2013



- Global CO<sub>2</sub>
  - Reduced 21%
- Fossil fuel air pollution deaths
  - Reduced 55%
- Revenue gain
  - 4% of global GDP
- Economic welfare gain
  - 2% of global GDP

# Concluding: Moving Policy Forward



- Energy price reform largely in countries interests
  - Countries can move ahead unilaterally
- Time is right
  - Low energy prices, fiscal pressures, Paris Agreement
- Need to address domestic obstacles
  - Protect low income households (requires  $\approx 10\%$  of revenues)
  - Assist transition away from uneconomic firms