Introduction

Oil, natural gas, and mineral resources do not only constitute a source of energy and raw materials; they are also a principal source of income for resource-rich countries. From 2006–2010, oil and gas constituted over half of government revenues or over 60% of export earnings in 27 producing countries. Over the same period, minerals, including coal, constituted over 30% of government revenues or over 40% of export earnings in an additional 10 countries (see Figure 15.1 for an illustration of resource-dependent countries). What’s more, undiscovered resources and uncollected revenues offer many countries the possibility of becoming resource-rich, especially in Africa, Asia, and South America (Collier 2010). These vast resources should provide an opportunity for growth and development. In reality, this potential often remains unrealized.

Oil-producing countries are less democratic and more secretive than those without oil. Most have not grown as quickly as they should have given their natural resource wealth (Ross 2012). The instability, uncertainty and, in some cases, violent conflict stemming from frustrations associated with resource mismanagement, has implied higher costs and price volatility for energy consumers around the world. As such, poor resource governance threatens global energy supplies and has stymied national development in many regions, particularly in Africa, Central Asia, and the Middle East.

This chapter will examine the steps necessary for transforming extractive resource wealth into well-being and stability. While corporate responsibilities toward the societies where they operate are an essential component for good resource governance, the focus will be on public policy and the interaction between non-state actors – companies, international institutions, civil society, and citizens – and the state. The following section will define resource governance and briefly diagnose the reasons why countries rich in natural resources tend to perform below potential. The next section will provide some basic principles for managing oil, gas, and mineral resources for the public good using the Natural
Net commodity exports to GDP
- Importers or insufficient data
- Between 0 and 2.5%
- Between 2.5% and 5%
- Between 5% and 10%
- Between 10% and 15%
- Between 15% and 25%
- Above 25%

Figure 15.1 Resource-dependent countries.

Resource Governance

Good resource governance is the effective, accountable, and transparent management of oil, gas, and mineral resources. This definition implies the enactment of rules to promote the use of natural resources to improve public welfare and as well as strengthening public institutions, like the justice system and oversight bodies, to enforce these rules. In most cases, it also requires political will to transform subsoil assets into tangible benefits for citizens.

Managing oil, gas, and mineral resources for the public good has never been easy. As far back as the fifth century BC, industrial expansion of iron demand and production – a result of the invention of the double-acting bellow – created a class of iron industrialists in China that threatened national stability and the power of the Han dynasty (Lynch 2002). Intensive production drove labor and capital from the Chinese economy’s traditional strength, agriculture, to the mining sector. Emperor Wu’s response to the perceived misbalance between private and public benefits was to nationalize the iron industry by 117 BC.

Similarly, in 483 BC, a major silver vein strike at the Athenian mines of Laurium provoked a fierce debate between Themistocles and Aristides over the management of resource revenues. Foreshadowing twenty-first-century debates in Iraq and Mongolia, Aristides argued that mining revenues should be parceled out to Athenian citizens as per tradition. Themistocles, in turn, made the novel suggestion to invest these large revenues for the public good, in this case to build a fleet of ships. The investment paid off two years later when the Persians attacked Athens and were repulsed by those same ships (Plutarch).
The Chinese Imperial Order banning mining activity in AD 1078 is the first well-documented regulatory response to poor resource governance. A mining commission at the time wrote:

Nature has provided us with excellent deposits. These deposits were capable of producing much profit to the people. The officials, thinking that there was very much money in mining business, wished to take it for themselves, so that in every mining district corrupt practices grew up amongst them, to the very great injury of the people. For this reason the rich refuse to devote their capital to mining and mining enterprises are gradually ruined. [...] It will thus be seen that Chinese mining affairs are exceedingly badly managed. (Collins 1918)

Thankfully, our understanding of the causes of poor social outcomes from resource extraction has evolved over the past centuries. The observation that countries rich in natural resources tend to perform below potential has given rise to a considerable body of literature seeking an explanation. Although the empirical evidence is not uncontested, the most compelling explanations of the negative relation range from purely economic arguments to political failures.

First, governments are often at a disadvantage relative to companies in negotiating contracts. Oil and mining companies often know more about the value of the resource, the geology, and the terms of international contracts, putting them in strong bargaining positions relative to governments (Humphreys et al. 2007). In many cases, they also have better access to economic and legal expertise, not to mention strong industry associations working hard to tout the benefits of favorable fiscal terms. This can result in countries collecting a negligible share of resource revenues. In 2008, for example, the Democratic Republic of the Congo (DRC) collected only $92 million in mineral taxes and tariffs on estimated mineral exports of $2 billion. And Cameroon collects approximately 12 cents on the dollar for its oil compared to Norway’s 78 cents. A fiscal regime that fails to distribute enough revenue to the host country can fail to effectively compensate the state and communities for the value of its depleting resources, and can foster citizen dissatisfaction and national instability. A lack of revenue can also starve the state of necessary funding for domestic investment.

A second set of explanations centers on the role that large capital inflows have on the macro-economy. In the late 1970s, economists began documenting the rise of a “booming sector” and decline of other export sectors in a number of resource-rich countries, namely Australia, the Netherlands, the UK, Norway, and OPEC countries. Nicknamed the “Dutch Disease” after the perceived negative effects of North Sea natural gas discoveries in the 1970s, the phenomenon was explained as an interaction between two effects, a spending effect and a resource pull effect. In the first place, large capital inflows cause an appreciation of the real exchange rate, making non-oil or mineral exports less competitive and leading to a decline of these sectors. Second, the appreciated exchange rate provokes consumers to shift expenditures from domestic to foreign goods, leading to a further shift of domestic resources away from export sectors to the natural resource sector and “non-tradeables” (Corden and Neary 1982). There is significant evidence of continuous Dutch Disease impacts in Iran, Nigeria, Russia, Trinidad and Tobago, and Venezuela over the past 30 years with several other countries experiencing milder forms of the “disease” for shorter periods of time (Darvas 2012; Ismail 2010).

A third set of explanations arises from the effects of volatile and unpredictable government and private sector revenues stemming from variable prices and production volumes. In countries dependent on resource revenues, large and unpredictable shocks to public
revenues have three effects. First, they make long-term planning difficult, especially for multi-year capital expenditures that require guaranteed financing over many years. This often results in “pro-cyclical” fiscal policy, underspending when revenues are low and overspending in good times. These boom-bust cycles can have an impact on the types of expenditures chosen by governments. Large revenue windfalls lend themselves to spending on expensive legacy projects such as airports, hospitals, and monuments rather than slow scaling-up of education or health programs. In countless cases, governments have engaged in wasteful spending when revenues have been high and undertaken painful cuts when revenues have declined. Boom-bust cycles can also lead to significant inefficiencies where bureaucracies find it difficult to adjust to a large scaling-up of expenditure, leading to poorly conceived, designed, and executed projects (Ramey and Ramey 1995). That said, succumbing to boom-bust cycles is not inevitable. While some governments have exacerbated the negative effects of oil revenue volatility with pro-cyclical “money-in, money-out” fiscal policy (e.g., Iran; Venezuela), others, like Norway and Saudi Arabia, have tried to counteract these effects through “counter-cyclical” fiscal policy, as illustrated in Figure 15.2. The positive consequences of these actions is not negligible.

Figure 15.2 Counter-cyclical and pro-cyclical fiscal policy in four oil-dependent countries. Source: Data from the IMF World Economic Outlook database.
Pallage and Robe (2003) estimated that eliminating output volatility in Sub-saharan Africa would increase annual GDP growth by 1% indefinitely. Second, private businesses are affected by revenue volatility, expanding production and overborrowing when government expenditures are high, and suffering when the government cuts spending sharply and demand drops. In this way government expenditure volatility can lead to bankruptcies in the wider economy, as we saw in Kazakhstan post-crisis and are starting to see in Mongolia today (Esnov and Kuralbayeva 2011). Finally, large windfalls can encourage overborrowing as resource-rich governments and businesses are considered more credit-worthy when projected revenues are high. In the 1970s, for example, the governments of Mexico, Nigeria, and Venezuela borrowed heavily against their oil revenues, provoking debt crises in the 1980s when oil prices, and hence revenues, declined (Humphreys et al. 2007).

A fourth set focuses on rent-seeking activities associated with oil, gas, and mineral extraction and their effects on institutional development. Large single-point sources of revenue are relatively easily captured by powerful elites. As such, elites in natural resource-rich countries are not only less likely to invest in productive enterprises like job-creating manufacturing industries, but may even fight over control or the right to allocate these resources, purposefully dismantling societal checks, a process nicknamed “rent-seizing” (Auty 2007; Ross 2001). Some have also argued that elite focus on rent-seeking promotes corruption and is damaging to institutional development, thereby engendering weak states, low levels of public service provision, and low growth (Arezki and Brückner 2009; Bulte et al. 2005; Isham et al. 2005; Karl 1997).

Lastly, oil and mineral revenues may lead directly to less government willingness to improve public welfare since citizens demand less public accountability. According to this view, a dependence on natural resource revenues means that governments are less reliant on broad-based taxation. As a result, the linkages between government and citizens are weak and citizens demand less accountability from their governments. In turn, politicians and officials are less interested in responding to the public interest, provide less services, and focus less on diversified and broad-based growth (Brautigam et al. 2008; Humphreys et al. 2007).

Despite the lack of consensus about the causality between extractive resources and poor economic performance, there is a general agreement that this so-called “resource curse” is not inevitable. For instance, according to the IMF (2007) it is “prudent and transparent management practices” that have allowed a range of countries including Botswana, Canada, Chile, Norway, and the United Arab Emirates to benefit from resource wealth. Given the strong link between institutional development and benefiting from resource wealth, the logical prescription is to improve the quality of institutions that manage the extractive sector and public finances. The next two sections outline these institutions and the policies that can be implemented to promote the transformation of natural resource wealth into well-being.

The Natural Resource Value Chain: A Framework for Managing Oil, Gas, and Mineral Resources

Drawing on Collier’s (2007) treatment of the topic, organizations working in the field of resource governance, like the Revenue Watch Institute and the World Bank, have adopted various forms of the Natural Resource Value Chain as a framework for thinking through the steps needed to turn natural subsoil assets into broad-based sustainable development.
While the details of the value chain differ from organization to organization, in general it follows five steps.

**Step 1 – Deciding to Extract:** This stage covers the process of discovery and the decision to engage in extractive activities, of which the licensing of exploration rights is a principal activity. Decisions must be taken on the size of plots to be licensed, the financing of exploration, and who gets the right to prospect. Once a discovery is made, the decision to extract should be based on a rigorous assessment of the local and national costs and benefits of drilling a hole in the ground or digging a pit and extracting the resource, including a full analysis of the social, economic, and environmental impacts. All too often, this step is skipped or public authorities do not have the willingness or capacity to actively oversee the process or make their own independent assessments.

**Step 2 – Getting a Good Deal:** Once a petroleum or mineral deposit has been discovered, a decision must be made on how to share the rents between extractive companies, governments, and communities. In most cases, rent-sharing is determined via tax regimes, contracts, and legal jurisdiction between national and local governments. What constitutes a “fair” or “good” deal is up for considerable debate. However, as previously mentioned, it is clear that in many countries rents are not shared equitably, leading to unstable fiscal regimes and, as we have seen in the Niger Delta (Nigeria) and Mindanao (Philippines), violent conflict from a lack of perceived equity.

**Step 3 – Revenue Assessment and Collection:** Often, governments do not collect either what was due or what was expected. Reasons for undercollection range from tax avoidance via transfer pricing and exploitation of archaic tax incentives to poor administrative systems and controls, lack of government oversight, and corruption. Communities are often similarly disappointed, having been promised transformative jobs, revenues, and economic development only to find that extractive activities are not major job producers, they come with significant environmental impacts, and large benefits do not accrue to local populations. Full disclosure of contracts, production volumes, payments, costs, and profits – along with improved public sector capacity to monitor production and contracts, oversee tax collection, and enforce rules – would enable revenue collection and help manage public expectations about impacts of extraction.

**Step 4 – Managing Large, Finite, and Volatile Revenues:** Even if all revenues due are collected, these revenues may still be mismanaged or wasted. First, governments may not have the capacity to increase public investment as quickly as revenues rise, leading to wasteful spending. This is referred to as a lack of “absorptive capacity.” Second, volatile revenues lead to pro-cyclical fiscal policy, as outlined in the preceding section. Third, since revenues are finite, once they run out the government may have to cut public spending drastically, leading to a severe contraction of the economy, as Yemen is currently discovering. This step therefore requires the government to make revenue projections, think through how much revenue to save and spend, and then decide how to allocate revenues between the national government, local governments, special funds, state-owned oil or mining companies, communities, and individuals.

**Step 5 – Investing in Sustainable Development:** Resource-rich developing countries that collect a large share of the rents are wealthy and have access to capital yet are investment poor. In those that are authoritarian or controlled by oil or mining elites, spending decisions are generally less susceptible to public pressure. Many also
lack the capacity to spend effectively. Development plans and expenditure systems must be tailored to these unique environments. Countries must strengthen capital investment processes such as procurement systems and project assessments, make budgets transparent, introduce accountability mechanisms that promote spending for the national interest, and focus on diversifying the economy away from the resource sector.

Principles of transparency and accountability straddle each of these five steps. As the IMF (2007) and the Natural Resource Charter (2010) make clear, citizens can only feel confident about the integrity of the public decision-making processes if they are informed. Transparency aligns public expectations with government objectives, builds public trust, and reduces internal conflict by creating a consensus around the role of extractives. Public disclosure requirements can also improve the quality of data the government gathers and maintains, thereby making the jobs of ministries and regulatory agencies easier. This can improve the efficiency and effectiveness of government policies. In a remarkable example, the 2005 Extractive Industries Transparency Initiative (EITI) report on Nigeria – which was designed to shed light on previously secretive oil sector payments – identified $4.7 billion in unpaid bills from the national oil company, the Nigerian National Petroleum Corporation (NNPC), to the government, in addition to over $560 million in unpaid taxes and other payments from private oil companies.

As well, transparency can foster more favorable access to domestic and international capital markets by strengthening credibility and investor confidence, as well as public understanding of government policies and choices. It can also help to highlight potential risks, resulting in an earlier and smoother fiscal policy response to changing economic conditions and thereby reducing the incidence and severity of crises.

Finally, transparency can improve public accountability. A well-informed public with the capacity to act can engage in a constructive discussion around policy formulation and government oversight of resource governance. Through public scrutiny, officials can be deterred from acting unethically and held accountable for abuses of power for private gain. Accountability, in turn, is critical to ensuring the sustainability of fiscal terms, revenue management systems, and budget decisions because it encourages adherence to rules and principles of efficient economic policy-making and effective management of public resources on timelines beyond officials’ own tenure in power.

Policies for Improved Resource Governance

Understanding the principles of good resource governance is not enough to guarantee good resource governance. Public policy must reflect the complex and unique political realities of resource-rich countries. This section will elaborate on some of these policies and will offer suggestions on how to maximize the public benefits of extraction in real world contexts. It will begin with the assumption that a country has made the decision to extract. Given the relatively generic nature of Step 5 – Investing in Sustainable Development, we focus on Steps 2 through 4 of the Natural Resource Value Chain.

Getting a Good Deal

The extractive sector is different from other types of industries due to the central role that economic rents play in it. Discovery is a geological lottery as much for countries as for companies; some countries are endowed with very large reserves while others have almost none. However, once a discovery is made, the cost of extraction is generally a
fraction of the value of the resource, creating potential for large profits and economic rents. Countries must therefore decide how to share that rent between different levels of government, special interest groups, and extractive companies. This balance is sometimes difficult to achieve in practice. If rent distribution is overly favorable to companies, citizens and governments can demand a larger share, leading to unstable contracts or even violence. On the other hand, if companies do not receive an adequate share, investment may dry up or production may stop.

Further complicating matters, oil, gas, and mineral exploration and production is fraught with uncertainty. The risk of drilling a dry oil well can be as high as 9-in-10 in underexplored petroleum basins and mineral exploration typically only follows after screening hundreds of mineral occurrences. Production requires large capital investments with long time-horizons. Return on investment is uncertain given the extreme volatility in oil and mineral prices. The risks of negative return, renegotiated contracts, and outright expropriation by the state after large investments have been made provide a justification for a larger than bare minimum share of rents accruing to companies.

That said, companies are at a distinct advantage in negotiating many contracts (see Box 15.1 for common types of fiscal arrangements between governments and oil, gas, and mineral companies). In general, they know more about the geology, costs of production, and international contractual standards than their negotiating partner, the government. They also often have superior legal expertise and strong lobbying powers. As a result, a significant number of contracts in both developed and developing countries strongly favor companies. In Alberta, where political and social risks are limited, the province has captured only 47% of economic rents on the oil sands over a decade, a $121 billion windfall for companies from 1999 to 2008 (Campanella 2010). The Indonesian government takes 45% of the net revenue of copper production; in contrast, government take for petroleum in Angola is 89% (McPherson 2010).

Box 15.1 Types of relationships between governments and extractive companies.

In general, there are three types of fiscal arrangements employed in the oil, gas, and mineral industries.

- **Concession agreements**, which grant ownership over the resource to a company, including the rights to explore, develop, produce, and market the resource, in exchange for taxes and royalties. These are common in Canada and the US.
- **Production sharing contracts** (PSCs), which typically allocate oil, gas, or minerals to companies as reimbursements on production costs, and then split the remaining “profit oil” or gas between the operating group of companies and the government. The government maintains ownership of the resource and either sells its portion on its own, or takes cash payment from the operating companies in lieu of physical delivery of the commodity. PSCs are most common in Africa, the former Soviet Union, and parts of the Middle East (e.g., Bahrain).
- **Service contracts**, where the government owns the resource and the company is paid a fee for producing in exchange for oil, minerals, or cash. Service contracts are common in Latin America and parts of the Middle East (e.g., Iraq).
Strong domestic resource mobilization and use is the only path to genuine sustainable development and an end to aid dependency for many countries. Oil, gas, and mining very likely represent the single most significant untapped source for financing development in resource-rich low- and middle-income countries, especially in Africa. In 2008, aid flows to Sub-Saharan Africa reached $36 billion per year. Natural resource rents, by contrast, stood at $240 billion (Revenue Watch 2011). How then to ensure that countries get a good deal?

One way is to promote royalty and tax regimes that are sufficient to compensate the country for the value of the asset being depleted. The right set of fiscal terms enables a government to strike a balance between attracting the best investors and getting a good deal for the country (see Box 15.2 for key tax instruments for extractives).

Fiscal terms influence not just expected national revenue under various resource price and production scenarios, but also the enforcement of extractive agreements. The success or failure of a legal system to provide benefits for the country depends on the state’s ability to manage its commitments and ensure that all parties are adhering to the rules. Thus, an analysis of any system must consider how effectively it empowers the government to enforce the terms that capture benefit for the state. Good terms will enable governments to minimize the risk of corruption, non-compliance, and use of loopholes.

Among these “loopholes” is transfer pricing. An integrated international company may use sales among various subsidiaries as a means to reduce its fiscal obligations within a particular country. A sale of mineral or petroleum output from one subsidiary to another at a price under the fair market value may serve to reduce the revenue the company reports to the government and thus limit the royalty or tax payments it owes. Similarly, by purchasing a good or service from a related company at an inflated price, a company can raise its reported costs, thereby increasing deductions and decreasing income tax liabilities. In order to limit transfer pricing abuse, a government should put in place a firm policy for the valuation of transactions between related parties, linking the prices utilized for revenue-collection assessments to objective market values wherever possible.

As well, interest payments on loans are often deductible for income-tax purposes. Integrated international companies sometimes finance subsidiaries in extractive-rich countries with extremely high levels of debt in the form of related-party loans, which means that interest payments made from the subsidiary to its parent company are deducted, limiting the subsidiary’s tax liability. Governments can combat this problem by capping the level of debt that an extractive subsidiary can take on in relation to its total capitalization, or by mandating that interest payments made on debt exceeding a certain debt-to-equity ratio will not be deductible for tax purposes.

Companies that have multiple activities within one country sometimes use losses incurred in one project (say, exploration expenses from a new mine that has not yet begun production) to offset profits earned in another project, thereby reducing overall tax payments. Governments can overcome this situation through “ring-fencing,” the separate taxation of activities on a project-by-project basis, which facilitates the government collecting tax revenue on a project each year that it earns a profit.

Many tax systems also allow a taxpayer to deduct losses generated in one year from income earned in a subsequent year. Such a system takes into account the heavy up-front costs necessary to get a project off the ground. But in an effort to prevent unfettered carry-forwards from overwhelmingly reducing long-term revenue generation, some governments have placed limits on them, restricting either the period of time that a loss can be kept on the books or the amount of income in any given year that can be offset by past losses.
Box 15.2  Key tax instruments for extractives.

Governments use a wide range of tax instruments in their arrangements with extractive companies. Among the most common are:

- **Bonus**: A one-time payment made upon the finalization of a contract, the launch of activities on a project, or the achievement of certain goals laid out in the law or contracts. Sizes vary, ranging from tens of thousands to even hundreds of millions of dollars for a few large petroleum projects.
- **Royalties**: Payments made to the government to compensate it for the right to extract (and purchase) a non-renewable natural resource. Most royalties are either ad valorem (based on a percentage of the value of output, e.g., 5% of the value of the minerals produced) or per unit (based on a fixed amount, e.g., $10 per ton).
- **Income Tax**: In some cases, oil, gas, and mining companies are subject to the general corporate income tax rate prevailing for all businesses in a country; in other cases, there is a special regime for these extractive sectors. Because petroleum and mining projects require heavy capital and operational investments, rules on how the tax system handles costs and deductions – the deductibility of interest payments, the depreciation of physical assets, the ability to count losses from one tax year to offset profits in a future tax year, etc. – play a major role in determining how governments and companies benefit.
- **Windfall Taxes**: Some countries have set up special tax instruments designed to give the government a greater share of project surpluses, through additional tax payments, when prices or profits exceed the levels necessary to attract investment.
- **Government Equity**: In some cases, petroleum and mining projects are set up as locally incorporated entities for which shares are divided between a private company and a state-owned company or another public body. Holding these equity stakes can give the state access to a portion of dividend payments.
- **Other Taxes and Fees**: Additional sources of fiscal revenues for the state include withholding tax on dividends and payments made overseas, excise taxes, customs duties, and land rental fees.

Finally, petroleum and mineral contracts often have clauses that establish that the law that exists on the day that the contract is signed will govern the agreement, and that subsequent legal changes will not have any effect on the contract. These “stabilization clauses” offer investors some assurance that they will not be subjected by legislative action to a drastically different fiscal regime than the one on which they based their decision to invest. But in order to protect the interests of citizens, preserve state sovereignty, and remain flexible to changing economic and political circumstances, stabilization clauses should be narrowly drafted and limited to major revenue streams such as royalties, taxes, duties, and major fees. Stabilization clauses should not freeze environmental, labor, or other similar rules.

In each country the best fiscal terms are characterized by variations in economic priorities, administrative capacities, mineral/petroleum endowments, and levels of political risk. However, there are certain considerations that governments should include in the design of any fiscal regime.
First, fiscal regimes should be clearly established by easily accessible laws and regulations. Minimizing parties’ discretion to alter fiscal terms in individual contracts facilitates contract enforcement and the application of a coherent sector-wide fiscal strategy, and reduces the risk of corruption in negotiations.

Second, fiscal regimes should contain progressive elements that give the government an increasing share of revenues as profitability increases in order to improve stability of contracts and respond to citizen demands when commodity prices rise. This can be achieved using a variety of instruments, including progressive income taxes, windfall profits taxes, and variable-rate royalties.

Third, all contracts should be made public. When contracts are publicly available, government officials have an incentive to stop negotiating bad deals and citizens can better understand the complex nature of their country’s agreements with industry (Maples and Rosenblum 2009).

Improved fiscal terms and closing loopholes can have huge impacts on government take. Guinea’s new mining code, for example, could bring in as much as $3 billion a year in extra revenues just from iron ore. This would triple Guinea’s national budget. However, fiscal terms are only one aspect of the rights and obligations between companies and governments. Other key terms include those related to the environment, local economic development, extractive work programs, community rights, dispute processes and rights to information. In order to evaluate whether or not the country is getting a “good” or “fair” deal it is necessary to weigh all of these terms together.

**Revenue Collection**

In any given year, average government take for oil, gas, or minerals can range from 90 cents on the dollar in countries like Azerbaijan, Iraq, and Norway to nearly zero cents in countries like the DRC. In some cases, low government share may be a result of unbalanced fiscal terms or generous tax incentives. But weak enforcement of contracts or revenue “loss” can also be contributing factors.

There are many reasons why taxes are not always fully collected. First, poor control, management, and accounting practices in tax administrations are common in developing countries. Among the challenges are complex filing and payment regimes, too many agencies responsible for collection, poorly qualified staff, and poor information management systems (Calder 2010). Second, many countries do not adequately monitor the volume and quality of oil or minerals being extracted and exported, making valuation of extraction near impossible. Informal estimates in the Philippines put underdeclaration as high as 70% of mineral value in some cases. Third, even if governments are aware of the volume and quality of resources being produced, the price used in revenue calculations can be manipulated, also leading to undervaluation. Fourth, multinational resource companies sometimes engage in aggressive tax planning, misstating prices in order to shift apparent sources of profit to the jurisdiction which provides the most advantageous tax outcome (Mullins 2010). Fifth, there are instances of outright theft by company or government officials. In one well-documented case, AmLib, a mining company, was found to have withheld $100,000 from the Liberian government. An investigation revealed that an AmLib employee had been falsifying receipts to the government and pocketing the payments.

It is to address some of these problems that the Extractive Industries Transparency Initiative (EITI) was launched in 2002. Based on voluntary principles of disclosure and compliance with validation criteria, the initiative was designed with a simple premise in
mind: If companies disclose their payments to governments and governments disclose payments received from companies, these figures can be verified against each other to ensure that all revenues make their way into the public coffers. Furthermore, if these payments are transparent, citizens are better able to hold their governments to account for the revenues generated from extractive resources. As of December 2012, 16 countries have been declared “EITI compliant” and 21 are “candidate countries,” of which one has been suspended.

While the EITI has faced difficulties, namely regarding inconsistent data quality and coverage, it has nonetheless proven invaluable at drawing citizen and international attention to resource governance where it is most needed (Gillies 2011). The impacts of oversight and awareness-raising are difficult to quantify; after all, how can researchers prove that an official chose to be less corrupt because of a transparency initiative? That said, several EITI reports have had clear and tangible benefits. A Nigerian EITI report, for example, uncovered $800 million in discrepancies between what companies said they paid and what the government received, an amount exceeding the individual budgets of the ministries of health and education. Of the $800 million, $560 million proved to be a shortfall in company payments (EITI 2012).

More recently, the US Congress passed the Cardin-Lugar Energy Security Through Transparency (ESTT) Amendment as part of the 2010 Dodd-Frank Act. The provision, sponsored by a Republican and a Democrat, requires extractive sector companies listed on US stock exchanges to disclose payments made to governments on a country-by-country and project-by-project basis, and to make this information available through an easy-to-use online database. While the goals of the legislation were to improve energy security by reducing the amount of revenue collected by violent groups or corrupt elements in unstable regimes, and to add stability to markets by providing information to investors on political and social risks of oil and mining projects, it also acts as a mandatory rule that complements EITI’s voluntary standards. Since the US passed the provision, the European Parliament and European Council have published legislative proposals requiring similar rules. Norway has also committed to adopt these rules.

Though the EITI and Cardin-Lugar rules improve transparency of payments, much still needs to be done to ensure full tax collection. Mandatory disclosure of payments should be expanded to all major jurisdictions, including Canada and Australia where the majority of mining companies are listed and headquartered. The scope of transparency initiatives needs to be expanded to include full contract transparency and disclosure of production, cost, and profit figures, and government capacity to monitor contracts and collect taxes must be improved. This will take time but can be supported through partnerships with international financial institutions and development partners. Finally, tax treaties can be updated and international tax transparency standards can be improved to reduce opportunities for aggressive tax planning and scope for hiding profits in tax havens.

**Revenue Management**

The governments of Azerbaijan and Norway both get a good deal on their oil, making approximately 80–90 cents for every dollar of revenues net of costs. They are also both large producers and have similar production paths. According to their respective EITI reports and the BP statistical review, Azerbaijan collected $19 billion in 2010 and has 7 billion barrels remaining while Norway collected over $44 billion in 2009 with 6.7 billion remaining barrels. Yet their management of oil revenues has been very
different. Norway has invested heavily in health, education, infrastructure, and the oil sector, went from one of Europe’s poorest countries per capita to one of its richest in four decades, and has saved $553 billion of oil revenue in its Government Pension Fund as of end 2011. In contrast, over 130 years after industrial oil production started on what is now Azerbaijani territory (Azerbaijan gained independence in 1991), 29% of the Azerbaijani rural population still does not have easy access to clean water, the government spends only 11% of its national budget on education, and it has saved only $33 billion in its State Oil Fund as of October 2012 (World Bank statistics).

Norway and Azerbaijan exemplify two extremes of a public policy choice: to consume for the benefit of the present generation or invest or save for the benefit of future generations. Following a large discovery, the temptation to consume today can sometimes be overwhelming, both for direct political gain and to respond to public expectations of immediate transformational benefits. Moreover, once money has started to flow, it is often difficult to shut the faucet. However consumption can also be well justified. Over 1.5 billion people in resource-rich countries live off less than $2 per day. These acute needs must be addressed today.

Many countries have employed special administrative rules and mechanisms to help rebalance the extractive revenue savings-investment-consumption ratio while also reducing budget volatility. The most common are formal or informal fiscal rules limiting public spending. For example, Botswana has enacted a rule limiting public expenditure to 40% of GDP while Australia and Peru have restricted their public debt to GDP ratios. However the most common set of fiscal rules in resource-rich countries are resource-based “revenue rules,” ceilings on the amount of oil or mining revenue that is allowed to enter the budget. Ghana, Mexico, Nigeria, and Timor-Leste have each enacted a legally binding revenue rule. For example, Ghana’s rule says that a maximum of 70% of a seven-year average of oil revenues shall be allocated to the national budget. Of the remaining amount, a minimum 30% is deposited into a Heritage Fund for future generations and a maximum of 70% is deposited into a stabilization fund to mitigate unanticipated revenue shortfalls. Figure 15.3 illustrates how this kind of fiscal rule works, creating fiscal surpluses to be saved for future generations and “smoothing” public expenditures to mitigate the negative effects of revenue volatility on the national budget.

Figure 15.3  Effect of an expenditure or revenue rule.
Among fiscal rules, revenue rules in particular require governments to decide what to do in instances when revenues are greater than the rule allows. In other words, they must decide where to save revenue surpluses. In cases where they are not held by the central bank as reserves or in private accounts of corrupt officials, they are saved in natural resource funds (NRFs), a subset of sovereign wealth funds (SWFs). These funds have proliferated in resource-rich countries; in 2009, there were 48 active NRFs in 34 countries, representing more than $2.03 trillion in assets (see Table 15.1 for selected natural resource funds).

NRFs have been established with several objectives in mind. First, they save resource revenues, accumulating interest for the benefit of future generations and for use in the event of crises (e.g., Abu Dhabi Investment Authority; Trinidad and Tobago Heritage Fund). Second, some provide a source of funds to be drawn upon in cases of revenue shortfall in the budget. These “stabilization funds” absorb revenue volatility, their balance sheets oscillating with the cyclical rise and fall of oil and mineral prices and production (e.g., Mexico’s three Oil Income Stabilization Funds and Chile’s Economic and Social Stabilization Fund). Third, they can help “sterilize” capital inflows, essentially redirecting capital inflows to foreign investments to mitigate Dutch Disease effects. The Kazakh, Kuwaiti, and Saudi NRFs may have helped sterilize capital inflows from 2001 to 2007 when oil prices increased by about 250% but none exhibited large-scale real exchange rate appreciation despite being on fixed exchange rates. Fourth, provided their financial statements are published, they can improve the transparency and accountability of resource revenues by collecting all resource revenues in one place and streamlining saving-spending decisions, as in Ghana and Timor-Leste. Fifth, they can encourage investment by earmarking resource revenues for development projects or capital expenditures (e.g., Timor-Leste Infrastructure and Human Capacity Development Funds).

### Table 15.1 Selected natural resource funds.

<table>
<thead>
<tr>
<th>Country or Province</th>
<th>Current Name</th>
<th>Objective</th>
<th>Founded</th>
<th>Assets (billion USD, 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abu Dhabi (UAE)</td>
<td>Abu Dhabi Investment Authority</td>
<td>Savings</td>
<td>1976</td>
<td>627</td>
</tr>
<tr>
<td>Norway</td>
<td>Government Pension Fund Global</td>
<td>Savings</td>
<td>1990</td>
<td>520</td>
</tr>
<tr>
<td>Kuwait</td>
<td>Kuwait General Reserve Fund Reserve Fund for Future Generations</td>
<td>Multiple, Savings</td>
<td>1953</td>
<td>296 combined</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>National Fund</td>
<td>Stabilization</td>
<td>2000</td>
<td>39</td>
</tr>
<tr>
<td>Chile</td>
<td>Pension Reserve Fund</td>
<td>Savings</td>
<td>2006</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Economic and Social Stabilization Fund</td>
<td>Stabilization</td>
<td>2007</td>
<td>13</td>
</tr>
<tr>
<td>Alberta (Canada)</td>
<td>Alberta Heritage Savings Trust Fund</td>
<td>Savings</td>
<td>1976</td>
<td>15</td>
</tr>
<tr>
<td>Timor-Leste</td>
<td>Petroleum Fund</td>
<td>Savings</td>
<td>2005</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Infrastructure and Human Capacity Development Funds</td>
<td>Development</td>
<td>2011</td>
<td>1</td>
</tr>
<tr>
<td>Botswana</td>
<td>Pula Fund</td>
<td>Savings</td>
<td>1996</td>
<td>7</td>
</tr>
<tr>
<td>Mexico</td>
<td>Oil Revenues Stabilization Fund</td>
<td>Stabilization</td>
<td>2000</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Bauer (2012).
Many funds have multiple objectives. For example, the Wyoming Permanent Mineral Trust Fund was established to limit government spending and provide funding for the US State in cases of crisis, though in practice it also acts as a stabilization fund.

The deposit, withdrawal, investment, and governance rules that regulate NRFs often determine how effective they are at helping countries overcome overspending, expenditure volatility, Dutch Disease, and rent-seizing. While a one-size-fits-all approach to these rules is not appropriate, there are conditions under which NRFs are more likely to function in the public interest.

First, NRF objectives should be clearly stated by the government and should be functions of country-specific revenue management challenges such as excessive expenditure volatility, excessive recurrent spending, or lack of capital investment.

Second, the rules governing which revenue streams (e.g., royalties; government equity; excise taxes; corporate taxes; fees) are deposited into the fund and the conditions for withdrawal should be a reflection of the fund’s objectives. For example, if a fund is given a stabilization objective, it may be appropriate to include only volatile streams, as in the case of the Wyoming Permanent Mineral Trust Fund. On the other hand, all revenue streams ought to be deposited into a fund designed to save for future generations. Similarly, it may be appropriate to prevent withdrawal from a savings fund until production has ceased, as in the case of the Ghana Heritage Fund, while a stabilization fund requires rules that help absorb budget volatility (see Figure 15.4 for two natural resource fund models with example deposit and withdrawal rules). That said, the vast majority of NRFs do not have clear or legislated rules. Iran is a case in point. Based on an analysis of data from the Central Bank of Iran and the IMF, Heuty (2012) estimates that the government withdrew over $150 billion from the Oil Stabilization Fund between 2006 and 2011 without clear economic justification. The Azerbaijani and Kuwaiti funds similarly lack withdrawal rules, with similar results.

Third, some countries have generated additional fiscal space or greater fiscal flexibility by manipulating the price and revenue assumptions necessary for the calculation of permissible withdrawals. In order to adhere to the spirit of the rules, it is essential that the formula for projecting resource revenues not be subject to manipulation. Price assumptions and revenue projections should follow strict criteria. Including an objective price assumption in legislation or regulation, such as the World Energy Outlook’s intermediate-scenario oil price forecast, may be helpful in this regard.

Fourth, NRFs should have clear investment rules consistent with objectives and capacity to invest. Since they must be able to finance quarterly or annual shortfall in government revenue, stabilization fund assets must be sufficiently liquid and low-risk. Conversely, it may be appropriate to invest in higher-risk or alternative assets to generate a higher return if the fund has a savings objective. Of course, the fund’s risk profile should also reflect the capacity to manage investment or to oversee the investment managers. The Libyan Investment Authority (LIA) offers a cautionary tale, having paid high management fees and received poor advice as a result of inadequate safeguards, rules or transparency under the Gadhafi regime, resulting in over $1 billion in losses. Institutions that invest public money should be held to a higher standard of transparency, accountability, and risk mitigation.

Fifth, governments may find that using resource funds as collateral on debt, especially if the fund is large, can provide access to finance on good terms. However the value of improved borrowing terms must be balanced against the risk of squandering the public’s savings. Furthermore, if savings are large, there is less justification for borrowing externally since the government can draw on these resources. The choice to encumber all
One fund approach

**Petroleum revenues**
“Petroleum royalties, bonus, surface fees, profit taxes/oil and gas, equity, national oil company payments, development and exploration fees”

**Petroleum fund**
Investment Rule: minimum X% low-risk debt instruments, maximum 1% higher-risk/higher-return equity; no domestic investment

**Annual budget allocation**
Rule example: X% of all oil wealth, based on long-term oil price

Consolidated fund (Budget)

Two fund approach

**Petroleum revenues**
“Petroleum royalties, bonus, surface fees, profit taxes/oil and gas, equity, national oil company payments, development and exploration fees”

**Petroleum fund**
Annual budget allocation
Rule example: X% of petroleum fund, based on long-term oil price

**Consolidated fund (Budget)**

**Stabilization fund**
Size rule: Max 5-10% of GDP
Investment rule: Low-risk, liquid assets

**Savings fund**
Investment rule: Diversified portfolio, slightly higher risk/higher return

Consolidated fund (Budget)

**Subnational government/other share**

**Local government/other share**

**Taxes priority over the savings fund until fully funded; afterwards all non-ABA excess goes to savings**

**All remaining non-ABA and non-stabilization funds**

Figure 15.4 One and two fund approaches to managing resource revenues.
or part of resource revenues should, again, be a reflection of the fund’s objectives. For example, if the objective of the fund is to provide an endowment for future generations, over-risking the fund may not serve this objective.

Sixth, faithful implementation of fiscal rules requires clear responsibilities and lines of communication between the board of directors or executive and the operational managers. Safeguarding operational management from political interference can help promote adherence to rules. It is also essential that fund managers have the capacity and incentives to implement legislated policies. However internal accountability is usually not enough. NRF operations should be verified by external auditors and overseen by independent bodies with the capacity and technical knowledge to analyze NRF behavior. Formalized monitoring of activities by parliament and the establishment of a specialized oversight committee consisting of government officials and civil society, like the Ghana Public Interest and Accountability Committee (PIAC), may be necessary for promoting adherence to the rules.

Finally, in order for oversight actors (civil society, parliamentarians, media) to fulfill their roles, there must also be a strong degree of transparency in all NRF operations. Information on annual activities, investment portfolio, flow-of-funds, governance structure, board of directors, and managers should be made publicly available in a timely manner and reporting should meet international standards.

While significant attention has been paid in the academic literature to withdrawal and investment rules, often public allocation decisions are also constrained by poor deposit rules, specifically as they pertain to transfers from state-owned resource companies (SOCs). National oil companies (NOCs) can be a particular drain on public resources in low-capacity environments, where there is a lack of oversight and where dividend, cost calculation, and reinvestment rules are unclear or poorly designed. Often, NOC revenues remain with the company rather than making their way to the NRF or budget. For example, in 2011, Ghana’s first year of major petroleum production, 47% of the state’s share of oil revenues was retained by the Ghana National Petroleum Company, leaving very little for the budget or the NRFs.

NOCs can drain public resources in other ways as well. In Nigeria, for example, “cash calls” by the Nigerian National Petroleum Company (NNPC) cost the taxpayer $7 billion in 2010, and petrol subsidies by the NNPC cost the state $11 billion in 2008/9. In Mexico, PEMEX posted a $30 billion loss in 2009, covered by the Mexican taxpayer. The risks associated with creating and empowering a SOC deserve a full chapter. Still, in general, these challenges can be overcome by aligning SOC and government incentives, improving and strengthening the rules governing SOCs, and ensuring that SOCs are accountable to the government, regulators, and the public.

The saving-consumption-investment decision is also a function of the resource revenue allocation system between the national government, local governments, special interests, and citizens. Revenues are distributed to local governments or communities for four main reasons: To compensate producing areas for the costs of production (e.g., environmental damage); equalize the benefits of extraction between richer and poorer regions; prevent or reduce conflict; and decentralize accountability for revenues. The challenge countries face is how to design a widely accepted stable system that achieves these objectives. In fact, very few countries have been successful. The Indonesian and Peruvian oil and mineral revenue-sharing regimes have arguably increased mismanagement and waste. The Nigerian and Mongolian regimes have increased inequality between producing and non-producing regions. It is unclear whether revenue sharing has mitigated or exacerbated violent conflict in the DRC, Iraq, and Nigeria. On the other hand, as Canada, Mexico,
and the UAE have shown, a widely accepted formula-based, predictable, and transparent regime can be conducive to improving development outcomes and can help countries meet their revenue-sharing objectives.

Recently, researchers at the Center for Global Development (CGD) and the World Bank have advocated for a specific type of revenue allocation as a means of improving accountability of resource revenues and spending efficiency: direct transfers of oil and mineral revenues to citizens. Under the CGD proposal (Moss 2011), “a government would transfer some or all of the revenue from natural resource extraction to citizens in a universal, transparent, and regular payment. Having put this money in the hands of its citizens, the state would treat it like normal income and tax it accordingly – thus forcing the state to collect taxes and fueling public demand for the government to be transparent and accountable in its management of natural resource revenues and in the delivery of public services.” Already, Alaska, Bolivia, Iran, and Mongolia have adopted these types of payments and Iraqi officials are currently considering doing the same. Iran’s “oil-to-cash” transfer program started awarding about $40 a month to over 70 million citizens in 2010, costing about $45 billion a year (Heuty 2012).

Since unconditional lump-sum transfers would benefit the poor relative to the rich, there is justification for these direct transfers in countries with high levels of poverty. However income taxes are difficult to introduce in many less developed resource-rich countries and direct distribution of cash may starve the public sector of much needed financing for investment. Governments may also not develop the capacity to deliver on infrastructure and human capital projects. After all, governments, like businesses, learn by doing. In summary, managing resource revenues is not simply a matter of collecting revenues and depositing them into the national budget. The flow of funds is often muddled by the institutions involved, generating opportunities for waste, mismanagement, and rent-seeking (see Figure 15.5). These systems can also make it more difficult to address macroeconomic challenges commonly found in resource-dependent countries, namely budget volatility, a tendency to overconsume, and Dutch Disease. Key institutions should be governed by predictable and appropriate rules, their activities should be transparent and they should be subject to rigorous oversight by independent, competent and credible bodies. While these steps do not guarantee that resource revenues will be transformed into useful investments, the probability that governments will make the right choices increases with each.

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**Figure 15.5** Typical resource revenue management system.
Conclusion

Oil, gas, and mineral resources are different from other sources of income. They are non-renewable, therefore only worth extracting if the country is adequately compensated for asset depletion. They are location-specific with high upfront costs and production timelines, providing leverage to government in contract negotiations, notwithstanding the information asymmetries between companies and the government. They generate substantial economic rents. Revenues generated from these resources are highly volatile. And, in many countries, they are large, with the potential to transform economies and societies. As such, these resources should be managed differently.

For example, contracts and company financial information should be made public. Fiscal terms should reflect practical limits to full tax collection, like transfer pricing or poor domestic administrative capacity. The management of resource revenues should be rules-based and transparent, with strong fiscal rules that promote appropriate levels of public savings, consumption, and investment, and “smooth” public expenditures. Fiscal rules should be enforced and compliance should be subject to oversight, for example by auditors, legislatures, the media, and civil society groups. Public institutions, like natural resource funds and state-owned companies, should also be administered largely by rules and be similarly subject to oversight. In general, resource revenues should be spent in the best public interest and governments should be accountable to the public for their use.

Energy consumers have a strategic interest in promoting good resource governance. In many producing countries, extractive revenues have fed corruption, wasteful spending, violent conflict, and instability rather than productive investment. This has exacerbated poverty, increased attacks on extraction sites, and empowered unstable regimes, creating significant uncertainty in world resource supplies. Improved governance fosters trust with local communities, reducing investment risk and creating more stable operating environments for companies. In turn, improved reliability of commodity supplies promotes greater energy security.

As such, the international community has an incentive to support good governance initiatives in large producing countries and in the home markets of extractive companies. For example, many developing countries may need to enhance domestic capacity to negotiate contracts, analyze fiscal regimes, collect taxes, manage resource revenues, and spend efficiently on projects that support growth and economic diversification. While capacity building and development initiatives should be driven by domestic imperatives, development partners and international financial institutions can help finance and support these activities. The entire international community should also support and adhere to best international standards of resource management, namely mandatory disclosure of payments to governments, publication of all contracts, elimination of tax havens, and improving accountability of companies in home jurisdictions.

Notes

1. Transparency is defined as clarity of government agencies’ and officials’ roles and responsibilities, public availability and access to information, open budget preparation, execution and reporting, and assurances of integrity, including high data quality and adequate oversight (IMF 2007). Public accountability is defined as the obligation of public officials to explain and justify their conduct and make decisions based on a concept of public service.
2. Economic rents are the returns to investment over and above the minimum required to invest.
3. “Government take” is the sum of royalties, taxes, and the value of “profit oil.” See Box 15.1 for explanation of “profit oil.”

References


Plutarch. *Life of Themistocles*.


