

## THE CARBON CONTAINED IN GLOBAL OILS

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Immense opportunities and challenges lie ahead in shaping the world's energy future. Triple digit oil prices spurred technological advances that have unlocked an array of unconventional oils—from carbon-laden tacky oils that resist flow to ultra-light petroleum liquids trapped in tight shale oil. Policy guidance is needed to strike a balance between exploiting these energy assets and protecting the climate.

### Key Themes

- While oils have historically been relatively homogeneous, new oils have very different makeups. The techniques and the amount of energy needed to extract and process them vary widely.
- Oils, once extracted, are separated into intermediary products that are then transformed into an array of marketable petroleum products. New oils yield a different slate of products.
- A barrel of lighter oil, such as tight shale oil, contains less carbon than a barrel of heavy oil, such as bitumen oil sands.
- Ultra-light oils contain more gas condensates—a mixture of various lighter hydrocarbon compounds, including natural gas liquids—that can be used as petrochemical feedstock rather than burned as transportation fuel.
- Extra-heavy oils have more carbon residue and yield more high-carbon co-products, such as petroleum coke, than lighter oils. When combusted, some of these petroleum products emit more carbon dioxide than coal, with negative environmental and climate consequences.
- Main policy objectives include using oil and its byproducts as efficiently as possible across the economy, prioritizing the use of lighter oils, avoiding combustion of high-carbon co-products, and reducing carbon emissions from oil throughout the oil value chain.

### Recommendations for U.S. Policymakers

**Expand knowledge about new oils:** There are serious information gaps when it comes to the makeup and climate impacts of new oils. Industry and policymakers should remedy this by fully characterizing the carbon potential of oils, sharing knowledge, and establishing open and accessible databanks of information.

**Put a price on carbon:** Oil markets are expanding as new oils are identified and become economically and technologically viable. Placing a price on carbon can help balance energy and climate security goals.

**Curb the development of new oils that have the largest impact on climate:** High-carbon potential oils and their carbon-intense co-products should only be considered for development when methods or practices to mitigate their climate impacts are perfected and widespread.

**Maximize energy efficiency:** Reducing energy demand is a powerful antidote to mounting carbon in new stores of oils. Targeting efficiency measures and reductions for higher-carbon oils is a top priority.

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