



CARNEGIE
ENDOWMENT FOR
INTERNATIONAL PEACE

Smart Tax: Pricing Oil for a Safe Climate

Deborah Gordon | June 15, 2016

Why is Oil Different?

	COAL	GAS	OIL
Chemical Distinctiveness	Relatively homogeneous	Relatively homogeneous	Highly Diverse
Supply chain	Relatively simple	Relatively simple	Highly complex
Capitalization	Medium to High	Medium to High	Very High
Market Reach	Limited	Limited	Global
End Uses	Power Heavy Industry	Power Petrochemical Residential Commercial	Transport (>90%) + Petrochemical Industry Residential Commercial Power
Commercial Substitutes	Many	Several	Few

Crude Oils



Heavy Oils



Extra-heavy Oils



Natural Gas Liquids



Ultra-deep Oils



Tar/Oil Sands (Bitumens)



Condensates



Depleted Oils



Tight Shale Oils



Oil Shale (Kerogen)



Tracing the Oil Supply Chain

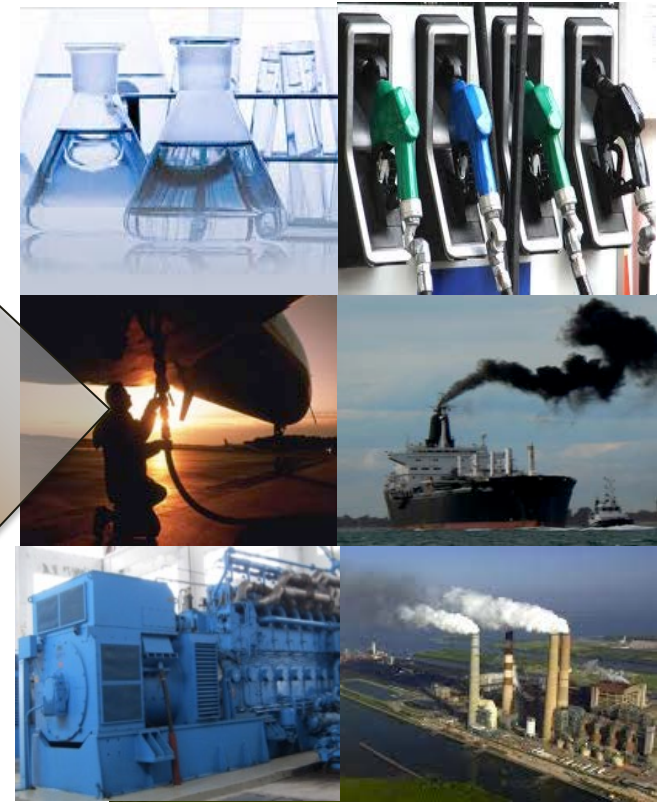
Upstream



Midstream



Downstream



**Exploration &
Production**

**Transportation &
Processing/Refining**

**Marketing &
Consumption**



Introducing the OCI

KNOW YOUR

OIL

Creating a Global **Oil-Climate** Index

Upstream Model

OPGEE

+

Midstream Model

PRELIM

+

Downstream Model

OPEM

=

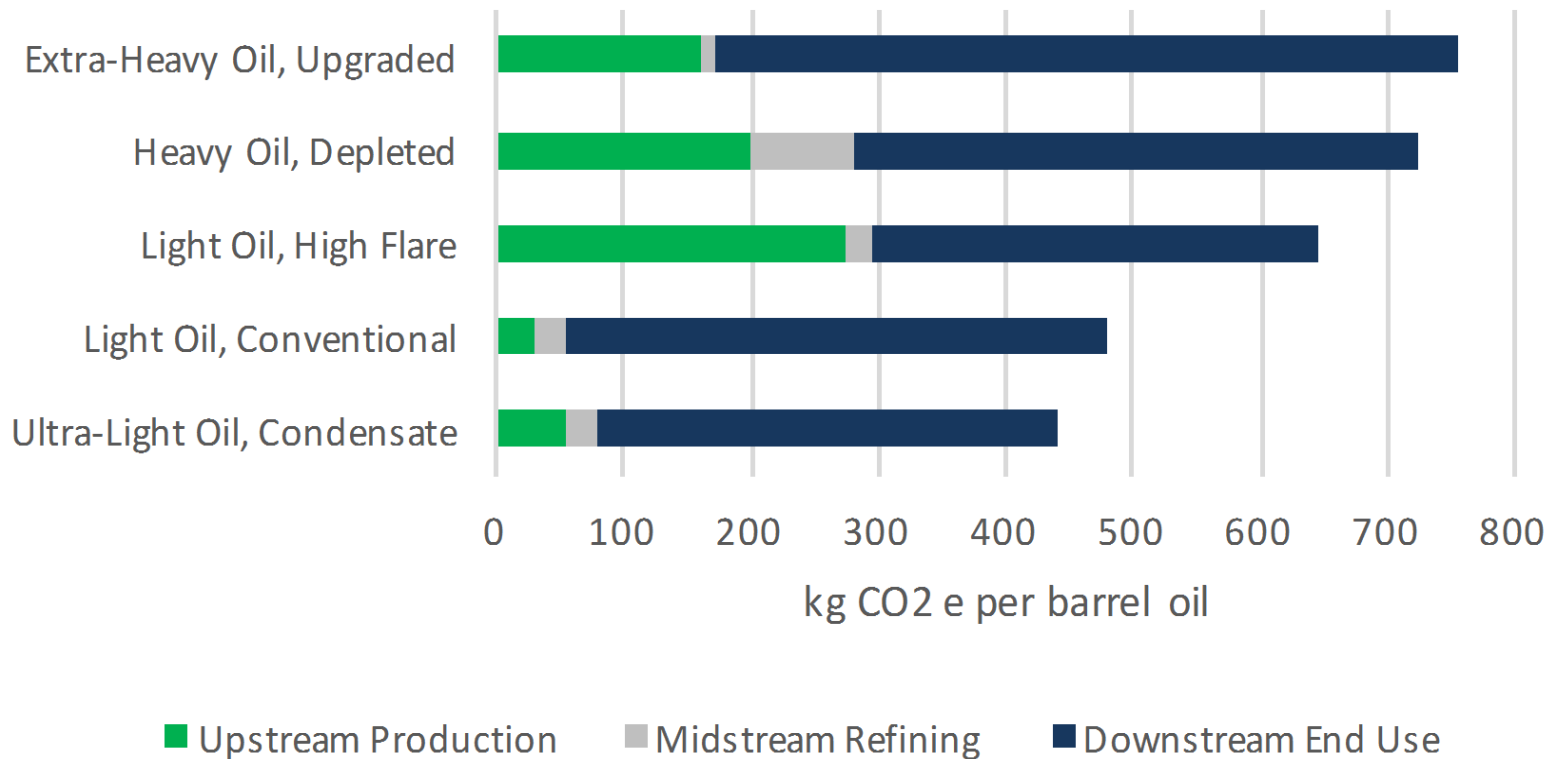
Oil-Centric Model

OCI

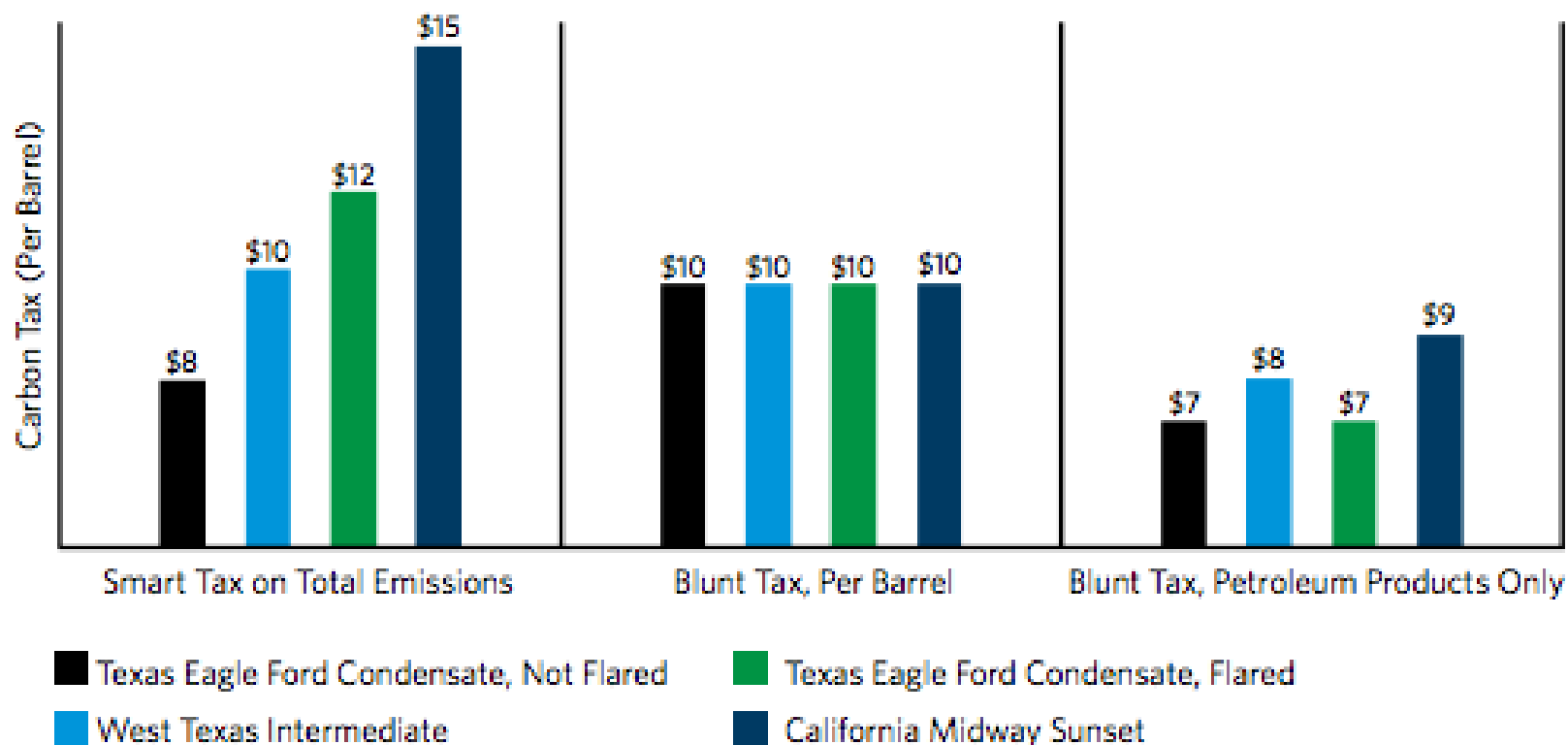


Tracking Emissions from Oil

GHG Emission Breakdowns for Different Oils



Smart vs. Blunt Tax Designs



Note: Tax estimates based on \$20 per metric ton of GHGs and rounded to the nearest dollar. This rate can be easily adjusted. It was selected for comparison because it equalizes a smart tax and per barrel tax on West Texas Intermediate oil.



Heart of the Argument

A smart tax must:

- Differentiate among the very different chemical entities that go by “a barrel of oil”
- Account for GHG emissions along the entire oil supply chain: production, refining, transport, and end product use
- Include emissions from all oil products, including petroleum coke and residual fuels
- Motivate innovation by enabling competition between all stakeholders in the oil industry



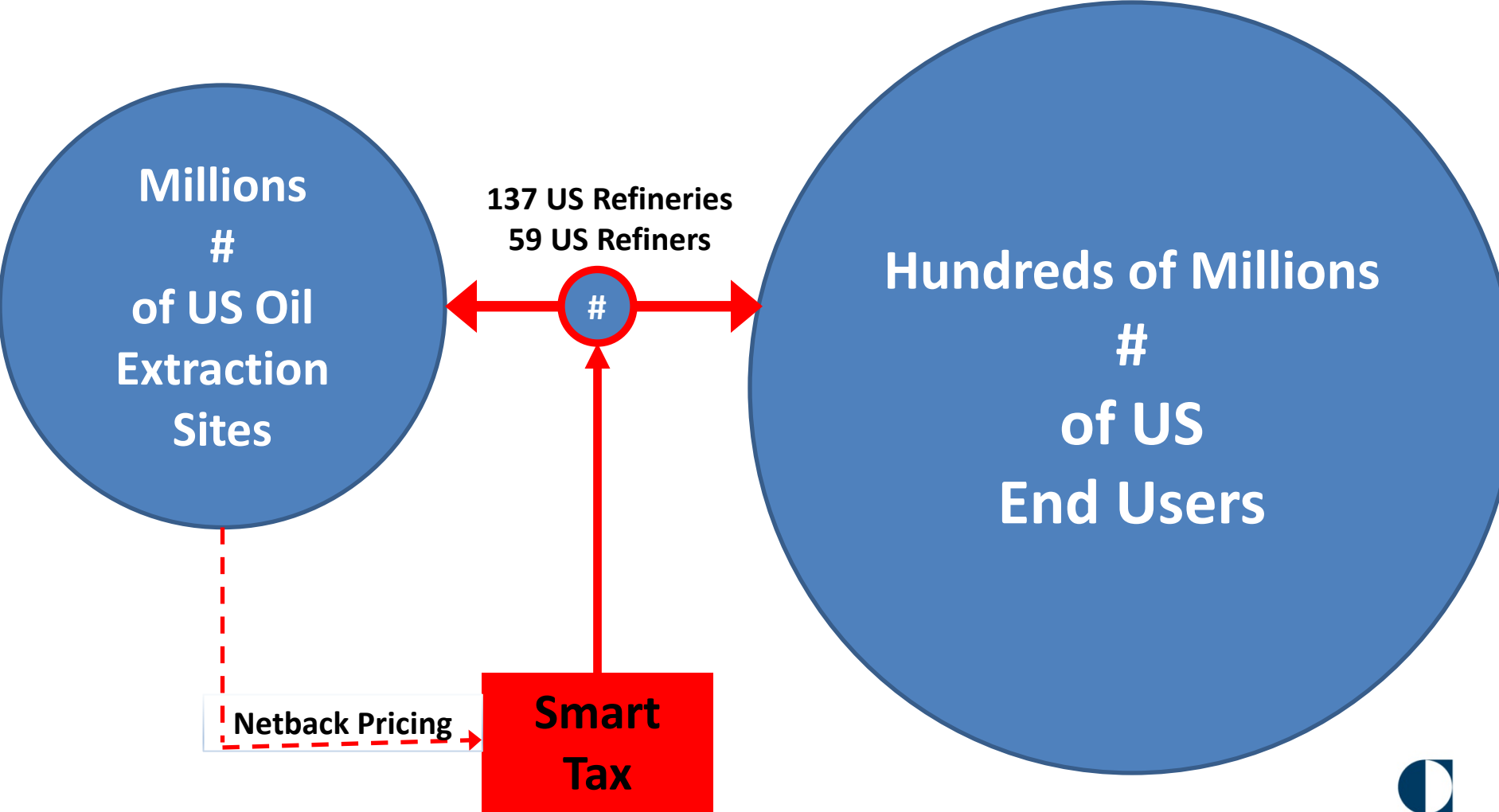
Failings of a Blunt Tax

A blunt tax:

- Leaves major emissions untaxed
- Sends a perverse market signal by encouraging the development of higher GHG oils
- Creates no incentive for technological innovation in the supply chain
- Creates no incentive for changes in the product slate
- Requires a higher tax rate than a smart tax for comparable emission reductions



Administering a Smart Tax



Accessible Data – A Requirement



Oil Field Data

- Well depth
- Steam-to-oil ratio
- Water-to-oil ratio
- Flaring rate
- EOR specs



Oil and Refinery Data

- Oil Assays
- Process energy requirements



Oil Market Data

- Product volumes
- Origins
- Destinations





Carnegie Smart Tax Calculator



Here it is...

