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Tanzania - from mining to oil and gas: Structural change or just big numbers?

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Tanzania—from mining to oil and gas

Structural change or just big numbers?

Alan R. Roe*

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Abstract: This paper extends UNU-WIDER Working Paper 2016/79, which examined the economic situation in Tanzania during the resurgence of gold and diamond production after 1999, with the situation that emerged as the country began to exploit its very large resources of natural gas mainly from the Indian Ocean. The mining boom after 1999 provided the authorities with significant lessons and opportunities associated with managing natural resource wealth. The present paper additionally examines some of the specific policy and regulatory decisions taken since 2015, and tries to assess how the multiple challenges of new natural gas wealth are being addressed. It concludes that the experience thus far is not encouraging.

Keywords: Tanzania, gas, liquefied natural gas, mining, energy generation

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1 Introduction

The context for this paper is the significant increase in dependence on extractive industries (minerals and oil and gas) seen in many low- and middle-income countries in the past 20 years. This increase was documented in Roe and Dodd (2017) and also in ICMM (2014, 2016).¹ The record of the past can also be linked to the future perspective, which clearly indicates that a number of low-income countries will likely see further significant increases in such dependence in the years ahead. In some cases this will be due to the discoveries in the past decade of very large quantities of natural gas, mostly offshore. Tanzania and Mozambique are two prominent examples of countries in such a position, and both countries have already seen substantial increases in their levels of extractives dependence since 1996: to around 70 per cent in terms of exports (versus only eight per cent in 1996) in the case of Mozambique, and to around 35 per cent (versus only four per cent in 1996) in the case of Tanzania. Given the strong evidence in many countries of a ‘resource curse’ linked to extractive resources, what will be the opportunities and challenges involved in utilizing these new discoveries to promote both structural change and broader development in economies such as these?

Section 2 of this paper briefly reviews the evidence of Tanzania’s economic performance in the period of its significant gold mining boom, which began around 1999, and puts forward some basic hypotheses about why this boom failed to produce significant structural change and diversification. Section 3 then briefly describes the new opportunities that seem to be opening up as a consequence of the new natural gas discoveries, and the huge future investments that will be associated with this. Section 4 provides a selective update on some of the developments in policy and regulation that may once again be undermining the prospects of the new boom leading to significant structural change in the economy. Section 5 offers some main conclusions.

2 Liberalization and the gold mining boom

An earlier paper, written in 2015 but published in 2016 (Roe 2016), documents the sequence of developments in mining and other sectors of the economy that helped to produce Tanzania’s economic resurgence from the late 1990s. That paper focused on the period from the start of the country’s economic liberalization in the mid-1990s through to about 2015. The storyline in brief was that the liberalization had been associated with a substantial improvement in the investment climate, particularly for mining, and had therefore led to a boom in new foreign direct investment (FDI), especially in gold mining, beginning at the turn of the millennium. That investment was part of a broader process that turned Tanzania’s previously stuttering growth into sustained positive growth in gross domestic product (GDP) and GDP per capita: a growth record that persisted from a start date of around 1997 until 2016, establishing a period of wholly unprecedented sustained growth in the post-war years. The mineral investment boom was associated in turn with exports of gold overtaking all of Tanzania’s tradition agricultural exports combined, to become easily the country’s largest source of foreign exchange earnings. It was associated also with a big increase in government revenues from mining, and with some limited

¹ Annex 1 to this paper presents some of the key underlying data to support this point. It shows in particular data for the period 1996–2014 for the 72 low- and middle-income countries that have the highest levels of dependence on extractives (minerals plus oil and gas). These are arranged in order (low-income countries, lower middle-income countries, higher middle-income countries), using the World Bank classification.

statistical changes in the structure of productive activity as measured by the shares of different sectors in total GDP—the first such changes since independence in 1964.

However, as explained in the earlier paper (Roe 2016), this huge and unprecedented opportunity was not converted into a deep change in the basic structure of the economy. This was in spite of the fact that Tanzanian policymakers had themselves identified a number of policy changes that would potentially have created a much bigger and broader economic impact than actually occurred.² These possible policy changes were crowded out by an overly narrow political focus on the need to extract more revenue for government from the booming sector—a focus that some commentators anticipated would be wholly unnecessary, because of the large natural growth of tax and royalty revenue that would arguably come independently of policy changes (ICMM 2009).

The analysis in Roe (2016) of this period and these matters is summarized in Annex 2 to this paper.

3 The new opportunities from natural gas

Gas has already been produced in Tanzania on a relatively small scale for some 14 years (from fields located at Songo Songo, which is on the Indian Ocean midway between Mtwara in the south and Dar es Salaam further north), and this is fed into a small pipeline that delivers gas mainly for power generation in or near Dar es Salaam. The current throughput is circa 90 million metric standard cubic feet per day (mmscfs/d), the bulk of which is used for power generation. However, more recent discoveries have radically changed the future perspective for gas in Tanzania. Specifically, in the past decade there has been very large exploration activity in the many concessions so far granted by the Tanzanian Petroleum Development Corporation (TPDC).³ These have resulted in vast commercial finds that are only now beginning to be developed.

The first chronologically—but not the largest—were the onshore and shallow-water finds at Mnazi Bay (south of Lindi and Mtwara) by the Anglo-French consortium of Maurel et Prom and Wentworth. These discoveries delivered their first gas into the major new and much larger Chinese-financed pipeline from Mnazi Bay in August 2015. They now have the capacity to deliver more than 100 mmscfs/d, i.e. significantly more than the existing throughput from Songo Songo, which itself is expected to increase.

However, the largest gas reserves have been discovered much further offshore (more than 80 kilometres) from mainland Tanzania by other consortia led by large private multinational companies. Specifically, in 2010 Ophir Energy plc⁴ announced an agreement with the BG Group of the UK⁵ over Ophir's exploration interests in three offshore exploration blocks (Blocks One, Three, and Four) in the Indian Ocean along the south-eastern coast of Tanzania. The BG Group took over operatorship in July 2011, and then embarked on an exploration drilling campaign,

² This fact is embodied in particular in the report of the Bomani Commission (URT 2008).

³ TPDC was established in 1969 by the Tanzanian government. It is through TPDC that the Ministry of Energy and Mining implements its petroleum exploration and development policies. However, one of the reforms in the Petroleum Bill that received presidential assent in July 2015 is that TPDC is now designated the National Oil Company, hiving off its regulatory role to a new independent regulatory body.

⁴ Ophir Energy is a conglomerate in which Indian steel magnate Lakshmi Mittal holds 14 per cent of the shares, a hedge fund 10 per cent, and a 10.6 per cent share previously owned by the late Polish millionaire Jan Kulczyk. There is also a holding by Tokyo Sexwale, the South African tycoon jailed with Nelson Mandela on Robben Island.

⁵ BG has now been taken over by Shell, but I shall continue to use the BG label to refer to the projects they originally began together with Ophir.

which resulted in seven gas discoveries (see Figure 6 in Roe 2016). In addition, there have been significant finds in Block Two by the Norwegian company Statoil, and there is ongoing exploration in Blocks Five, Six, and Eight by the Brazilian company Petrobras and in Blocks Nine, 10, 11, and 12 by Shell (some in the waters of Zanzibar). The discoveries meant that by 2012 Tanzania's total estimated natural gas reserves had quadrupled from 10 to 40 trillion cubic feet (tcf). Since then press reports⁶ indicate additional finds that take the total estimated reserves to 53.2 tcf of recoverable natural gas.

The situation in Mozambique is even more dramatic. Natural gas reserves there would total an amount equal to almost twice that estimated for Tanzania. This figure is based on the discoveries of over 100 tcf of natural gas reserves in the Rovuma basin by the US company Anadarko and the Italian firm Eni. Anadarko's main discovery of natural gas occurred in Area One, off the northern coast of Mozambique near the border with Tanzania. The large reserves are thought likely to justify the construction of at least two liquefaction trains for liquefied natural gas (LNG) production (for export), with the potential to extend to 12 at some future date.

Returning to the situation in Tanzania, a major point to note is that the gas discoveries so far known about are on a scale far larger than anything ever seen in gold and diamond mining. Early estimates from just one of the 20 or more major companies currently licensed to explore for oil and gas suggest that the FDI from their project alone (the BG/Ophir project) could top US\$5 billion in the single peak year of construction—some five times larger than the *maximum* annual FDI seen in any of the years of the gold resurgence. Allowing for the recent significant increases in the estimates of the country's total gas reserves referred to above suggests that the peak year FDI for all the gas investments combined could be many million dollars larger than even this huge figure. To put the offshore finds into some sort of perspective with Tanzania's previous gas history, the technically recoverable gas in Songo Songo and Mnazi Bay is thought to total something less than two tcf. By comparison, the BG Group has already confirmed reserves in their deep-water blocks of 15 tcf, and Statoil has confirmed reserves of 22 tcf. In other words, the known deep-sea reserves are at least 20 times larger than the known onshore and shallow-water reserves.

The question of what all this may mean for the economy of Tanzania and its longer-term development still needs to be clarified, given the uncertainties about various factors: the volumes of gas that will in practice be developed, the future prices that this production can command given the recent softness of oil and gas prices, and the actual dates when production might start. The earlier paper (Roe 2016) sought to clarify as much as possible, based on the then-existing information and some reasonable assumptions. Some of the key results of this analysis are summarized in the following paragraphs, with fuller detail on the macroeconomic impacts presented in Section 3.3 of the earlier paper.

⁶ For example, Obiukwu (2014). Most recently, the Dubai-based Dodsai Group has announced the country's largest *onshore* find: a discovery in the Ruvu Basin near Dar es Salaam that is estimated to contain at least 2.7 tcf of natural gas deposits, with a value of US\$8–11 billion. This would push total reserves as high as 57 tcf.

3.1 Prospects in the short term

The short-term situation is dominated by the developments in Mnazi Bay and their likely impact on Tanzania's capacity to generate electric power. Starting in August 2015, the availability of new gas from this source has already resulted in the delivery of some gas through the new high-capacity pipeline from Mnazi Bay, which was financed on relatively soft commercial terms by the China Exim Bank. Full use of this pipeline may need to await the delivery of some domestic gas from the offshore BG/Ophir/Statoil and other fields, which are unlikely to be available until around 2021–22.

However, even the new short-term gas could have a very significant impact on both the availability and delivery costs of electric power in Tanzania. In the 'Big Results Now' programme—the centrepiece of recent Tanzanian planning—it is anticipated that it will be possible to provide electricity to five million more Tanzanians by 2030, thereby alleviating to a degree the shockingly low rate of access to electricity that currently exists. This achievement will depend on many factors, including the completion of a major programme of new power stations at Kinyerezi near Dar es Salaam. Generating capacity currently—before the new Kinyerezi plants come on stream—is some 1,200 megawatts (MW). However, the four phases of the planned expansion will increase this capacity to more than 2,200 MW, which for gas-fired technologies would require a total gas feedstock of some 220 mmscfs/d. The new Maurel et Prom/Wentworth deliveries plus some early-stage expansion from the older Songo Songo fields would potentially provide at least 90 per cent of this requirement, and in the very near future.

This seems like extremely good news for the Tanzanian economy in several different ways. First, it means that Tanesco—the national energy supply company—has already been able to decrease its dependence on expensive imported feedstocks of diesel, and also reduce its use of ageing and unreliable hydro plants. Second, Wentworth has stated that its gas sales agreement with TPDC means that it can deliver gas at Mtwara at US\$3.07 per million cubic feet (mcf), meaning that TPDC should be able to supply to Tanesco at US\$5 per mcf (Wentworth 2014). This in turn should enable Tanesco to produce and supply power at a price per kilowatt-hour which is less than half the price necessitated by the use of expensive imported diesel. Third, as well as hopefully lowering prices for some consumers, this will also reduce import bills. A spokesperson for the Ministry of Energy has said that this change of feedstock could save the country some US\$1 billion per annum in import costs. Finally, it should also enable a large reduction in the massive fiscal subsidy paid to Tanesco—a subsidy justified partly by the company's inability to set prices to fully cover its currently excessive costs, and partly by the large payment arrears from which it suffers. This subsidy payment amounted to TSh399 billion in 2013–14, which compares with total government revenues in the same year of TSh10,182 billion, i.e. the energy subsidy was nearly four per cent of that total (IMF 2015).⁷

The other significant thing that is happening in the short term is the initial planning and construction work around the large BG/Ophir project and some of the other large offshore gas projects. During this planning and construction phase, capital investment for the one project alone (in the upstream gas extraction and midstream processing activities) will be around US\$11 billion, with the largest annual capital investment of US\$5 billion made in the final year of construction—possibly 2020 or 2021. Construction work has been underway for some time, and during the full four-year period that is involved it will employ many thousands of construction workers. This has

⁷ However, a more recent IMF report shows government transfers to Tanesco of zero in both 2014–15 and 2015–16 (IMF 2017).

meant that the Tanzanian Revenue Authority has already been receiving significant pay-as-you-earn revenues associated with the wages and salaries paid to these workers. These revenues have amounted to more than US\$100 million in some recent years, which compares favourably with the US\$390 million for all the revenues from mining companies as shown in a report of the Tanzania Extractive Industry Transparency Initiative (TEITI) for 2011–12 (TEITI 2014).

3.2 Prospects in the medium and longer term

The offshore gas from the BG/Ophir, Statoil, and similar new reserves is located mostly in gas fields that are up to 85 kilometres from mainland Tanzania, in water 1,000–1,400 metres deep, and up to a further 2,000 metres below the seabed, in an area of 200 kilometres. Producing this deep-water offshore gas is far more costly than shallow-water or onshore gas.⁸ This is because it is technically more complex, and so requires more specialized equipment and engineering skills. This also means that significant engineering problems still have to be solved to produce this gas, and that the development of these fields will have costs that cannot be fully assessed at the present time. One unavoidable consequence of this is that in order to make the huge BG/Ophir investment commercially viable, large volumes of gas will have to be produced from these fields, so that the revenues from selling the gas can cover the cost of the initial investment as well as the ongoing operating costs of the gas fields. This logic results in a message that if wrongly interpreted can be politically very difficult to accept. This is that most of the gas (as much as 95 per cent, as in the production sharing agreement already signed with government) will need to be exported as a large ‘anchor volume’ of LNG in order for the project to be commercially viable. This is broadly the same commercial reality that applies to the Anadarko and Eni fields in Mozambique.

A modelling of results that assessed the numerical magnitudes of just one of the BG/Ophir discoveries was presented in a joint Oxford Policy Management and Uongozi Institute study in 2013 (Uongozi Institute 2013).⁹ These results, based on both a high- and a low-price assumption for LNG, can be summarized as follows:

- The final year of construction could bring with it new inflows of FDI of some US\$5 billion, which would be six times the size of annual FDI receipts in most recent years.
- LNG would quickly become the country’s largest single export activity, with the export value climbing to US\$5 billion per annum. This figure would easily overtake the gold and diamond exports that came to dominate Tanzania’s exports after 2000; this overtaking would happen even in the lower-price scenarios.
- In the balance of payments (BoP), the FDI will be used in part to import specialist equipment and services not available locally, and exports will also be partly offset by both other imports and the repayment of the initial capital investment. Nonetheless, the net overall BoP effects in most future years will be positive and significant, with a typical annual improvement of US\$2 billion.
- Under the high-price scenario, the additional revenue to government would be as high as US\$2 billion in peak years, equivalent to between two and three per cent of GDP (projected forwards). This sum is also equivalent to more than two thirds of current receipts of overseas development assistance. However, in the lower-price scenario that is

⁸ As much as US\$7 per barrel of oil equivalent (boe), versus US\$3–4 per boe for the onshore gas. The total capital cost of this one BG/Ophir project alone is estimated to be US\$27 billion.

⁹ See in particular the section in that report by Samantha Dodd, Mark Henstridge, and Alan Roe: ‘An Assessment of the Macro-Level Socio-economic Impacts of a Potential LNG Plant in Tanzania’.

now much more likely, these peak years' additional revenues would be approximately halved at US\$1 billion.

- There will be thousands of jobs created in the four-year period of construction. However, the direct employment impact of the project is likely to be fairly modest during the longer operational phase (perhaps only 400–500 direct jobs), due to the highly capital-intensive nature of LNG projects.

4 So what might go wrong?

Given that the numerical results summarized above relate to just one of several very large projects, the collective impact of the new natural gas ought to be transformative. Certainly the magnitudes of the likely macroeconomic impacts seem likely to be wholly unprecedented in Tanzania's history, and they should dwarf the very large numbers seen from the gold mining boom in the years from the late 1990s. Given also that the estimated reserves in Mozambique are almost twice those of Tanzania, even more dramatic statements might be made about that country's future prospects.

The anxiety arises nonetheless that these huge opportunities might fail to produce transformative economic effects—for example, in terms of fundamental changes in economic structure, or significant improvements in economic conditions for a broad section of the Tanzanian (and Mozambican) population. This is a matter that can obviously be addressed by reference to the huge literature on the resource curse, in both its economic and its political-economy manifestations.¹⁰ But in this section I look at the matter from a somewhat different angle by focusing on just a few individual political and policy decisions that might collectively work to undermine the opportunities that the new gas is starting to bring. It is almost two years since the previous paper (Roe 2016) was written, and in those two years we have seen a number of separate decisions that have revealed more not only about the spin-off opportunities that exist from the gas, but also about the types of things that might undermine these opportunities.

The broader context for the discussion that follows draws on two main considerations. The first is that it is undoubtedly an unusually complex challenge to address policy planning for and practical regulation of the oil and gas industry (in any country). The time horizons involved are frequently very much longer than is the case in other industries; the instabilities (especially of prices) are greater; the environmental concerns are considerable; the number of different ministries and agencies that are involved in decision-making are unusually large. This all raises a huge challenge of effective coordination. The reality of this challenge is illustrated for the case of Tanzania in Box 1, and is confirmed by the specific examples I present later in this section. The second aspect is that it is arguably the case that the planning and regulatory challenges are several degrees more difficult in low-income and low-capacity countries. This is because such countries often have fragile institutions and limited experience in the underlying technical issues, compounded by social and political constraints that make enforcement far more difficult than it is elsewhere.¹¹ The examples below provide a few practical illustrations of how these problems seem to be working themselves out in Tanzania.

¹⁰ A good and up-to-date review of this literature is provided in recent research from Chatham House. See Stevens (2015) and Stevens et al. (2015).

¹¹ As is noted in a forthcoming paper by Ruth Greenspan Bell (2017), there is a large literature on the regulatory deficiencies seen in the developing world, and on the various disasters that have ensued as a consequence of those deficiencies.

Box 1: Who is involved in extractives planning and regulation in Tanzania?

The complete answer to this question involves a plethora of ministries and agencies that ideally need to work together to deliver an ‘all-of-government’ approach. The vice-president’s office is nominally the lead coordinator on overall policy, but often needs to defer to the office of the president himself. The other involved ministries and agencies include the Ministry of Energy and Minerals (MEM) as the lead policy and administrative institution; TPDC (now NOC) as the designated national partner in all petroleum-related ventures; the Petroleum Upstream Regulatory Authority, which has recently taken over the regulatory functions of TPDC; the Energy and Water Utility Regulatory Authority (EWURA), whose role is confined to midstream and downstream regulation; the Ministry of Finance (MOF) as the lead policy institution in setting royalty and profit-sharing terms at the project level; the Tanzanian Investment Authority; the Attorney General’s office, which is also involved in negotiating and devising contracts; the Tanzania Revenue Authority, which collects income taxes from gas companies. MEM collects the large share of non-tax revenues from petroleum activities via TPDC including royalties, licence fees, application fees, annual rent, and the government profit share from oil and gas, with MOF collecting revenues from equity holdings, and local authorities collecting a local service levy from mining companies. If this were not already a daunting enough coordination challenge, the National Environment Management Council in coordination with local authorities manages environmental issues; the Ministry of Labour and Employment leads on the formulation of labour, labour market, social security, and employment policies; the Ministry of Lands, Housing, and Human Settlements Development has to approve land allocations for extractives use.

4.1 Example 1: large-scale cement production as a major downstream spin-off

The multibillion dollar investments associated with the new gas discoveries will obviously involve a huge programme of construction, not only in the LNG plants and the associated ports, roads, and bridges needed for the extraction and processing of gas, but also in the housing and ancillary facilities needed to support many tens of thousands of new workers.

Cement is a central input for that building programme, and it was an early success when the country attracted a major US\$500 million investment into that industry from Dangote Cement, which is owned by Africa’s allegedly richest businessman, Aliko Dangote of Nigeria. The plant near Mtwara was commissioned in October 2015 with much political fanfare from the previous political administration led by President Jakaya Kikwete. It has a large annual potential capacity of three million tonnes.¹² At that time it was heralded as the first of a number of major new downstream industries—many located in the relatively underdeveloped region of Lindi-Mtwara—that would be made possible by the presence of natural gas, and that could help to diversify the Tanzanian economy. But since then the variety of problems the plant has faced illustrate the range of practical problems that arise when political manoeuvrings intervene in a commercial operation. First there have been allegations that the incentives the Kikwete regime offered to Dangote were far too generous, implying that the deal ought to be renegotiated. I am not aware of any hard facts that have been made public about this matter, but news reports have suggested that this was one factor behind the recent firing of the former executive director of the Tanzanian Investment Authority (TIA). Second, it is also alleged that some of the wealthy Tanzanians who had co-invested in the new plant had obtained their funds to do so through what an MP from the Mtwara region is quoted as describing as ‘grand corruption that was diverted from other government projects’.¹³ Certainly, Dangote quickly found its situation to be embroiled in the crossfire of rumour and innuendo, as between the previous and current administrations.

¹² Dangote is reported as seeking to double the country’s annual output of cement to six million tonnes.

¹³ Quoted in *The Citizen*, 30 November 2016.

However, perhaps the most serious aspect of the various political machinations is the effect that these seem to be having on the commercial viability of this highly significant new plant. The difficulties relate mainly to the restrictions that have been placed from time to time on Dangote's sourcing of its key inputs. Initially one of these was coal imported from South Africa. Although a switch to natural gas always seems to have been envisaged, the initial operations preceded the availability of an adequate gas supply, and so depended heavily on coal. However, in August 2016 the import of coal from South Africa was banned as part of a programme to try to stimulate Tanzania's own coal industry.¹⁴ Various versions of the facts around this ban are now circulating. But initially, in October 2016, the official Dangote position was that they could not use local coal because it was of too poor a quality. This view was supported by a Tanzanian special commission set up to investigate the matter, chaired by Dr Augustine Hang, which had earlier confirmed that local coal was indeed of 'poor and/or fluctuating quality'.¹⁵ Other local cement producers have stated that before the import ban they had the option to balance both the quality and the supply chain (as between local supplies and imports), but now they have no alternatives.¹⁶ More recently, Mr Dangote himself has stated that he wishes to try to develop the use of local coal and so support that local industry. In any event, in the latter part of 2016 Dangote was forced to fall back on the import of expensive diesel fuel, spending an amount reported to be around US\$4 million per month to do so. These unexpectedly high costs, which resulted in significant operational losses and other contemporaneous difficulties, led the plant to temporarily shut down in late November 2016. However, rumours at that time of a permanent closure have fortunately proven to be incorrect.

A central factor behind these cost and input supply problems has been the difficulty until now in providing Dangote with access to the natural gas it had always expected to have available: indeed, the close proximity of plentiful cheap gas was a key part of the logic for Dangote's location near Mtwara. Allegedly too, the provision of gas at reasonable prices was one of the offers made to Dangote by President Kikwete. For reasons that are explained elsewhere in this paper, adequate supplies of the near-shore gas produced by the Wentworth project are now available, and the company is willing to sell some of this to Dangote. But for the time being, the regulations in force require the purchase of this gas to be intermediated by TPDC. This arrangement has stumbled into some wholly human-made problems over pricing. According to EWURA, the regulator for water and energy, in a statement in December 2016, gas was then priced (and maybe still is) at a standard tariff based on the full costs of production, processing, transportation, and distribution to the main users at Dar es Salaam.¹⁷ Among other things, this means that customers in Dar es Salaam pay the same tariff as users close to Mtwara such as Dangote, who are some 500 kilometres closer to the source of that gas. Dangote has quite reasonably expressed some frustration at this state of affairs, especially in light of the agreements on the matter that it thought it had obtained from the Kikwete administration. The gas supplying company, Wentworth, seems happy to supply Dangote locally at prices that could be considerably below those charged at Dar es Salaam; contrary to press comment, these would not be subsidized prices. But this apparently cannot happen.

¹⁴ Some reports say that the ban was explicitly targeted at Dangote. To the outsider this looks like a classic case of a protectionist industrial policy designed to help one 'new' activity (coal) undermining the commercial prospects of a second important activity (cement).

¹⁵ *The Citizen*, 12 December 2016.

¹⁶ It was added that the quality of local coal is compromised since Tancoal, the only active coal producer in the country, lacks a processing plant to produce coal of the consistent quality demanded by the market, and also that local storage is inadequate with the result that the water content of the resultant coal can often be compromised.

¹⁷ *The Citizen*, 30 November 2016.

Significantly, it has not only been Dangote management that has expressed its disappointment over this matter. In addition, the leadership of the ruling CCM party in Mtwara stated last December that it was high time that the government helped to solve the operational problems. The regional administration in Mtwara stated that the Dangote issues had revealed deep weaknesses in several ministries and departments.

A later and strange chapter in this eventful saga of policy on natural gas and cement came with an announcement in March of this year that the relevant ministry (MEM) had given Dangote a 10 square kilometre plot of land in Ngaka to use for the mining of its own coal. The Ngaka coal basin in southern Tanzania covers an area of more than 800 square kilometres, and is licensed to Tancoal Energy Ltd. The incumbents say that they will work with the authorities to hand over part of their licensed coal mining area to Dangote, but have also raised concerns about what they call ‘special treatment’ being given to the Nigerian cement maker by the Tanzanian government. This looks like a decision that has come directly as a result of an ultimatum given to officials by President John Magufuli to help Dangote resolve its fuel supply problems.¹⁸ It remains to be seen whether this is the best or even a good way to do so.

The somewhat better recent news—yet to be detailed—is that Dangote is now going ahead with a gas-fired power plant to supply electricity to its Mtwara factory. Apparently a price for the gas input has been set by EWURA (for TPDC to charge Dangote) that is commercially acceptable to the gas producers and TPDC, but is less than the price previously demanded. Dangote will thereby become a significant user of the Mnazi Bay gas, but only after many months of difficult and painful arguments over what should have been a simple matter.

4.2 Example 2: new gas to enhance the supply of power generation and lower costs

As was noted in Section 3, the production since late 2015 of natural gas from the near-shore finds of Maurel et Prom and Wentworth at Mnazi Bay appears to offer a clear win-win situation for all interested parties: a cheaper fuel stock for Tanesco; a good source of fuel for the new power plants at Kinyerezi; an increase in the numbers of Tanzanians with access to affordable electricity; an early use of the new Chinese pipeline, and hence some revenues to help service the debt involved; a reduced level of fiscal subsidy needed by Tanesco; a commercially viable operation for the private operators. But once again the practical realities of Tanzanian decision-making and politics intrude to threaten a successful outcome.

The explanation of this point is complex, and the relevant factors are not fully known or fully available to the author. But a good place to start is with the decision of the energy regulator EWURA at end-December 2016 to recommend a tariff increase for Tanesco of 8.5 per cent. This was in response to a request submitted to them by Tanesco for a tariff increase of 18.19 per cent. Although there are many factors contributing to the long-standing financial problems of Tanesco, the case for a significant tariff increase was argued in some detail by the company in a submission of August 2016 (Tanesco 2016). It cited the facts that it was losing money on each unit of power sold; that its huge accumulated arrears of payments from customers (nearly TSh700 billion) had still not been converted into long-term concessional debt;¹⁹ that it needed a much stronger financial position in order to undertake the capital investments needed to ensure the government’s target increase in electricity coverage of the country by 2025. The alternative to the requested tariff increase would include Tanesco’s ongoing failure to meet accepted standards for repairs and

¹⁸ *World Coal*, 13 March 2017.

¹⁹ It had been expected that concessional loans from the World Bank and African Development Bank might have been available to provide this financial support, but this had not been forthcoming.

maintenance, and a level of spending on repairs and maintenance far less than the 15 per cent of revenues that is seen as good industrial practice.

EWURA responded to this request with a very detailed consultative process that ran from October to December 2016, and then published its decision on 29 December (EWURA 2016). This decision reflected EWURA's technical assessment of the Tanesco case, and also the opinions of a significant number of stakeholders who were consulted about the request during the consultative process. In brief, EWURA accepted the need for a tariff increase to come into effect from January 2017, but decided that this should be substantially below the percentage figure asked for by the generator company. However, before the tariff increase could come into effect, the ministry, strongly supported by President Magufuli, ordered the recommended increase to be rescinded. The president is quoted as saying: 'It's unacceptable that while we are making plans to build manufacturing industries and ensure more citizens have access to electricity, someone else uses his position to increase power tariffs.'²⁰ The head of Tanesco was also fired by the president. As of today, it is understood that the president's decision stands, and Tanesco continues to struggle with the financial problems set out in its submission of last August.

Unfortunately, as in the case of the Dangote cement saga, these high-level political decisions have had unintended consequences that seem (to the outsider) to be inimical to Tanzania's ambitions to make effective use of its huge gas resources to build a bigger and more diversified economy. One such consequence that was entirely predictable is that Tanesco has needed to address the high level of non-payment from which it suffers by itself failing to pay its suppliers. These include TPDC, which among other things provides the generator company with the gas from the Mnazi Bay source. TPDC in turn has consequently struggled to make prompt payment under the gas sales agreement that it has signed with the private companies who produce that gas. It is understood in fact that no payments at all have been made under that agreement since the turn of the year. This in turn has caused significant cash flow difficulties for at least one of the companies involved, namely Wentworth, which has needed to resort to its shareholders to raise additional funds. Wentworth's future ability to produce the gas that is available must be in some doubt, and for some months it has been operating at well below the capacity that its discoveries make possible—a problem for Wentworth, but also a lost opportunity for the country more generally. The saga is further complicated by the fact that the local banker to the gas supply company is the Tanzanian Investment Bank (TIB), which is itself a parastatal organization.

The upshot of all this is that the apparent win-win situation described in Section 3 seems to be compromised by a variety of ostensibly unconnected decisions, the cumulative effects of which are contrary to any outcome that any supreme authority might have planned for. Particularly important in all of this are the actions of a set of parastatal agencies, with the problems they all face tracing back, it would seem, to a lack of financial/fiscal discipline within a range of mainly public bodies. Tanesco's financial difficulties are complex, but include the major burden of huge arrears of payment by clients (TSh700 billion is equivalent to about US\$300 million), many of which are understood to be public-sector bodies such as the army, police, and prison service. It seems reasonable to suppose that the absence of these arrears would have lessened the need for the major tariff hike that triggered the angry reaction of the president in January, and that it would also have made it more likely that Tanesco could have stayed current with its payments to TPDC, a second parastatal. A third public body, namely EWURA, seems to have discharged its legal responsibilities in a principled and professional manner, but has been overruled by higher authority. A fourth parastatal, namely TIB, might have the means to cut through the impasse by providing cash support to the gas producers (secured perhaps by the receivables due from these

²⁰ *The East African*, 2 January 2017.

companies by other public sector bodies). However, it is not clear whether that bank has sufficient capital to take on such an operation, given that the bulk of its capital does indeed come from government. Nor is it clear that TIB would relish the task, or indeed have the authority, to deal with the chain of payment arrears back to the ultimate source of that problem—non-payments on a huge scale to Tanesco.

5 Some conclusions

This paper, in common with the earlier paper (Roe 2016), began with a discussion of Tanzania's gold mining boom from the late 1990s, and suggested a number of reasons why this boom failed to ignite a major structural change for the economy consistent with its very significant magnitude. The earlier paper also looked in some detail at the orders of magnitude that seem likely to be associated with the newly emerging boom in natural gas. The present paper repeats in summary form some of the key aspects of that emerging situation. But it also tries to put that situation into perspective, by selectively analysing some of the specific policy decisions and actions that have been made in the most recent past since the earlier paper was written. That analysis seems to confirm the general proposition, advanced by others and repeated in Section 4, that the regulatory and policy challenges, especially those that require effective coordination across a range of agencies, can be especially overwhelming in low-income countries with relatively new (or weak) institutions. So the initial high hopes and optimism associated with the truly huge natural gas discoveries are already beginning to be dampened down by the emerging realities.

This is not to criticize individuals in government, or even individual decisions: a scan of relevant published documents seems to show a reasonable standard of professional performance by most agencies, judged in terms of their narrowly defined mandates and objectives. It seems unfortunate that the heads of three major parastatals (TIA, Tanesco, and EWURA) have been fired in the past two years. But maybe the problem lies not with individuals such as these, but with the system. The element that is missing seems to be the higher-level understanding of how the separate mandates of these different bodies might be better integrated and coordinated so that they can together deliver a nationally optimal set of outcomes. In the absence of this understanding and related actions, errors in one part of the system are producing domino effects that negatively impact other parts, with no one apparently able to stand above all of the machinations to achieve a breakout from the domino sequence of unintended outcomes.

So the history of gold and its failure to induce deep structural change is in some danger of repeating itself. As the earlier paper noted, the challenges of coordination are most acute in relation to the important relationship between commercial gas production and its narrow logic on the one hand, and on the other the wider economic issues that need to be addressed to ensure a real boost to the non-hydrocarbon economy using the catalyst of large gas discoveries. Although there are some small victories in this area—some important companies such as Dangote and also Coca-Cola now benefit from the use of the new local and cheaper gas—the bigger challenges in this regard lie ahead. If the problems of using gas in cement production have proved so problematic, how will the challenges be handled of the much larger investments needed to develop the core LNG production (which underpins the commercial logic of developing the large offshore gas discoveries) and some downstream outputs such as fertilizer and even methanol production?²¹

²¹ The very large capital costs of these possible downstream activities and some of the other practical challenges they pose were addressed in the earlier paper.

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Annex 1: Increasing extractives dependence: selective evidence

Table A1: Changes in extractives export dependence, 1996–2014

	Income	Country	Minerals as percentage of total				Minerals including coal and oil and gas as percentage of total			Change 1996–2012 (percentage points)	Change 1996–2014 (percentage points)
			1996	2012	2014		1996	2012	2014		
1	Low	Benin	1%	21%	12%		5%	37%	26%	31%	21%
2	Low	Burkina Faso	8%	46%	50%		23%	46%	57%	23%	33%
3	Low	Central African Republic	56%	44%	45%		56%	45%	46%	-12%	-10%
4	Low	Chad	0%	0%	0%		0%	94%	94%	94%	94%
5	Low	Dem. Rep. of the Congo	72%	81%	78%		83%	92%	93%	9%	10%
6	Low	Eritrea	62%	61%	36%		63%	61%	36%	-2%	-27%
7	Low	Guinea	76%	60%	53%		81%	87%	92%	7%	11%
8	Low	Korea, Dem. People's Rep.	9%	16%	15%		11%	56%	50%	44%	39%
9	Low	Liberia	49%	24%	43%		50%	41%	44%	-9%	-7%
10	Low	Madagascar	8%	18%	34%		11%	20%	36%	9%	25%
11	Low	Mali	8%	42%	47%		10%	43%	50%	33%	40%
12	Low	Mozambique	6%	36%	42%		8%	72%	68%	64%	61%
13	Low	Niger	21%	22%	21%		40%	57%	57%	17%	17%
14	Low	Rwanda	3%	39%	45%		3%	47%	55%	44%	52%
15	Low	Sierra Leone	28%	51%	46%		29%	51%	46%	22%	17%
16	Low	Togo	33%	28%	18%		40%	43%	34%	3%	-6%
17	Low	United Republic of Tanzania	4%	35%	33%		4%	37%	34%	32%	30%
18	Low	Zimbabwe	15%	27%	19%		17%	38%	31%	22%	14%
19	Lower-middle	Armenia	25%	45%	47%		27%	50%	52%	23%	25%

20	Lower-middle	Bhutan	3%	15%	16%		23%	36%	27%	12%	4%
21	Lower-middle	Bolivia	30%	30%	27%		43%	81%	81%	38%	38%
22	Lower-middle	Cameroon	5%	5%	3%		40%	5%	57%	-36%	16%
23	Lower-middle	Congo	2%	4%	8%		87%	92%	92%	5%	5%
24	Lower-middle	Côte d'Ivoire	1%	6%	6%		16%	35%	26%	19%	10%
25	Lower-middle	Djibouti	6%	17%	17%		30%	23%	25%	-6%	-4%
26	Lower-middle	Egypt	5%	9%	7%		56%	45%	35%	-11%	-22%
27	Lower-middle	Ghana	28%	18%	21%		33%	48%	55%	15%	22%
28	Lower-middle	Guyana	37%	58%	52%		37%	59%	52%	21%	14%
29	Lower-middle	India	16%	11%	12%		18%	30%	31%	12%	14%
30	Lower-middle	Indonesia	6%	7%	6%		32%	41%	35%	9%	3%
31	Lower-middle	Kyrgyzstan	7%	17%	26%		22%	31%	37%	9%	15%
32	Lower-middle	Lao, People's Dem. Rep.	1%	39%	30%		2%	55%	45%	54%	43%
33	Lower-middle	Lesotho	4%	44%	38%		4%	44%	38%	41%	34%
34	Lower-middle	Mauritania	36%	63%	59%		36%	72%	68%	36%	31%
35	Lower-middle	Myanmar	8%	18%	19%		8%	58%	35%	49%	27%
36	Lower-middle	Nigeria	0%	1%	1%		94%	94%	95%	0%	1%
37	Lower-middle	Papua New Guinea	24%	51%	39%		55%	69%	70%	14%	15%
38	Lower-middle	Senegal	10%	13%	16%		29%	34%	36%	5%	7%
39	Lower-middle	Sudan	4%	46%	25%		4%	80%	88%	76%	84%
40	Lower-middle	Tajikistan	30%	59%	49%		33%	60%	51%	27%	18%

41	Lower-middle	Uzbekistan	10%	19%	35%		16%	26%	52%	10%	36%
42	Lower-middle	Yemen	1%	3%	3%		94%	89%	91%	-5%	-3%
43	Lower-middle	Zambia	76%	69%	69%		80%	70%	71%	-10%	-9%
44	Upper-middle	Albania	9%	12%	8%		15%	38%	27%	23%	12%
45	Upper-middle	Algeria	1%	0%	0%		78%	99%	98%	20%	20%
46	Upper-middle	American Samoa	0%	3%	5%		0%	40%	5%	40%	5%
47	Upper-middle	Angola	5%	1%	2%		99%	100%	100%	1%	1%
48	Upper-middle	Azerbaijan	2%	1%	1%		64%	94%	94%	30%	30%
49	Upper-middle	Belarus	1%	1%	1%		9%	36%	34%	27%	25%
50	Upper-middle	Botswana	81%	92%	92%		81%	92%	92%	11%	11%
51	Upper-middle	Brazil	12%	17%	16%		12%	28%	26%	16%	14%
52	Upper-middle	Bulgaria	10%	17%	15%		16%	34%	27%	17%	11%
53	Upper-middle	Colombia	4%	7%	4%		40%	73%	70%	33%	30%
54	Upper-middle	Cuba	16%	22%	20%		17%	33%	28%	16%	11%
55	Upper-middle	Ecuador	3%	2%	5%		39%	60%	56%	21%	17%
56	Upper-middle	Fiji	9%	9%	6%		10%	34%	31%	25%	21%
57	Upper-middle	Gabon	4%	6%	7%		83%	85%	72%	2%	-11%
58	Upper-middle	Iran	1%	5%	6%		81%	75%	71%	-6%	-10%
59	Upper-middle	Iraq	0%	0%	0%		85%	99%	98%	15%	13%
60	Upper-middle	Jamaica	50%	39%	48%		50%	62%	69%	12%	19%
61	Upper-middle	Kazakhstan	20%	14%	9%		53%	84%	87%	31%	34%

62	Upper-middle	Lebanon	11%	32%	26%		11%	35%	30%	24%	19%
63	Upper-middle	Libya	0%	1%	2%		94%	98%	97%	5%	3%
64	Upper-middle	Malaysia	1%	3%	3%		9%	23%	25%	14%	16%
65	Upper-middle	Mongolia	57%	75%	64%		58%	86%	93%	29%	35%
66	Upper-middle	Namibia	38%	53%	38%		40%	54%	40%	15%	0%
67	Upper-middle	Panama	3%	3%	5%		9%	15%	32%	7%	23%
68	Upper-middle	Peru	48%	60%	54%		55%	72%	66%	17%	11%
69	Upper-middle	Saint Lucia	0%	2%	2%		0%	34%	33%	34%	33%
70	Upper-middle	South Africa	30%	33%	33%		41%	42%	43%	1%	2%
71	Upper-middle	Suriname	69%	76%	23%		73%	85%	37%	12%	-36%
72	Upper-middle	Turkmenistan	1%	0%	1%		75%	63%	89%	-12%	15%

Notes: Table shows the 72 low- and middle-income countries (according to the World Bank classification) with the highest levels of dependence on extractives (minerals plus oil and gas). Shaded cells indicate declines.

Source: author's calculations based on UN Comtrade data.

Annex 2: Why did the gold mining boom fail to produce structural change?

The question in the title here can be phrased rather differently: given the impressive contribution of mining to the Tanzanian economy after 2000 in the macroeconomic dimensions of investment, exports, and government revenue, why was the role of mining in Tanzania's development so commonly underrated and frequently criticized? There are several lines of answer to this question. They include criticisms of the fairness of the agreements that the government signed with the new mining companies; familiar criticisms of the conduct of mining companies as regards their alleged use of transfer pricing and unreasonable employment practices; large numbers of complaints about the treatment of local communities in the mining-affected areas; disappointment that the artisanal mining component of the sector proved unable to provide a solid core of new sustainable employment for the economy.

Aside from these points, I focus here on a set of issues that help to explain why the mining industry in its new post-1990s manifestation seems to have failed to deliver any real structural change to the economy. In examining these issues, I draw on the important comprehensive internal review of the mining sector conducted in 2007–08 and chaired by respected Tanzanian judge Mark Bomani. The Bomani Report (URT 2008), published in April 2008, recognizes the official position towards mining as articulated in Tanzania's 'National Development Vision 2025', published in 1994.²² But Bomani also identifies a number of failings in the industry, and elaborates a programme of regulatory and other reforms designed to achieve larger economic and social benefits for the Tanzanian people. That programme includes:

1. *Infrastructure—the need for an improved approach.* The Bomani Report recognizes explicitly the responsibilities of the government to provide supporting infrastructure in mining areas covering roads, electricity, water, and social services such as village dispensaries, schools, and security services. Some of these services have direct relevance for the operations of the mines, and so affect their cost base. Other services are more directly relevant to the well-being of the mine-affected populations. On the specific subject of electricity and access to the grid, Bomani argues that a more concerted effort to extend capacity across the contiguous mining regions would serve to eliminate the contentious issues around the diesel fuel subsidy to mines. The companies have needed this subsidy only to compensate for the high costs of having to generate their own electricity.
2. *Compensation and the associated development possibilities.* The Bomani Report recommends a tightening-up of the existing systems for compensating farmers and others who lose access to land as a result of mining activity. Significantly, it also argues that compensation revenues can provide the basis for helping the beneficiaries to fund new types of business activity. However, this would require policies and programmes whereby systems for, say, small to medium-sized enterprise promotion are well integrated with the needs of both the local communities and the mining companies. Such arrangements, Bomani argues, could help to ensure that the new businesses can become a part of a new development dynamic in mine-affected areas.

²² This position was that mining's role in the economy could increase over time. Specifically, it envisaged an increase in the economic role of mining in Tanzania that would result in its contribution to GDP increasing from 3.8 per cent in 2006 to a share that would be three times greater at 10 per cent of GDP by 2025. This would incidentally bring it close to the share of monetized agriculture: 16 per cent of GDP as of 1994.

3. *Improved training arrangements.* It is a recurring criticism of mining that insufficient numbers of Tanzanians are being engaged. But this of course is not surprising, given the long hiatus in significant mining activity in Tanzania after the 1970s, which degraded such skills as had previously been available. A long-term programme of training is one obvious answer, with the responsibility for this ideally being shared between national and corporate stakeholders. The Bomani Report recommends tighter legal requirements on the companies in this regard, but combined with a more systematic set of government-driven arrangements, including larger budgets for existing colleges and other training institutions.
4. *Enhancing added value.* The Bomani Report makes some useful suggestions about ways to add greater value to the mineral products that are exported, and to also ensure assistance in marketing of the enhanced products. Bomani recognizes that the high energy costs and other complexities (e.g., of smelting rock containing both gold and copper) may limit the scope for much beneficiation, but argues that it is important for there to be solid information about the possibilities to allow an informed policy decision to be taken.
5. *Mining towns.* The Bomani Report argues that the development of such towns has been haphazard, and has happened in a manner that has left some of the affected populations without proper access to the normal social and other supporting services. The report recommends that the government work more closely with the companies to plan and monitor the development of these towns.
6. *Improved integration of mining into the local economy.* Recommendations in this area constitute arguably the most important in the whole of the Bomani Report. However, they are described only very briefly. Specifically, Bomani argues for two main things. The first is for improved policies and programmes to help the strengthening of any sector that works closely with the mining sector to capture 'the immense benefits that the growing mining industry provides'. The second is a plea for more explicit and effective arrangements to promote the greater local procurement of goods and services. The second of these tasks is proposed to be undertaken by a new minerals authority and the Tanzanian mining companies through the Chamber of Mines.²³
7. *A better revenue deal for local mining-affected areas.* The Bomani Report advocates a Ghana-style distribution of a part of the royalty revenues. This would provide 10 per cent of that revenue to the districts where a mine is actually located; seven per cent to adjacent districts that will also see some impact from mining; three per cent directly to the villages around the mine. In Ghana this system has worked only moderately well, and suggestions have been made to enhance it through explicit government and donor programmes to improve the technical capabilities and accountability of the districts receiving a share of revenues. With such enhancements, this system could be very helpful for local development around mining in Tanzania.

The unifying theme across these seven recommendations is a broad vision that mining in Tanzania can and should be used as a focal point for broader economic development, with government (local and national) and mining companies playing partnership roles in various joint activities to bring this about. The confrontational tone of much of the previous Tanzanian debate around mining (mining companies being characterized as inimical to Tanzanian development) is largely absent in the Bomani recommendations. So it is ironic, disappointing, and unhelpful that events subsequent to Judge Bomani's report in 2008 put almost the whole of the emphasis on another set of his report's recommendations, namely:

²³ Significantly, strengthening of electricity delivery through Tanesco would be an explicit part of this improved programme of integration, as would the 'urgent' improvement of the central railway line. More systematic land-use planning in the broad catchment areas of the mines would also be part of the proposed package.

8. *Increased rates of royalties and mining taxes.* In Section 2.5.1 of the report, Bomani argues for the royalty rates on mining to be increased (from five to seven per cent for rough diamonds, and from three to five per cent for metals such as gold, copper, and silver). The report also argues for capital allowances to be made somewhat less generous, and to be unified with the normal arrangements of the Income Tax Act of 2004; for some exemptions under excise, value added tax, and customs duties to be made less generous; for the tightening-up of some other tax arrangements.

These tax-reforming and tax-raising measures pretty much dominated the subsequent discussion around the Bomani Report and associated press coverage. The wide range of other important matters identified by the report that, if implemented, could have improved the structural contribution of the industry were effectively sidelined in this process.²⁴ The broad vision for the developmental role of the sector that is seen in the Bomani Report has been little reflected in subsequent debate and new policies. Arguably a major opportunity has been lost to utilize the huge investments of the mining companies in broadly contiguous area around the southern part of Lake Victoria, to help catalyse a significant cluster of new economic activity based also on a set of judicious supporting investments and policies by the government. Figure 4 in Roe (2016) shows the location of the major mine investments, and illustrates the existence of at least the necessary conditions for such a cluster to have been successful. Tanzania would not have been out of line with other African countries had it seized on this opportunity to promote broader development based in part on some of the component suggestions advanced by the Bomani Commission.

This is not to suggest that the proposed tax reforms were unnecessary; they were certainly very well argued by the report. But with the benefit of hindsight, it is clear that the perceived imperative at the time to extract more revenue from the industry by raising royalty and tax rates was not the only or even the major priority for the industry at that time. The subsequent major boost to revenues revealed by the work and subsequent hard data from the TEITI analysis are evidence that there would in any event have been a large boost to government revenues, even without the eventual partial adoption of Bomani revenue recommendations as part of the new mineral legislation of 2010.²⁵

This history of elevating revenue matters to a position of dominant importance and relegating a myriad of other important issues to a position of virtual insignificance is relevant, I suggest, to the new challenges that now face the Tanzanian authorities in deciding on the many things that need to be done to incorporate the new gas discoveries into their thinking about longer-term development. This is especially true of the broader developmental effects that investments in

²⁴ This problem may have arisen in part because the Bomani Report itself does not present these structural ideas in a fully integrated manner linked to the theme of local and regional development in the areas of Tanzania most impacted by the new mines. Rather, the recommendations are presented as separate and independent ideas, and are scattered throughout the report: it is largely left to the reader to join them together, and most readers have not done so.

²⁵ In fact, the TEITI number for revenues in 2011–12 at circa US\$390 million is significantly higher than the 2009 projection for the same year presented in ICM (2008) of only US\$150 million. This is for three main reasons. First, there have been increases in the rates of royalty and some taxes since the 2009 projections were made. In the new mining legislation introduced in 2010, the government required mining companies to increase their royalties on gold exports from three per cent of netback value (essentially, the difference between the total costs of bringing a commodity to market and revenues from the sale of the commodity) to four per cent of gross value, as well as paying the government 0.3 per cent of their annual turnover, up from a capped maximum of US\$200,000 a year. Second, those projections related only to existing known gold resources and not to a broader coverage of mining activities. Third, the TEITI analysis covered 23 mining companies and not only the four large ones included in the 2009 projections.

extractives can help to catalyse. It is to be hoped that the short-term emphasis on revenue maximization will not dominate Tanzanian debate around the gas discoveries quite as much as it seems to have done in the context of mining.