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6.1 Organization in the Public Interest

The challenges of building the necessary government institutions are well-known. A central theme in much of the literature on development is the importance of ‘capacity building’, particularly to equip countries new to oil, gas or mining development for the specialist tasks arising from oversight of oil, gas and mining activities. A wide variety of specialist educational programs have sprung up in centres around the world to meet these needs. Yet, if the goal is extractives-led development, the kind of knowledge needed by the new arrivals – and by others that are embarking on reform of their established EI sectors – goes beyond this to the kind of organizational structures that are typical in the oil, gas and mining industries and the particular challenges that the structures represent for oversight and partnership. Without a sound knowledge of the standard approaches to industry governance, and how government interventions can ‘fit’ such conventional structures, it is quite possible that government-driven efforts to make the sector work properly to achieve overall social and economic benefits (for example, local content, shared use of infrastructure) may have limited and disappointing outcomes.

Responding to the challenges of sector organization is certain to be informed by knowledge of how other governments have designed their own sectors for oil, gas and mining activities. For this reason, there is always likely to be a search for approaches that offer constructive lessons. In the hydrocarbons sector, an influence on thinking has been the Norwegian approach, sometimes described as ‘the Norwegian model’¹. A key feature of this approach is the separation of regulatory and commercial functions: instead of entrusting both to a state company, this approach places them into separate institutions (see **Figure 6.1**). However, its influence in other countries has been limited in practice. It argues against a consolidation of domestic sector capacity, when a lack of skilled personnel and institutional capacity (a common problem) may make such a consolidated approach more likely to deliver results in the near term and may be a step towards a separation of functions at a later stage. In mining, Botswana and Chile have enjoyed similar success to Norway in the development of their extractive resources. However, for reasons discussed below, they may offer lessons in optimising sector organization but they stop well short of providing a prescriptive template or model for others to follow.

¹ The classic exposition of this is Farouk Al-Kasim’s book, ‘Managing Petroleum Resources: the ‘Norwegian

Figure 6.1: The Norwegian Approach

Governance tasks: How to split the Institutional responsibilities?		
Task	Responsibility	
1. Policy making	1. Ministry / Parliament	
2. Legal Framework	2. Ministry / Parliament	
3. Ownership to resources	3. Ministry / Regulator	
4. Collector of tax or share of production	4. Ministry / tax regulator / State Owned Company	
5. Regulatory work	5. Independent Regulator or government directorate	
6. Commercial activities	6. State owned or private, national companies or international oil companies	

Source: Norwegian Petroleum Directorate presentation at CEPMLP Seminar, 2005. Further information available on website at: <http://www.npd.no/en/> (last accessed 27 March 2016).

6.1.1 Governance: Who Does What?

The roles and responsibilities of different ministries and agencies need to be clearly defined and enforced. This helps to avoid overlapping or conflicting competencies and roles in policy- and rule-making, and monitoring. At the same time, it prevents gaps in regulatory responsibility. Moreover, if the overall policy objective is to utilize the extractives sector for wider economic development and benefits, it is important to ensure that all of the institutions and agencies are actually working to this end and not discouraging such development by their actions.

Ten Key Institutions Typically, there are ten key institutions that share responsibilities in the management of oil, gas and mining. Their actions will have an impact on the economy, environment and society:

- (1) Executive bodies;
- (2) Legislative bodies;
- (3) Sector ministries;
- (4) Regulatory agencies;
- (5) National resource companies;
- (6) Finance ministry;
- (7) Taxation authority;
- (8) Central bank;
- (9) Economic planning ministry and
- (10) Environmental ministry.

Close coordination among all of these, while admittedly difficult to achieve, is essential to effective extractives sector management. Conflicts among the various roles are potentially damaging, both to the achievement of the state's goals and to the scale and tempo of investment. This is even more challenging in states with federal or decentralized structures. Addressing these challenges effectively requires the creation of a high level of capacity in the institutions charged with sector management and regulation.

Each of the ten institutions above needs to have the necessary resources and staff to fulfil its mandate, commensurate with the technical complexities of oil, gas and mining sectors. More often than not, requisite capacity is lacking. Technical assistance and the engagement of professional advisers can make an important contribution to capacity building. However, capacity requirements will change if activity moves beyond exploration to development and production. A dynamic, evolving approach to the various tasks of government is therefore essential.

In more detail, the tasks of the ten key institutions are described below.

CEPMLP Executive Bodies

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The executive, which typically includes the presidency and executive cabinet, often reserves for itself the final decision on critical EI sector issues such as licensing rounds, state participation, and the establishment of extractives sector-related funds.

Legislative Bodies

Often overlooked and handicapped by weak institutional capacity and more powerful executive bodies, legislatures have the potential to play a major role in effective management of oil, gas and mining sectors. Through their core law-making function, legislatures are responsible for reviewing bills and enacting legislation needed to support the extractives sector.

Legislatures also serve an oversight function that allows them, and particularly their committees, to: (1) inject accountability through investigation of oil, gas and mining sector issues; and (2) scrutinize government activities and the allocation of funds. The latter function can extend to the scrutiny of national resource companies,

perhaps through a requirement to submit annual reports and audited financial statements. Under Norway's Petroleum Act, the state petroleum company, Statoil, is obliged to report to the legislature on any projects it undertakes which have significant economic and social impacts or which have costs reaching to more than US\$840 million.

Finally, in their representative role, legislatures can ensure public participation in the political process as it relates to these sectors.

Sector Ministry

At the centre of the network of government agencies in extractives sector management and oversight is the sector ministry itself. This ministry typically has overall responsibility for the extractives sector, but sometimes its scope is limited to only hydrocarbons or mining. This mandate requires the ministry to oversee sector operations and to set policy and strategic direction of the sector. The Ministry's role is usually defined in sector legislation.

Tasks falling within its mandate and guided by legislation commonly include: (1) sector policies and planning, including proposed legislation; (2) negotiation and award of contracts or licences; (3) calculation and collection of royalties; (4) promotion of local content; (5) preparation of regulations; (6) oversight and regulatory functions, with authority to delegate this responsibility; (7) coordination with other ministries, especially the ministries of finance and economic planning; (8) governance of NRCs, sometimes in collaboration with the finance ministry; and (9) promotion of the sector at national and international events.

For countries that discover petroleum deposits for the first time, there is likely to be a *provisional* approach to the design of a Ministry's role, relying upon an existing Ministry until it is clearer what the size of the deposits is likely to be, and therefore what sort of organisational commitments are likely to be required.

Although environmental and sustainable development issues are usually the responsibility of other ministries, small units charged with coordination of the sector and environmental or social ministries on extractives sector-related impacts are often found within the extractives sector ministry.

Mining Specifics With respect to mining, the sector ministry will typically include four units that will play important roles. The first of these is the Mining Cadastre Office, which will be responsible for issuing and overseeing licences,

enforcing licence conditions, suspending, terminating for cause or accepting relinquishment of licences. It will also be responsible for maintaining an up-to-date and public register of exploration and mining licences, to which any interested parties will have access. The second is the Mining Inspectorate Office, which is typically charged with ensuring compliance with licensing conditions, and health and safety regulations. It will also carry out production and technical audits, all of which require a strong presence at commercial and artisanal mining sites. The third unit to play an important role is likely to be the Environmental and Social Unit, which will provide support to the environmental and social authorities responsible for the sector, but which will also take charge of outreach to local communities and mining companies. Their activities can contribute to improving the benefits of mining activities and mitigating the impacts, which are often community-related. Finally, within the sector ministry there may be a Unit dedicated to engagement with artisanal and small-scale mining (ASM). This is likely to provide training to assist ASM productivity and health, safety and environmental performance.

Requirements for Effective Performance If the sector ministry is to work effectively with other ministries and agencies, there will have to be an alignment of shared objectives, knowledge sharing, clarification of mandates, competences and responsibilities, and a willingness to use memoranda of understanding or similar mechanisms to formalize working relationships and to clarify potentially overlapping mandates, competences and responsibilities.

Effective performance in the ministry is likely to be enhanced by attention to five areas: firstly, avoidance of discretionary or arbitrary power, so that investors will be given confidence that any issues arising will be addressed in a predictable, transparent and orderly manner; secondly, securing adequate and competent specialist capacity required for monitoring, oversight and enforcement of regulatory requirements and licence and/or contract conditions; thirdly, securing highly competent, professional and non-corrupt staff to oversee large hydrocarbons or mining projects, with the capacity to deal with the management of international companies and large investors; fourthly, offer employment conditions and salaries that prevent the most highly skilled and experienced staff from being hired away by international oil, gas and mining companies; and finally, use of effective, third party dispute resolution and appeals mechanisms.

Regulatory Agencies

The EI sector ministry should be empowered and expected to delegate regulatory functions to a subordinate and quasi-independent agency. It would normally report

to the EI sector ministry and have oversight functions for: (1) the development of technical specifications and standards; (2) technical supervision of EI sector operations; (3) supervision of company operations in accordance with contracts and legislation; (4) metering and monitoring of production, technical data analysis, and storage; (5) recording of licenses and ownership interests; (6) contributions to economic planning; and (7) social and environmental protection in coordination with relevant authorities.

Responsibility for HSE oversight and enforcement is commonly assigned to a regulatory agency. On HSE issues, the regulatory agency typically will have reporting obligations to the EI sector ministry and one or more other ministries or agencies involved in HSE issues. This, however, is not always the case. In Norway, for example, safety matters are vested in a distinct petroleum safety authority within the regulatory agency. This Norwegian approach appears to highlight the importance given to safety considerations; it also provides some autonomy from within the regulatory agency itself.

The collection, storage, and analysis of EI sector data and samples, and the preparation and maintenance of records on petroleum and mining rights and agreements have become critical mandates for regulatory agencies. Good practice would provide for an arms-length relationship between the regulatory agency and its ministry in order to safeguard the regulatory agency's objectivity. In a number of states, EI sector regulatory functions, either formally or in practice, have been allocated to the NRC rather than to an independent agency. This choice appears to have been based primarily on the perceived superiority of expertise within the NRC: a practice that seriously compromises the impartiality of regulation (see **Section 6.1.2** below).

Mining Specifics For mining, a distinct body will usually have important functions covering geological data collection, management and dissemination. It will work closely with the sector ministry, and may well be a part of it. The work of a Geological Survey unit is not likely to be primarily (or at all) regulatory in character but its work will contribute to the efforts of the main regulatory bodies.

Box 6.1: Oil, Gas & Mining: Institutional Structure

The two main institutions with overall responsibility are the sector ministry and regulatory agency. A key principle is that a well-designed sector ministry will have:

1. A unit which is responsible for issuing and overseeing licenses, enforcing license conditions, and maintaining an up to date and public register of exploration and production licenses which is easily accessible by all interested parties;
2. For mining, an artisanal and small-scale mining (ASM) unit (in states with large ASM);
3. An inspectorate with a strong presence at sector sites. This inspectorate will be responsible for inspections relating to compliance with licensing conditions, compliance with HSE regulations, and undertaking production and technical audits;
4. An environmental and social unit, which collaborates with, and provides support to, the environmental and social authorities that oversee the sector;
5. An economics unit that analyzes the economics of petroleum and mining companies operating in the sector;
6. A unit that promotes the sector at national and international events;
7. Highly experienced and skilled staff to oversee large petroleum and mining projects and to put the government on an equal footing when dealing with the management and specialist staff of international companies and large investors; and
8. Employment conditions and salaries which are sufficient to prevent the most highly skilled and experienced staff being hired away by international companies.

A well-designed sector regulatory agency will be responsible for:

1. Topographical mapping, regional geological mapping, and related work;
2. Geological data collection, dissemination, and publication (including the digitization of paper files and records);
3. Setting consultation, consent, and approval requirements at critical stages of operations, including:
 - a) reconnaissance;
 - b) exploration work program implementation;
 - c) drilling;
 - d) discovery;
 - e) appraisal;
 - f) commerciality;
 - g) development plan and any revisions thereto;
 - h) reservoir management and production;
 - i) late field or mine life plans; and
 - j) decommissioning plans.

The survey and mapping work will include high-level regional geographical survey work to provide data from which interested parties can select exploration targets. It will include topographical mapping which is important for many purposes including mineral exploration. The collection and management of data will be important too. It will include maintaining all historical data files and maps, including both its own data and geological data received from licence holders carrying out exploration work. It will include the digitalization of paper files and maps. Exportation files will have to be kept confidential and then the data integrated into the overall data base and making it publicly available once a licence is relinquished. Finally, the Geological Survey unit will be responsible for data publication and dissemination. Interested parties will have to be provided with physical or virtual access to hard copy and digital reports and files; topographical and geological maps and reports and data will have to be published at an affordable cost and in suitable map and other formats, ideally including digital formats.

National Resource Companies

National Resource Companies (NRCs) play a powerful, and often controversial, role in EI sector management in many states. Normally, NRCs are responsible for commercial operations and the development of a shared national capacity in the EI sector. In sharing competence between public and private obligations, NRCs often have difficulty in separating these obligations. Since NRCs are charged with responsibilities going far beyond commercial operations and may 'capture' local managerial and technical sector expertise, they often bypass the EI sector ministry to which they usually nominally report.

The importance of NRCs varies greatly between the petroleum and the mining industries. Few countries with petroleum production actually or in prospect would fail to introduce and build up an NRC. By contrast, in the mining sector this is far less common. Largely due to their prominence in the petroleum sector, NRCs are discussed below at some length in **Section 6.1.2** below.

Finance Ministry

In almost all states there are certain tasks that fall exclusively within the traditional competence of a ministry of finance. These usually include: (1) tax policy and the proposal of tax legislation; (2) resource revenue forecasting; (3) revenue

management; and (4) expenditures (budget allocations). In a number of states, mining and petroleum royalties are assessed and collected by the EI sector ministry especially where there are issues of measurement of quantities or verification of prices which require specific EI sector technical expertise.

All of these functions, however, depend on an accurate understanding of the EI sector and require close coordination between the finance and EI sector ministries and NRCs. Unfortunately, this coordination is typically weak or entirely lacking.² Good practice would recommend establishment of a small professional unit within the finance ministry that is well-grounded or trained in sector economics and operations and able to deal with EI sector agencies on an equal footing and, therefore, ensure coordination.

Taxation Authority

In most states, there is a revenue authority that is responsible for assessing and collecting taxes and undertaking tax audits. Likewise, most states have a customs authority that is responsible for import duties. With regard to mining and petroleum taxation, the finance ministry is responsible for tax policy and proposing tax legislation. All EI sector ministries and authorities must have strong EI sector knowledge to do their work efficiently and effectively.

In many states, EI sector tax authorities are part of a larger taxpayer unit within the tax authority. Some states may even have a dedicated mining tax unit. For states where petroleum or minerals make up a significant portion of tax revenues, it will be important to have better systems and capabilities and more highly skilled and experienced staff to work on a small number of large EI sector projects. This approach contrasts with tax agency authorities that may be dealing with tens of thousands, or possibly hundreds of thousands, of small retail or other businesses. This may have important implications for the staffing and employment policies as well as the provision of fully adequate computer and other systems for the sections of the tax agency that deal with the EI sector.

² Rosenblum, P., and Maples, S. (2009). *Contracts Confidential: Ending Secret Deals in the Extractive Industries*. New York: RWI, p. 26.

Central Bank

While not expected to play a proactive role in EI sector management, the central bank of a resource-rich state does play a pivotal role in the tracking, reporting, and reconciling of fiscal and financial flows in the EI sector. Central banks in these states will also likely play a large role in setting monetary and exchange rate policies. However, in resource-rich states the central bank's major role relates to requirements for repatriation of funds by EI sector investors. The central bank will often set policy concerning the share of export revenues that must be brought onshore and the share that may remain offshore.

Economic Planning Ministry

In states where economic dependence on the EI sectors is high, the performance of these sectors becomes critically important to overall macroeconomic planning. The ministry charged with economic planning, like the finance ministry, should have a very close relationship with, and a good understanding of, the various EI sector agencies.

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Environment Ministry

Petroleum, and especially mining, activities are often associated with significant environmental and social 'footprints.' Addressing the issues arising from those footprints may be the responsibility of the EI sector ministry, but good practice would recommend that responsibility go to specialized ministries like the environment ministry and ministries dealing with labour and local community matters. In this case, good practice would also recommend that a small unit be established within the EI sector ministry to coordinate with the specialized environmental and social issue ministries.

Other Agencies

There are a number of other state agencies that are relevant to the EI sector. These include: the health ministry; the labour ministry; the ministry of foreign affairs; the ministry of national parks, wildlife, and tourism; ministry for infrastructure; and the customs and excise tax authority (for imports and exports).³

6.1.2 The State as Participant

Governments have adopted state participation in many countries but have chosen a variety of forms, according to their aims, their circumstances and the issues that they faced. The most common vehicle for state participation has been the National Resource Company (NRC), but participation can still be effected without it.

On the face of it, NRCs would seem an ideal instrument to tackle the problem of asymmetry of information between governments and foreign investors. They seem to be an obvious vehicle for ensuring and promoting national control over the development of the oil, gas and mining sectors. Yet they feature far more prominently in the development of oil and gas than in the mining sector. *NRCs are now a typical feature in most if not all petroleum regimes around the world, particularly outside of the OECD countries.* They control about 90 per cent of the world's oil reserves and 75 percent of production, with similar shares for natural gas, and many of the world's major oil and gas infrastructure systems.

The role of NRCs in the mining sector has been less pervasive but significant nonetheless: the largest producer of copper in the world is Codelco (Chile); the leading producer of diamonds is Botswana's partly state-owned Debswana and OCP (Morocco) is the leading producer of phosphate in the world. This imbalance is reflected in the state of the research, where significant studies have been carried out into the role of NRCs in the hydrocarbons but fewer in their role in mining⁴. In a

³ Bunter, M. (2002). *The Promotion and Licensing of Petroleum Prospective Acreage*. London: Kluwer International; Duval, C., Leleuch, H., Pertuzio, A., and Weaver, J. (2009). *International Petroleum Exploration and Exploitation Agreements*. New York: Barrows, Ch. 20.

⁴ On hydrocarbons, the principal studies are: 'Oil and Governance: State-owned Enterprises and the World Energy Supply' (edited by DG Victor, DR Hults and M Thurber)(2012), Cambridge University Press, Cambridge; P Heller, P Mahdavi, J Schreuder, 'Reforming National Oil Companies: Nine Recommendations' (2014), Natural Resource Governance Institute, New York; S Tordo, B Tracy and N Arfaa, 'National Oil Companies and Value Creation' (2011)(3 volumes), World Bank Working Paper Series #18, World Bank, Washington DC; C McPherson, 'State Participation in the Natural Resource Sectors: evolution, issues and outlook', in Daniel, Keen and McPherson (2010), 263-288; V Marcel, 'Oil Titans' (2006), Brookings Institute Press, Baltimore. On mining, examples would include: Raw Materials Group, *Overview of State Ownership in the Global Minerals Industry*, World Bank; Washington D.C. (2011); Humphreys, D. (2009). *Emerging Players in Global Mining*. Washington, D.C.: The World Bank, but see also the Natural Resource Governance Institute website:

recent study of NRCs, 45 countries were examined but of these only 11 countries had an NRC in mining, or one with production greater than any NRC it had in its hydrocarbons sector⁵. Nonetheless, state participation in the mining sector, in any one of a diverse array of forms, is typical: “through outright ownership or share participation, either on a mandatory basis or through the exercise of option rights, [it] remains common practice”⁶.

Enthusiasm for NRCs has waxed and waned over the years, as experience with them has varied greatly. However, they have proved a durable phenomenon, particularly in resource-rich developing states. They are usually a powerful influence on policy-making in developing countries. Some countries have more than one: Russia has Rosneft (oil) and Gazprom (gas); China has CNOOC (oil) and partly state-owned Petrochina (oil); and Trinidad and Tobago (one in gas and one in oil: NGC and NPC).

Often referred to as ‘national champions,’ NRCs have been established with a wide range of both commercial and non-commercial objectives. The latter have included, in countries like Nigeria and Angola, the tasks of award of rights, revenue collection and public expenditures. Their performance in pursuing all these objectives has provoked debate⁷ and prompted responses aligned with what is now considered good practice. Initially, there was a tendency to evaluate them in relation to the kind of objectives that International Resource Companies set themselves, and identify ways in which they could be more effective in value creation⁸. More recently, appraisals of their performance have focused on their governance, since often they operate with low levels of oversight and accountability⁹. Indeed, recent research has indicated that no less than 18 out of 45 NRCs are not under any legal obligation to report information about their operations and 28 fail to provide comprehensive reports on their activities and finances. However, where existing NRCs have accepted remedial reform measures, there is good evidence of their achieving enhanced levels of performance.

<http://www.resourcegovernance.org/rgi/soc> last visited 28 March 2016), and particularly Copper Giants: Lessons from State-Owned Mining Companies in the DRC and Zambia (2015): <http://www.resourcegovernance.org/analysis-tools/publications/copper-giants-lessons-state-owned-mining-companies-drc-and-zambia-0> (last visited 27 March 2016).

⁵ <http://www.resourcegovernance.org/rgi/soc> (last visited 28 March 2016).

⁶ McPherson, C., State participation in the natural resource sectors: evolution, issues and outlook, in Daniel, Keen and McPherson (2010), 265-266.

⁷ Marcel, V. (2006). *Oil Titans*. London: Royal Institute of International Affairs (RIIA); McPherson, C. (2003). Chapter 7. In: Davis, J., Ossowski, R., and Fedilino, A. (eds.) (2003). *National Oil Companies: Evolution, Issues, Outlook in Fiscal Policy Formulation and Implementation in Oil Producing Countries*. Washington, D.C.: IMF Media Services Division.

⁸ For example, the study by Tordo et al (2007).

⁹ For example, Heller, Mahdavi and Schreuder (2014), which builds on the Natural Resource Charter Precepts and the Resource Governance Index.

The international reach of NRCs has grown in recent years. A number of NRCs have adopted a strategy of diversifying internationally into upstream investments abroad. Examples of companies pursuing this strategy are Petrobras in Brazil; the Chinese National Petroleum Corporation (CNPC) and Sinopec in China; Oil and Natural Gas Corporation Limited (ONGC) in India; Gazprom, LukOil, and Rosneft in Russia; and Petronas in Malaysia. For the Chinese and Indian companies, one of the drivers behind such expansion has been to gain access to energy production that can meet the home state's economic demands.¹⁰ However, NRCs have achieved very diverse results in their internationalization strategies, some achieving no success at all¹¹.

Commercial Objectives

Most NRCs have objectives that include a requirement to act in a commercial manner, even if the way in which that is defined and its relationship to other goals vary considerably from one case to the next. In a small number of cases in the past, NRCs in the petroleum industry have been expected to emulate, and have been successful in emulating, their privately owned counterparts in terms of commercial efficiency and the generation of profits. These NRCs have been successful in operating as a counter-balance to the traditional influence of IRCs. In a limited number of cases, these NRCs have been able to replace IRCs completely.¹²

Non-Commercial Objectives

The more common experience is that NRCs have tended to be the focal point for accomplishing a broad range of national, economic, social, and political objectives. This focus is particularly based on their access to funds and to a lesser extent on perceptions of their superior technical and managerial skills. Objectives coming under this heading are comprised of the following: (1) job creation; (2) development of local capacity; and (3) provision of social and physical infrastructure.

¹⁰ Jiang J., and Sinton J. (2011) *Overseas Investments by Chinese National Oil Companies: Assessing the Drivers and Impacts*, Information Paper. Paris: OECD/International Energy Agency (IEA), pp.12-13. Available at: http://www.iea.org/papers/2011/overseas_china.pdf (last accessed 31 July 2012).

¹¹ For a study of why emerging country NRCs have obtained such diverse degrees of internationalization in recent years, see: Pauline Jones Luong and Fiorella Jazmin Sierra (2014), 'Crude Ambitions: the Internationalization of Emerging Country NOCs', University of Michigan Working Paper: <http://politics.virginia.edu/sites/politics.virginia.edu/files/Jones%20Luong%20LLB.pdf>.

¹⁶² Stockman, L. (2011). *Reserves Replacement Ratio in a Marginal Oil World: Adequate Indicator or Subprime Statistic?* Washington, D.C.: Oil Change International, p.26. Available at: <http://priceofoil.org/educate/resources/reserves-replacement-ratio-in-a-marginal-oil-world/> (last accessed 27 March 2016).

In addition to these roles, petroleum NRCs have also had a key role in income redistribution through the supply of products at subsidized prices for domestic consumption. Importantly, these may not cover even the NRC's operating costs. If the NRC tolerates an accrual of arrears by consumers, the de facto subsidies can be even higher¹³. Other assigned functions for petroleum NRCs include, as noted above: (1) acting as the petroleum sector regulator, and (2) in the case of petroleum projects under PSAs, NRCs act as a fiscal or commercial agent selling the government's share of petroleum on the government's behalf.

Examples of these non-commercial roles allocated to an NRC are many. In Angola, Sonangol, the national oil company, has the duty to use its revenues to manage and service Angola's sovereign debt. In Mexico, PEMEX, the state petroleum company, has directed a program called Gifts and Donations, which aims to promote social development by providing small-scale infrastructure, in-kind goods and cash transfers. This is one of the areas that were targeted for reform in 2013.

It may be argued that the NRC is better suited to provide services to remote communities than the central government: this was an argument made in Angola with respect to Sonangol¹⁴. The transparency of any such activities would need to be clear however, with reporting requirements put in place. Often they are not.

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Issues Relating to NRC Performance

There have been problems and controversy with respect to both the assigned functions and the NRCs' performance in carrying out these functions. Meeting commercial objectives has proved difficult; in fact, with few exceptions, NRCs have scored poorly in this area.¹⁵ This is attributable to a number of factors which primarily include a lack of competition and weaknesses in capacity among them. Funding equity participation in the EI sector has also proved a problem for NRCs. In states where there are urgent competing priorities for the use of public funds, choices not to contribute NRC equity participation in EI sector projects can hold back performance and development of capacity. Other causes have been attributable to political interference (using the NRC as a 'cash-cow', for example, or changing the directors or management arbitrarily) and requirements to carry out non-commercial activities.

¹³ Another way open to governments to achieve this goal, with respect to hydrocarbons pricing, is to require the foreign oil company to accept a Domestic Market Obligation. This commonly requires the foreign company to sell a proportion of crude oil production to the domestic market at below the market price.

¹⁴ IMF, *Guide to Resource Revenue Transparency* (2007), p.29, note 50.

¹⁵ Tordo, S., et al. (2011). *National Oil Companies and Value Creation: Volume II Case Studies*. Washington, D.C.: World Bank Publications.

By assigning non-commercial objectives to NRCs (sometimes called ‘non-fiscal’ goals), most of which would usually be seen as falling within the proper province of government, the NRCs have the potential not only to undermine their own commercial effectiveness, but also the effectiveness of governmental macroeconomic management. In granting these non-commercial functions to NRCs, governments can unnecessarily complicate macroeconomic management and diminish transparency and accountability. An NRC assumption of the role of sector regulator while simultaneously pursuing commercial objectives creates serious conflict of interest issues.

Along with the assignment of non-commercial objectives, the other main impediment to commercial performance relates to a lack of good governance. Primarily, this issue relates to the problem of NRCs becoming captured by a small number of privileged elites who then use the NRC for their own gain rather than for the national interest and poverty alleviation. With access to significant financial flows and the ability to exercise considerable influence over economic activity both inside and outside the resource sectors, the NRCs have been natural targets for control by elites interested in pursuing their own political and personal agendas. In so doing, these elites have an interest in promoting a lack of clarity with respect to NRC operations, in politicizing management, and in ensuring dependency of the NRCs on the elites for funding and other operational prerequisites.

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Responses and Good Practice

The debate over NRC performance in the past has prompted a number of positive responses. Commercial performance has been enhanced by the introduction of competition (by partnering with IRCs) and by privatization in varying degrees (by partial listing on stock exchanges). Funding issues have been addressed by adopting flexible contractual formulas (such as carried interests or production sharing) with the private sector that defers or cancels funding obligations. Efficient modern EI sector tax systems can be relied on to generate revenues for the state comparable to those obtained through equity participation without risking public funds.

As reflected in a number of states, *most reform recommendations include the transfer (with suitable transition arrangements) of non-commercial functions to government, leaving the NRC to focus primarily on commercial activities.* Most states have avoided giving regulatory roles to NRCs in the mining sector, but in the petroleum sector it is quite common for NRCs to have considerable regulatory obligations in addition to commercial functions. This is usually attributable to capacity issues or overriding political considerations.

A measure of pragmatism is required in addressing the presence of non-commercial functions however. Probably the only NRC that has eliminated all of these functions from its portfolio is the Norwegian NRC, Statoil. The challenges to exporting the Norwegian model to other countries are significant in this and in most other areas¹⁶. Context is crucial here. For small states that are commencing extractives development, a strict separation of functions may not yet be attainable or even desirable. For states with limited capacity or political constraints, it may also not be feasible, at least in the near term. Indeed, some countries, such as Brazil, Indonesia, Colombia and India have temporarily assigned *regulatory responsibilities* to an NRC during an initial phase of development, only to take them away at a later, more mature phase of operations when commercial behaviour appears feasible and when conflicts of interest may create performance costs¹⁷.

If regulatory functions cannot be separated from the NRC, they can be ring-fenced within it for operational and accounting purposes, and reported in the national budget and accounts. Transfer of regulatory functions out of the NRC is high on all EI sector reform agendas, but internal ring-fencing may be preferable until credible capacity and assurances of good governance can be established in an external agency. Serious commitment to eventual NRC commercialization is also essential.

Without resources, the path to eventual commercialization will prove elusive. If revenue cannot be retained by the NRC, or if flows from the finance ministry cannot be guaranteed, the results are likely to be negative. PEMEX, Petronas, and in Nigeria, the NNPC, have incurred significant losses since revenue flows have proved inadequate to cover operational costs on a regular basis. The experience of Angola's Sonangol illustrates that the opposite, too much autonomy, can have damaging effects upon revenue flows to the central governmental institutions.

Within the NRC, transparency should be accepted as a critical ingredient to good governance. This starts with properly prepared, externally audited, and public accounts. Disclosure of such key data on company finances and activities on a regular basis is critical. One of the ways in which this can be achieved is to partly privatize the NRC, as with Petrochina, Gazprom, Petrobras, KazmunaiGaz E&P (Kazakhstan) and Statoil. This requires the NRCs to demonstrate to prospective investors that they have good commercial prospects, transparent decision-making and accounts that are clear and fit-for-purpose. Adherence to the EITI standard of 2013 would require the publication of information on the in-kind sales of oil, gas and minerals managed by NRCs; on NRC transfers to and from the state finance ministry; on the overall revenues earned by the NRC; and on basic information about quasi-

¹⁶ M Thurber, D Hults and P Heller, 'Exporting the 'Norwegian Model': the Effect of Administrative Design on Oil Sector Performance', Energy Policy, June 2011.

¹⁷ Heller, Mahdavi, Schreuder (2014), p.8.

fiscal expenditures on infrastructure, subsidies and debt relief. Behind this emphasis on transparency is the familiar concern with effective performance rather than transparency as an end in itself. It can play a key contributory role in transforming economic success in oil, gas and mineral activities into sustainable advances in development.

Mining NRCs

The establishment of NRCs in the mining sector has become more popular in recent years following a period of relatively poor performance. Some of the NRCs in the mining industry had their roots in nationalizations of mining operations primarily in the 1960s and 1970s, following the independence of many states. Their performance, especially those in Africa and Asia, was hampered by a variety of factors, including mismanagement, poor access to resources, a lack of cost discipline, political intervention, and corruption. Only a few, for example in Zambia, the Democratic Republic of Congo and Ghana, reversed their nationalization of the mining sector, however. For the most part, state participation remained in one form or another.

In recent years there has been a revival of interest, with plans to establish new mining companies announced¹⁸. Seven of the top 25 mining companies are to some extent in state hands¹⁹. Mining companies with links to the state have emerged as international investors too (see **Chapter 3.3.2**). A new set of issues is emerging related to Chinese NRCs becoming investors around the world and offering turnkey infrastructure and other investments as part of an overall mining investment package, usually brokered by the respective governments.²⁰

¹⁸ Kenya: <http://www.mining.com/kenya-to-form-state-owned-mining-company-73500/> (last accessed 28 March 2016); South Africa: <http://mg.co.za/article/2011-02-25-sa-launches-state-mining-company> (last accessed 28 March 2016).

¹⁹ UNCTAD (2007), cited in J Southalan, *Mining Law and Policy*, p.7.

²⁰ See UN Economic Commission for Latin America and the Caribbean (ECLAC) (2010). *Direct Investment by China in Latin America and the Caribbean*. In: ECLAC. *Foreign Direct Investment in Latin America and the Caribbean*. Santiago: ECLAC. Available at: http://www.eclac.cl/publicaciones/xml/0/43290/Chapter_III_Direct_investment_by_China_in_Latin_America_and_the_Caribbean.pdf (last accessed 5 July 2012); see also Davies, M. (2010). *How China is Influencing Africa's Development*, Background Paper for the Perspectives on Global Development 2010: Shifting Wealth. Paris: OECD.

Box 6.3: Mining Participation

Well-designed arrangements for a government to take a minority equity role in private sector mining investments will be based on a shareholder agreement that addresses the following:

1. how the equity is funded (free equity, carried equity, or paid-in equity) for both initial capital expenditures and any subsequent needs (this can include covering cash flow shortages or funding sustaining capital expenditures or production expansions);
2. the decision-making powers of different shareholders regarding issues such as dividend decisions, budget approvals, senior management appointments and remuneration, investment programs, and raising new capital (including new debt);
3. conditions under which ownership may change; and
4. shareholder responsibilities and obligations at the time of mine closure.

CEPMLP Legal Standing

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NRCs should ideally be established as distinct legal entities under the state's corporate laws and not as units within governmental departments. This legal separation assists in providing a clear profit motive and avoids productive enterprises being used for predominantly social or political purposes. Corporatization can also help to avoid operational subsidies being subsumed in the budgets of government departments. It can also help incorporate fiscal discipline principles from the corporate world in terms of both capital raising and corporate decision-making. Beyond corporatization, a partial stock listing (where the state maintains majority control) can bring the added discipline of meeting stock market listing and reporting requirements.

Market Discipline

The most efficient NRCs are those which have been subject to full market competition; that is, NRCs that gain no advantageous treatment from their own governments compared with privately owned companies. This means that NRCs should whenever possible be subject to the same fiscal regimes, tax assessments, auditing procedures, and tax payments of a privately-held company. The NRC should

apply for, and obtain, licenses in the same manner as other companies and should be subject to the same licensing conditions as private companies with all regulatory activities being undertaken by government regulatory offices.

Like a private company, the NRC should be subject to strong market discipline.²¹ This means that the NRC should raise capital in the private market place and should set up and maintain a strong balance sheet with debt obligations that do not create any undue pressure or risk for the shareholder. Any debt obligations should be insignificant in terms of their impact on national accounts, sovereign debt, and any debt service of the state.

Good Governance

Good governance of NRCs requires attention to the role of EI sector or finance ministries in exercising the shareholder role on behalf of the state. Commercially based shareholder roles can lead to companies that compete strongly in the international market place. Examples of companies with a strong commercially based shareholder role include: Codelco in Chile, Petronas in Malaysia, and Vale and Petrobras in Brazil. Codelco and Statoil (Norway) are often cited as examples of NRC 'success stories' (see **Box 6.4**).

Likewise, a misguided or even corrupt shareholder role that is combined with inadequate or corrupt management and large non-commercial roles can lead to the kind of companies that are now producing only a small fraction of their peak production. Examples of companies in the mining sector that have experienced these types of problems in the past include: Gecamines in the Democratic Republic of Congo (DRC), ZCCM Investment Holdings in Zambia, and Comibol in Bolivia. Examples from the petroleum sector might include: the Nigerian National Petroleum Corporation (NNPC) in Nigeria and Pertamina in Indonesia, both of which have incurred huge financial losses in the past.

While the management of state-owned enterprises (SOEs) may make recommendations and proposals regarding annual budgets, investments, and raising debt and dividends, good practice is for an NRC to be required to have policies and decisions regarding such matters taken by its board of directors, giving due consideration to the owners' interests, guidance, and instructions.

²¹ S Tordo, et al. (2011). *National oil Companies and Value Creation*, Working Paper No. 218. Washington, D.C.: World Bank Publications, p. 53.

At the highest level, there are six main aspects related to a strong commercial shareholder role. They are the following:

1. Shareholding needs to be held in the name of one or more government officials (such as EI sector or finance ministries) which will appoint the board of directors, who act as the shareholders' representatives governing the NRC. The directors should be selected and appointed on the basis that they are knowledgeable about the business, and that each has the time available to be informed about the company's activities and ensure that the shareholders' interests are well-served. The directors should be fully independent of management and management influence.
2. The appointment of management should be made on the basis of professional qualifications and experience, not according to political or family affiliations.
3. The board of directors should provide the management with a clearly stated mission related to resource development (including mineral or petroleum processing and marketing as appropriate).
4. The board of directors should ensure that the management focuses on its core business and does not expand its activities into other non-core business areas. In this regard, the board of directors should approve only those company business and investment plans that are consistent with shareholder objectives. A very important aspect is the scope and focus of the core business and any ancillary business activities. Another important aspect is the employment policy of the company regarding workforce productivity and remuneration.
5. Oversight of the sources and uses of funds with regard to the NRC should be done so as to raise commercial borrowing of needed debt, meeting the listing requirements of stock markets and the shareholder; that is, the management should not take decisions with regard to cash flow distribution, dividend, and retention for the company. Instead, this should be based on a management recommendation.
6. The NRC, its managers, and directors should be excluded from any regulatory-type roles or activities.

State Equity

It is not uncommon for legislation to provide government with the right to take a minority equity holding in a private sector EI operation (see **Chapter 6.3.6** and **Box 6.1** below). Such equity can be held directly in the name of the government or it can

be held by a government entity that is established simply as a vehicle to hold equity in other companies.

Minority equity participation can have the advantages of enabling a government to invest in a potentially profitable EI project, while avoiding the costs and risks associated with exploration or other preparatory work (which may not eventually result in a viable investment opportunity). It also gives the government access as a shareholder to information about the project and the private company which may not otherwise be available. Moreover, it gives government a share in the dividends of the company – although these are generally unpredictable and may take many years to appear, especially if the company is not very profitable or if all the profits should be reinvested.

There are also potential risks and disadvantages to minority equity participation. The government may have a limited decision-making role as a minority shareholder when all major decisions are taken by the majority shareholder. If the company plans a major new investment or expansion which requires additional equity from its shareholders, the government may be faced with a dilemma of having to put in additional equity or see its ownership diluted.

In the worst case, if the company is losing money, it may require additional shareholder funds to remain in business. The government may be required to put in new cash to keep the company operating. There can also be a potential or real conflict of interest if a regulator is also given a position on the company's board of directors as one of the government shareholder representatives for the company.

It is important that there is full disclosure of the forms of payment involved for participation shares and the ownership arrangements involved. In some countries a working interest share may be granted to the 'government' but in fact is held by a group of individuals associated with the government. If this delegation is transparent, its rationale should be fully disclosed²².

Equity Funding

There are two main ways to fund an equity stake: by means of paid-in capital or a carried interest (see **Chapter 7.2**). A third but less common approach is to acquire the equity for free. The method of paid-in capital means that the government pays for its equity in cash so that it has the same standing as other shareholders. In this

²² IMF, Guide on Resource Revenue Transparency (2007), p.25, note 39.

case, the government should make its decision as part of its overall process for determining both the uses and sources of its funds to help ensure that it makes rational decisions regarding any use of its funds for an equity investment.

Carried interests are frequently used for minority government equity participation in EI sector projects. The advantage for the government is that it does not have to provide cash. The disadvantage for the company, and the other shareholders, is that carried interests have the effect of diluting the equity base of the company which must then raise the cash to cover the government's participation.²³ Thus, carried interests are essentially a loan from the company, or the majority shareholder, to the government.

There are instances where governments insist on a minority free equity in a new EI sector project. Free equity is tantamount to taxing the project but is also a very different instrument from a tax. An equity holding gives a government the many rights and benefits but also the many obligations and risks of a shareholder. A tax requirement simply gives the government the right to collect a tax payment by the company and the obligation to assess and collect taxes according to the prevailing taxation rules.²⁴ A mandatory requirement for free equity runs the risk of creating a climate of resentment and distrust. This can result in the private shareholder(s) looking for ways to recoup their investment without using dividends to which all shareholders are entitled.

6.1.3 Key Institutional Issues

Building Capacity

Large scale EI sector developments can involve very substantial investments relative to many small economies and can require much more technical expertise than other sectors in the domestic economy. They can also involve very experienced and serious international investors on the one hand, and speculators seeking a short-term advantage from a state's resources on the other.

²³ Kemp, A. (1987). *Petroleum Rent Collection Around the World*. Quebec: The Institute for Research on Public Policy, p. 103.

²⁴ Sunley, E., Baunsgaard, T., and Simard, D. (2003). Revenue from the Oil and Gas Sector: Issues and Country Experience. In: Davis, J., Ossowski, R., and Fedilino, A. (eds.). *Fiscal Policy Formulation and Implementation in Oil Producing Countries*. Washington, D.C.: IMF Media Services Division, p. 164.

Experienced investors can put government officials at a disadvantage when negotiating private participation in a state's EI sector.²⁵ It may well be necessary, therefore, to adjust employment and other policies, so that the EI sector agencies can attract and retain competent, non-corrupt, well-qualified, and experienced professional staff in sufficient numbers to administer the EI sector effectively so as to adequately represent the state interest. It may also be necessary to ensure that the EI sector ministries and agencies, and their counterparts in the tax and finance ministries, have adequate budgets and technical capacity given the high financial stakes involved for a state with large-scale EI sector operations.

In this context, it will be seen that *the development of institutional capacity is crucial* (see **Box 6.5**). Resource-rich developing states, where institutional capacity is weak, can seek support by directly engaging external expertise or benefiting from donor or IFI technical assistance programs. External assistance can be doubly valuable in providing essential training while at the same time addressing current issues on behalf of the state. Good practice would call for this assistance to be discussed and carefully planned with the expected beneficiaries. The petroleum sector technical assistance program, designed jointly by the Governments of Norway and South Sudan, and the World Bank, provides an excellent example of good practice (see **Box 6.6**).

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Inter-Agency Coordination

Perhaps the biggest issue related to the development of appropriate institutional capacity relates to inter-agency coordination. Several different governmental entities engage with EI sector investors. The key government agencies include: (1) the EI sector ministry or government department on exploration and production; (2) the ministry responsible for geological data; (3) the ministry responsible for the environment; (4) the ministry responsible for local community and social issues; (5) the finance ministry; (6) the ministry or administration responsible for taxation; (7) the ministry responsible for economic planning; and (8) the ministry or ministries responsible for rural and small business development. There are also specialist regulatory agencies that will have a role from time to time.

As noted later, in the discussion of fiscal administration (**Chapter 7**), all too often the expertise regarding EI sector exploration and operation is to be found only in the EI sector ministry. If this expertise is not made available to, or not accepted by, other

²⁵ Cotula, L. (2010). *Investment Contracts and Sustainable Development: How to Make Contracts for Fairer and More Sustainable Natural Resource Investments*. Natural Resources Issues No. 20. London: International Institute for Environment and Development (IIED), p. 131.

arms of government, it can result in those other agencies being seriously disadvantaged in their engagement on EI sector issues.

It is not unusual to find a situation in which some ministries or agencies are actively encouraging new investment while, at the same time, others are in effect creating barriers (for example, in their approach to environmental permitting procedures). This can obviously create additional risks for investors and fewer benefits for government. As a practical matter, this can cause problems relating to issuing visas and work permits, and in providing customs clearances and releases for goods and equipment. Thus, there is great value in developing well-organized and coordinated EI sector knowledge-sharing and information flows. In particular, it is important that the EI sector ministry coordinates well with other government departments in order to achieve effective oversight, regulation, and risk sharing between government and investors.²⁶

6.1.4 Efforts at Institutional Reform

An increasing number of countries have engaged in major reforms of their institutional structures responsible for oil, gas and mining. From Indonesia and Mexico to Nigeria and Algeria, there are examples of countries that have found their institutions inadequate to evolving national circumstances, changing resource horizons or market conditions. As a result, they have initiated, at a minimum, reviews of existing arrangements, and more ambitiously, programs of sweeping institutional change. Some of these have succeeded, at least in part, and others have stalled or failed. These experiences have generated a growing body of literature, which has relied heavily on case study analysis, sometimes using political economy theory as a tool for analysis²⁷. Heller and Marcel have rightly observed that much of the literature on the hydrocarbons sector is heavily biased towards the experiences of large, well-established oil producers, which have geological prospects, and institutional capacity levels that are very different from the context of administrative, human and oil-sector capacity constraints that typically characterize the new entrants²⁸. To build capacity quickly, the governments concerned face the choice of concentrating resources and responsibilities in a single institution, such as

²⁶ Alba, E. (2009). *Extractive Industries Value Chain: A Comprehensive Approach to Developing Extractive Industries*, Working Paper of the Oil, Gas, and Mining Policy Division of the World Bank. Washington, D.C.: World Bank Publications, p. 9.

²⁷ The volume edited by D Victor, DR Hults and M Thurber (2012) provides a collection of such studies.

²⁸ PRP Heller and V Marcel, Institutional Design in Low-Capacity Oil Hotspots: <http://www.resourcegovernance.org/sites/default/files/Institutional%20Design%20in%20Low%20Capacity%20Oil%20Hotspots.pdf>

an NRC or sector ministry, or to separate the functions and lay the foundations for good governance.

Hydrocarbons

Much of the effort at reform in the hydrocarbons sector has been influenced by the Norwegian 'separation of functions' approach, whereby the commercial, regulatory and policy functions of government are kept institutionally distinct. Specialist institutions are created for each of these functions, and given a limited mandate, so that intra-governmental roles are clear. Such an approach appears to have had much success in Norway in its resource management, but this provides no guarantee that it can be replicated in countries with very different political systems, population sizes and institutional structures. A major constraint is often a lack of human capital, but so is a lack of institutional development such as one might expect to find in a post-conflict society. For example, in a study of several oil producing countries and their oil governance regimes, a Stanford University research team noted that efforts at the establishment of independent regulatory agencies in Algeria and Nigeria had not only failed but also had done no good at all in promoting the idea that regulatory reform could bring valuable benefits²⁹. If the wider environment is not conducive to reform, or the political will is lacking, or both, the chances of such a structure being successfully transplanted and leading to greater accountability are very small. Sao Tome e Principe is another example of a country in which the establishment of a tripartite structure has failed to generate significant improvements in accountability³⁰.

The same study also noted the existence of a group of countries that had never seriously attempted to separate commercial from regulatory and policy functions but which had nevertheless had oil sectors that appeared to run "reasonably well"³¹. Angola is one such example where there is no independent regulatory institution and where in practice the NOC is sector manager, regulator and operator all rolled into one. From a transparency point of view this is far from optimal, but it has led to a productive and stable petroleum sector in a country that had the destabilizing effects of a civil war from 1975 to 2002. If a conclusion may be drawn it is that the political economy of the country concerned is of paramount importance to the

²⁹ M Thurber, D Hults and PR Heller, Exporting the 'Norwegian Model': the effect of administrative design on oil sector performance, Energy Policy (2011) at: http://pesd.fsi.stanford.edu/sites/default/files/Thurber_Hults_Heller_Norwegian_Model_Energy_Policy_2011.pdf.

³⁰ Heller and Marcel, p.31.

³¹ Thurber, Hults and Heller (2010), p. 14.

establishment of a successful regime of governance and that reform plans need to take this into account if they are to be effective.

In recent years, Latin America has offered a number of different approaches to reform in both hydrocarbons and mining³². In hydrocarbons, Colombia is a leading example (see **Box 6.8**), following on from earlier reforms in Brazil (see **Box 6.9**), with Mexico embarking on an ambitious restructuring in 2013. In their approach to the assignment of powers to regulate and oversee the sector, Brazil, Colombia and Peru have put in place systems with an independent, professional and transparent administration of the resource and a separate NRC. Mexico is a transitional case, but has already separated the resource administration and licensing responsibilities from the NRC into the Ministry of Energy and the National Hydrocarbons Commission.

Mining

Efforts at institutional reform in the mining sector have taken a slightly different direction from hydrocarbons, with a strong emphasis on the kinds of reform required to attract inward investment, coupled with measures designed to enable institutions to respond better to the social and environment footprint of the mining industry³³. However, to achieve these objectives, there has been a similar focus on identification and differentiation of roles among government institutions, even if much less on the role of state companies than in the hydrocarbons sector. In many countries a significant challenge derives from the age of the mining sector. Often, it has a much longer history than hydrocarbons: the institutional and legal frameworks can readily date from decades earlier and reflect thinking that has long since been superseded. Reform has also had to take into account the differences in scale that are common among mining projects, with small-scale and artisanal miners playing a role that has no parallel in the hydrocarbons sector.

Several examples of mining reform illustrate the special challenges facing reformers in the mining sector. In Argentina in the 1990s, reform targeted legal and policy frameworks that had been established in the 19th century, and required the establishment of coordination between the 23 provinces, which owned the mineral resources, and the federal government. The initial emphasis was upon licensing and geological survey activities but this shifted to environmental aspects and social impacts.

³² For an overview see Zamora (2014).

³³ E Bastida, 'Mining Law in the Context of Development: An Overview' (2008), in P Andrews-Speed, *International competition for Resources: the Role of Law, the State and of Markets*, University of Dundee Press, 101-136.

Institutionally, the biggest challenge is often what Gary McMahon has called the 'catch 22' of mining sector reform'³⁴. If reform is successful at attracting investment, "the public institutions cannot hire more staff or even keep their own people due to the large demand from much higher paying private companies". This problem appeared in other countries such as Mali and Papua New Guinea, which addressed it by earmarking part of the mining revenues for the responsible sector ministries.

In Papua New Guinea, the sector reforms were triggered by the clear need to rebalance sector organization in favour of community rights, in the face of a perception among the Bougainville islanders that they bore all of the environmental and social costs but saw few of the economic benefits³⁵. Changes were made in the draft standard mining contract to address this, and institutional capacity was expanded. Spin-off businesses and joint ventures between local and foreign companies resulted, formalized in memoranda signed by mining companies and their host communities. Further, both government and mining companies supported the establishment of specific Action Plans to support women in mining, with a gender desk set up for each large mine. This gender focus led to women playing important roles in the renegotiation of community benefits in memoranda of agreement for two of the most important mining areas, Ok Tedi and Lihir.

Separately, a new mining authority was established in 2006: the Mineral Resource Authority (MRA), charged with administering the sector. It raises its own funding from sector levies and fees and is not subject to the kind of funding shortages and staff constraints as its predecessor. Another agency was established to maintain the regulatory framework with substantial institutional capacity.

Another example of mining reform is the program that commenced in Madagascar in the late 1990s³⁶. The two key planks of the policy were: a decentralized administration and a close involvement of affected communities. Programs of capacity building were introduced for local and regional mining administrations. A separate initiative was to establish an institute for the study of gems, since the country has around 500,000 artisanal and small-scale miners.

³⁴ G McMahon, 'The World Bank's Evolutionary Approach to Mining Sector Reform (2010), The World Bank, Washington DC, p. 16.

³⁵ McMahon, pp.16-17.

³⁶ McMahon (2010), pp.22-23.

Box 6.7 below summarizes key points about mining sector reform in several other countries :

Box 6.7: Mining Sector Reforms

Botswana, Chile, Brazil, the DRC, and Zambia provide different models for both sustained success and reform.

Botswana has a 50/50 ownership of the highly profitable Debswana diamond operation with De Beers and has played an active, commercial shareholder role while leaving management in the hands of De Beers. In addition to its dividends as shareholder, the government has also received substantial tax payments.

Chile has retained control and operation of much of its copper resources through the 100 percent state owned Codelco. A strong shareholder role, undertaken in large part by the technically competent and well-experienced Chilean Copper Commission (Cochilco), has enabled Codelco to remain one of the most highly profitable and lowest cost mining companies in the world over many decades.

CVRD (now called Vale) has been a well-governed and well-managed iron ore mining company in Brazil which was taken to the stock market by the government and remains one of the world's largest and most profitable iron ore exporters.

In the mid-1970s, both Gecamines in the DRC and ZCCM in Zambia were two of the largest and most profitable copper producers in the world; both were state-controlled. However, a combination of non-commercial roles, mismanagement, and corruption led them to becoming non-competitive in their copper and cobalt mining production. Today, they produce one-fifth of their peak production in the 1970s. Both have now been restructured and reformed and have divested much of their non-commercial roles to other government agencies. Most of their mineral reserves have been auctioned to private investors who are now assisting in the rebuilding of the mining sector in the DRC and Zambia.

Box 6.8: Colombia

After 30 years of resource administration by the Colombian National Oil Company, Ecopetrol, which had been created in 1951 to operate the assets of the De Mares concession after its contractual ending, an institutional reform was adopted by the government using special powers granted by Congress in 2003.

Similar to Brazil, the reform separated the administration of the petroleum resources from Ecopetrol and created the National Hydrocarbons Agency (ANH) to undertake this role. The ANH was given sufficient powers to design the most appropriate contractual vehicle(s) to allow the operations of Ecopetrol or any other qualified third parties in exploration and production, under equal access.

In December of 2006, Ecopetrol was further transformed into a publicly owned and listed corporation with direct participation of financial investors in its ownership and decision making, within a limit of 20% of its shares.

The scope of the resource administration of the ANH is limited to the upstream end of the value chain. The midstream activities continue to be regulated by the Ministry of Mines and Energy while, from December 2012, the regulation of downstream activities passed from the Ministry to the already existing independent regulatory commission for electricity and gas (CREG).

The ANH adopted a new contractual vehicle in 2014. It can be described in modern terms as a tax and royalty license with additional state participations as variable shares of production. The royalty established by the law is variable (5 - 25%) on a sliding scale according to average monthly production volumes by field. The additional contract-based shares of production are two tiered: one that is based on a sliding-scale function of international prices (calculated as a 30 – 50% share of excess price over a base price) and another that is established as a bidding parameter in competitive bidding rounds (X factor) as a percentage of the net production of the operator after royalties and price-based production shares.

The new contract could be described as a hybrid between concession and production sharing. Such a design allows for a variable capture of economic rent, as is the case with PSAs but without the complications of a joint administration. The State owns the resource in the ground and transfers title of the operator's share at the wellhead, while retaining the State's share through to the point of sale, which can be anywhere from the wellhead onwards. While reaffirming the sovereignty of the State over its resources, the contract allows for a flexible and progressive capture of rent and a clean and simple administration that avoids potential conflicts of interpretation or cumbersome administrative procedures.

Ecopetrol, on the other hand, operates as a fully integrated petroleum company, listed in the Bogotá, New York and Toronto stock exchanges, with strict and transparent governance and reporting systems.