INTRODUCTION CHAPTER 1

Despite increasing concerns over the environmental consequences of our heavy reliance on oil, the U.S. government continues to subsidize the fuel. Subsidies to oil are provided to producers, transporters, and consumers in varied and often subtle ways. These subsidies not only cost taxpayers billions of dollars per year, but they often exacerbate environmental damage. They can also reduce oil prices, suppressing market signals to oil consumers to decrease consumption and begin shifting to alternatives.

This study examines federal subsidies to oil in detail. By highlighting and quantifying this support, we demonstrate that subsidies continue to play a substantial role in the U.S. economy and highlight logical areas for reforms that save taxpayer money, reduce environmental damages, and potentially help the country to meet carbon reduction targets.

1.1 SUBSIDY BASICS

Subsidies represent government policies that benefit particular sectors of the economy. Government subsidies are common in most countries and benefit many industries. When these subsidies reduce the prices of natural resources or natural resource intensive products, they encourage additional pollution and habitat destruction. An overview of subsidy basics will make the rest of this report easier to understand.

- **Subsidies are not just cash.** A great deal of market activity involves controlling and sharing the risks and rewards of economic activities. Subsidies are government-provided goods or services, including risk-bearing, that would otherwise have to be purchased in the market. Subsidies can also be in the form of special exemptions from standard required payments (e.g., tax breaks).

- **Defining the baseline.** Subsidies must often be measured against some baseline. What would taxes owed have been in the absence of this special tax break? How much would industry have had to pay in interest to build

that new facility if the government had not guaranteed the loan? Our baseline assumes standard corporate tax rates and no special agency programs to finance or absorb market risks for oil-related endeavors.

- **Subsidy targeting.** One issue related to defining a baseline is that of narrowly targeted subsidies versus more broadly targeted programs that benefit oil as well as some other industries. Industry representatives inevitably conclude that only subsidies directly targeted at the oil industry should count as benefits to oil producers or consumers. In fact, many other subsidies tilt the energy playing field towards oil even if other industries also benefit. It is useful to consider a handful of common subsidy targeting approaches.

    - *Single sector.* The clearest and easiest subsidies to identify and allocate are those directly targeted to the oil industry, such as government financing of oil-related research and development programs through the Department of Energy.

    - *Multiple sectors.* Other subsidies are beneficial to a number of economic sectors, including oil. For example, the oil, gas, and hard rock minerals industries are all eligible for the percentage depletion allowance (discussed in Chapter 2). Since many other energy sources do not benefit from this provision (and the rates vary even for those that do benefit), the policy contributes to inter-fuel market distortions.

    - *Geographic region.* Most state and local subsidies are targeted to particular geographic regions (i.e., the state or locality). To the extent that natural resource intensive industries are located in the region receiving the subsidy (for example, corporate tax rate reductions in a large, oil producing region), policies can encourage incremental pollution and the development of "subsidy clusters" that rely on continued subsidization to survive.

    - *Factor of production.* Some subsidies are targeted at a particular factor of production (e.g., labor, capital) instead of specific industries. Although broadly available to all industrial sectors, subsidies affecting factors of production can cause market distortions nonetheless. Accelerated depreciation provisions, for example, allow any industry using capital equipment to deduct the capital from taxes more quickly than the anticipated service life of the capital asset. These provisions give capital intensive energy types a competitive advantage over types that require less capital investment, such as some demand-side management options. In

addition, sector-specific depreciation rules in the tax code can create additional distortions between different capital-intensive energy sectors.

- **Externalities are extra.** While environmental externalities such as pollution certainly constitute subsidies to industry, many subsidy studies (including this one) do not analyze them. The uncertainty regarding their value is larger, and authors often wish to focus on the many ways that government subsidies directly help polluting industries. Properly functioning markets would both eliminate internal subsidies to oil and include a tax equal to the remaining externalities.

- **Treating offsets.** In addition to providing subsidies, the government also levies fees on oil. While subsidies act to distort energy markets in favor of oil, certain fees may have the opposite effect, and are properly treated as offsets to subsidies. Our basic approach for calculating net subsidies is shown in Exhibit 1-1. Where fees represent standard treatment of all industries, they are not considered subsidy offsets. Where a fee is levied only on oil (or on oil plus a few other sectors), it must be evaluated further. Many of these fees are earmarked to pay for government activities such as oil spill cleanup or the remediation of contamination from underground gasoline storage tanks. If the levies pay for oil-related government activities, then they are treated as *user fees* rather than subsidy offsets and they are credited against the oil-related government program spending that they support. To the extent that a particular fee is levied only on a few industries (including oil) and receipts do not support an oil-related purpose, it is referred to as a *special tax*. Special taxes are extra charges on oil that do not pay for activities related to the industry. Thus, they offset subsidies by decreasing oil's competitive advantage. We subtract special taxes from our gross subsidy numbers. Exhibit 2-1 provides a flow chart illustrating how to differentiate these various types of fees.

- **Linkage between subsidy levels and oil prices.** In the aggregate, subsidies throughout the world to the oil fuel cycle depress oil prices, encouraging overconsumption. However, not every individual subsidy has an impact on oil prices. Many subsidies to domestic oil producers, for example, simply keep these producers competitive with less expensive imports (which are themselves subsidized through a variety of mechanisms). Subsidies that have little or no effect on commodity prices will not likely change *consumption* patterns for oil. However, removing even these subsidies will affect the market behavior of oil *producers*. Their removal will also save taxpayers money.

- **Cost to taxpayers versus value to recipients.** The cost of a subsidy to taxpayers does not necessarily equal the value of the subsidy to recipients. Many government loan programs, for example, allow corporations to borrow funds at the lower interest rates obtained by the U.S. Treasury. Such loans do not directly cost the taxpayer but they have an incremental benefit to the industry that we try to measure here. In contrast, government programs may be inefficient and unproductive. Thus, while the programs cost the taxpayer a great deal of money, industry may value them at much less than their direct cost. We were unable to incorporate this latter category in our analysis.

Exhibit 1-1

CALCULATING NET SUBSIDIES TO OIL

Calculating the net subsidies to oil involves three main steps, shown below. Instead of deducting aggregate user fees, as shown in Step 2, we have deducted each user fee from the specific federal program it supports. This approach does not affect the resulting aggregate figures, but provides more detail on individual program subsidies.

1) Measure total federal subsidies to the oil fuel cycle:

+ Subsidies directly targeted to oil
+ Pro-rated portion of more broadly targeted programs to reflect oil's share
= Gross subsidies to oil

2) Deduct fees collected from the oil industry and oil consumers:

- User fees collected from the oil sector to pay for oil-related government activities
- Fees levied only on the oil industry, but that support non-oil activities ("special taxes")
= Gross offsets

3) Calculate net subsidies to oil

+ Gross subsidies to oil
+ Gross offsets
= Net subsidies to oil

1.2 SCOPE, METHODOLOGY AND LIMITATIONS

This report focuses on subsidies to oil throughout its entire fuel cycle, including oil exploration, development, transport, refining, and consumption. The report also includes research and development, decommissioning, and remediation related to these stages of the fuel cycle wherever possible. Subsidies evaluated include federal agency activities, tax breaks, resource sales, liability shifting, and below-market insurance programs. Programs benefiting more than the oil sector, as outlined in the "Subsidy Basics" section above, have been included in our estimates, and in every case have been **pro-rated to reflect only the portion accruing to oil.** We have also included incremental reductions in state taxes attributable to the federal tax breaks, and post-closure liabilities associated with oil well abandonment that are regulated at the state level, but not sufficiently funded by state-level user fees at this time.

We have chosen fiscal year 1995 as the base for our estimate, partly to allow for lags in data availability and partly so that our figures will be comparable to Greenpeace's estimates of European energy subsidies.[1]

To address the complexity of government programs that support oil, we have adopted the following conventions in how we classify and report our data:

- **Gross and Net Subsidy Numbers.** Many government programs of benefit to oil are at least partially funded through user fees on industry. This fact represents significant progress over the past 20 years in charging industries a higher percentage of the cost of government-provided goods and services that are required by activities of those industries. While fiscally prudent, the user fee approach can sometimes create a system in which specific government offices rely on industry user fees for their continued existence, increasing the risk of cooption. For this reason, we track gross subsidy values for each program evaluated, and identify programs with high user fee collections and potentially higher cooption risks.[2] However, gross numbers alone overstate the effective transfer of wealth from government to the oil industry. Thus, our primary focus is on net subsidy numbers, deducting special taxes and user fees from gross subsidy values when it is appropriate to do so.[3]

[1] Elisabeth Ruijgrok and Frans Oosterhuis, *Energy Subsidies in Western Europe*, Amsterdam: Greenpeace International, May 1997.

[2] A reliance on user fees does not mean cooption occurs *per se*. In addition to the magnitude of fees collected as a percentage of the program budget, the risk of cooption rises where funds collected are fed directly back into local operations rather than to the U.S. Treasury.

[3] While special taxes on oil may offset the *aggregate* subsidies to the industry, they may affect different activities than subsidies. Therefore, subsidies and special taxes may not counteract each other. For example, subsidies may encourage increased oil exploration and development even though special taxes further down the supply chain affect oil transport or refining.

- **Range Estimates to Bound Uncertainty.** We have used high and low estimates for many of the programs included in the analysis. This variation reflects differences in analytic approaches or data sources. The origin of very large variances between the high and low values on specific items is explained in more detail in the report.

- **Separation of Domestic Subsidies to Foreign Oil from Subsidies to Domestic Oil in our Discussion of Results.** While both foreign and domestic subsidies cost the taxpayer money, their impact on the market differs. We present domestic subsidies to foreign oil separately from support for domestic oil to make our results more useful to readers.

- **Separate Reporting of the Cost of Defending Oil Shipments.** Our aggregate subsidy values are quite sensitive to the estimated cost of defending Persian Gulf oil shipments, as these costs are as large as all other programs combined. As a result, we provide aggregate data both with and without these defense costs so that policy analysts can more clearly see the impact of non-defense subsidies.

Our analysis is subject to a number of caveats. First, by focusing only on oil we are unable to present a holistic picture of the distortions that energy subsidies have caused in the marketplace. Second, we do not attempt to quantify the impact of subsidies on prices and the effect subsidy removal might have on long-term energy production or consumption patterns. Third, we were unable to analyze every federal agency involved with oil due to the limitations of the available budget information. Exhibit 1-2 lists the programs that were not analyzed. Fourth, we did not evaluate oil-related environmental externalities or exemptions from environmental laws. Fifth, while we analyze subsidies to fuel transport, we do not analyze subsidies to transportation systems overall, even though these likely increase the demand for oil. Had we done so, our subsidy estimates would be higher. Finally, any change in economic structure will cause short-term economic dislocations, including job losses in some parts of the economy and job gains in others. Evaluating the magnitude and distribution of these dislocations was also beyond the scope of our analysis.

Exhibit 1-2

FEDERAL PROGRAM SUBSIDIES TO OIL NOT QUANTIFIED IN THIS REPORT

Program	Oil-Related Activities
Department of Agriculture	
U.S. Forest Service	Oversight of natural resource development, including oil production, on National Forest System land.
Department of Commerce	
U.S. National Oceanic and Atmospheric Administration	Navigational aids and provision of marine predictions useful for oil shipping; marine research useful for addressing oil contamination; natural resource damage assessments and restoration related to oil contamination.
Department of Defense	
Security of Alaskan Oil Supply	Military exercises and contingency planning for oil infrastructure.
Department of the Interior	
U.S. Fish and Wildlife Service	Oil contamination prevention, response, and restoration.
Bureau of Indian Affairs	Technical assistance, geological and economic studies, and marketing and training programs for Native American landowners who want to develop their oil resources.
Environmental Protection Agency	Regulation of oil industry impacts on environmental quality.
Multi-lateral Development Banks	Investments in foreign oil operations by the World Bank, its affiliates, and other multi-laterals that receive large contributions from the United States.
Naval Petroleum Reserve	Development and sale of federal oil reserves, not always at market price.

1.3 REPORT STRUCTURE

The remainder of this report is organized topically to enable sometimes complex subsidy mechanisms to be explained in greater detail. Chapter 2 provides an overview of federal tax subsidies to, and special taxes on, the oil fuel cycle. Chapter 3 examines government programs directly supporting oil or required to oversee the oil industry. These include research and development, construction and maintenance of transportation infrastructure, oversight of the industry, and credit subsidies for oil-related exports and foreign investment.

Chapter 4 examines government spending to defend oil supplies, including defense of oil shipping and the cost of the Strategic Petroleum Reserve oil stockpile. Chapter 5 evaluates unfunded liabilities associated with oil spills and the proper closure of oil-related infrastructure. Chapter 6 examines the issue of oil leases in detail, and explains how governments provide subsidies to producers through lease sale practices and lease terms. This chapter also examines the various government programs in place to manage oil production on federal lands. Chapter 7 presents our summary findings and our recommendations for policy changes. Detailed tables used to derive our estimates are contained in the Appendix.

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June 1998