



# FUTURE MINING REVENUES FOR MALAWI

A Case Study of Mkango's  
Songwe Hill Project



**OXFAM**

**Cover Photo:** Mkango Mine, Second Drill Pad  
**Photo:** Mkango Mine

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## About Researchers

Resources for Development Consulting is a policy research firm that seeks to assist citizens in resource-rich developing countries to secure a fair share of extractive sector wealth by analysing contracts and broader fiscal regimes, and conducting integrated economic analyses in order to assess plausible government revenues.

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# Executive Summary

Government revenues from the mining sector have not met expectations. This has been due to long timelines from discovery to production, to the global slump in commodity prices, and to investment incentives offered to Paladin.

Good governance in the sector depends on realistic expectations. Companies, governments and donors routinely oversell the economic benefits of mining projects. Project-level analyses from public domain information can provide a much-needed reality check on the timing and scale of potential government revenues.

This report applies that methodology to Mkango's Songwe Hill "rare earth elements" deposit. The project was selected for three reasons: Malawi has been touted as a major potential source of rare earths; Songwe Hill is the most advanced rare earth project and Mkango has published economic details; and revenue analyses should be undertaken before projects are developed in order to anticipate and mitigate risks.

The global market for rare earth elements – 17 elements used in electronics, telecommunications, and medical and green energy technologies – is very small compared to other minerals and is dominated by China. A price spike in 2010 following Chinese export restrictions generated extensive exploration projects in more than 15 countries, including Malawi. The subsequent collapse in prices has undermined the economic viability of most potential projects. Given the small size of the market, four or five mines would likely be sufficient to meet global demand.

Mkango is a Canadian company listed on the Toronto Venture Exchange (TSX-V). It holds the rights to Songwe Hill through its subsidiary Lancaster Exploration Limited, registered in the British Virgin Islands. The exploration rights were first acquired in 2010 and the current license expires in early 2017.

It is currently unclear whether the Songwe Hill project will go ahead – massive price increases in rare earth elements are needed to make it economic. Assuming it does proceed, further technical analysis, fund-raising and mine construction mean that production could not start until at least 2020.

If Songwe Hill becomes a mine, government revenue would come from five major sources: royalties paid on production value (5%), corporate income tax paid on company profits (30%), a resource rent tax paid on "super-profits" (15% on returns over 20%), withholding taxes on payments to foreign companies (10-15%), and the government's equity in the project (10%).

In the past, tax terms were negotiated on a project-specific basis. For example, significant investment incentives were included in the Paladin contract for the Kayelekera uranium mine. In the intervening years, the government has adopted international best practice by putting in place a mining policy (2013), preparing a new Mines Bill (2015) and enacting mining-specific revisions to the Taxation Act (2016). There have been few changes to the "headline" terms as officials believe these represent an appropriate balance between encouraging investment and generating revenue. Revisions have focused on providing much needed clarity on how taxes will be calculated and on closing potential tax loopholes.

Estimating potential government revenue from mining requires applying the relevant fiscal instruments to forecasts of mineral production and project costs at varying commodity prices. Drawing on Makango's 2015 feasibility study, we assume that production could start in 2020 and last for up to 18 years with annual production of +2,800 tons. Estimates of project costs come from the same source: mine development costs are \$230 million and operating costs are

around \$19/kg.

The future price for the three “magnet” REEs that dominate the Songwe deposit will determine the viability of the project and the scale of potential government revenue. A price of around \$50/kg is necessary for the project to go ahead. The price in late 2015 was around \$30/kg.

Assuming that a massive price increase makes the project viable, under the assumptions set out above, government revenues could reach between 20-50 million per year, once the initial investment has been recovered. Over the lifespan of the mine, total government revenue could amount to several hundred million dollars. The theoretical share of revenue that would flow to the government appears reasonable compared with peer countries, and much better compared with the terms agreed with Paladin.

The revenue projections in this report are based on input assumptions contained in Mkango’s 2015 feasibility study. Comparative analyses demonstrate that feasibility studies normally overestimate production volumes

and price while underestimating timelines to production and project costs. It is likely, therefore, that these projections are far too optimistic. However, they do demonstrate that rare earths are unlikely to generate “game changing” revenues, with annual payments to government in the tens of millions.

The government cannot control what resources are in the ground or how much they are worth in international markets. What they can control is the deal that they offer to companies to explore and exploit those resources. Malawi has now established an appropriate fiscal regime embedded in law. There must be no return to offering project-specific tax breaks.

Looking forward, the challenge for future mining projects in Malawi is likely to change from an emphasis on negotiating a fair deal to ensuring that companies pay what they owe. This will require strengthened tax administration and routine audits. It will also require careful monitoring by government officials, the media and civil society organizations.

# Introduction

For more than a decade, mining has been touted as a major driver of the Malawian economy and a much-needed source of additional government revenue. Thus far, the sector has failed to live up to expectations. None of this should come as a surprise. Malawi is experiencing patterns that are normal in the mining sector. Timelines are notoriously long – often measured in decades – from discovery of a resource to the development of a mine to significant revenue payments to government. Many of the predictions of a mining boom in Malawi were made during the spike in commodity prices, but steep declines are to be expected even if they cannot be predicted. And negotiations for the first major mining project in a country commonly involve investment incentives that are later the source of regret, as was the case with the 2007 Paladin contract for the Kayelekera uranium mine.

It is inherently difficult to maintain realistic expectations. Companies speak to their shareholders and have a clear interest in presenting their projects in the most favourable light. Governments are always looking for a good news story and find it difficult to dampen enthusiasm. Donors should know better but usually fail to provide a much needed reality check. The result is that the upside benefits of mining are often oversold.

It does not have to be this way. In most cases there is enough information in the public domain – thanks to the success of the global movement for transparency in the extractive sector and to information that publicly listed companies are required to provide to their investors – to develop realistic assessments.

The questions that most need answering are not hard to identify. What volume of resources is in the ground and in what concentrations? What commodity prices are necessary for the project to be economically viable? What are the expected costs to

develop and operate the mine? When might production actually start and how much production would be expected annually? How do governments make money from mining and what kinds of revenue payments can theoretically be expected? And finally, how do companies seek to minimize their tax payments and what can governments do to counter these efforts?

The purpose of the report that you are now reading is to demonstrate that these questions can be answered, and to show how, through a specific case study. There were three potential projects to examine: Paladin's uranium project at Kayelekera, Globe Metals' niobium project at Kanyika; and Mkango's rare earth project at Songwe Hill.

As a publicly listed company, Paladin has disclosed significant data on the Kayelekera project. Numerous reports have already been written on the project and its failure to generate expected revenues for the government.

As the mine is currently on care and maintenance and will not reopen without a major recovery in uranium prices, the project may say more about the past than the future. Globe Metal's niobium project was to have moved to production years ago, yet negotiations with the government have not yet been completed. And while Globe Metals is publicly listed in Australia, the mine feasibility study completed in 2012 is not publicly available.

There are several reasons why Mkango's rare earth project at Songwe Hill was chosen. First, rare earth elements have been identified as one of the most promising commodities in Malawi's mining sector, with the country sometimes listed as the most promising in Africa. Second, as described below, Mkango is publicly listed in Canada and has therefore disclosed detailed economic data on the Songwe Hill project.

Third, it is important to do revenue analysis at the front-end of a project while there is still time to fix potential problems. The analyses on the Kayelekera mine were conducted long after production had begun, and pointed to problems embedded in a contract that was almost impossible to change. Environmental and social impact assessments are always done in advance of project development in order to anticipate and mitigate adverse effects. Revenue assessments should be as well.

### Project-Level Economic Modelling

In order to account for the mining sector contribution to government revenue, it is essential to understand mine economics at the level of the individual project. Government revenue from the mining sector, after all, is simply the sum of revenues from each individual project. Government revenues from a specific project, in turn, are determined by the specific fiscal (tax) instruments applied to project revenues determined by production volumes, project costs and commodity prices.

One valuable way to integrate the disparate kinds of project level data is through “cash flow” modelling.

The technique is at the heart of company investment decisions and is increasingly used by governments for fiscal systems design, contract negotiation, tax administration and medium-term budget planning.

There is a growing movement towards “open modelling” designed to strengthen the capacity of research institutions, journalists and civil society organizations.

It provides an effective technique in seeking answers to common revenue-related questions: why did companies pay what they did in the past, what might they pay in the future (depending on specific assumptions); and which fiscal (tax) instruments generate government revenues at which stages of the project lifecycle.

The challenge is often to find a project with sufficient data in the public domain to allow for reliable project-level analysis. As the government does not publish project-by-project data, the only available source of information is the data that companies listed on stock exchanges provide to their investors.

Comprehensive economic data is available for the Songwe Hill project because Mkango Resources Limited is listed on the Toronto Venture Stock Exchange (TSX-V). As a publicly listed company, Mkango is required to routinely disclose key economic data to its investors.

Documents formally disclosed to investors through a stock exchange are particularly valuable because regulations require that companies truthfully report on issues that would be relevant to their share price. They are also a reliable source of information because once a document is filed, unlike on a company website, it can never be removed.

Companies listed on a Canadian stock exchange are a particularly useful source of information because they are required to file detailed Technical Reports (NI 43-101) that, depending on the stage of the project, include extensive economic analysis.

The reports are designed to ensure that misleading or fraudulent technical information is not published on stock exchanges overseen by Canadian Securities Authority. They must be prepared by a “qualified person” to meet standards established by the Canadian Institute of Mining, Metallurgy, and Petroleum. Perhaps most importantly, in comparison with similar requirements in other jurisdictions including Australia, South Africa, and the United States, only Canada requires that full technical reports be disclosed.

Technical reports for the Songwe Hill were published in 2010, 2011, 2012, 2014 and 2015.

## Mkango's Songwe Hill Project

The Songwe Hill project is considered to be the most promising of Malawi's rare earth prospects. The deposit is located within the Phalombe License, in the Phalombe District of the Southern Region of Malawi, approximately 70 km southeast of the city of Zomba (See Figure 1). Mkango holds the rights to Exclusive Prospecting Licence No. EPL0284/10 through Lancaster Exploration Limited, its wholly owned subsidiary.

Mineral occurrences were first investigated in the license area during the 1930s through the 1950s. Rare Earth Elements (REEs) were first investigated in the area in the late 1980s through a surface exploration and drilling program undertaken by the Japan International Cooperation Agency (JICA), the Metal Mining Agency of Japan (MMAJ), and the Geological Survey of Malawi.

Lancaster Exploration Limited was granted the Phalombe License in January 2010 for a period of 3 years. The License has twice been

extended for two-year periods. The current license expires in January 2017.

Since acquiring the license, the company indicates that it has spent a total of C\$13 million to complete two drilling programs. The results of these programs culminated in the preparation of a "preliminary feasibility study" in November 2015. The company is now working towards a definitive feasibility study that would provide the foundation for raising funds in order to develop the mine.

Lancaster Exploration Limited, the company that holds the Phalombe License for Songwe Hill is registered in the British Virgin Islands. Immediately after the acquisition of the Phalombe License in 2010, Lancaster was acquired by a Canadian company then known as Alloy Capital Corp. and subsequently renamed Mkango Resources Limited.<sup>1</sup> In 2011, Mkango was listed on the Toronto Venture Stock Exchange (TSX-V). In 2016, the company was also listed on London's Alternative Investment Market (AIM). As a junior mining company, Mkango's



**Figure 1:** Location of the Songwe Hill Deposit

strategy is to find deposits and develop the value of those assets in order to sell to a larger mining company that would oversee the subsequent development and operation of the mine. In 2013, for example, it was reported that Leo Mining and Exploration Limited, an unlisted British Virgin Islands registered company and then-owners of a 48% stake in Mkango, was to be sold to Australian-based Forte Energy.<sup>2</sup> Under the terms of the sale, which apparently did not proceed, Mkango would have continued to trade as an independent company although nearly half of the company would have been owned by Forte.

### Structure of the Report

The report begins with an analysis of Rare Earth Elements (REEs) and the potential for their exploitation in Malawi. It then explains the legal basis on which governments generate revenue from mining, highlighting the importance of full public disclosure of mining contracts (development agreements). The following section provides a detailed

review of the five main sources of government revenue from mining: royalties paid on production, corporate income tax and a resource rent tax paid on company profits, withholding taxes assess on funds paid to non-resident companies, and the governments share of project profits through its equity stake. The report then introduces scenario analysis and cash flow modelling as techniques to forecast potential government revenues, including a review of the relevant input assumptions for the Songwe Hill project (production volumes, project costs and commodity prices). The economic analysis that follows shows what government revenues might look like, under different price scenarios, over the lifespan of the mine and on a year-by-year basis. It also analyses the government take – the proportion of after cost revenue that goes to the government – and compares this with the terms contained in the Paladin contract. Conclusions are then offered related to the Songwe Hill project and more generally for the mining sector in Malawi and the potential that it holds for generating revenue payments to government.

# Rare Earth Elements

Much has been made in recent years about the potential that REEs hold for Malawi. In 2011, the Director of Malawi's Geological Survey Department, Leonard Kalindekaffe, indicated that "the country's rare earths resources far exceed the 11-million tons documented for Kangankunde, and Malawi could become one of the major suppliers of rare earths."<sup>3</sup> In 2012, Cassim Chilumpha, Minister responsible for mining stated that the country held more than 30 million tons of rare earths, the largest in Africa, that could support a mining lifespan of around 30 years and contribute up to 20% of the nation's GDP.<sup>4</sup> In 2013, the Financial Times published an article on "Africa's rare earths opportunity" with Malawi identified as among the continent's most promising jurisdiction.<sup>5</sup> Around the same time, the publication mining.com declared, "Malawi is the next rare earth hub."<sup>6</sup>

Identifying mineral deposits is an essential step to the development of a mining project. High levels of enthusiasm often follow mineral discoveries and can easily lead to the generation of unrealistic expectations. But discovery is only a first step. Deposits themselves are worthless in the absence of a company that believes the project to be economically viable and is willing to invest in the development of a mine. The existence of mineral deposits must therefore be understood in the context of mineral economics and the supply and demand dynamics for the particular commodity. This is particularly true in the case of REEs.

Rare earths are a set of 17 elements (15 lanthanides, plus scandium and yttrium) that share similar chemical properties. The full suite of REEs is commonly referred to as total rare earth oxide (TREO) and is then divided into the less valuable light rare earth oxides (LREO) and the more valuable heavy rare earth oxide (HREO).

Rare earth metals and alloys that contain them are used in electronics, telecommunications and defense systems

and increasingly in medical and green energy technologies such as electric vehicles and wind turbines. China is the largest consumer of REEs (67%) with Japan (16%) and the United States (13%) ranking second and third.<sup>7</sup>

While an essential ingredient in new technologies, REEs are used in small quantities and global demand is relatively small. In 2012, worldwide production was estimated at around 100,000 tons with growth expected to result in an increase to 150,000 tons by 2017.<sup>8</sup> In contrast to other minerals, the opening of a single new mine can have a significant impact on global supply. Although dozens of REE projects are currently in the exploration phase, experts believe that only four or five will be needed to meet the growing demand.<sup>9</sup>

Until recently, mines in China have dominated global supply. In 2010, they controlled around 95% of global REE production. China also imposed significant tariffs on REE exports resulting in a large price differential between the price inside China and in the international marketplace.<sup>10</sup> A Chinese decision in 2010 to cut exports by 40% resulted in a massive price spike (See Figure 2) and sparked exploration for new deposits in more than 15 countries around the world.<sup>11</sup> The price spike encouraged significant illegal mining in China that most analysts believe has kept prices below actual market value. Following a WTO ruling, Chinese removed export tariffs on REEs resulting in a convergence between Chinese and international prices.<sup>12</sup>

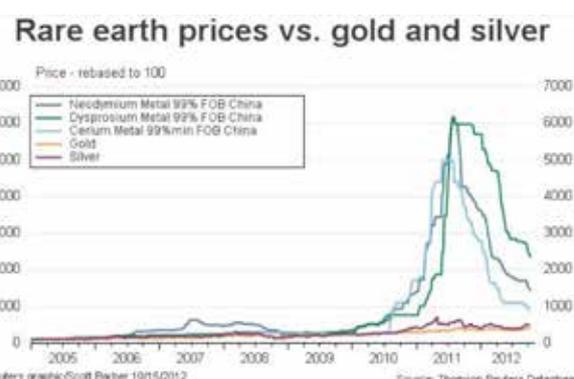


Figure 2: Rare Earth Prices v Gold and Silver

## Contracts, Legislation and Tax

Government revenue from a mining operation is determined by the fiscal (tax) terms that govern the project. The specific fiscal terms governing each mine are commonly contained in project-specific “mining agreements” or contracts.<sup>13</sup> As the Songwe Hill project is still in the exploration phase, no project-specific contract has yet been negotiated. There is however considerable information in the public domain on the fiscal terms that would likely be applied.

### Contract Disclosure

In the past, Malawi’s mining agreements were confidential documents and were not publicly disclosed, though companies sometimes provided a summary of the key fiscal term to their investors.<sup>14</sup>

While mining contracts have often been confidential documents, there has been a strong shift towards public disclosure.<sup>15</sup> Examples of countries in sub-Saharan Africa that have disclosed extractive sector contracts include Burkina Faso, Democratic Republic of Congo, Liberia, Mali, Mauritania, Mozambique, Republic of Congo and Sierra Leone.<sup>16</sup> The EITI added contract disclosure to their list of recommended practices in 2013.<sup>17</sup> International organizations such as the International Monetary Fund (IMF) encourage contract transparency while the World Bank’s International Finance Corporation (IFC) now makes contract disclosure a condition of their support.<sup>18</sup>

It is now widely accepted that confidentiality increases the risks of both corruption and revenue leakage. Even where all contract provisions are appropriate, confidentiality breeds suspicion of wrongdoing. Commercial sensitivity, often cited as a barrier to public disclosure of contracts, has proven not to be a significant issue.<sup>19</sup>

Civil society organizations have been calling for full disclosure of Malawi’s extractive sector contracts since the MDA

with Paladin was signed in 2007.<sup>20</sup> Malawi’s EITI multi-stakeholder group – made up of representatives from government, civil society and the private sector – committed to contract transparency in 2015.<sup>21</sup>

In 2016, the EITI process delivered results, with Paladin and Nyala contracts being made publicly available on [ResourceContracts.org](http://ResourceContracts.org) – a global repository of extractive sector contracts.<sup>22</sup> Malawi would benefit from following international best practice and adopting a formal policy of contract disclosure for both the mining and petroleum sectors.

### From Contracts to Legislation

While contract disclosure is an essential component of extractive sector good governance, best practice increasingly suggests moving away from project-by-project negotiations and embedding mining fiscal terms in sector-wide legislation.<sup>23</sup> This shift is motivated in part by the desire to reduce the discretionary power of contract negotiators that has, in some cases, been linked to corruption.<sup>24</sup> Even where contract negotiation has been undertaken with complete integrity, project-by-project negotiations result in a patchwork of contractual terms that substantially increase the challenges of contract monitoring and tax administration.

There are indications that Malawi is moving towards a fiscal regime embedded in legislation rather than in Mining Development Agreements. In its 2013 Mines and Minerals Policy, the government committed to “develop a viable and transparent fiscal and taxation regime that attracts investors in the minerals sector and ensures a substantial amount of revenue is retained in Malawi.”<sup>25</sup> The core elements of Malawi’s new fiscal regime for the mining sector are contained in the Mines and Minerals Bill (2015) and the Taxation (Amendment) Bill 2016. The government seems to have reversed an earlier decision to abandon Development Agreements entirely, but it appears that fiscal terms as set out in legislation will be non-negotiable.<sup>26</sup>

# Sources of Government Revenue

There are five main instruments that generate government revenue in Malawi's mining fiscal system.<sup>27</sup>

- Royalty: a percentage of the sale value of the commodity produced.
- Corporate Income Tax: a percentage of company net (after cost) income.
- Resource Rent Tax: a second tax imposed on company "super-profits".
- Withholding Taxes: a percentage of payments to non-resident companies.
- State Equity: dividends to the government as a commercial partner.

These five instruments will be retained in the new fiscal framework to be implemented through the Mines and Minerals Bill (2015) and the Taxation (Amendment) Bill 2016. Headline rates are largely unchanged. Based on a comparative review of fiscal regimes in the region, the government concluded that the existing terms establish an appropriate balance between attracting inward investment and securing an equitable share of the divisible revenue.<sup>28</sup> Revisions therefore are focused on providing clarity on the calculation of the revenue base against which taxes are assessed and on closing potential loopholes.

## Royalty

A royalty is a payment to government based on mineral production. It is commonly a percentage of the sale value of a mineral.<sup>29</sup> In the past, royalties were often seen as a payment for the sale of a "non-renewable resource." Increasingly, however, they are seen as a guaranteed source of government revenue for mines that are producing but not reporting profits.

Malawi has long had clear royalty rates set out in regulation: 10% for precious and semi-precious stones, and 5% for

radioactive materials and other minerals. In practice, however, there have been numerous exceptions. The 2007 Development Agreement for the Kayelekera mine set the royalty rate at of 1.5% for the first 3 years and 3% thereafter. Other agreements have also reportedly diverged from the published regulations.<sup>30</sup> The regulations are also clear that the royalty is payable on the "gross value" of the sale. Once again, however, there were exceptions in practice with extensive deductions allowed in the calculation of the value against which the royalty would be applied in the Paladin contract.<sup>31</sup>

The new fiscal regime will enshrine the existing royalty rates in the Taxation Act, including 10% for precious and semi-precious stones, 5% for all other minerals and 7.5% for unmanufactured commercial minerals.<sup>32</sup> The royalty is to be paid on the full commercial value of the minerals as established by international reference prices.<sup>33</sup> Responsibility for the collection of royalty payments has been transferred to the Malawi Revenue Authority.

There is now widespread recognition of the risks of undervaluing commodities and the resulting reduction in royalty payments. The OECD is in the process of developing detailed guidance to assist resource-rich developing countries in mineral valuation.<sup>34</sup> Even with a good legal framework in place, the Revenue Authority will need to be vigilant to ensure that inadmissible costs are not deducted from the sale value before the royalty is assessed. A common example is marketing fees, where companies often pay a percentage of the total sale value to a subsidiary located in low tax jurisdictions.<sup>35</sup>

## Corporate Income Tax

The second source of government revenue from the mine is corporate income tax.

Unlike a royalty that is assessed on the sale value of production, corporate income tax is assessed on the company profits that remain after all eligible costs have been deducted. The Taxation Act of 2006 establishes an income tax rate of 30% for Malawi-registered companies and 35% for foreign companies. In the past, the rate of corporate income tax was negotiable. The Paladin contract for Kayelekera mine included a corporate income tax rate reduced to 27.5% of taxable income. The Paladin contract also provided for generous provisions relating to the tax deductibility of interest payments on project financing. Specifically, the contract allowed the company to finance the project through 80% debt with only 20% equity. In that case, financing was provided by a Paladin subsidiary based in the Netherlands. As the Kayelekera mine never reported a profit, no income tax was paid. Financing the project mostly through debt would further extend the period during which Paladin would pay not corporate income tax.

The tax rate will remain unchanged at 30%, and it appears that this rate will now be non-negotiable.<sup>36</sup> The new fiscal terms add specificity to the way in which taxable income is to be calculated. In the past, mining companies were allowed to claim all capital expenses immediately, subject only to a six-year limit on the carry forward of losses. These provisions would push back the time when corporate income tax would first be paid. Under the new regime, capital assets will be depreciated over the expected life of the mining project while the loss carry forward period has been extended to ten years. New rules also limit the proportion of debt financing costs that can be claimed against taxable income.<sup>37</sup> In both cases, these changes would be consistent with international best practice.

As is the case with royalties, a good legal framework is only the first step to protecting government revenues. Companies commonly reduce their income tax payments by reducing the gross revenue that they report and by inflating the costs that can be deducted in calculating net revenue.

Costs can be inflated where affiliated companies provide goods and services. This type of transfer mispricing is common for costs related to financing, insurance, mine management, and headquarters administration.<sup>38</sup> Particular attention is required during the exploration and development phases to verify costs that will be claimed against future income.<sup>39</sup> Careful oversight and regular audits are required to minimize these risks. Experience in developed countries however suggests that even where strong tax administration exists, constraining transfer mispricing is a serious challenge.<sup>40</sup>

### Resource Rent Tax

A corporate income tax is commonly applied in the mining sector, as it is to all other kinds of businesses. Mining projects however can, under specific circumstance such as commodity price spikes, generate “super-profits.” Economists often call these additional profits “resource rents” and suggest that they can be subject to an additional tax without driving away investment. When company profits are very high, this additional tax is imposed and the overall government “take” increases. The tax is not however imposed on project where costs are high or when commodity prices are low.

Adding a resource rent tax to mining fiscal regimes has become part of the standard guidance offered to developing countries.<sup>41</sup> While the value of such a tax seems clear in economic theory, past applications have not been very effective. The imposition of an additional tax creates a strong incentive for companies to manipulate reported revenues and costs in order to avoid reaching the designated rate of return.

Since 2006, Malawi tax law has included an additional profits tax of 10% to be imposed on after-tax profits of a mining company when the rate-of-return exceeds 20%. The tax was not imposed in the Paladin contract, where it was removed in favour of a government equity stake in the project.

Previous analyses of Malawi's resource rent taxes noted that there was insufficient clarity on how the rate of return would be calculated.<sup>42</sup>

Under the new fiscal regime, the resource rent tax rate will be assessed at 15% of the "resource rent."<sup>43</sup> The method of calculating the tax is now clear. According to the Taxation (Amendment) Bill 2016, resource rent is defined as positive after-tax project cash flow after eligible deductions have been "uplifted" by 20%.<sup>44</sup>

The challenges of assessing the resource rent tax are similar to a corporate income tax: ensure that gross revenue is accurately reported and that costs have not been inflated. The difference is that a tax on "additional" profits further increases the company's incentive to reduce "reported" profits by reducing reported revenue and inflating reported costs.

### **State Equity**

Governments can also gain revenue by holding an equity stake in a mining project. In such a situation the government itself, or a national mining company, becomes a commercial partner in the venture, often holding between five and twenty percent. Securing additional revenue is only one rationale for holding an equity stake. Other reasons can include asserting influence over mine development and increasing in-country knowledge and experience.

In some cases, the government finances its share of development costs. More commonly, the government takes a free carried interest with the company paying its share of the costs through the development phase. Companies view a free carried interest as an additional tax layer of tax. From a government perspective, it is a highly unpredictable source of revenue as even for profitable projects, revenue depends on the dividend policy established by the Board of Directors.

Holding an equity interest has often failed to meet government objectives. As a result,

countries are commonly encouraged to try to meet these fiscal and non-fiscal objectives through other means. Nevertheless, state equity remains a feature in many developing country fiscal regimes, suggesting that national pride – the sense that a country "ought" to hold a stake – may be the decisive factor.

State equity has been a prominent feature of Malawi's fiscal regime. In the Paladin contract, the government traded away the resource rent tax and 2.5% of corporate income tax for a 15% stake in the project. However, as the project never made a profit, no dividends were ever paid. Even where projects are profitable, dividend payments are determined by the company's Board of Directors, a body with which government has little influence, and are therefore an unreliable source of revenue.

There appears to be a growing recognition among government officials that too much emphasis has been given to state equity in the past negotiations. Nevertheless, the Mines and Minerals Bill (2015) provides for the government to take a free equity interest of up to 10% in any large-scale mining project.

Many African governments have suffered from unpredictable revenue flows due to company decisions on the distribution of dividends. There are measures that can be taken.<sup>45</sup> In Ghana, for example, the government exchanged a 10% free equity stake for 10% of the net cash flow of the project. This has created a more reliable revenue stream, as payment no longer depends on a decision by the company board.<sup>46</sup>

### **Withholding Taxes**

A final source of government revenue is withholding taxes on payments made to non-resident (foreign) companies. In the mining sector, large payments to non-resident companies (e.g. interest, dividends and sub-contractors) are common. As there is no practical way for the government to tax these non-resident companies after the money has left the country, a withholding tax is

commonly imposed allowing the government to administer a tax before the money leaves the country. Withholding taxes can also be an unreliable source of government revenue as they are often reduced or nullified when companies establish subsidiaries in jurisdictions like the Netherlands that have an extensive network of Double Taxation Treaties.<sup>47</sup>

Malawi imposes a withholding tax on payments to non-resident companies with a 15% tax applied to interest payments and management fees and a 10% tax applied to dividend payments. Paladin, however, was able to avoid withholding tax payments by using a subsidiary company registered in the Netherlands, a country that had a Double Tax Treaty with Malawi.

Withholding tax rates in the Taxation (Amendment) Bill 2016 are set at 15% for management fees and 10% for interest and dividend payments.<sup>48</sup> While the provisions are clear, the challenge is to prevent “treaty shopping,” where companies create subsidiaries in specific countries with the sole objective of minimizing or eliminating withholding taxes.<sup>49</sup>

Bilateral taxation treaties designed to stop double taxation have become a way for companies to avoid taxation altogether. Increasingly the IMF and others are recommending that countries completely rethink double taxation treaties.<sup>50</sup> In the past, developing countries appear to have signed treaties to signal the desire to

strengthen economic relations. In many cases however the economic benefits have been overwhelmingly in favour of the capital exporting countries. Recognizing the asymmetric implication, countries like Mongolia have terminated bilateral treaties with countries like the Netherlands.<sup>51</sup>

Denying treaty benefits is not easy. Unless there are explicit prohibitions in the treaty, there is nothing stopping a company from setting up a shell company in order to reduce withholding tax payments. In most cases, tax laws and double taxation treaties need to be revised. Kenya for example, now offers treaty benefits to companies in the Netherlands where at least 50% of the underlying owners are resident in the treaty state, or where the company is listed on a stock exchange in the treaty state.<sup>52</sup>

Malawi has made some progress in limiting treaty abuse. The 1961 double taxation treaty with the Netherlands was terminated in 2013 and the revised treaty signed in 2015 contains clear anti-abuse provisions. Similar provisions must be included in the treaty currently under negotiation with Mauritius, a well-known conduit for foreign capital. Malawi has existing tax agreements with eight other countries.<sup>53</sup> As mining companies could well establish subsidiaries in these other jurisdictions to take advantage of treaty benefits,<sup>54</sup> each of these treaties should be reviewed and revised if necessary to ensure that they include explicit measures to stop abuse.

# Scenario Analysis and Economic Modelling

Any effort to forecast potential revenue payments to government from future mining operations depends on a series of assumptions related to the potential volume of the mineral produced and the costs of production, as well as the future mineral sale price.

Estimates for production volumes and project costs for Songwe Hill are drawn from a Technical Report, prepared under National Instrument 43-101, and filed by Mkango in November 2015.

## Production Forecasts

The information contained in the Technical Report on Songwe Hill filed by Mkango in late 2015 indicates that the project may be economically viable. There are however no guarantees that the project will go ahead. The production forecasts set out below therefore are based on a series of assumptions.

The first crucial assumption is the date of first production. Mkango has identified 2018 as a potential date for first production. However, even under a best-case scenario,

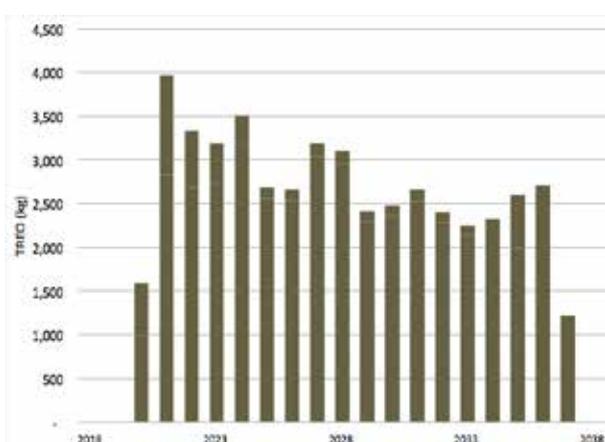


Figure 3: Forecast Production Profile – Songwe Hill

a series of time-consuming steps that would need to be completed before production could begin including: the completion of a definitive or “bankable” feasibility study,<sup>55</sup> securing adequate financing and then the actual construction of the mine. A minimum estimate for the completion of these steps would be three years, resulting in an earliest possible start to production of 2020. This is a “best case scenario,” with further delays likely.

Given that there are 17 REEs with different supply, demand and price dynamics, a second key question is what exactly would a Songwe Hill mine produce. Most of the 17 REEs are present in the Songwe deposit, though in differing concentrations. The specific “basket” of REEs that would be produced at Songwe Hill would be dominated by four “magnet” elements: neodymium (53 %), dysprosium (12 %) praseodymium (14 %) and terbium (3%).<sup>56</sup>

The base-case production forecast for Songwe Hill is shown in Figure 3. As mentioned above, we assume a start date of 2020. The mine is assumed to operate for 18 years with an average annual production of just over 2,800 tons.<sup>57</sup> We also consider a reduced case where production targets are not met, particularly in the early years, as well as an upside case where mine production is extended for an additional three years.

## Project Costs

All mining projects share a common set of project costs that correspond to the different phases of a mining project (See Figure 4<sup>58</sup>). Projects begin with costs associated with exploration – the search for economically viable mineral deposits. The

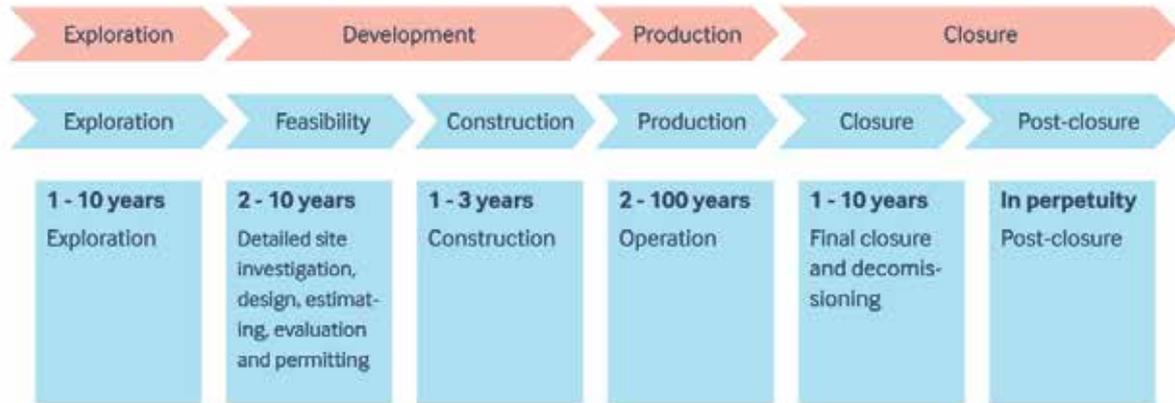


Figure 4: Phases in the Lifecycle of a Mining Project

bulk of capital costs normally come during the initial development phase, prior to initial production (e.g. buildings, mills, equipment, vehicles). Once operating, capital costs are divided into “sustaining capital” needed to maintain current levels of production and “developmental capital” needed for potential mine expansion. Following the capital investment to develop the mine, operating costs constitute the majority of mine costs (e.g. salaries, fuel, water, grinding media, electricity, tires etc.) Finally, there are costs associated with mine closure and remediation.

Capital and operating costs are drawn from the Songwe Hill technical report of December 2015. Capital required to develop the mine is forecast to be around \$230 million. Operating costs over the life of mine are forecast to be around \$19/kg.

**Songwe Hill Prices**

Future prices for the basket of REEs in the Songwe deposit are decisive both for the development of the project and also for

potential government revenues. Historic prices for the Songwe basket are show in Figure 5 with a modest increase over time (ignoring the price spike following the reduction of Chinese exports in 2011). A major price increase in the coming years is necessary for the Songwe Hill project to be economically viable. The basket price in late 2015 was around \$30/kg. Rare earth prices have recovered only slightly since that time.

The Mkango technical report considered three possible price scenarios ranging from a low of \$52 to a high of \$64 in 2020. The price assumption used in the 2014 Pre-Feasibility Study was \$55.<sup>59</sup> (See Figure 6). Our base case analysis uses the optimistically named “business as usual” case with a basket price of just under \$60/kg.

The price for the Songwe basket must also take into account the cost of processing and separating the mixed chemical concentrate. This can be considered either an additional operating cost or, as we do, a discount to the sale price. Mkango’s technical report assumes a discount of \$10/kg.

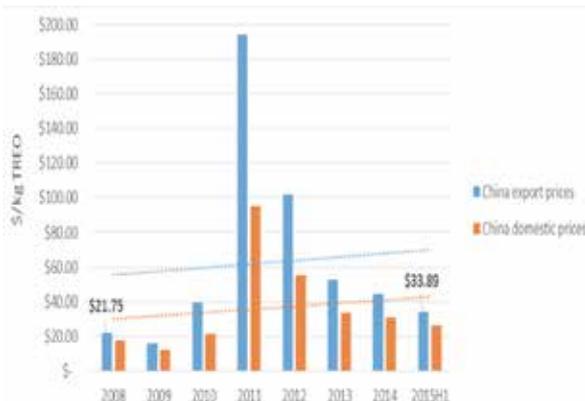


Figure 5: Songwe Hill REE Basket – Historic Prices

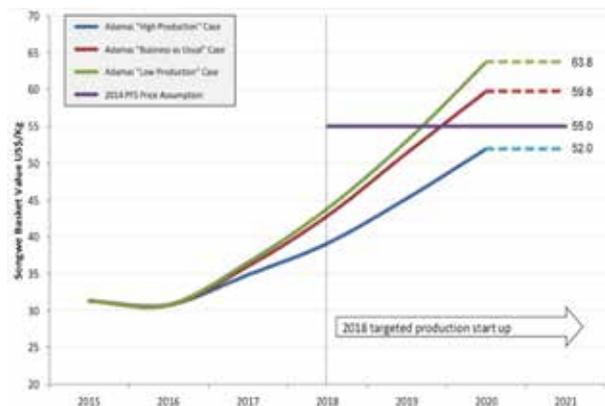
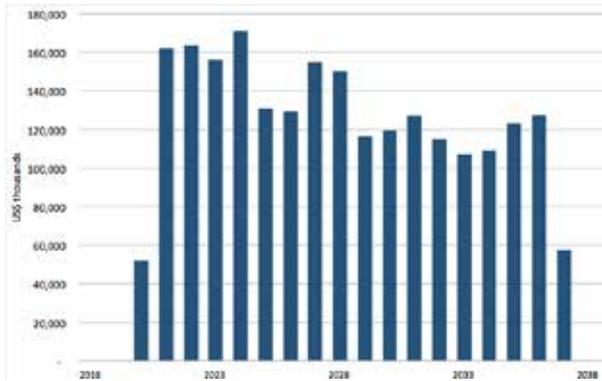


Figure 6: Price Scenarios for Songwe Hill REE Basket

# Potential Government Revenue from Songwe Hill

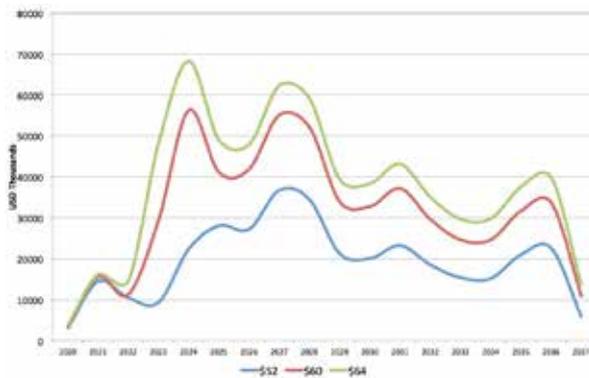


**Figure 7:** Forecast Project Revenue at \$60/kg

The results from cash flow models are not meant to be predictions of actual government revenue. Rather, they provide estimates of potential government revenue under specific sets of assumptions related to production volumes, project costs and commodity prices.

The starting point for any analysis of future government revenues is overall project revenues. Forecast project revenues at a price of \$60/kg for the Songwe Hill basket, for example, are shown in Figure 7.

A massive increase in the price of the Songwe Hill REE basket is necessary for the project to have any chance of going ahead.



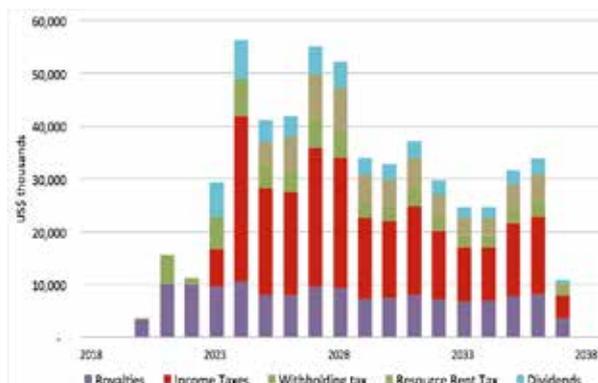
**Figure 8:** Government Revenue at Different Basket Prices

Our analysis shows that a price of close to \$50/kg would be necessary for the project to generate a positive “net present value” – the key determinant in the company’s decision to proceed.

## Potential Payments to Government

Potential government revenue will also depend heavily on the sale price of the Songwe REE basket. Figure 8 shows potential government revenue at the three scenario prices used in the Technical Report. Under a high price scenario peak annual government revenue is nearly \$70 million while in the low price scenario it does not reach \$40 million. Over the lifespan of the mine, total government revenues at high prices could amount to nearly \$700 million while at the lower price the total could be only half that amount.

Figure 9 shows the relative importance of the five different sources of government revenue. Royalties generate government revenue from the start of production and over the lifecycle of the project account for 25% of total payments to government. Corporate income tax is the main source of government revenue, accounting for more than 40% overall. The resource rent tax, the combined



**Figure 9:** Sources of Government Revenue

withholding taxes and dividends from state equity each account for around 10% of government revenue.

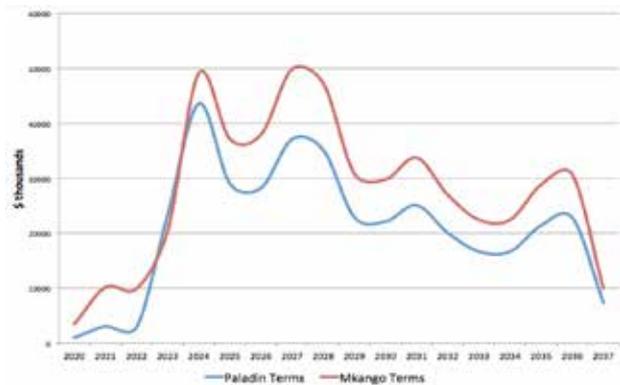
**The Government Take**

The “government take” is a common if crude metric for assessing how fair a deal the government negotiated. It assesses the percentage of divisible revenue (revenues after costs have been subtracted) that goes to the government as compared to the company over the entire life cycle of the project. The IMF suggests that in the mining sector developing countries should expect a government take of 40-60%.<sup>60</sup>

Applying the fiscal terms as set out in Section 4, we find a government take of just over 50%, though that number could drop below 45% depending on the applicability of withholding taxes and the company’s dividend policy.

One important benchmark is how the new fiscal regime compares with the fiscal terms

contained in the 2007 Paladin contract. We therefore applied the Paladin fiscal terms to the Mkango project and found that the government take would be around 10% lower. This illustrates the importance of establish a clear fiscal regime and avoiding project-by-project concessions. We show the potential impact of the difference on government revenue in Figure 10.



**Figure 10:** Comparing Paladin and Mkango Fiscal Terms

# Conclusions and Recommendations

The objective of this study was to analyse the economics of Mkango's Songwe Hill deposit and the potential of the project to generate government revenue. The case study was also designed to provide wider insights into the prospects and challenges of securing government revenue from the mining sector.

## Prospects for Songwe Hill

The Songwe Hill project is commonly described as a highly promising deposit on the cusp of moving into the mine development phase. This analysis however raises serious questions about the economic viability of the project in the absence of major REE price increases. Even if those price increases materialize, it is not obvious that Songwe Hill would be one of the four or five REE mines that would be needed to meet projected global demand. Market analysts point to relatively low concentrations of REEs in the Songwe deposit,<sup>61</sup> while Mkango claims that they have a comparative advantage in capital and operating costs.<sup>62</sup>

On the optimistic assumption that the project does go ahead, production could not start until at least 2020, given the need for a definitive feasibility study, project financing and then around 2 years for mine development. Depressed prices make delays likely.

The economic analysis above is based on the assumption that the fiscal terms that would apply to a Songwe Hill project are the same as those contained in the draft Mines and Minerals Bill (2015) and the final Taxation (Amendment) Bill 2016. Any project-specific tax breaks, as were granted to Paladin for the Kayelekera mine, would significantly reduce future government revenue.

The analysis above is also based on the

project data contained in the 2015 pre-feasibility study. This is the best public-domain information available on Songwe Hill. It is also almost certainly overly optimistic. Comparative analyses of mining feasibility studies reveal a systematic bias towards over-estimating production volumes and project revenue and under-estimating timelines and project costs.<sup>63</sup> The forecasts for potential government revenue provided above should, therefore, be used to provide a sense of potential scale under "best case" assumptions.

Rare earth elements have been touted as potential "game changers" for Malawi's mining sector. The Songwe Hill project is Malawi's most advanced rare earth project. The revenue forecasts above are almost certainly inflated. But even if they were to materialize, an additional \$30-50 million per year would not fundamentally change the government's budget situation.

## Locking-in a Fair Deal

Ultimately, the government has no influence over the main factors that will determine the future of the mining sector: the resources that are in the ground and the market price for those resources. What the government can do is put in place a fiscal regime that finds the appropriate balance between attracting inward investment and securing government revenue in the short and long-term.

The government is headed in the right direction by seeking to embed the fiscal regime in legislation and ending project-by-project investment incentives. The Taxation (Amendment) Bill 2016 has been passed and reports suggest that the Mines and Minerals Bill (2015) is likely to be tabled later in 2016. Work is also underway to add anti-abuse provisions to at least some of Malawi's double taxation agreements.

Even with a clear legal framework in place, there are indications that the government plans to continue to negotiate project-specific Mine Development Agreements.<sup>64</sup> The reason, it appears, is that there are many non-fiscal issues that need to be clarified at a project-specific level. After an extensive process, Malawi has settled on a set of fiscal terms for the mining sector that the government believes are appropriate for the sector and compare well against peer countries. It is imperative that the government not revert to offering project-by-project tax breaks. Assuming that the government follows through on these commitments, the fiscal regime that will apply to future projects will be much more beneficial to the country than the one that was signed with Paladin in 2007.

### Protecting Government Revenues

Setting good fiscal terms is only the first step to securing an equitable share of natural resource wealth, and in some respects it is also the simplest. The hard work of protecting government revenues is

in establishing the tax base against which the respective fiscal instruments are to be applied.

Fiscal terms define what the government should get in theory. As noted above, the IMF suggests that an analysis of mining fiscal regimes suggests that they should generate a government take of between 40-60%. The analysis above suggests that, in theory, the Malawi fiscal regime is well positioned. However, the IMF also notes that in many cases actual receipts fall far below these expectations.

Stopping tax base erosion has become a priority for developed and developing countries alike.<sup>65</sup> In the extractive sector, this means verifying the quality, quantity and international market value of resource production in order to ensure that project revenue is accurately reported. It also means ensuring that profits are not under-reported due to inflated project costs. Meeting these objectives requires strong tax administration and careful audits.

### Textbox 1: Tanzania's Mining Audit Agency

In the late 1990s, Tanzania liberalized its mining sector and attracted massive inward investment. A decade later, however, little tax had been paid. Exports in 2006 were worth nearly \$1 billion but payments to the government were only \$26 million. Large gold mining companies paid no corporate income tax due to aggressive tax avoidance strategies. Between 1998 and 2005, mining companies declared losses of more than \$1 billion. A government audit suggested that these losses may have been "over-declared" by \$502 million.

In 2009 the government established the semi-autonomous Tanzania Minerals Audit Agency. The agency independently assesses the quantity and quality of minerals mined and exported through a combination of on-site mine-monitors, independent mineral sample analysis, and a close tracking of market prices. The agency also supports tax authorities by verifying the authenticity of revenue, investment and expense claims, analyzing the legitimacy of company costs and providing forecasts of expected future revenue.

Since the creation of the TMAA, revenues have increased substantially. Royalty payments from large mines increased from \$24 million in year 2007 to \$70.2 million in 2014. No corporate income tax had been paid before 2009. Between 2009 and 2014, corporate tax amounted to \$365 million. Growth in corporate taxes is to be expected as depreciation allowances decline, but the correspondence between close government monitoring and increased corporate payments is striking.

Established mining countries in the region have struggled to collect a fair share of mineral revenues. Tanzania established a dedicated Mineral Audit Agency and revenue collection has increased significantly (See Textbox 1<sup>66</sup>). Zambia is currently strengthening their administration capacity through the Mineral Production Monitoring Support Programme and the Mineral Value Chain Monitoring Project.<sup>67</sup>

Major capacity-build and monitoring programs like those in Tanzania and Zambia are expensive and are warranted where the potential for revenue recovery is very large. Malawi's efforts to strengthen tax administration capacity should be commensurate with the sector's potential for revenue generation. At the same time, revenues can be lost if tax authorities are not well prepared as new projects come on-stream.

As Malawi concludes work on the legal framework for the mineral sector, it should look to existing international partners including the IMF, the World Bank and DFID to support strengthened capacity for tax administration. Other support may be available in the wake of the Addis Tax Initiative commitments of 2015. Malawi should also benefit from international process including those designed to implement the OECD Base Erosion and Profit Shifting (BEPS) recommendations, and those designed to strengthen the auditing of the extractive sector in Africa including the African Tax Administration Forum and the African Supreme Audit Institutions (AFROSAI).

### **Monitoring Mining Projects**

Even with effective capacity building efforts, there will remain a profound imbalance in experience and expertise of international mining companies, and their lawyers and accountants, and those who seek to defend the revenue interests of the citizens of Malawi. Careful monitoring by government officials on the inside, and by civil society organizations on the outside, is the best way to secure a fair share of the countries natural resource wealth.

The government's commitment to joining the EITI is an important step. Effective monitoring depends on the disclosure of revenue payments, of extractive sector contracts and of the individuals who ultimately own the rights to extractive sector resources. But these are only first steps.

More and more, the challenge is not simply ensure transparency but to make full use of public domain information in order to protect future government revenues and strengthen accountability in the sector. Systematic economic analyses should be done in advance of all new mining projects.

Early project-level economic analyses can help communities recognize the long timelines from the discovery of deposits to mine development and first production. They can also highlight the inherent risks of commodity price fluctuations and their impact on project viability and potential government revenue streams. An obvious candidate for this kind of analysis would be Globe Metals' niobium project at Kanyika.

For on-going mining projects, project-level economic analyses should be used to create revenue forecasts that can assist in budget planning and can generate payment expectations that, if unmet, should be investigated. An economic analysis of Paladin's Kayelekera mine could be undertaken in order to ensure that effective monitoring was in place should uranium prices recover and the mine re-opens.

Protecting government revenues from mining is a long-term process. It depends on strengthened in-country expertise inside government and for CSOs, the media and educational and research institutions. Mining has the potential to be a valuable contributor to Malawi's economy and to its budget. Active engagement is needed to ensure that these benefits are fully realized.

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