Managing the decline of fossil fuel production: a missing piece of the climate policy puzzle

Michael Lazarus and Georgia Piggot,
SEI-US (Seattle)

SEI Stockholm Environment Institute

Green to Scale:
10 Low-Carbon Solutions for Estonia
Nordic Hotel, Tallinn April 30, 2018

We’re not just getting better at renewable energy technology…

Leaders increasingly recognize

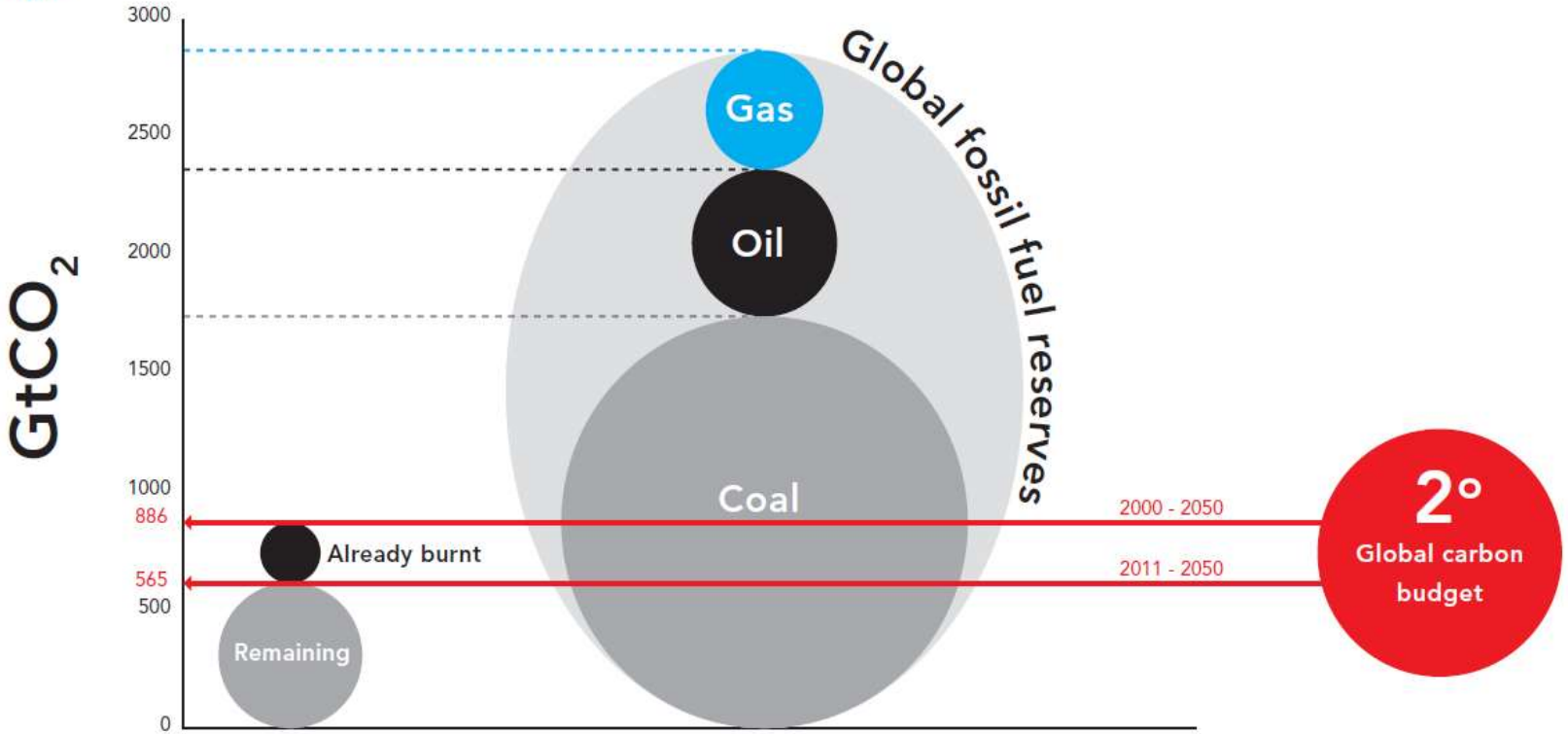
2/3 of proven reserves of **oil, gas & coal** have to be left undeveloped for a **2°C** pathway
– **Fatih Birol**, executive director, International Energy Agency

‘… governments everywhere on behalf of their citizens have major stakes in bringing fossil fuel to market…

Carbon entanglement will not be easily undone…’
– **Angel Gurría**, OECD Secretary-General

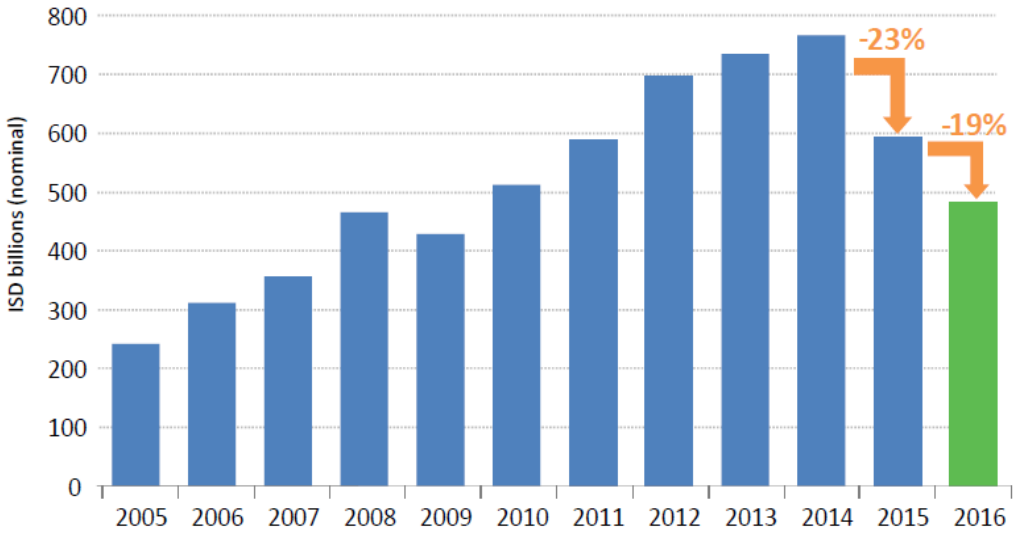
Comparison of the global 2°C carbon budget with fossil fuel reserves CO_2 emissions potential

Fig. 1



Unburnable Carbon: Are the World's Financial Markets Carrying a Carbon Bubble?, Carbon Tracker Initiative, 2011, www.carbontracker.org/reports/carbon-bubble/

Climate policies focus almost entirely on reducing *demand* for fossil fuels



Source: IEA, 2016

Why supply-side climate policy?

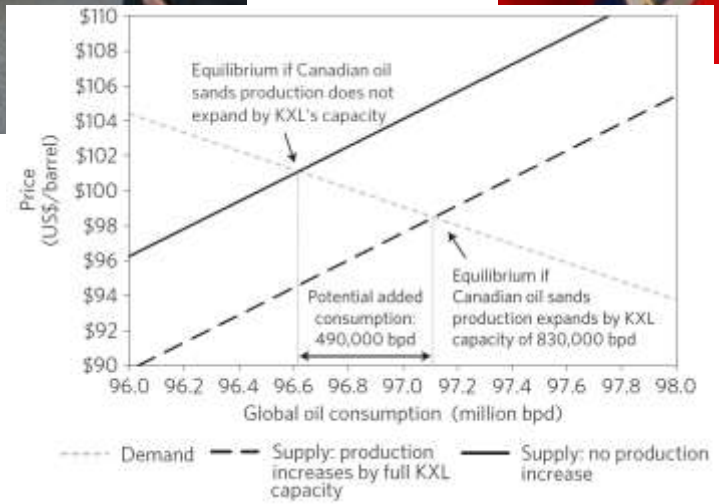
Supply-side policy can take many forms

Table 1: Types and examples of supply-side and demand-side climate policies

	Supply-side policy	Demand-side policy
Economic instruments – taxes	Resource production tax Resource export taxes Taxes on fossil fuel capital (income)	Carbon or fuel use taxes Border carbon price adjustments
Economic instruments – subsidies	Removal of fossil fuel producer subsidies	Removal of fossil fuel consumer subsidies Renewable energy subsidies
Economic instruments – tradable allowances and credits	Cap-and-trade for production rights Offsets for leaving assets in ground	Cap-and-trade for consumption rights Emission reduction credits or offsets
Regulatory approaches	Prohibiting development of certain resources or use of certain technologies Limiting production or export (e.g. via quota) Comprehensive emissions assessment in environmental impact review of new fossil fuel supply projects	Coal plant emission standards Building codes
Government provision of goods and services	Restricted leasing of state-owned lands and waters for coal, oil and gas development Decision to not develop specific resources or infrastructure (oil pipelines and terminals; coal ports, etc.) Funding to compensate resource owners for leaving reserves undeveloped Policies to restrict export credit agency or multilateral development finance for coal mining and other supply infrastructure	Infrastructure expansion (district heating / cooling; electric vehicle charging stations; wind transmission) Policies to restrict export credit agency or multilateral development finance for coal power stations
Information programmes, voluntary actions, and other	Divestment by institutions and individual from companies involved in fossil fuel production Extraction-based emissions accounting by nations and sub-national governments; life-cycle based accounting of embedded GHGs in fossil fuels sold in marketplace	Energy audits Vehicle or appliance labelling Territorial emissions accounting

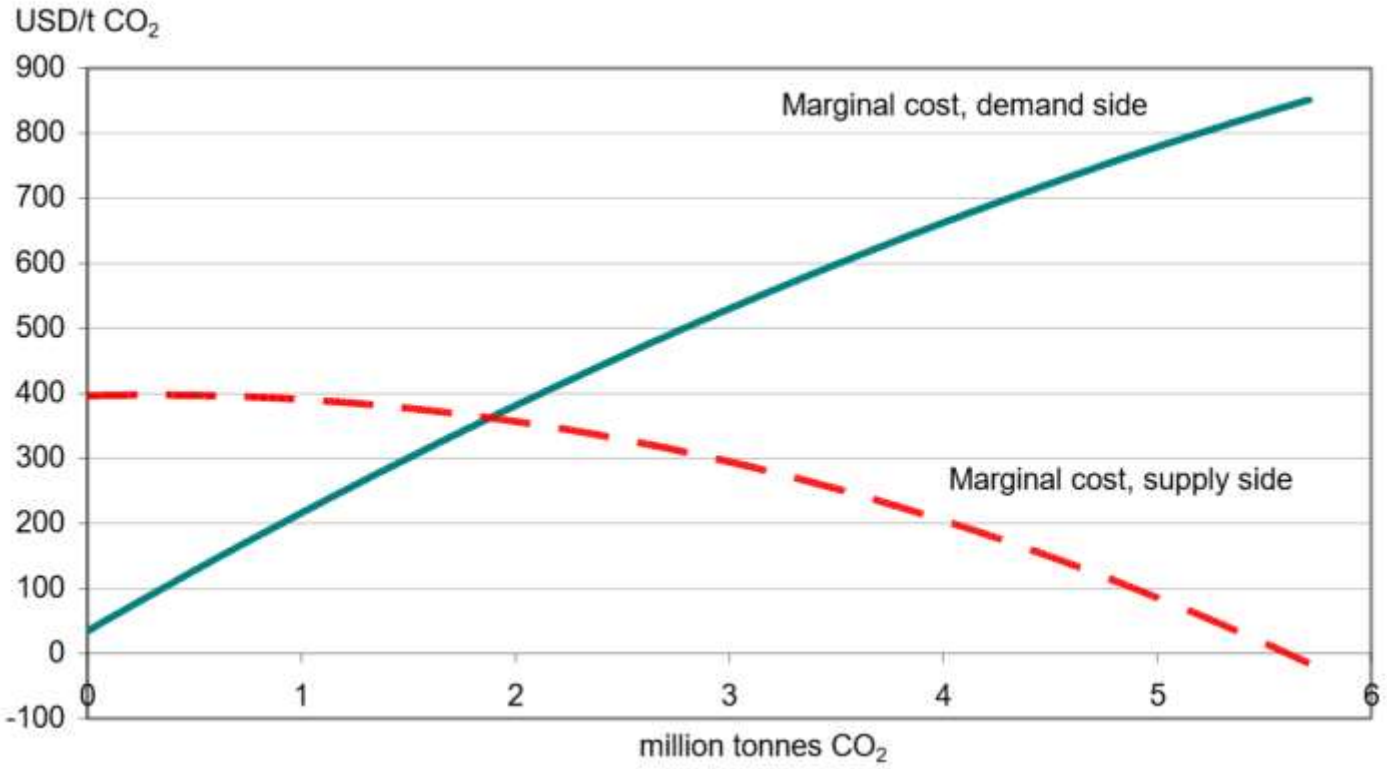
Source: Adapted from Somanathan et al. (2014), Table 15.2.

Limiting supply can reduce overall emissions



Erickson and Lazarus (2015), *Nature Climate Change* 4(9), 778–81.

Enable greater emission reductions for a given marginal cost



Source: Faehn, T., et al., 2013. *Climate Policies in a Fossil Fuel Producing Country: Demand versus Supply Side Policies*. https://www.ssb.no/en/forskning/discussion-papers/_attachment/123895?_ts=13f51e5e7c8.

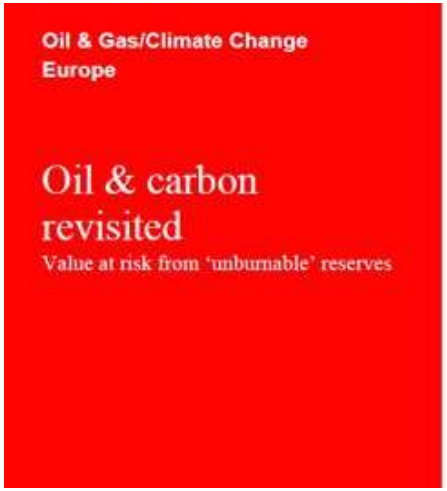
Avoid carbon lock-in

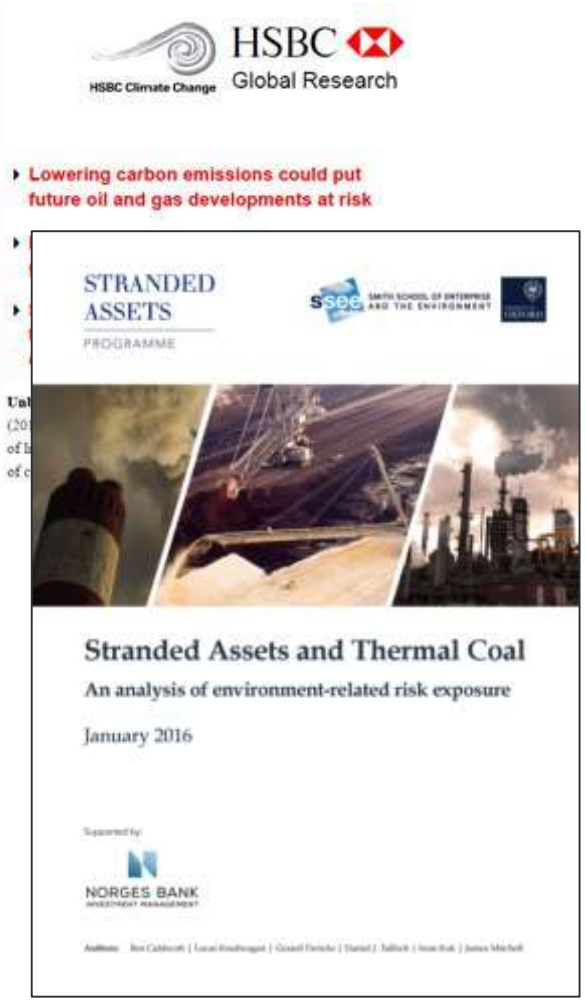
- Fossil fuel investment today makes it harder to reach future low-carbon targets
  - Economic, technical, institutional, social, & political drivers

- New, unconventional, and offshore oil may pose greatest lock-in challenge

Carbon Lock-in from Fossil Fuel Supply Infrastructure. SEI Discussion Brief. www.sei-international.org/publications?pid=2805

Lower the risk of stranding investments and communities

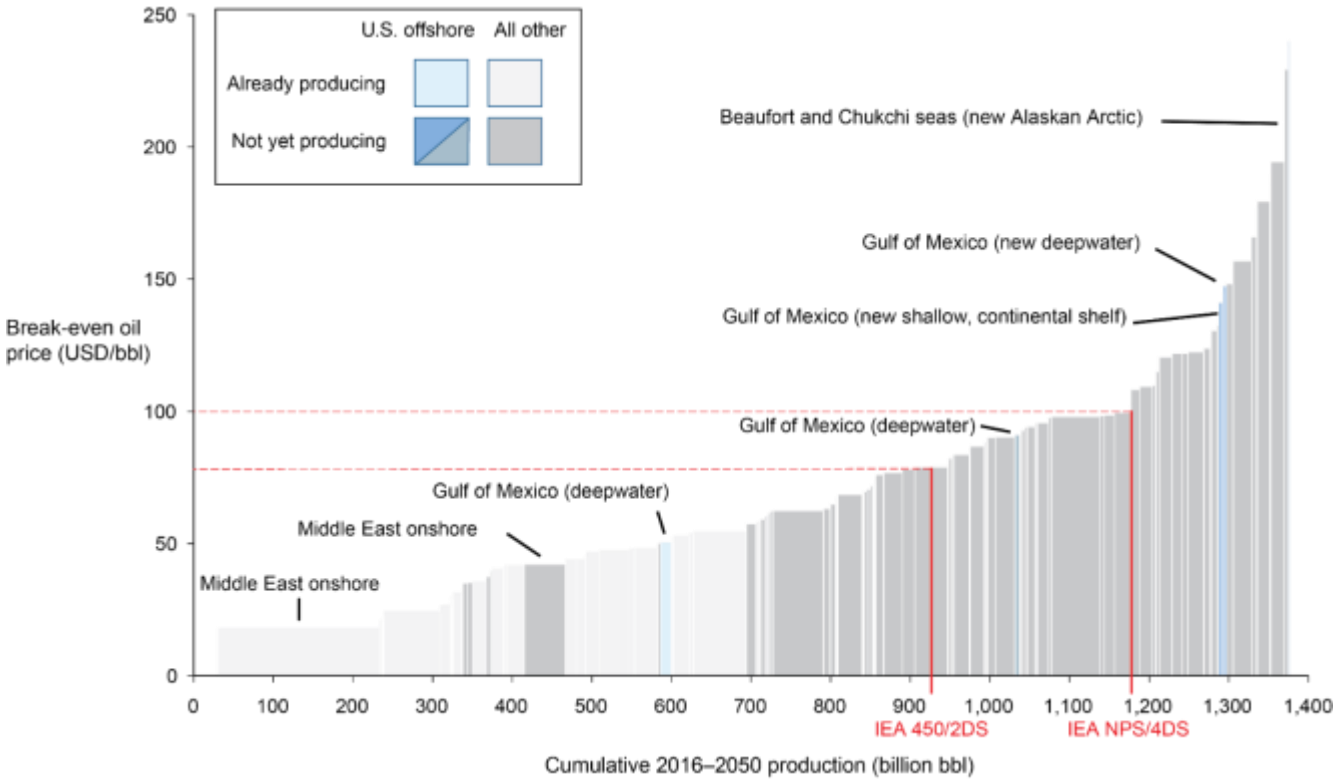




SEI Initiative on Fossil Fuels & Climate Change

- better understand how institutions, investments and infrastructure can lock in dependence on fossil fuel production and identify strategies to manage the transition away from fossil fuel dependency

Which oil resources make (economic) sense in a low-carbon world? New offshore oil in the US?



Dec. 2016: We don't need this oil anyway: "If lease sales were to occur and production take place, it would be at a time when…the United States and the international community must be transitioning its energy systems away from fossil fuels."

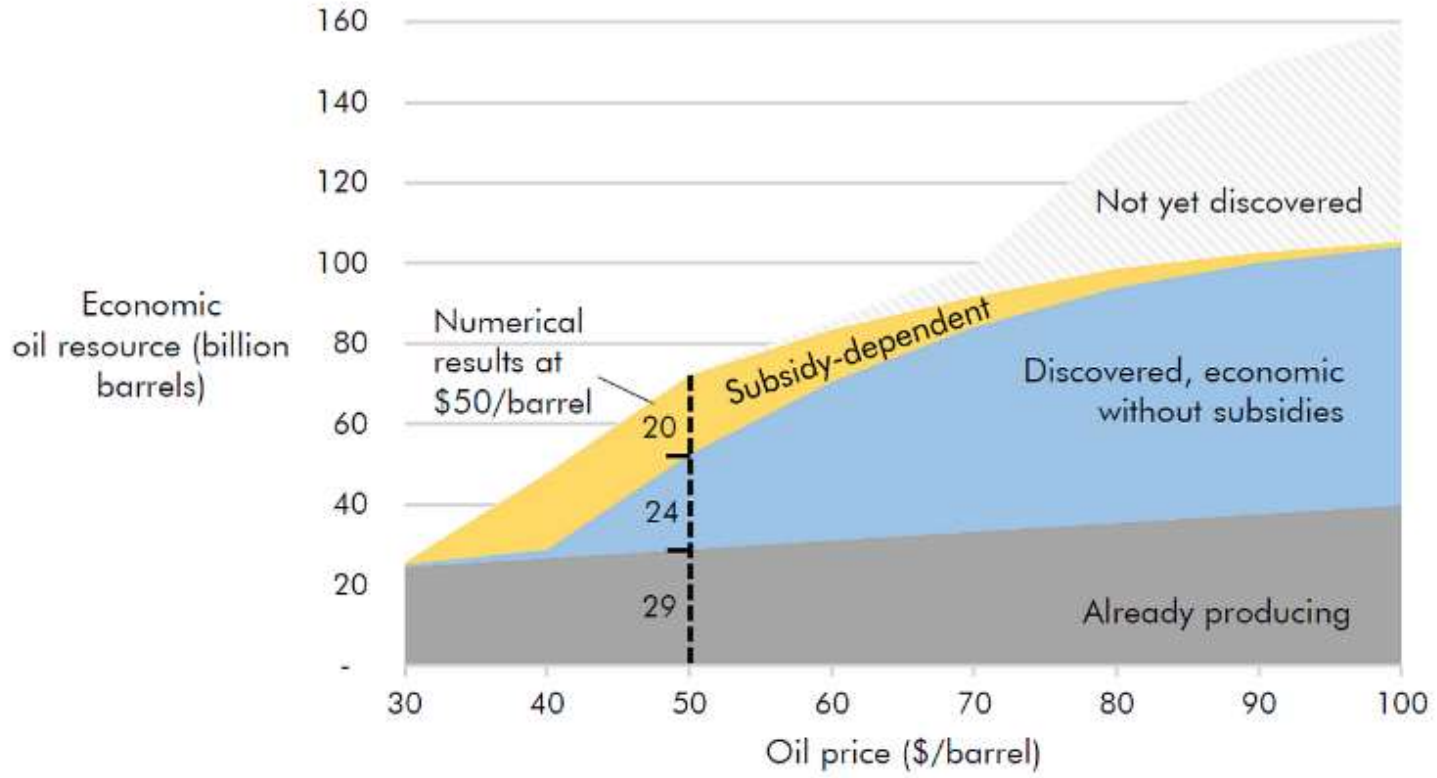
– White House Fact Sheet explaining decision to remove Arctic and Atlantic from future leasing

Erickson, P., Down, A., Lazarus, M., Grant, A., Leaton, J. and Fulton, M. (2016). Making Future U.S. Offshore Oil Leasing More Consistent with Climate Goals. Stockholm Environment Institute, Seattle, WA.

Effect of government subsidies for upstream oil infrastructure on U.S. oil production an global CO2 emissions, SEI Working Paper, 2017.

Nearly half of new US oil production is subsidy-dependent (at $50/bbl oil)

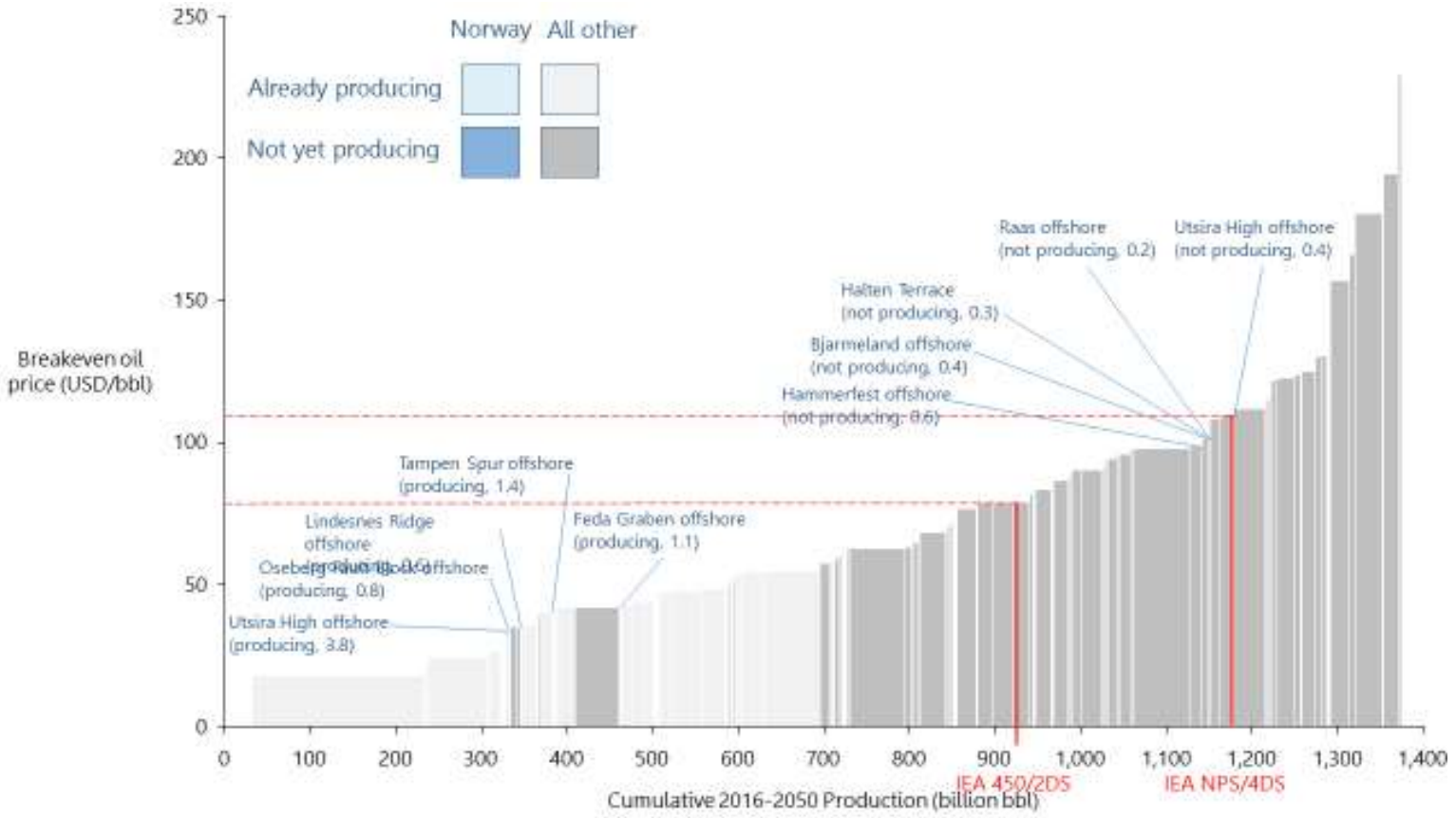
Figure 2: Share of U.S. oil resources that are subsidy-dependent as a function of oil prices



Note: The chart assumes a 10% hurdle rate.

Erickson, P., Down, A., Lazarus, M., & Koplow, D. (2017). Effect of subsidies to fossil fuel companies on United States crude oil production. Nature Energy, 2(11), 891.

Norway



Norwegian oil production and keeping global warming “well below 2deg C””, SEI Discussion Brief, 2017. (Cost estimates from Rystad Ucube)

California

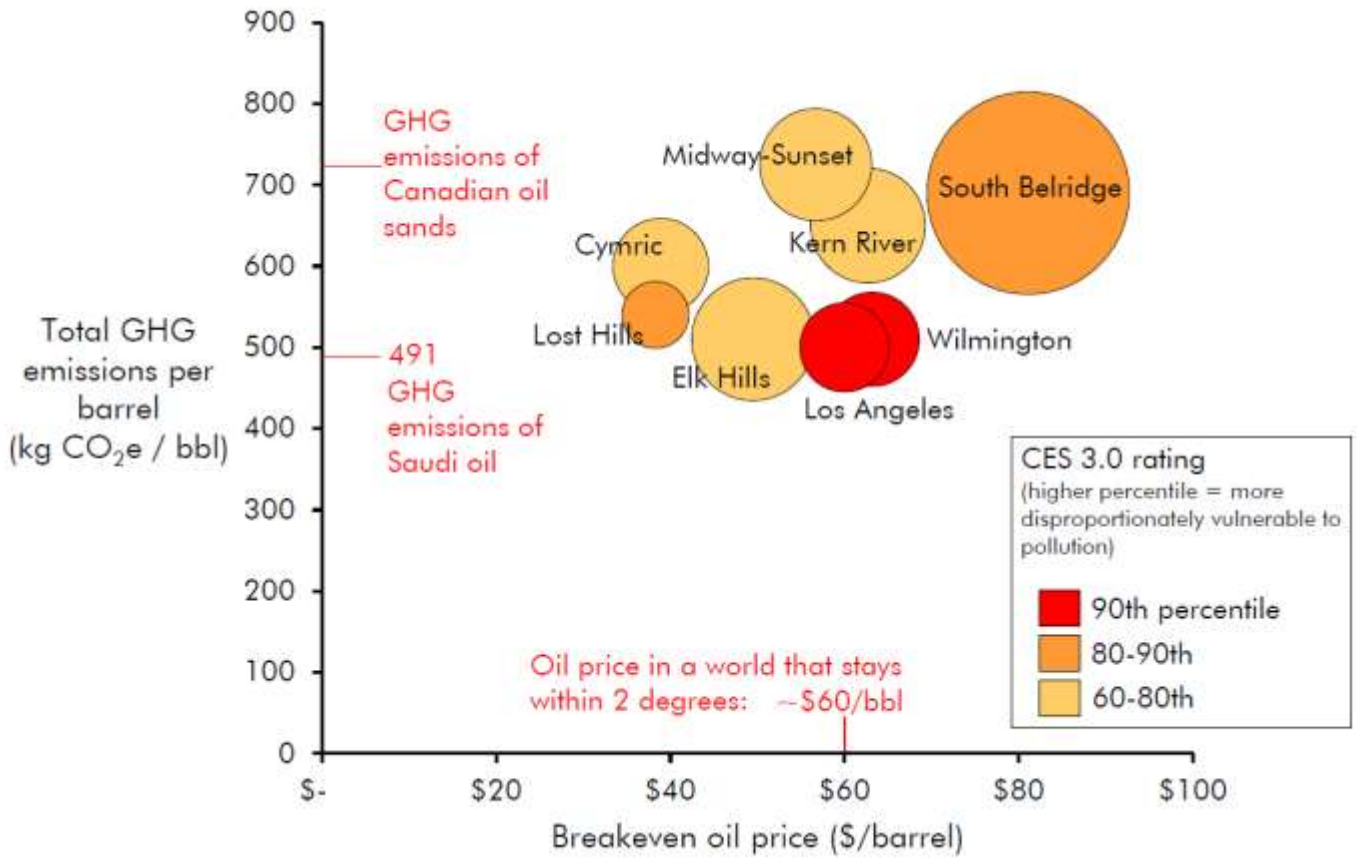
SEI STOCKHOLM ENVIRONMENT INSTITUTE

DISCUSSION BRIEF

How limiting oil production could help California meet its climate goals

By many measures, the U.S. State of California has put in place climate policies that stand among the world's most ambitious. Over the last 15 years, the state has adopted (and extended) the nation's largest

Much of California's oil is high-emissions, high-cost, and in pollution-vulnerable communities



Source: SEI analysis. Seven largest 2030 oil fields shown, representing 70% of 2030 production (bubble size proportional to production), with costs and quantities as in Figure 2. Colors indicate CalEnviroScreen 3.0 Percentiles of overlying census tracts. Low-carbon two degree oil prices as summarized in Erickson and Lazarus (2018)

Policy approaches under discussion

Policy	Rationale
Cease issuance of new permits	Expansion of oil supply not consistent with Paris Agreement goals
Limit oil production in areas with disproportionate pollution vulnerability, e.g. using setbacks	Climate change already places disproportionate burdens on vulnerable communities
Charge a carbon 'adder' on oil extraction	Could be added at the wellhead to cover a portion (e.g. 50%) of damages associated with CO2 from combusting oil
Remove subsidies for oil production	Subsidies increase oil production and profits, increasing CO2 emissions
Phase out GHG-intensive oil through an emissions performance standard	Maximizes overall GHG savings per barrel not produced; achieves some emissions reductions regardless of level of substitution

Dialogues on transitioning from coal: Colombia, Indonesia, and South Africa

Photo credit: Flickr / Tanenhaus

2nd International Conference on

Fossil Fuel Supply and Climate Policy

24–25 September 2018
Queen's College, Oxford, UK

SEI Stockholm Environment Institute

ODI

CICERO Center for International Climate Research

UNIVERSITY OF EASTERN FINLAND

ERC ENERGY RESEARCH CENTRE University of Cape Town

Australian National University

IISD International Institute for Sustainable Development

SUSTAINABLE FINANCE PROGRAMME

UNIVERSITY OF OXFORD

Climate Strategies

Supply-side climate policy

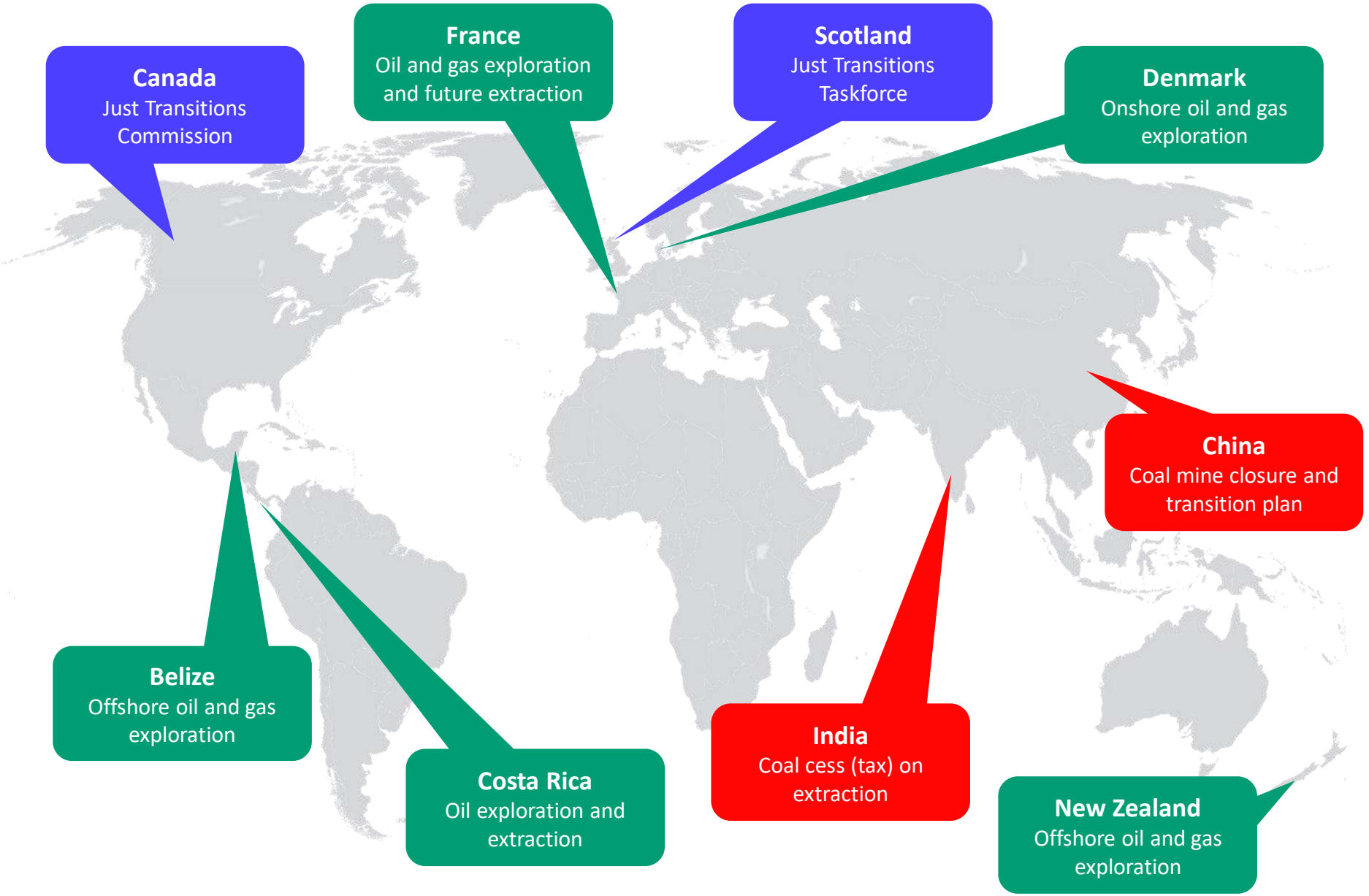
Recent developments and new opportunities

Photo credit:Getty / AlizadaStudios

What is supply-side climate policy

Policies focused on supply, as a complement to policies to limit demand, such as:

- Production/export taxes
- Producer subsidy removal
- Quotas or limits on extraction
- Compensation for resources undeveloped
- Climate test for supply decisions
- Finance restrictions
- Workforce & community transitions


Canada
Just Transitions Commission
France
Oil and gas exploration and future extraction
Scotland
Just Transitions Taskforce
Denmark
Onshore oil and gas exploration
China
Coal mine closure and transition plan
Belize
Offshore oil and gas exploration
Costa Rica
Oil exploration and extraction
India
Coal cess (tax) on extraction
New Zealand
Offshore oil and gas exploration

New Zealand

New Zealand bans all new offshore oil exploration as part of 'carbon-neutral future'

Prime minister Jacinda Ardern says move 'will essentially take effect in 30 or more years' time'

Eleanor Ainge Roy *in Dunedin*

@EleanorAingeRoy

Thu 12 Apr 2018
02.17 BST

69k

India Doubles Tax On Coal Again

Twitter Google+ LinkedIn Pinterest

March 4th, 2016 by **Saurabh Mahapatra**

Broadly along expected lines, India has yet again increased the tax on coal mined or imported in the country.

On 29 February, the Indian Finance Minister tabled a budget **proposal** to double the tax on coal from Rs 200 (~US$3) to Rs 400 (~US$6) per tonne. This was the third instance, since it was introduced in July 2010, that the tax was doubled. Officially called the Clean Energy Cess, the tax was introduced by the United Progressive Alliance government and made effective from 1 July 2010.

The tax has now been renamed as the Clean Environment Cess. The fund that collects the revenue has also been renamed from the National Clean Energy Fund to the National Clean

MCKENNA PLEDGES JUST TRANSITION TASK FORCE, SUPPORT FOR LAID-OFF COAL WORKERS

FULL STORY: NATIONAL OBSERVER @NATOBSERVER

NOVEMBER 17, 2017 / PRIMARY AUTHOR MIKE DE SOUZA @MIKEDESOUZA / 530 / 0

SHARE:

40 Shares

PRINT THIS STORY

Planning for a “just transition”

Supporting communities who will be adversely affected by a transition away from fossil fuels:

- Compensatory policies
- Structural adjustment assistance
- Holistic transition supports

Spencer, T., Colombier, M., Sartor, O., Garg, A., Tiwari, V., Burton, J., … Wiseman, J. (2017). The 1.5°C target and coal sector transition: at the limits of societal feasibility. *Climate Policy*, 1–17. https://doi.org/10.1080/14693062.2017.1386540

Scaling up action and ambition

Addressing fossil fuel supply at the **UNFCCC level** can help:

- Facilitate international cooperation
- Clarify and strengthen signals to financial markets
- Support planning for a just and equitable energy transition

Piggot, G., Erickson, P., Lazarus, M., & van Asselt, H. (2017). *Addressing Fossil Fuel Production Under the UNFCCC: Paris and Beyond* (SEI Working Paper). Seattle, WA: Stockholm Environment Institute. https://www.sei-international.org/publications?pid=3220

Supply-side policy in national plans

INDIA'S INTENDED NATIONALLY DETERMINED CONTRIBUTION:

WORKING TOWARDS CLIMATE JUSTICE

ॐ द्यौः शान्तिरन्तरिक्षं शान्तिः

पृथिवी शान्तिरापः शान्तिरोषधयः शान्तिः ।

"Om dyauh śāntir antariksam śāntih prithvi śāntih āpah śāntih osadhayah śāntih"

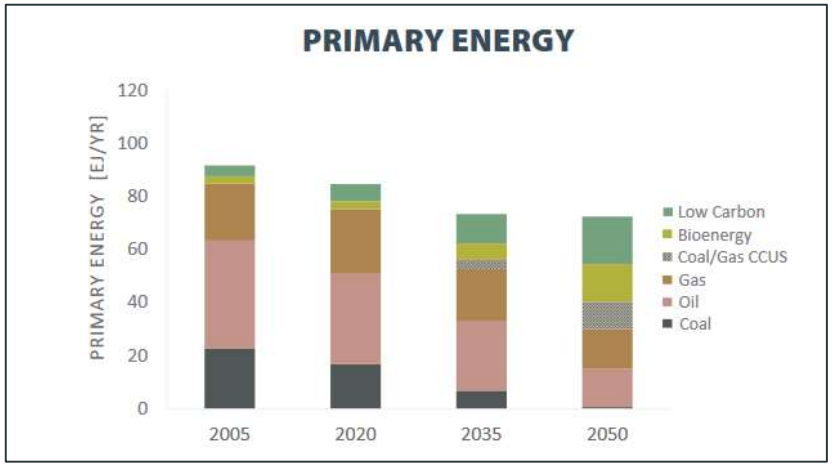
-- Yajur Veda 36.17

{{Unto Heaven be Peace, Unto the Sky and the Earth be Peace, Peace be unto the Water, Unto the Herbs and Trees be Peace}}

3.1 National Funds

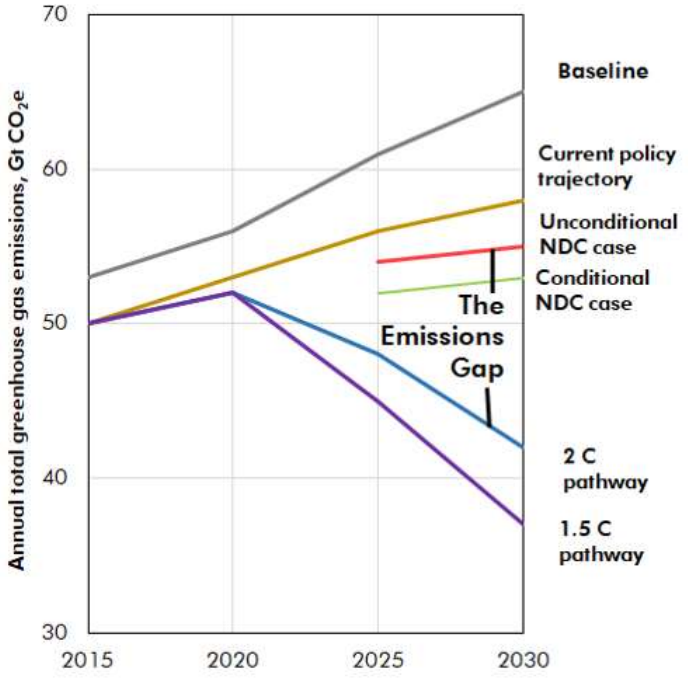
To augment the availability of assured targeted resources, Government of India has set up two dedicated funds at the national level for mobilizing financing for mitigation and adaptation respectively.

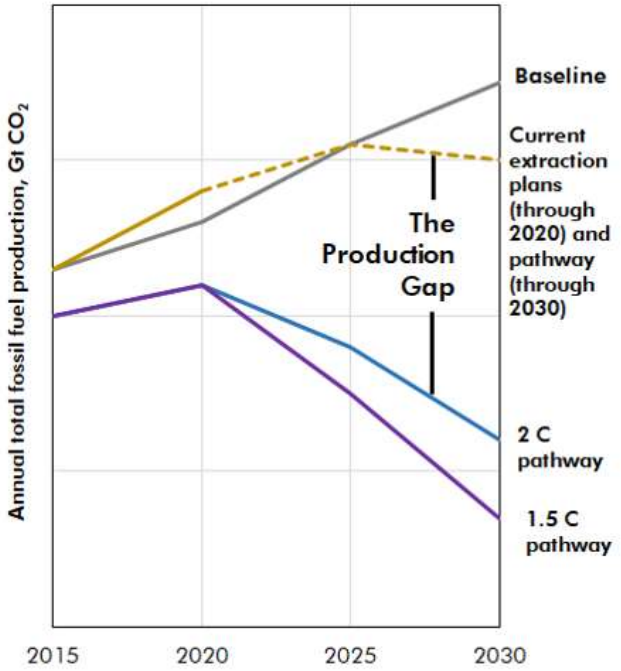
1) **Cess on Coal**: India imposed a cess on coal in 2010 @ INR 50 (USD 0.8) per tonne of coal. Recently it has been quadrupled to INR 200 (USD 3.2) per tonne of coal. The coal cess translates into a carbon tax equivalent, using the emission factor for coal, of around USD 2 per tonne. This forms the corpus for the **National Clean Environment Fund**, used for financing clean energy, technologies, and projects related to it. The total collection of INR 170.84 billion (USD 2.7 billion) till 2014-15 is being used for 46 clean energy projects worth INR 165.11 billion (USD 2.6 billion).
2) India has set up a **National Adaptation Fund** with an initial allocation of INR 3,500 million (USD 55.6 million) to combat the adaptation needs in sectors like agriculture,



- **Support Americans vulnerable to a low-GHG transition.** By implementing t
American workers and businesses will have ample time to adjust to a changing e

Keeping fossil fuel supply in line with Paris Goals

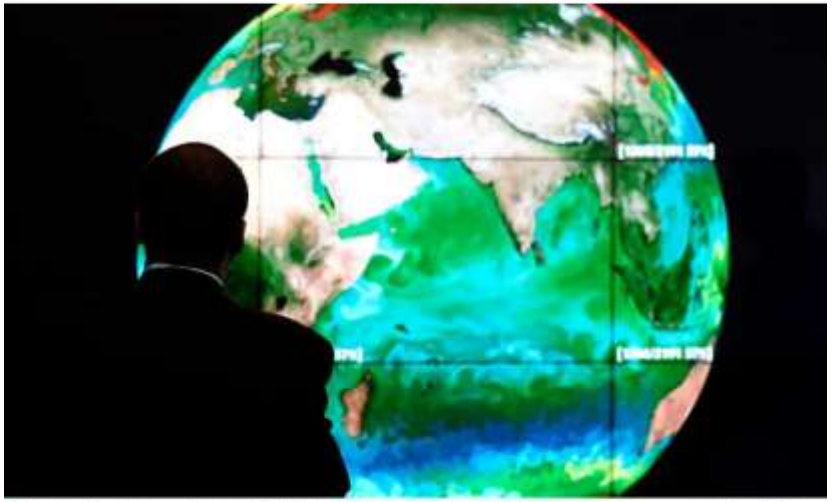




Move from brown to green finance

World Bank to end financial support for oil and gas extraction

Bank announces in Paris it 'will no longer finance upstream oil and gas' after 2019 in response to threat posed by climate change



▲ The One Planet Summit in Paris. The World Bank announcement delighted campaigners opposed to fossil fuels. Photograph: Alain Jocard/AFP/Getty Images

The World Bank will end its financial support for oil and gas extraction within the next two years in response to the growing threat posed by climate change.

Key points

- Policies to reduce fossil fuel supply are an important complement to those that limit fossil demand & CO2 emissions
- Supply-side action helps limit carbon lock-in, achieve more CO2 reductions, signals inevitability of low-carbon economy
- Managing the transition can help to avoid stranded assets and communities
- Understanding and adoption is growing among analysts, policy-makers and civil society
- More action and ambition is needed – this could be facilitated through the UNFCCC

Thanks for your attention!

SEI Initiative on Fossil Fuels and Climate Change

For more information, contact:

- Michael Lazarus, **michael.lazarus@sei.org**
- Georgia Piggot, **georgia.piggot@sei.org**