Risks of, and Responses to, the New Fossil Fuel Economy

Geographical focus:	Global, with case studies in selected regions
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Duration:	2013-2014

For the past two decades, national and international climate change mitigation efforts have focused on policies that promote low-carbon technologies and practices. While some regions have succeeded in placing a small price on carbon, for the most part, policy-makers, businesses, and civil society have emphasized measures to increase the penetration of renewable energy, energy efficiency, and to a lesser extent, carbon sequestration.

As a result, many technological solutions are now within grasp. The manifold benefits and potential of energy efficiency are widely recognized, and, in many places, wind and solar stand at the cusp of "grid parity" with coal and gas. But major barriers to a sustainable energy transition remain. From political interests to energy subsidies, the playing field still tilts toward further development of, and reliance on, fossil fuels.

Furthermore, while the climate change community has focused on enabling the transition to efficiency and renewables, a back door was left open. In came what might be termed the "new fossil fuel economy". Globalized coal markets and unconventional oil and gas production now operate at levels that few had predicted a decade ago. The challenge is now to ensure that this new fossil fuel economy does not further imperil prospects for stabilizing the climate and for achieving sustainable development goals.

Project focus

This project aims to deepen understanding of the risks posed by new investments in fossil fuel infrastructure, and of the possible responses that policy-makers and civil society can take to mitigate or avoid these risks. Since the geographic and economic reach of the oil, gas, and coal sectors is vast, with myriad social and environmental consequences, our initiative concentrates in a few areas that represent emerging developments and leverage SEI capabilities. In particular, this initiative will examine:

- Decisions regarding major new investments in fossil fuel extraction and trade infrastructure: Like fuel-using systems (e.g. power plants or vehicle manufacture), supply-side investments in expanding fossil fuel extraction (e.g. coal mines, gas and oil deposits) can be "game changers" that render economies and societies reliant on and supportive of fossil fuels, creating the economic and political constituencies that perpetuate global high-emission pathways. A prime example is Canada's exploitation of its oil sands, which has transformed its domestic politics and diminished its international climate leadership.

PjotrMahh1/Wikimedia

A dragline excavator in the Baltic Oil Shale Basin. Estonia has been a pioneer in technologies to exploit oil shale.

- Venues where green growth or low-emission development strategies (LEDS) are under development or consideration: These efforts – encompassing over 40 developing countries as of mid-2013 – tend to focus on cleaner energy production and more efficient energy use. However, to embody the tenets of green growth, these strategies should also address the consequences of, and alternatives to, fossil fuel production and exports. Often as major elements of expected economic growth, they are left unquestioned, except to explore efforts to improve their efficiency or to capture their resource rents. At the same time, the impacts of new fossil fuel supply on global greenhouse gas (GHG) emissions are comparatively less well understood, and accounting frameworks and climate policies have yet to come fully to grips with these emission implications.

- Regions where SEI has a presence or is engaged in related activities: This focus will allow us to embed our research in ongoing policy processes and enhance the impact of this initiative. To this end, we will leverage our involvement in green growth and LEDS planning efforts (SEI-US), our long experience with oil shale development (SEI-Tallinn), as well as our ongoing involvement in international climate negotiations (SEI-wide).

Planned outputs

Through this project, we will develop several outputs designed to improve understanding and to minimize the risks of new fossil fuel production and trade infrastructure. Our work will include a mix of research and specific case studies to engage researchers, civil society groups, and policy-makers around the world. We will develop:

Alfvan Beem/Wikimedia

A ship loaded with coal at the Port of Rotterdam, Holland, the hub of a thriving and growing global coal trade.

- Tools and accounting frameworks that assess GHG emissions from a supply perspective. Fossil fuel combustion emissions are typically attributed to consuming countries, helping to explain why less attention and responsibility have been accorded to fossil fuel extraction and supply. We will examine various means to quantify and assign responsibility for the incremental GHG impacts of new fossil fuel supply infrastructure, including total emissions and carbon budgets, incremental impacts, and extraction-based emissions accounting (see figure to the right). We will also assess the capabilities, limitations, and insights of techniques for estimating the full, incremental impacts of new fossil fuel development, such as supply-demand modeling and life cycle analysis.

- Conceptual approaches to addressing equity considerations in new fossil fuel development, given differentiated responsibilities and respective capabilities of supplying countries with respect to addressing climate change.

- Resources for assessing non-climate environmental, social, and economic impacts of unconventional gas and oil development, as well as new coal trade infrastructure, especially with respect to livelihoods in developing countries.

- Assessments of policies that can help to avoid or minimize risks associated with potential fossil resource development. We will explore response measures that can be taken by policy-makers, civil society, and multilateral institutions (including lenders) and how they can balance sovereignty, energy security, and climate stabilization goals.

Case studies

In specific case studies, we will apply and refine these methods and concepts and aim to provide new insights in specific contexts, such as the following:

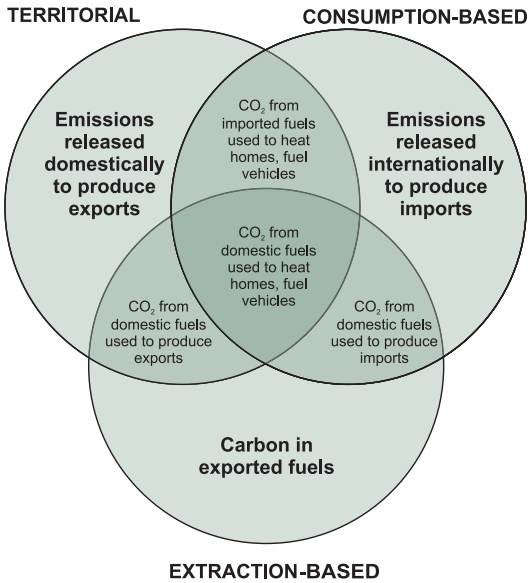
- Development of new coal extraction and trade infrastructure for Asian markets. We will look in particular at countries such as Mongolia or Mozambique, where green growth studies are under way and major new investments in coal mines and export facilities are under consideration, potentially affecting prospects for new coal power in rapidly growing Asian economies.

- Development of oil shale deposits, based on technologies and practices pioneered in Estonia. Oil shale may represent the most emissions-intensive fossil fuel, surpassing brown coal, and total oil shale resources may exceed those from remaining conventional oil supplies. Case study locations may include Estonia, Jordan, Morocco, and the Western U.S.

- Development of oil sands in the Orinoco basin, deposits that have vaulted Venezuela past Saudi Arabia as the global leader in proved oil reserves. This case study may be contingent on additional resources.

Activities and outputs

The project will produce several white papers and/or policy briefs, leading up to an international workshop in 2014 geared to both researchers and decision-makers. We will also produce online resources and tools for planners and policy-makers to use in assessing risks of, and responses to, fossil development, as part of low-carbon and green growth planning.



Addressing GHG emissions from multiple perspectives: An extraction-based perspective can complement more commonly used territorial (e.g. national inventory) and consumption-based emissions accounting, especially with regard to dependence on fossil fuel production and competitiveness in a low-carbon global economy.

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