EPS PEAKS Our Expertise. Your Knowledge.

ECONOMIC AND PRIVATE SECTOR

PROFESSIONAL EVIDENCE AND APPLIED KNOWLEDGE SERVICES

HELPDESK REQUEST

Environmental management for extractives

Michael John Bloomfield

LSE Enterprise

November 2012

coffey international development

ODI

UNIVERSITY OF BIRMINGHAM

NATHAN

LSE Enterprise

Oxford Policy Management

EPS-PEAKS is a consortium of organisations that provides Economics and Private Sector Professional Evidence and Applied Knowledge Services to the DfID. The core services include:

1) Helpdesk
2) Document library
3) Information on training and e-learning opportunities
4) Topic guides
5) Structured professional development sessions
6) E-Bulletin

To find out more or access EPS-PEAKS services or feedback on this or other output, visit the EPS-PEAKS community on http://partnerplatform.org/eps-peaks or contact Yurendra Basnett, Knowledge Manager, EPS-PEAKS core services at y.basnett@odi.org.uk.

Contents

1 Introduction

The purpose of this paper is to provide evidence on the types of policies that have been put in place by developing and developed countries to manage the ecological costs and maximise the socio-economic benefits of extractive industries (EI)[1]. Through this research we hope to provide a better understanding of the various pros and cons of different policies based on real experience, particularly with regard to growth and poverty reduction.

The focus is on host country regulatory initiatives, meaning regulations from the jurisdiction within which extraction is taking place rather than those implemented to regulate companies working abroad. The types of institution considered are both 'hard' (e.g. legislation) and 'soft' (e.g. public-private partnerships).

Priority is given to those initiatives aimed at protecting the natural environment while also facilitating economic growth and poverty reduction. Where information is available, the paper will consider the effect of specific institutional challenges – for example, the scale of extractives resources as a percentage of the country's national budget/GDP, a stable government, a good/poor investment/business climate, the extent/strength of property rights, and the extent of corruption – on the effectiveness of these institutions in delivering their intended results.

The literature on which policies and institutions are best to manage the ecological impact of the extractive industries (EI) is vast and varied. It is generally agreed, and case studies have confirmed, that there needs to be a strong institutional and regulatory framework in place if governments and their populations are to maximise their benefits from resources extraction.

This paper cites and evaluates a range of policy options for developing countries that want to take responsibility for these issues and is organised along these lines. Specifically, existing literature suggests that developing countries could continue being encouraged by donors to:

i. Make the environment-poverty link and introduce cutting-edge wealth measures and natural capital accounting;

ii. Revisit outdated tax and revenue regimes and reform in line with recent fiscal innovations;

iii. Implement initiatives promoting transparency and participation of local communities with a concomitant distribution of the wealth accrued;

iv. Directly engage with EI companies and informal practitioners where appropriate;

v. Enact legislation for suitable land-use and impact assessments;

vi. Incorporate the services of specialised support and standards agencies.

Structure

Section 2 briefly describes the potential ecological and socio-economic impacts of EI. Section 3 discusses how weak political institutions, coupled with a dependence on natural resources, can lead to sub-optimal results for national economic development and the reduction of poverty. Section 4 provides a rationale and policy examples for each of the six focus areas outlined above

[1] This briefing adopts the International Finance Corporation's (IFC) definition of extractive industries (EI), which includes oil, gas, and mining of minerals and metals. Mining for construction materials, including cement production and quarries, is not included, nor are indirect investments through financial intermediaries.

(i – vi). The conclusion in Section 5 reiterates the range of policy options available to developing countries and suggests a range of opportunities for developing country governments to proactively engage with extractives firms. Finally, Sections 6 and 7 provide recommendations for further reading and a substantial bibliography.

2 Environmental and social impacts of extractives industry

Extractive industries have potentially significant impacts on the natural and human environment, both positive and negative. These impacts are magnified in that many projects take place in developing countries, constitute a large proportion of developing country revenues and exports, and are often carried out in rural areas where nearby communities are often under represented at the national level, where royalties are collected and policy decisions are made. Despite the many challenges posed by EI, there is vast potential to channel the revenues from projects toward development goals, including economic growth and poverty reduction, but only if appropriate policies are in place.[2]

The potential environmental impacts of extractives:

- They use large quantities of water and risk contaminating local sources
- They significantly alter landscapes
- They discharge CO2, gas flares, and toxic chemicals
- They constitute a long-term liability (spills, collapse of tailings ponds, etc.)
- Threaten biodiversity

The potential for negative social aspects:

- The 'resource course' issues (see Auty, 1993; Sachs & Warner, 1995, 1999, 2001)
- Alter traditional or existing economies and livelihoods
- Relocation of local communities
- Inflate local prices
- Demographic change (e.g. influx of male migrant workers)
- Conflict, corruption, prostitution, alcoholism, etc.

[2] For a more in-depth look at the ecological and socio-economic impacts of EI see, for example, Miranda & Kool, 2003; Miranda, Chambers & Coumans, 2005.

3 The importance of strengthening institutions

EI will inevitably impact the environment in negative ways, even when best practices in environmental management are being utilised. For many of the poorest but resource-rich economies, institutional capacity is severely lacking and reform of these domestic institutions will be a necessary step toward ecological protection. In other words, many of the most severe impacts can be mitigated if appropriate policies are implemented which, in turn, requires robust political institutions to be in place. There is a vast literature on this.[3] Below a small but very recent sampling is presented. Taken together, the following three World Bank studies (De Rosa & Iootty, 2012; Gboyega et al., 2011 and Ayee et al., 2011) suggest that:

1) Increasing resource dependence appears to further deteriorate governance effectiveness, especially if these institutions were weak to begin with
2) A country might recover from the poor governance and growth associated with the 'resource curse' (including over-dependence on EI, corruption, etc.) through institutional reform and the severing of vested interests
3) The positive net impact of mining on economic development is likely to be enhanced with appropriate reforms in governance and, importantly, these reforms must address incentive problems at the political level (incentives leading to corruption, vested interests, political patronage, lack of transparency, etc.)

De Rosa & Iootty (2012) show how strong institutions can help circumvent the resource curse while weak institutions exacerbate the negative effects of resource dependence – using Canada v. Russia

- A high degree of resource dependence is associated with worse government effectiveness and reduced levels of competition across the economy
- Both of these factors appear to decrease over time as dependence on natural resources increases in both Russia and Canada
- However, the decline is much less in Canada where there were stronger institutions already in place[4]
- The authors suggest this indicates that generally weak institutional environments allow resource interests to influence domestic governments to change laws and regulations to suit these interests – including lax regulations for EI. The fact that this is associated with negative externalities for the rest of the economy, notably by undermining a level playing field across non-resource sectors, sheds light on a potential channel for the resource curse.

Gboyega et al. (2011) examine the case of Nigeria and its notoriously slow growth despite, or perhaps because of, its large petroleum reserves. This is a case study examining whether a country can escape poor governance ostensibly linked to EI. The authors take a political economy perspective to analyse the governance weaknesses along the petroleum sector value chain and attempt to establish the links between challenges in sector regulation and the following major political and economic attributes: (i) strong executive control on petroleum governance in a

[3] For recent and highly-regarded volume see Collier, P., & Venables, A. J. J. (Eds.). (2011). *Plundered Nations?: Successes and Failures in Natural Resource Extraction*. London: Palgrave Macmillan.
[4] The strength of institutions was based on the World Bank's Worldwide Governance Indicators (WGI), which estimate six indicators – Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption – though, interestingly, only Government Effectiveness proved to be statistically significant.

political environment of weak checks and balances; (ii) regulatory and operating roles bundled into one institution, thereby creating conflict of interest; and (iii) manipulation of elections and political appointments.

- They find the restoration of democratic government has helped improve transparency and management of oil revenue
- At the same time, the judiciary has started to restore confidence that it will serve as a check and balance on the executive and the electoral process. Yet, these reforms are fragile and need to be deepened and institutionalized
- The take home point is that political institutions and EI practices can be reformed, but must be addressed not as purely technocratic matters but as issues of political economy and vested interests that must, through regulation and reform, be aligned with the public interest

Ayee et al. (2011) examine the case of Ghana focusing on the institutional set-up and the political environment as central to understanding and rectifying the poor impact of mining on Ghana's economic development.

- The paper highlights the vulnerabilities in mining sector governance along the industry value chain
- The authors find that incentive problems in institutions directly or peripherally involved in mining governance are a major factor, as are an excessively centralized policy-making process, a powerful executive president, strong party loyalty, a system of political patronage, lack of transparency, and weak institutional capacity at the political and regulatory levels
- They argue that the net impact of mining on economic development is likely to be enhanced with appropriate reforms in governance
- Most importantly, there should be a greater awareness of incentive problems at the political level and their possible implications for sector performance and the economy at large
- Capacity building at different levels and institutions is needed and should be combined with efforts to enhance incentives for institutional performance

4 Policy options

While there are clearly very significant ecological and socio-economic risks associated with EI, case studies have also shown that countries can avoid or recover from poor governance of natural resource endowments if robust institutions are in place or institutional reform is undertaken and rigorous environmental management of extractives is enforced. There are a range of policy options available to countries that want to ratchet-up the quality of their governance architecture surrounding EI and the body of this brief addresses these options based on existing literature and practice.

It suggests that developing countries could be encouraged by donors to i) make the environment-poverty link and introduce cutting-edge wealth measures and natural capital accounting; ii) revisit outdated tax and revenue regimes and reform in line with recent fiscal innovations; iii) implement initiatives promoting transparency and participation of local communities with a concomitant distribution of the wealth accrued; iv) directly engage with EI companies and informal practitioners where appropriate; v) enact legislation for suitable land-use and impact assessments; vi) incorporate the services of specialised support and standards agencies. The following section goes through each of these options in more detail.

4.1 Make the environment-poverty link and introduce natural capital accounting

Poor people tend to be more dependent on natural resources for their livelihoods (see, for example, ERD, 2011, pp. 2, 129); therefore, they are disproportionately affected by the environmental degradation resulting from EI and other industries. Furthermore, consumption of natural capital today reduces the resources with which to drive future poverty reduction. Therefore, resource assets must be accounted for, resource extraction must be regulated, and resource revenues must be strategically reinvested if they are to contribute to pro-poor growth and poverty reduction (Hartwick, 1977, 1978; Solow, 1974, 1986, 1998).

Making the link between ecological protection and poverty reduction is a necessary first step if the compatibility of these concepts is to be mainstreamed into developing country policy circles and act as a catalyst to pro-poor growth. The goal is to better incorporate the value of environmental assets and services into economic development and poverty reduction strategies.

Since 2007, the United Nations has stepped up its efforts to make the link between environment protection and poverty reduction. The programme spearheading this movement is the UNDP-UNEP Poverty-Environment Initiative (PEI). There are two key publications backing the initiative:

- 'Making the economic case: A primer on the economic arguments for mainstreaming poverty-environment linkages into national development planning'
  http://www.unpei.org/PDF/Making-the-economic-case-primer.pdf

- 'Mainstreaming Poverty-Environment Linkages into Development Planning: A Handbook for Practitioners'
  http://www.unpei.org/PDF/PEI-full-handbook.pdf

The PEI supports country-led efforts to mainstream poverty-environment linkages into national development planning. It provides financial and technical assistance to government partners to set up institutional and capacity strengthening programmes and carry out activities to address the particular poverty-environment context. The PEI lists a number of indicators for successful implementation of environmental and poverty reduction goals into national EI policies, including:

- Inclusion of Poverty-Environment (P-E) linkages in national development and poverty reduction strategies.

- Strengthened capacity within finance/planning ministries as well as environmental agencies to integrate environment into budget decision-making, sector strategies and implementation programmes.
- Inclusion of P-E linkages in sector planning and implementation strategies.
- Strengthened capacity in key sector ministries to include environmental sustainability into their strategies.
- Widened involvement of stakeholders in making the case for the importance of environment to growth and poverty reduction.
- Improved domestic resource mobilization for P-E investments.
- Increased donor contributions to country-level environmentally sustainable investment.
- Improved livelihoods and access to environmental and natural resources for the poor.

These are still early days for the project so quantitative impact assessments are still forthcoming. The project has 16 national government partners and boasts of numerous successes in mainstreaming environment-poverty concerns into policy in Bhutan, Rwanda, Tanzania, Uganda and Mozambique, among others.

Inclusive wealth measures and natural capital accounting as baseline to sustainability

Many countries are now incorporating wealth measures and natural capital indexing into their growth and development planning (Gjoksi, 2010). These innovative accounting measures go beyond GDP to include factors such as human development (measured in education outlays) and natural capital accounting to offer a more inclusive and accurate picture of the sustainability of the country's growth strategy (see, for example, Stiglitz, Sens & Fitoussi, 2009). Such accounting is vital if governments are to implement appropriate fiscal strategies for EI and ensure net savings from resource exploitation.[5]

There are numerous organisations dedicated to promoting these measures, with the World Bank being perhaps the most prominent. The World Bank has produced a number of seminal reports, including:
World Bank. (2011). *The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium*. Washington, DC: World Bank.
http://data.worldbank.org/news/the-changing-wealth-of-nations

Bourguignon, F., & da Silva, L. A. P. (2003). *The impact of economic policies on poverty and income distribution: evaluation techniques and tools*. Washington, DC: World Bank.
http://siteresources.worldbank.org/ESSDNETWORK/1105722-1115888526384/20645232/ensuring.pdf

[5] For a recent DFID survey, see Smith, M. (April 6, 2012). *Survey of green growth / environmental sustainability accounting and indicators*. DFID. http://www.dfid.gov.uk/Documents/publications1/DFID-green-growth-indicators.pdf

Through the Wealth Accounting and the Valuation of Ecosystem Services (WAVES) program,[6] the World Bank has pushed the sustainable budget and natural capital accounting agenda, partnering with various host country governments with seemingly great success. Some of the partner country projects and their progress include:

- Botswana
- Colombia
- Costa Rica
- Madagascar
- Philippines

One widely established indicator of net wealth accumulation is measured in percentage by dividing the country's Adjusted Net Savings (ANS) by its Gross National Income (GNI).[7]

- Gross national saving – Consumption of fixed capital = **Net National Saving**
- Net National Saving + Education Expenditure – Energy depletion – Mineral depletion- Net forest depletion – Damage from carbon dioxide emissions – Damage from particulate emissions = **Adjusted Net Saving**

A 2012 study funded by the World Bank (Boakye et al., 2012) compares the reinvestment of resources rents gained at the cost of non-renewable resource depletion in Ghana, Liberia and Sierra Leone. It finds that even well-governed Ghana has had trouble reinvesting its accumulated rents in net wealth increasing activities while the other two countries, with relatively weaker institutional capacities, will almost certainly struggle. Many developing countries would surely benefit from incorporating and acting upon such natural capital accounting strategies, especially in light of further findings from the study:

> *In Sub-Saharan Africa as a whole, adjusted net savings have been on a downward trend since 1995, and have turned negative since 2004. As liquidating its capital to sustain consumption, the region will eventually leave its citizen poorer and with less capacity to generate income in the years to come unless these trends are being reverted rapidly* (Boakye et al., 2012, p. 2).

This is because the loss of natural capital from EI has not been more than compensated for by increases in other forms of capital, such as economic or social capital. Without incorporating measures of natural capital into wealth accounting strategies, unsustainable practices such as these would appear more productive than they are.[8]

On the other hand, Botswana, best known for its diamond wealth, is often held up as an example of well-managed natural capital resources. It has been a notable exception to the 'resource curse', showing healthy growth rates for over three decades. The country has gone from a low to a middle income country, utilising its natural resource base to propel its rising per capita GDP.

We can attribute Botswana's relative success to its explicit policies of reinvesting its natural resource revenues in ways that have increased its overall wealth (measured in produced, human,

[6] http://www.wavespartnership.org/waves/
[7] See: World Bank. (2012). *Contribution to Beyond-GDP, 'Virtual Indicator Expo'* http://www.beyond-gdp.eu/download/bgdp-ve-ans.pdf
[8] For the specific comparative measures between the cases, see: Boakye, D., Dessus, S., Foday, Y., & Oppong, F. (2012). *Investing Mineral Wealth in Development Assets: Ghana, Liberia and Sierra Leone* (No. 6089). Policy Research Working Paper. Washington, DC: The World Bank.http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2012/06/14/000158349_20120614165615/Rendered/INDEX/WPS6089.txt

natural, and social capital). The well-known study by Acemoglu, Johnson and Robinson (2001, 2003) attributes Botswana's success to its astute economic policies, which the authors link to the country's strong institutions of private property. Although much of this can be attributed to the country's unique history, the study points to the importance of private property institutions in creating and maintaining incentives for the strong and stable governance of EI. Furthermore, it offers an optimistic account of EI-based growth with the appropriate institutional design and a reminder of the underlying political factors that could encourage or discourage such growth.

Further research by Glenn-Marie Lange (2004) supports this claim. The author's study compares the reinvestment of resource rents in Botswana, versus the lack of explicit reinvestment policies in Namibia, leading to the sustainable growth of the former and the unsustainable path of the latter. Similar in many other respects, the countries differed significantly in their sustainable management policies. Botswana developed an explicit policy of reinvesting all resource rent and, importantly, an indicator to monitor this policy, the 'Sustainable Budget Index', that loosely follows the Hartwick-Solow rule (Lange, 2004, p. 259; see also Solow, 1974, 1986, 1998; Hartwick, 1977, 1978).

A recent World Bank Study (2012) has come to similar conclusions when comparing Malaysia and Venezuela, with the former on a sustainable path while the latter is on the unsustainable path of consuming natural capital without reinvesting.[9] The data shows that the positive adjusted net savings rate in Malaysia is associated with strong, positive growth rates while the negative adjusted net savings rate in Venezuela corresponds to its extremely slow growth rate. Clearly, a prior requirement to reinvesting rents in ways that ensure a positive net savings rate is receiving adequate compensation for the natural resource loss inherent in the process; therefore, it is to the fiscal considerations in the environmental management of extractives we now turn.

4.2 Revisit outdated tax and revenue regimes and reform in line with recent fiscal innovations

The extraction of non-renewable resources diminishes the natural capital within the economy. Therefore, it is important that the country is compensated for this loss in natural capital so it might reinvest this money in other areas that will ensure future growth and a sustainable economy. If those communities surrounding EI projects are given a stake in the natural asset, including the long-term revenues accrued from it, they may be more likely to support environmentally sustainable projects while opposing activities that degrade their ecological endowment.

Furthermore, the perception of due process in the distribution of EI rents is paramount if EI are to retain their social license to operate locally and if local populations, who bear the burden of degraded environments, are to be adequately compensated. Additionally, such systems should hold some potential for diluting central control over policies and revenues, further democratising the process and fracturing any vested interests that are often associated with central control. Culverwell, Lee, and Koziell (2002, p. 7) offer a number of examples of revenue sharing between different levels of government:

> *Oil/gas/mineral revenues generally accrue to central government. Sometimes there are provisions for revenue sharing with lower levels of governments, with three possible formulas:*
> *1) Taxation authority delegated to lower levels (e.g. Canada, United States)*
> *2) Lower levels receive a proportion of tax income (e.g. Indonesia, Philippines, Peru)*
> *3) Lower levels receive allocations over central government budget (e.g. most countries)*

[9] See: World Bank. (2012). *Contribution to Beyond-GDP, 'Virtual Indicator Expo'* http://www.beyond-gdp.eu/download/bgdp-ve-ans.pdf

> *How to share revenues between the central government and local governments and communities in oil/gas and mining areas remains a contentious issue. The amount of any additional revenues from mineral development to allocate to the local level as opposed to other national purposes is a political decision within the sphere of a sovereign government.Few countries with extractive projects in developing countries have been able to resolve the issue satisfactorily.*
>
> *In many countries, this is now changing, and negotiations and agreements increasingly include communities and regional or local authorities receiving a share of the revenue. Attempts have been made, through policy and legislative changes, to redistribute some of the benefits to the local level. These changes have taken place in a range of countries, including Bolivia, Canada, Colombia, Indonesia, the Philippines, Papua New Guinea, South Africa, and Venezuela and they have achieved a varying degree of success. In some countries, implementation is hindered by the vagueness of policy.*
>
> *Peru's mining law (the Canon Minero), for example, provides that a fixed percentage of the revenues collected from mining by the central government will be paid to regional authorities, though owing to fiscal problems' the central government has for years delayed payments to local governments. Indonesia's decentralization process under way since 2000 will enable the regions to retain up to 80% of the resource revenues from within the boundaries. However, there have been some serious doubts about the technical capacity of local administrations to handle these new responsibilities.*

Additionally, a recent paper prepared by the Fiscal Affairs Department at the International Monetary Fund (IMF, 2012) offers numerous suggestions for appropriate fiscal regimes for resource rich developing countries so as to better realise the revenue potential of EI. The suggestions can be summarised as:

- Revenues from EI can have major macroeconomic implications, which will be amplified as the scale of extractives resources as a percentage of the country's national budget/GDP rises
- Revenue objectives loom large in designing fiscal regimes for EI, but involve complex trade-offs
- Fiscal regimes for EI vary greatly with a wide range of instruments being used including, but not limited to, direct taxes (corporate income tax, royalty tax, withholding tax, import and export taxes, excess or super profits tax) and fees (registration, land, water, infrastructure use) for the use of the jurisdiction's resources (Culverwell et al., 2002, p. 6)
- Country circumstance require tailored advice, but a regime combining a royalty and a tax targeted explicitly on rents (along with the standard corporate income tax) has appeal for many developing countries
- Effective administration is vital, but complex EI fiscal regimes and fragmented responsibilities are often major impediments

Culverwell et al. (2002, p. 6) provide a fine account of some additional fiscal regimes from which governments might choose amongst:

> *Large extractive projects have long lead times, but public costs are incurred well before operations begin. In many countries, the majority of tax revenues (especially from mining) do not begin to flow until the project has been in operation for several years, due to provisions for accelerated depreciation or tax holidays. This means that resource rents do not accrue to either the national or local government when they are most needed. Resource flows tend to be low or non-existing when public*

expenditure is highest: during project development and closure. Some governments have chosen to levy a royalty from the beginning of operations to ensure that a minimum level of revenue is received. Another problem for governments is that revenue flows from mining are unstable, owing to the long term and/or short-term price instability resulting from changes in the international economy and the resultant supply and demand for commodities over time. Last but not least, despite royalty payments, company taxation and similar fiscal instruments, 'regulatory frameworks for revenue distribution frequently fail to distribute wealth to communities across the region of operation (BPD, n.d.).'

A report prepared for the United Nations Global Compact describes three general categories of revenue-sharing regimes (Bennett, 2002):
a) Stabilization funds that apply revenues to immediate needs of economic stabilization and development.
b) Future-generation funds that collect current revenues for future use.
c) Sustainable economic development revenue regimes that allocate proceeds for current social, environmental, and developmental purposes such as the construction of hospitals, schools, roads, and infrastructure.

A final point is that with the recently high commodity prices, it is becoming increasingly accepted practice to enforce a 'super profits tax' on mining revenues – basically equating to higher taxes and higher revenues that kick in when mining company profits rise above a certain level due to global commodity price spikes.

Australia, after a long political battle, has imposed such a tax and most Canadian provinces, the United States (Nevada), and Norway have all similarly opted for sliding tax regimes on profits rather than royalties (taxes on production).[10] However, these countries all have attractive investment climates and are close to large markets, so they possess more leverage than many countries when negotiating project parameters and other jurisdictions may face more resistance when attempting to pass similar legislation.

Regardless of the exact fiscal regime governments opt for, it is vital that negotiations and payments are carried out in a transparent and participatory manner if the true costs and benefits – ecological and socio-economic – are to be weighed and balanced in a way that leaves the population is better off. The following section considers the role of transparency promotion in the environmental management of EI.

[10] http://www.mining-tax.com.au/;
http://www.deewr.gov.au/Department/Documents/Files/Announcement%20document.pdf

4.3 Promote transparency and participation of local communities

There are suggestions that the ecological impact of EI is exacerbated by secret deals negotiated behind closed doors that often include lax Environmental Impact Assessments, insufficient monitoring, and negligible penalties for environmentally degrading activities (see, for example, Christian Aid, 2009). Increasing transparency and community participation can have an enormously positive effect on the robustness of ecological regulations as well as reducing the chance for projects that result in a net loss in wealth for the region. There are really three significant stages to most EI projects, namely, exploration, development and production, and closure. It is vital that there is widespread participation of relevant stakeholders and transparent payments at each stage.

For example, access should be granted through publicly viewable auctions to ensure bidding is undertaken in a transparent and inclusive manner. Appropriate fiscal policies are necessary to recoup and gain from the loss of non-renewable resources so communities can be compensated and revenues can be reinvested. Historically, many African countries suffered from deals negotiated in private with below-market taxes and royalties for years thereafter.

In a recent study of seven African countries (Ghana, Tanzania, Sierra Leone, Zambia, Malawi, South Africa, and the DRC), a network of civil society groups examined these countries' past and present tax laws, tax rates, and the forces driving tax changes, comparing the tax terms of mining contracts with national tax laws (Christian Aid, 2009). The findings suggest that these countries have not been able to optimise revenue from mining as (1) Mining companies operating in Africa are granted too many tax subsidies and concessions (2) There is high incidence of tax avoidance by mining companies conditioned by such measures as secret mining contracts, corporate mergers and acquisitions, and various 'creative' accounting mechanisms. These two factors, along with poor institutional capacity to ensure compliance have contributed significantly to these countries failing to reap the rewards of EI. These issues have been acknowledged by senior African tax administrators and their findings were disseminated in the Pretoria Communique in 2008 (Pretoria Communique, 2008).[11] There have been efforts to reform many of the tax laws that have led to EI revenue leaking from Africa, including DFID's assistance in funding a legal team to help Zambia's government to rewrite its tax laws (Christian Aid, 2009, p. 12).

Clearly tax law reform and transparency would help reverse this trend. There are groups that push EI companies to 'publish what you pay',[12] there are the OECD Guidelines on Multinational Enterprises[13] to which, unfortunately, many of the beneficiaries of secret tax deals in the study were also signatories, and there is the Extractive Industries Transparency Initiative,[14] which provides a methodology for host countries to apply when governing EI, including publishing what the companies pay and what the governments receive.

But there are additional steps being taken by governments to ensure they are maximising revenue from existing and new projects, many of which lead to recommendations in the 2009 study, 'Breaking the Curse: How Transparent Taxation and Fair Taxes can Turn Africa's Mineral Wealth into Development', published by *Open Society Institute of Southern Africa*, *Third World Network Africa*, *Tax Justice Network Africa*, *Action Aid International*, and *Christian Aid* (cited as Christian Aid, 2009). For example:

- There is a need for an easy to use guide on best practice in mining taxation, citing the purpose, costs in foregone revenue and benefit of each type of tax instrument and tax concession

[11] To view the communique, see http://www.oecd.org/tax/taxadministration/41227692.pdf
[12] http://www.publishwhatyoupay.org/
[13] http://www.oecd.org/investment/investmentpolicy/48004323.pdf
[14] http://eiti.org/

- Review their company and financial laws to require all EI companies to use the EITI template for their annual reporting by law
- Stop the practice of granting tax exemptions to mining companies in mining contracts. All mining tax rates and terms should be legislated in the substantive law and merely confirmed in mining development agreements
- Ghana and Sierra Leone, for example, have passed laws that require mining development agreements to be ratified by parliament and made public
- Pressure companies at the national and international level to report on profits, expenditures, taxes, fees and community grants paid in each financial year on a country-by-country basis
- Review existing tax regimes and ratchet-up capacity to monitor accounts of EI companies (many governments will need substantial financial assistance for this)

Additionally, past experience has shown land reclamation and mine closure to be an expensive, under-funded, and often publically paid for aspect of EI. That is why many countries now require companies to post bonds or escrows managed by a third-party, which may be the better option for regions in which corruption has been a problem, to be used for site rehabilitation post development. This not only ensures that land will be properly rehabilitated after project closure, but it creates a financial incentive for EI companies to minimise the ecological impact of the project while in operation and to rehabilitate sites as they work.

For example, Australia uses environmental bonds (Mining Rehabilitation Fund or MRF) and India maintains a fund (CAMPA) into which EI companies must pay for restoration of forest lands.[15] Revenues from the Chad-Cameroon oil pipeline have been paid into a third-party London account, as per the standing agreement with the World Bank in exchange for partial funding, to be used for specific development projects moving forward. Unfortunately, the first payment was used by the government in Chad to buy arms – breaking the spirit of the commitment (Brown, 2002).[16]

Despite some past failures in engagement with the EI sector, if conducted with sufficient transparency, there are many opportunities for regulators to engage directly with EI companies to negotiate partnerships that leave all parties benefiting from extractive projects. The following section highlights a few options for engagement on ecological and socio-economic issues.

4.4 Directly engage with EI companies and informal practitioners where appropriate

While working out deals with companies behind closed doors has seemingly often led to corrupt practices by rent seeking individuals, there remain many opportunities to engage directly and proactively with EI firms. These firms offer a significant opportunity for developing countries to import best practice environmental management processes and technical capacity. Companies can not only assist with baseline measures for ecological and socio-economic conditions in the project area, but are often willing participants in projects that tailor their commitments to the context-specific needs of the region. One way to engage effectively with EI companies is through a division set up for this purpose, provided this division is itself answerable to the wider public and local stakeholders.

[15] Australia: http://www.miningaustralia.com.au/news/wa-mine-rehabilitation-bond-system-overhauled
India: http://envfor.nic.in/modules/recent-initiatives/campa/
[16] Chad: http://www.oecd.org/countries/cameroon/44392731.pdf; http://internationalbudget.org/wp-content/uploads/Chads-Oil-Miracle-or-Mirage.pdf;
http://www.guardian.co.uk/environment/2002/sep/27/internationalnews

Governments, national and local, can negotiate directly with companies over policies on ecological conservation and rehabilitation as well as on hiring priorities, local procurement, training facilities, locating value-added activities in the region, etc. This is common practice for governments in a number of regions with the Government of the Northwest Territories in Canada being one such example. The Industrial Initiatives Division negotiates individual socio-economic agreements directly with the companies themselves, even though the regional government does not control the mineral rights themselves or the environmental legislations governing the projects, both of which fall under the jurisdiction of the Government of Canada.[17]

Additionally, there are various voluntary initiatives. In addition to the aforementioned Publish What You Pay and Extractive Industry Transparency Initiative, there is the United Nations Global Compact and the soon to be launched (anticipated for 2014) Initiative for Responsible Mining Assurance (IRMA), which seeks to establish best practices at mine sites and offer an independent, third-party certification for the sites themselves.[18] IRMA is a multi-stakeholder initiative involving participants from both industry (including Rio Tinto and Tiffany & Co.) and civil society (including Earthworks and Oxfam) and should provide best practice guidelines and monitoring of mine sites once launched.

When engaging with the EI sector directly, regulators must consider the fact that in many countries there are two mining industries operating side-by-side, the large-scale, industrial mining sector (LSM) and the small-scale, artisanal mining sector (ASM). LSM is usually the target of national government regulation as the giant multinationals behind the projects are part of the formal sector. ASM, however, tends to be part of the informal economy and is, by definition, largely unregulated. The ASM sector represents a significant opportunity to drive improved environmental practices, increase the revenue base, decrease poverty, distribute wealth more evenly, and reduce corruption and conflict.

Historically, LSM companies and ASM miners have clashed in many regions in which they compete for scarce resources. ASM miners, as part of the informal sector, often operate without official land titles and frequently dig on land for which LSM companies hold the rights. LSM companies will certainly need to be part of the process if ASM miners are to be effectively engaged with, including being brought into the fold of environmental management.

Engaging with artisanal, small-scale miners (ASM)

There is vast potential for minimising the ecological damage resulting from unregulated EI activities by enhancing government oversight of the ASM sector. While large EI projects are obviously higher impact than individual small, informal resource extraction sites, the aggregate and cumulative ecological damage of artisanal extraction can be equally impactful. The benefits to engaging with this industry on ecological issues is that there are also potential gains to be made in poverty reduction and gender equality as well as reducing conflict and raising employment and public revenues.

Mining is expanding in developing countries and the LSM sector is under pressure to improve its environmental and social commitments there. While the vast majority of capital is accrued by LSM, the vast majority of labour is employed by ASM, making this sector an important source of livelihoods in the mineral rich developing world. Additionally, ASM holds within it the opportunity to distribute the benefits more evenly throughout host countries.

There is a need for increased attention to the wide diversity of livelihoods and working conditions within the fold of ASM, which has a much larger number of women as part of its labour force. There are relatively few direct employment opportunities in LSM relative to ASM in general, and the percentage of women miners remains in the single digits. ASM accounts for an estimated 90

[17] To view the division's work, go to http://www.iti.gov.nt.ca/strategiesagreements/
[18] Global Compact www.unglobalcompact.org/; IRMA www.responsiblemining.net/

per cent of the world's mining workforce (CASM, 2011), and an estimated 30 per cent of the world's ASM miners are women (Hinton et al., 2003, p. 1; CASM, 2011). However, there is significant regional variation with women accounting for less than 10 per cent of miners in Asia and between 40 to 60 per cent in sub-Saharan Africa (Hinton et al., 2003, p. 1; CASM, 2011) with most existing studies showing an upward trend (Lahiri-Dutt, 2008, 2011). This clearly makes ASM a major employer and source of income for both men and women. There is a need to expand on an important body of research and action that is drawing attention to ASM (see, for example, Lahiri-Dutt and Macintyre, 2006; Gier and Mercier, 2006) and to find ways in which to incorporate this important economic activity into the formal sector through policy reform.

Whether gold is extracted by LSM or ASM is partly determined by geology; however, due to colonial era mineral codes and corporate lobbying, current legal frameworks and international capital are channelled toward the formal sector dominated by LSM. Add to this the narrative of 'illegality' and 'conflict' that dominate policy discussions of ASM, and the systemic forces marginalising the millions of miners working in and around this sector become apparent.

Women's increasing involvement has been attributed to structural adjustment and economic liberalization that have created a greater need for families to supplement incomes (Dreschler, 2001; Labonne, 2002). Exclusion from LSM, deepening rural poverty, the need to secure cash incomes, male outmigration from rural areas and the realities of women's critical roles in ensuring household food security are additional factors (Hilson, 2003; Lahiri-Dutt, 2008; Werthmann, 2009). While ASM itself is poorly understood and encompasses a diverse range of mining practices, it is a critical livelihood strategy for many poor families in the developing world.

The process of how to incorporate ASM miners into national development plans and how these processes would affect the miners themselves is not yet well-known (Buxton, 2011). There have been efforts toward this goal in Sierra Leone, Ghana and Mali, but the few analyses of these efforts simply suggest that bringing unregulated, informal mining activities into the legal domain remains a considerable challenge (Maconachie & Hilson, 2011; CASM, 2011). The process will involve assigning property rights in the form of legal and, perhaps, transferable mining titles – though, it must be noted, that any such efforts would need to be undertaken slowly and with rigorous monitoring procedures so as not to negatively affect miners and mining communities that rely on ASM for their livelihoods.

CASM, the leading multi-lateral agency working on the formalisation of artisanal mining has provided a number of policy recommendations based on experiences with formalisation strategies in Ecuador, Peru, Tanzania, Uganda and Mongolia (CASM, 2011).[19] While LSM and ASM projects will certainly require different environmental management policies, there are a number of channels through which policymakers might act when devising regulation. The following section discusses some of the basics, from top-down legislation to the design of Environmental and Socio-Economic Impact Assessments.

4.5 Enact legislation for suitable land-use and impact assessments

Culverwell, Lee, and Koziell (2002, p. 30) list a number of national-level legislative strategies and action plans to regulate access and use of sensitive areas.[20] These constitute more traditional approaches, based on conservation, to protecting the environment. Although they may seem outdated and often impose hard limits on development, they will be the best approach in many sensitive areas and may even constitute the most cost-effective approach in the long-run by

[19] http://www.communitymining.org/attachments/059_Formalization%20Exec%20Sum.pdf; See also: http://pubs.iied.org/pdfs/G00723.pdf;http://www.unep.org/hazardoussubstances/Mercury/PrioritiesforAction/ArtisanalandSmallScaleGoldMining/tabid/3526/Default.aspx

[20] To view the document in its entirety, go to http://www.chathamhouse.org/sites/default/files/public/Research/Energy,%20Environment%20and%20Development/riia_extractive.pdf

averting ecological degradation, irreversible biodiversity loss, and potential land-use or scarce resource conflicts.

Protected Areas legislation defines areas for conservation e.g. national parks, and activities allowed or prohibited therein. In most developing countries it has proved increasingly difficult to monitor and enforce protected areas legislation given the intense pressures on land and politicization of the natural resource. Furthermore, legislation governing extraction and mining – such as ***Minerals and Mining Acts*** *– are usually more powerful than conservation legislation. National* ***Environmental Protection and Management Acts,*** *which include requirements and guidelines for Environmental Impact Assessment, could play a more significant role in minimizing mining impacts within sensitive areas.*

Other relevant laws and agreements at national level

- ***Biodiversity action plans.*** *Under the Convention on Biological Diversity, each country is required to have a Biodiversity Action Plan, which identifies key issues and necessary activities.*
- ***Land use planning acts*** *which identify the procedures and authorities for controlling changes in land use.*
- ***Land Tenure legislation*** *determining the rights of land ownership.*
- ***Community/traditional rights legislation*** *including rights of access for cultural reasons and for the collection of wild products.*
- ***Water resource acts****, including the regulation of water resource use, groundwater abstraction, water pollution laws and effluent standards.*
- ***Clean air acts*** *including air pollution and emission standards.*
- ***Natural resource legislation****, including agriculture, livestock and forestry acts. Conservation of soils and prevention of erosion may also be covered.*

Some countries, for instance Canada and Australia, have had some success in instituting integrated land use planning exercises to resolve conflicts of interest between the extractive industry and sensitive areas. One example being tested by the Government of Manitoba in Canada, through the Land Access Action Plan, is aimed at improving the coordination of land use policy and regulatory proposals. The action plan aims to minimize the overlap of incompatible land use allocations, e.g. by early settlement of First Nations land claims (Government of Manitoba, 2000).

The common way to test the feasibility of a project and to prevent unnecessary clashes with existing land use in the area is to conduct an Environmental and Socio-Economic Impact Assessment, which is discussed in the following section.

Environmental and Social Impact Assessments

A standard way to assess the ecological and social impacts of a project is through Environmental and Socio-Economic Impact Assessments (EIAs and SEIAs). It is also standard practice for EI companies to themselves pay the cost of these assessments. However, the parameters of the assessments and the rigour through which they are conducted can be controlled through the national government or local authority. Below is an example of best practice in how these assessments might be designed to be robust and carried out in a transparent and inclusive manner. The Northwest Territories, Canada, is resource rich in diamonds, oil and gas among many other materials. The Environmental Impact Assessments as well as the Social and Economic Impact Assessments are recognised internationally as best practice and highly innovative. Therefore, there are lessons to be garnered from the case, including from the

recommendations offered by a recent review of the Mackenzie Valley Environmental Impact Review Board, which is charged with administering the EIA and SEIA processes.[21]

Expand SEIA Consultation Guidelines	**To expand consultation, the Review Board is considering the development of guidelines for broadening public participation, including requirements for appropriate cross-cultural consultation and community-based licensing.**
Standardize SEIA Terms of Reference Items	The Review Board is considering the development of certain standard SEIA Terms of Reference with consistent: ☐ Social, cultural and economic questions; ☐ Expectations for social and economic impact boundaries and, ☐ Structure for determining alternatives.
Guidance on SEIA Prediction Methods and Tools	To improve the overall social and economic impact analysis of projects, the Review Board, will consult with appropriate agencies, and will develop a guideline supporting: ☐ The use of community-based socio-economic change research (that is, use of standard social science techniques alongside the long term surveys and ethnographic research that is done now); ☐The use of appropriate tools for economic analysis and overall impact evaluation (for e.g., the government's use of specific tools like cost benefit analysis which more accurately predict the overall economic impact of development); and, ☐ Valuation of things that are important to people but hard to measure (such as the market value of potential losses to traditional economic activities).
Strengthen Significance Determination for Social and Economic Impact Evaluation	To improve the outcomes of SEIA significance determination, the Review Board, in consultation with appropriate agencies, will: ☐ Determine best approaches exist for addressing factors such as magnitude, duration and frequency of the social and economic effects that remain after mitigation; ☐ Encourage government initiatives that develop social, cultural and economic benchmarks or thresholds appropriate for the region.
Linking Mitigation, Management & Monitoring to SEIA	To strengthen adaptive management related to SEIA within the context of mitigation monitoring, evaluation and management of project impacts, the Review Board will, in consultation with appropriate agencies: ☐ Carry out research and consultations on the types of mitigation measures that are acceptable to help lessen or avoid undesirable impacts and maximize benefitsto northerners; ☐ Develop a guideline requiring follow-up reporting on the success or failure of mitigation measures and whether they were implemented; and, ☐ Encourage developers and affected communities to conclude IBAs after conclusions of SEIA are made public.

[21] The section on EIAs and SEIAs is adapted from: Franks, D., Fidler, C., Brereton, D., Vanclay, F., & Clark, P. (2009). Leading Practice Strategies for Addressing the Social Impacts of Resource Developments. Centre for Social Responsibility in Mining, Sustainable Minerals Institute, The University of Queensland Briefing paper for the Department of Employment, Economic Development and Innovation, Queensland Government, November, Brisbane.
http://www.csrm.uq.edu.au/docs/Franks_etal_LeadingPracticeSocialImpacts_2009.pdf

Table 1: Recommendations for improvement of the Social and Economic Impact Assessment (SEIA) process of the Mackenzie Valley Environmental Impact Review Board (adapted from Franks et al., 2009).

Due to recent land claim settlements, the regulatory frameworks used in the Northwest Territories were developed recently and were informed through deep consultations and with community input, paying particular attention to social and economic management and utilising internationally recognised SIA principles. Impact assessment and management was established under the Mackenzie Valley Resource Management Act, which is federal legislation, and two comprehensive Aboriginal land claims, the Gwich'in Land Claim Agreement (1992) and the Sahtu Dene and Metis Land Claim Agreement (1994). The Mackenzie Valley Environmental Impact Review Board is co-managed with both Aboriginal and Government appointees while having a strong participatory focus on socio-cultural impacts and regional planning. The recommendations below should be useful when devising SEIAs in different jurisdictions.

Strong legislation and impact assessments will prove more challenging in some political contexts than others. In places where governance is weak, such as in remote areas and in many developing countries, there will be significant challenges to instituting sustainable land use regimes and monitoring impact assessments (Culverwell, Lee & Koziell, 2002, p. 30). However, there are many standards setting regimes and support organisations that exist to assist developing countries in setting up appropriate institutions to effectively govern EI. The following section lists some of the most prominent and offers a brief description of their stated mandates.

4.6 Incorporate the services of specialised support and standards agencies

There are a number of multilateral agencies and organisations with programmes dedicated to improving the institutional capacity for resource rich, developing countries to manage their natural resource wealth in ways that will both minimise the ecological impacts while maximising the growth potential for the economy. Listed below are the major demand-driven initiatives that developing countries could engage with to increase their capacity to implement ecologically and economically sound policies as well as organisations that have developed standards ready for import into national contexts.

- Natural Resource Charter http://naturalresourcecharter.org
  - The Natural Resource Charter (NRC) is series of economic principles for governments and societies on how to sustainably manage the opportunities created by natural resources. Australia is supporting work on the development of more detailed guidance for developing countries on how to implement Charter principles and expanded advocacy, research and benchmarking.
- IMF Topical Trust Fund for Managing Natural Resource Wealth http://www.imf.org/external/np/exr/key/ttf.htm
  - Topical trust funds support global IMF technical assistance on specialized thematic areas and complement the work of the IMF's regional technical assistance centers and other IMF technical assistance. The topical trust funds incorporate international best practice and are closely aligned with recipients' development strategies. Donors are actively engaged in the governance of the topical trust funds.
- Global Reporting Initiative (GRI) https://www.globalreporting.org/Pages/default.aspx

- The Global Reporting Initiative (GRI) is a non-profit organization that works towards a sustainable global economy by providing sustainability reporting guidance. GRI has pioneered and developed a comprehensive Sustainability Reporting Framework that is widely used around the world. The Framework enables all organizations to measure and report their economic, environmental, social and governance performance – the four key areas of sustainability.

- World Bank Oil, Gas, and Mining Unit http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTOGMC/0,,contentMDK:20188239~pagePK:210058~piPK:210062~theSitePK:336930,00.html
  - The objective of the World Bank Oil, Gas, and Mining Unit is to facilitate the extractive industries' contribution to poverty alleviation and economic growth through the promotion of good governance and sustainable development.
    - The Extractive Industries Technical Advisory Facility (EI-TAF) is a multi-donor trust fund managed by the Oil, Gas and Mining Policy and Operations Division of the World Bank. The EI-TAF facilitates advisory services to resource-rich, developing country governments for capacity building related to extractive industry contract negotiations and associated policy reforms/frameworks. The objective of the EI-TAF is to assist resource-rich, developing countries – on a demand-driven basis – to structure correctly extractive industry development projects and related policies, thereby reducing the risk of costly or politically difficult remediation at later stages.

- World Bank Governance Partnership Facility (GPF) http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTGOVANTICORR/0,,contentMDK:22675070~menuPK:7546375~pagePK:210058~piPK:210062~theSitePK:3035864,00.html
  - GPF is a flagship governance engagement activity for the World Bank supported by four countries. The objective is to improve governance and anti-corruption outcomes in developing countries, through rigorous and systematic country-level approaches. In Mongolia, the GPF is helping build local capacity in mining policy and building awareness of mining issues in civil society organisations. The GPF is supporting improved mining practices in other countries including Zambia, Uganda and the Democratic Republic of Congo. Australia's support to the GPF is $10 million (2011 to 2013).

- ICMM (International Council on Metals and Mining) http://www.icmm.com/
  - ICMM was established in 2001 to improve sustainable development performance in the mining and metals industry.

- Extractive Industries Transparency Initiative (EITI) http://eiti.org/
  - The EITI aims for better transparency through companies publishing their payments and governments disclosing their receipts from those companies. It, therefore, promotes better governance in countries rich in

oil, gas and minerals and seeks to reduce the risk of diversion or misappropriation of funds generated by the development of a country's extractive industry resources. It works through the joint co-operation of governments, private sector companies and civil society groups.

- International Mining for Development Centre (IM4DC) http://im4dc.org/
  - IM4DC provides access for resource rich developing countries to education and training, as well as technical and other advice, including through: short courses in Australia and overseas; fellowships in Australia; mentoring and capacity building of local institutions; publishing guides and tools; and conference and alumni events and support. The Centre builds developing country capacity in governance and regulation; community and environmental sustainability; and operational effectiveness and safety.

- CommDev http://www.commdev.org/extractives
  - CommDev houses a selective group of public documents, tools, case studies, training opportunities, presentations and other resources produced by IFC and many other partners and organizations to guide companies in delivering shared value and enhancing benefits to local communities.

- Alliance for Responsible Mining (ARM) http://communitymining.org/
  - The Alliance for Responsible Mining (ARM) is an independent, global-scale, pioneering initiative established in 2004 to enhance equity and wellbeing in artisanal and small-scale mining (ASM) communities through improved social, environmental and labour practices, good governance and the implementation of ecosystem restoration practices. ARM is committed to social justice and environmental responsibility as the values driving the transformation of ASM. ARM's mission is to set standards for responsible ASM and to support and enable producers to deliver "fairmined" certified metals and minerals through economically just supply chains to the markets, in order to contribute towards the transformation of ASM into a socially and environmentally responsible activity, and to the improvement of the quality of life of marginalized artisanal miners, their families and communities.

- Communities and Small-scale Mining (CASM) https://www.artisanalmining.org/casm/
  - The Communities and Small-scale Mining (CASM) initiative was launched in 2001, in response to a critical need for integrated, multi-disciplinary solutions to the complex social and environmental challenges facing ASM communities, and improved coordination between those working in this sector. CASM is a global networking and coordination facility with a stated mission to "to reduce poverty by improving the environmental, social and economic performance of artisanal and small-scale mining in developing countries." CASM is currently chaired by the UK's Department for International Development and is housed at the World Bank headquarters in Washington, D.C.

- World Bank WAVES http://www.wavespartnership.org/waves/
  - Wealth Accounting and the Valuation of Ecosystem Services (WAVES) is a global partnership that aims to promote sustainable development by ensuring that the national accounts used to measure and plan for economic growth include the value of natural resources. This global partnership brings together a broad coalition of UN agencies, governments, international institutes, nongovernment organisations and academics to implement environmental accounting where there are internationally agreed standards, and develop standard approaches for other ecosystem service accounts. By working with central banks and ministries of finance and planning across the world to integrate natural resources into development planning through environmental accounting, we hope to enable more informed decision making that can ensure genuine green growth and long-term advances in wealth and human well-being.

- Beyond GDP joint initiative http://www.beyond-gdp.eu/
  - The Beyond GDP initiative is about developing indicators that are as clear and appealing as GDP, but more inclusive of environmental and social aspects of progress. Economic indicators such as GDP were never designed to be comprehensive measures of prosperity and well-being. We need adequate indicators to address global challenges of the 21st century such as climate change, poverty, resource depletion, health and quality of life.

- African Initiative on Mining, Environment and Society (AIMES) http://www.twnafrica.org/index.php?option=com_content&view=article&id=513:-emerging-processes-threaten-mining-reform-agenda-in-africa&catid=46:aimes&Itemid=71
  - Founded in 1999, AIMES is a Pan-African network of organisations, groups, communities and individuals engaged in extractive sector advocacy, in particular mining. As a network, it offers a framework for collaboration to strengthen collective actions that advance community interest, environmental sustainability and development in relation to the extractive sector. The network has representation in over 15 strategic mining countries in Africa. Third World Network (TWN) - Africa is the secretariat of AIMES.

National Government programmes

- Australia – Mining for Development Initiative http://www.ausaid.gov.au/aidissues/mining/Pages/home.aspx
  - The Mining for Development Initiative is helping developing countries use their natural resources to grow their economies and provide social benefits to their people. The aid program is expanding its mining-related assistance to improve resource governance, sustainability and development.

- Leading Practice Sustainable Development Program for the Mining Industry, launched in 2006, supports the sustainable development of the Australian minerals industry.

5 Conclusions

To reiterate, existing literature suggests that developing countries that want to take responsibility for these issues could continue being encouraged by donors to:

i. Make the environment-poverty link and introduce cutting-edge wealth measures and natural capital accounting;

ii. Revisit outdated tax and revenue regimes and reform these in line with recent fiscal innovations;

iii. Implement initiatives promoting transparency and participation of local communities with a concomitant distribution of the wealth accrued;

iv. Directly engage with EI companies and informal practitioners where appropriate;

v. Enact legislation for suitable land-use and impact assessments;

vi. Incorporate the services of specialised support and standards agencies.

While policies need to be tailored to the specific ecological, economic, political and institutional context, this paper has demonstrated a selection of both 'hard' and 'soft' regulation from which developing countries could choose when managing the ecological and socio-economic impacts of EI, including:

a. Policies at the national-level

   - 'Hard' legislation such as land-use laws and requirements for Environmental and Socio-Economic Impact Assessments
   - Incorporate inclusive wealth measures and natural capital accounting when devising development strategies to facilitate appropriate levels of reinvestment
   - Taxes and royalties regimes may need to be revisited and reformed periodically to meet the changing demands for development

b. Policies at the local-level

   - Inclusive decision-making and revenue sharing with local communities in areas where EI takes place may improve participation and transparency while reducing the potential for conflict

c. Direct engagement with EI practitioners

   - Governments might consider setting up specific departments to work directly with firms on a project-by-project basis to meet context specific needs
   - Incorporating ASM and other informal EI sectors has the potential to raise revenue while improving environmental and socio-economic conditions of workers and communities

d. Direct engagement with support organisations

- There are many programs and organisations established to assist developing countries with best practice standards in ecological and socio-economic management of EI
- There are organisations and agencies that can assist in project negotiations with industry and setting appropriate fiscal policies that are tailored to specific political, economic, and institutional context

Furthermore, the paper suggests that proactive engagement with extractives firms to deliver success could include:

a. Working closely with industry to improve Environmental and Socio-Economic Impact assessments, including establishing baselines as well as tailoring policies to the specific national and local contexts

b. Establishing formal divisions to negotiate directly with firms on a project-by-project basis (e.g. the Industrial Initiatives Division in the Government of the Northwest Territories, Canada)

c. Incorporating the EI informal sector into national environmental management and development strategies (and including the formal sector in these initiatives)

d. Recruiting existing support agencies to assist with establishing partnerships (they have experience and will likely have existing relationships with EI companies)

6 Further reading

Best practices mining and governance guidelines

Brodeur, C., & Herman, T. (2006). *Summary Critique of Standards Relevant to Extractive Industries.* Canadian Network on Corporate Accountability. Ottawa: Halifax Initiative. http://www.halifaxinitiative.org/updir/Compendiumsummariesfinal.pdf

Norad. (2009). *Beyond the Resource Curse: Harnessing Natural Resources for Development.* Conference and Workshop Summary. 8-11 September. Oslo: Norad, Norwegian Ministry of Foreign Affairs, CMI, World Bank. http://www.cmi.no/file/?900

Dudley, N., & Stolton, S. (2002). *To Dig or Not to Dig: Criteria for Determining the Suitability or Acceptability of Mineral Exploration, Extraction and Transport from Ecological and Social Perspectives.* WWF Discussion Paper, February.

EPA Australia (1995). *Rehabilitation and Revegetation. Best Practice Environmental Management in Mining.* Environmental Protection Agency Commonwealth of Australia. June.

IFMMMSD. (2010). *A Mining Policy Framework: Mining and Sustainable Development: Managing One to Advance the Other*. The Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development. December.
http://www.globaldialogue.info/Mining%20Policy%20Framework%20final.pdf

IPIECA. (2000). *Biodiversity and the Petroleum Industry: A Guide to Biodiversity Negotiations.* London: IPIECA.

IPIECA. (2002). *The Oil and Gas Industry. From Rio to Johannesburg and Beyond. Contributing to Sustainable Development.* London: IPIECA.

IPIECA. (2012). *Improving Social and Environmental Performance: Good Practice Guidance for the Oil and Gas Industry.* London: IPIECA.
http://www.ipieca.org/sites/default/files/publications/good_practice_guide_4.pdf

Meynell, J., & Golombok, R. (2000). *Environmental Sustainability Guidelines on Mining and Petroleum Extraction Activities in Arid and Semi-Arid Zones.* IUCN and the Convention to Combat Desertification.

Miranda, M., Chambers, D., & Coumans, C. (2005). Framework for responsible mining: A guide to evolving standards. *Center for Science in Public Participation (CSP2) and the World Resources Institute (WRI)*, *19*.
http://www.frameworkforresponsiblemining.org/pubs/Framework_20051018.pdf
Rosenfeld, A., Gordon, D., & Guerin-McManus, M. (1997). *Reinventing the Well: Approaches to Minimizing the Environmental and Social Impacts of Oil Development in the Tropics.* Washington, DC: Conservation International.

UNEP. (2001). *APELL for Mining. Guidance for the Mining Industry in Raising Awareness and Preparedness for Emergencies at the Local Level.* Technical Report No. 41. Nairobi: UNEP.

Select donor reports on EI and development

African Development Bank. (2007). *African Development Report 2007: Natural Resources for Sustainable Development in Africa*. Tunis: African Development Bank.

http://www.afdb.org/portal/page?_pageid=473,30695219&_dad=portal&_schema=PORTAL

Bourguignon, F., & da Silva, L. A. P. (2003). *The impact of economic policies on poverty and income distribution: evaluation techniques and tools*. Washington, DC: World Bank. http://siteresources.worldbank.org/ESSDNETWORK/1105722-1115888526384/20645232/ensuring.pdf

IFC Extractives Industry Review. (2011). *The World Bank Group in Extractives Industries Annual Report 2011.* Washington, DC: World Bank. http://siteresources.worldbank.org/INTOGMC/Resources/WBG_EI_Annual_Report_FY11_Final.pdf

United Nations Economic Commission for Africa and the African Development Bank. (2007). *The 2007 Big Table: Managing Africa's Natural Resources for Growth and Poverty Reduction*. http://www.uneca.org/thebigtable/documents/2007BigTableSummaryReport.pdf

UNCTAD. (2007). *World Investment Report 2007: Transnational Corporations, Extractive Industries and Development*. Geneva: United Nations Conference on Trade and Development. http://www.unctad.org/Templates/WebFlyer.asp?intItemID=4361&lang=1

World Bank. (2003). *Extractive Industries and Sustainable Development. An Evaluation of World Bank Group Experience.* Washington, DC: World Bank Operations Evaluation Department. http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/FB2A79B1EB4B9A4D85256D7A00750357/$file/Extractive_Industries_Evaluation_Overview.pdf

World Bank. (2004). *Evaluation of the World Bank Group's Activities in the Extractive Industries. Factoring in Governance.* Washington, DC: World Bank Operations Evaluation Department. http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/EDB3D7F75F336DEF85256F0F00775E53/$file/extractive_industries_wp_governance.pdf

World Bank. (2004). *Striking a Better Balance: The World Bank Group and Extractive Industries: Final Report of the Extractive Industries Review: World Bank Group Management Response.* Washington, DC: World Bank. http://www.ifc.org/eir

World Bank (2007). *World Bank Mining Activities in Africa: Policy Framework and Country Experience.* Tunis: African Development Bank – World Bank Group Experience-Sharing Meeting, Tunis, February. http://www.afdb.org/pls/portal/url/ITEM/2980EF8BFAA51B4EE040C00A0C3D4D52

World Bank. (2011). *The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium*. Washington, DC: World Bank. http://data.worldbank.org/news/the-changing-wealth-of-nations http://siteresources.worldbank.org/ENVIRONMENT/Resources/ChangingWealthNations.pdf

7 References

Acemoglu, D., Johnson, S., & Robinson, J. A. (2000). *The colonial origins of comparative development: An empirical investigation*. National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w7771

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. *Handbook of economic growth*, *1*, 385–472.

Acemoglu, Daron, & Robinson, J. (2013). *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. Crown Publishing Group.

Asheim, G. B. (1994). Net national product as an indicator of sustainability. *The Scandinavian Journal of Economics*, *96*(2), 257–265.

Auty, R. M. (1993). *Sustaining Development in Mineral Economies: The Resource Curse Thesis.* New York: Routledge.

Ayee, J., Soreide, T., Shukla, G. P., & Le, T. M. (2011). Political economy of the mining sector in Ghana. *World Bank Policy Research Working Paper Series, Vol*. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1892670

Bank Information Center. (2007). *Undermining Communities and the Environment: A Review of the International Finance Corporation's Environmental, Health and Safety Guidelines for Mining.* Washington, DC: Bank Information Center, Center for Science in Public Participation, Earthworks, Oxfam International, & WWF International.

http://www.earthworksaction.org/pubs/IFC%20Mining%20Guidelines_20070904.pdf

Bebbington, A., Hinojosa, L., Bebbington, D., Burneo, M., & Warnaars, X. (2008).

Contention and Ambiguity: Mining and the Possibilities of Development. *Development*

and Change, 39(6), 887–914.

http://eoffprint.aptaracorp.com/cgi-bin/offal?aid=10405wC2331hEnq1477zF

Benntt, J. (2002). Conflict Prevention and Revenue-Sharing Regimes. *Policy Dialogue: Business in Zones of Conflict*. New York: United Nations Global Compact.

Boakye, D., Dessus, S., Foday, Y., & Oppong, F. (2012). *Investing Mineral Wealth in Development Assets: Ghana, Liberia and Sierra Leone* (No. 6089). Policy Research Working Paper. Washington, DC: The World Bank.http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2012/06/14/000158349_20120614165615/Rendered/INDEX/WPS6089.txt

Bourguignon, F., & da Silva, L. A. P. (2003). *The impact of economic policies on poverty and income distribution: evaluation techniques and tools*. Washington, DC: World Bank.

BPD. (n.d.). *Tri-Sector Partnerships: Contributing to Long-Term Regional Development*. Briefing Note 8. Business Partners for Development – Natural Resource Cluster.

Brown, P. (2002, September 27). Chad oil pipeline under attack for harming the poor. *the Guardian*. Retrieved from http://www.guardian.co.uk/environment/2002/sep/27/internationalnews

Buxton, A. (February 18, 2011). Fairtrade and formalisation for small-scale miners | International Institute for Environment and Development. International Institute for Environment and Development. Retrieved November 13, 2012, from http://www.iied.org/fairtrade-formalisation-for-small-scale-miners

CASM. (2011). *Communities and Small-scale & Artisanal Mining: A Global Partnership for Action*. Washington, DC: CASM. http//www.artisanalmining.org/UserFiles/file/CASMbrochure_Updated.pdf

Christian Aid. (2009). *Breaking the Curse: How Transparent Taxation and Fair Taxes can Turn Africa's Mineral Wealth into Development.* London: Open Society Institute of Southern Africa, Third World Network Africa, Tax Justice Network Africa, Action Aid International, and Christian Aid. http://www.christianaid.org.uk/Images/breaking-the-curse.pdf

Collier, P., & Venables, A. J. J. (Eds.). (2011). *Plundered Nations?: Successes and Failures in Natural Resource Extraction*. London: Palgrave Macmillan.

De Rosa, D., & Iootty, M. (2012). Are natural resources cursed? *An Investigation of the Dynamic Effects of Resource Dependence on Institutional Quality (July 1, 2012). World Bank Policy Research Working Paper*, (6151). Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2121146

Dreschler, B. (2001) *Small-scale Mining and Sustainable Development within the SADC Region*. London: World Business Council for Sustainable Development.

Gboyega, A., Soreide, T., Le, T., & Shukla, G. P. (2011). Political economy of the petroleum sector in Nigeria. *World Bank Policy Research Working Paper Series, Vol*. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1916541

Gier J. and L. Mercier (eds) (2006) *Mining Women: Gender in the Development of a Global Industry, 1670 to 2005*. New York: Palgrave Macmillan.

Government of Manitoba. (2000). *Land Access and Sustainable Development: Land Access Action Plan*. Mineral Resource Division, Mines Branch (Regulation), 23 and 26 October. Province of Manitoba. *http://www.gov.mb.ca/itm/mrd/index.html*

Gjoksi, N. (2010). International Approaches to Measure Wealth and Well-Being in the Context of Sustainable Development. ESDN Case Study No. 3. Vienna: European Sustainable Development Network. http://www.sd-network.eu/pdf/case%20studies/03_ESDN%20Case%20Study%203_FINAL.pdf

Hamilton, K., & Hartwick, J. M. (2005). Investing exhaustible resource rents and the path of consumption. *Canadian Journal of Economics/Revue canadienne d'économique*, *38*(2), 615–621.

Hartwick, J. M. (1977). Intergenerational equity and the investing of rents from exhaustible resources. *The American Economic Review*, 972–974.

Hartwick, J. M. (1978). Investing returns from depleting renewable resource stocks and intergenerational equity. *Economics Letters*, *1*(1), 85–88.

Hilson, G. (2003) *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. Netherlands: A.A. Balkema, Swets Publishers.

Hinton, J., Veiga, M., & Beinhoff, C. (2003) Women and Artisanal Mining: Gender Roles and the Road Ahead. In Hilson, G. *(ed.) The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries.* Netherlands: A.A. Balkema, Swets Publishers.

Holliday, G. & Mainhardt-Gibbs, H. (2007). *Quick Reference Guide to Policies on*

Extractive Industries. Revenue and Contract Transparency at the International Financial

Institutions. Washington, DC: Bank Information Center.

www.bicusa.org/proxy/document.9825.aspx

IFC. (2007). Integrating Women into Mining Operations Ensuring Greater Development Impact. Washington, DC: IFC World Bank Group.
http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/art_GenderTools_IntegratingWomenintoMiningOps/$FILE/2.2IssuePiece_MiningD6.pdf

ILO. (2007). Girls in mining: Research findings from Ghana, Niger, Peru and the United Republic of Tanzania. *Bureau for Gender Equality*.
http://www.ilo.org/public/portugue/region/eurpro/lisbon/pdf/girlsmining.pdf

IMF. (April 15, 2012). *Fiscal Regimes for Extractive Industries: Design and Implementation.* Fiscal Affairs Department. Washington, DC: International Monetary Fund.
http://www.imf.org/external/np/pp/eng/2012/081512.pdf

Javia, I. & Siop, P. (2010) *Challenges and Achievements on Small scale mining and Gender: Papua New Guinea*. New York*:* Women in Mining Conference,10 May.
http://www.sidsnet.org/msi_5/docs/sidsday/statements/pm-SIDSday/sidsday-presentation_javia.pdf

Labonne, B. (1996). Artisanal mining: an economic stepping stone for women. *Natural Resources Forum, 20(2),* 117-122.

Labonne, B. (2002). Commentary: Harnessing Mining for Poverty Reduction, especially in Africa. *Natural Resources Forum, 26*, 69–73.

Lahiri-Dutt, K. (2008). Digging to Survive: Women's Livelihoods in South Asia's Small Mines and Quarries. *South Asian Survey*, *15(2),* 217–44.

Lahiri-Dutt, K. (2011). *Gendering the Field: Towards Sustainable Livelihoods for Mining Communities.* Canberra: ANU E Press.

Lahiri-Dutt, K. (2011). Introduction: Gendering the Masculine Field of Mining for Sustainable Community Livelihoods. In K. Lahiri-Dutt (ed) *Gendering the Field: Towards Sustainable Livelihoods for Mining Communities.* Canberra: ANU E Press, 1-20

Lahiri-Dutt, K., & Burke, G. (2011). Gender Mainstreaming in Asian Mining: A Development Perspective. In K. Lahiri-Dutt (ed) *Gendering the Field: Towards Sustainable Livelihoods for Mining Communities.* Canberra: ANU E Press, 213-230.

Lahiri-Dutt, K., & Macintyre, M. (2006). Introduction: Where Life is *in the Pits (and Elsewhere) and Gendered.* In K. Lahiri-Dutt & M. *Macintyre (eds), Women Miners in Developing Countries: Pit Women and Others*. Aldershot: Ashgate, 1-24.

Lange, G. (2004). Wealth, natural capital, and sustainable development: contrasting examples from Botswana and Namibia. *Environmental and Resource Economics*, *29*(3), 257–283. ftp://ftp.cgiar.org/cip/CIP-QUITO/Jorge%20Andrade/Literatura%20SAS-M/capital%20natural%20base/wealth,%20natural%20capital,%20and%20sustainable%20development.pdf

Lastarria-Cornheil, S. (2007). Who Benefits From Land Titling? Lessons From Bolivia and Laos. *Gatekeepers Series, 132*. http://pubs.iied.org/pdfs/14553IIED.pdf

Macintyre, M. (2002). Women and Mining Projects in Papua New Guinea: Problems of Consultation, Representation and Women's Rights as Citizens. In I. Macdonald and C. Rowland (eds), *Tunnel Vision: Women, Mining and Communities.* Fitzroy: Oxfam Community Aid Abroad.

Maconachie, R., & Hilson, G. (2011). Safeguarding livelihoods or exacerbating poverty? Artisanal mining and formalization in West Africa. Natural Resources Forum, 35(4), 293–303. doi:10.1111/j.1477-8947.2011.01407.x

Mainhardt-Gibbs, H. (2004) *Revenue Transparency in the Extractive Industries - The Role*

of International Financial Institutions. Washington, DC: Bank Information Center.

http://www.bicusa.org/Legacy/Revenue_Transparency_in_EI.pdf

Miranda, M., & Kool, J. (2003). *Mining and critical ecosystems: mapping the risks*. World Resources Institute Washington, DC. Retrieved from http://defiendelasierra.org/descargas/mining_critical_ecosystems_full.pdf

Miranda, M., Chambers, D., & Coumans, C. (2005). Framework for responsible mining: A guide to evolving standards. *Center for Science in Public Participation (CSP2) and the World Resources Institute (WRI)*, *19*. Retrieved from http://www.kuskokwimcouncil.org/documents/3.%20Mining/Framework%20for%20Responsible%20Mining.pdf

Mong, S. (2010). Mainstreaming Gender in the extractive industries: Lessons for Cambodia. http://www.un.org.kh/undp/media/files/Mainstreaming_Gender_in_Extractive_Industries_Lessons_for_Cambodia.pdf

Mwaipopo, R., Mutagwaba, W., Nyange, D., & Fisher, E. (2005). Increasing the Contribution of Artisanal and Small-scale Mining to Poverty Reduction in Tanzania. www.swan.ac.uk/cds/pdffiles/ TANZANIA20ASM20REPORT.pdf

Sachs, J. D., & Warner, A. M. (1995). *Natural Resource Abundance and Economic Growth* (Working Paper No. 5398). National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w5398

Sachs, J. D., & Warner, A. M. (1999). The big push, natural resource booms and growth. *Journal of Development Economics*, *59*(1), 43–76. doi:10.1016/S0304-3878(99)00005-X

Sachs, J. D., & Warner, A. M. (2001). The curse of natural resources. *European Economic Review*, *45*(4–6), 827–838. doi:10.1016/S0014-2921(01)00125-8

Solow, R. M. (1974). Intergenerational equity and exhaustible resources. *The review of economic studies*, 29–45.

Solow, R. M. (1986). On the intergenerational allocation of natural resources. *The Scandinavian Journal of Economics*, 141–149.

Solow, R. M. (1998). *An almost practical step toward sustainability*. Washington, DC: RFF Press.

Stiglitz, J., Sen, A., & Fitoussi, J.P. (2009). *Report of the Commission on the Measurement of Economic Performance and Social Progress.* Technical Report, Paris. http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf

Werthmann, K. (2009). Working in a boom-town: female perspectives on gold- mining in Burkina Faso. *Resources policy, 34*, 18-23.