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GROUNDING GROWTH: Finding the right balance between mining and the environment

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The cover photograph shows the De Beers diamond mine in Kimberley being filled with re-processed mine tailings

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Introduction

Though South Africa has enormous mineral wealth, its mining industry is at risk of becoming 'uninvestable' under the impact of unrealistic empowerment and other policies. It also confronts major challenges in the environmental sphere. Here, the right balance still has to be found between protecting the environment and preserving the competitiveness of the mining industry.

South Africa has been mining intensively for close on 150 years. For much of this time, it did little to protect the environment from the negative impacts of mining. Hence, Gauteng alone has some 375 tailings dams and other 'mine residue areas'. It also has some 6 150 'ownerless and derelict mines', which often continue to pollute the surrounding air, soil, and water. These legacy issues have given added impetus to the government's determination to hold current mining companies fully responsible for any environmental damage they may cause.

The environmental rules affecting mining are many and complex, and cannot be adequately described in this brief overview. Instead, this analysis will focus briefly on some of the key issues: the absence of a single permitting system; the environmental authorisation needed for mining; the difficulty in ensuring adequate community consultation and a social licence to operate; the introduction of permanent environmental liability; the contested financial provisioning regulations; the growing role of activist environmental organisations; and how a better balance could be found between mining and the environment.

No single permitting system

Before mining can begin, a mining company must have, at minimum, a mining right, an authorised environmental management programme, an environmental authorisation and a water use licence. The company may also have to demonstrate compliance with legislation on air quality, the protection of biodiversity, the safeguarding of 'protected' areas, and the management of waste. The National Environmental Management Act (NEMA) of 1998 is the umbrella statute, and provides over-arching principles for decision-making in all matters relevant to the environment.[1]

> *In practice, the licensing system is highly convoluted and mining companies must deal with multiple authorities, all of which have their own timelines, guidelines, and requirements. It may thus be difficult to obtain all the necessary permissions at the same time.*

South Africa does not have an integrated permitting system. However, mining companies try to cover all relevant issues in one environmental impact assessment, which they submit to the Department of Mineral Resources (DMR), the Department of Environmental Affairs (DEA), and relevant provincial authorities, along with the Department of Water and Sanitation (DWS). All these entities are supposed to co-ordinate their activities. In practice, however, the system is highly convoluted and mining companies must deal with multiple authorities, all of which have their own timelines, guidelines, and requirements. It may thus be difficult to obtain all the necessary permissions at the same time.[2]

In an attempt to resolve these difficulties, the mining and environmental ministers agreed in 2008 that there should be 'one environment system' for the country. This was finally achieved in December 2014, when the environmental requirements in the Mineral and Petroleum Resources Development Act (MPRDA) of 2002 were effectively replaced by an amended version of NEMA. Under these revised rules, the responsibility for issuing the environmental authorisations needed for mining has shifted away from the DEA and is now vested in the mining minister. However, the integration achieved is partial at best, as water-use licences and many other necessary permissions fall outside the ambit of this system.

Environmental authorisations for mining

According to the amended NEMA rules, no company may begin mining unless the mining minister has granted it an environmental authorisation. Every environmental authorisation must, 'as a minimum, ensure that adequate provision is made for the ongoing management and monitoring of the impacts of the [relevant] activity on the environment through the life cycle of the activity'.[3]

Before considering an application for an environmental authorisation, the mining minister will generally require the submission of an 'environmental management programme' (EMP). An EMP must provide information on the 'proposed management, mitigation, protection, or remedial measures' that will be used to address environmental impacts at all stages of the mining operation, from planning and design to closure. It must also set out the measures that will be taken to 'rehabilitate the environment...to its natural...state' or 'to a land use which conforms to generally accepted principles of sustainable development'.[4]

The mining company must 'manage all environmental impacts in accordance with its approved environmental management programme'. Once mining begins, companies must also conduct annual audits of their EMPs, so as to monitor their performance against undertakings made. If any obligation has not been met, the annual audit must set out measures to improve compliance in the future.[5]

Under the 'polluter pays' principle, the mining company is 'responsible for any environmental damage' resulting from its operations. Its directors may also be held 'jointly and severally liable for any negative impact on the environment, whether advertently or inadvertently caused by the company which they represent'.[6]

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The importance of community consultation

NEMA and other environmental statutes require proper consultation with all 'interested and affected people' (IAPS) on the potential impacts of mining operations on land, water, air, people, plants, and animals, as well as buildings and houses. Mining companies generally appoint environmental authorisation practitioners (EAPs), who then advertise in newspapers and put up public notices calling IAPs to meetings or inviting them to post comments on websites. These processes allow people to ask questions of the EAP and request more information. Any comments made by community members must be given full consideration by both the company and, in time, the DMR.[7]

In practice, however, it can be very difficult to ensure adequate community consultation for two main reasons. First, it is challenging to secure adequate understanding and engagement with all IAPs on technically complex issues. Says environmental lawyer Matthew Burnell: 'The EAP must try to break the information down so that it's easier for people to understand. He will then engage with IAPs [and seek to obtain a] reasonable degree of consent... But it's very easy to challenge the public participation process and argue that it has not been enough – that the reports were not clear enough, or that they were not made sufficiently available, or that the community did not really understand the explanation provided.' When people give their comments, it can also be argued that 'these views were not taken seriously enough, that there was not a proper sense of engagement', but rather a 'tick-box' approach in which legitimate concerns were brushed aside.[8]

The second problem is that those who purport to enter into agreements with mining companies may not in fact have the legal authority to do so. Says Mr Burnell: 'This often arises with tribal authorities... Often, it is difficult to know who exactly has the ultimate authority. Sometimes factions are in dispute over leadership positions. At other times, arguments can develop later about how the flow of money is to be directed – and

a traditional leader who was accepted before will be disputed now. Often companies don't know what to do. Customary law provisions are difficult to follow, and objections can always arise.'[9]

Appeals and prosecutions

Dissatisfaction among communities and other IAPs may also manifest in the lodging of appeals against the granting of mining rights, environmental authorisations, and water use licences. Appeals against the granting of mining rights lie to the mining minister, appeals against the issuing of environmental authorisations to the environmental minister, and appeals against water-use licences to the minister of water and sanitation. The lodging of an internal appeal (to the relevant minister) against an environmental authorisation suspends its operation and means that mining cannot start until the matter has been resolved. An internal appeal against the issuing of a water use licence has a similar effect. Where internal appeals are dismissed, dissatisfied communities and IAPs may take these decisions on review to the high court.[10]

In addition, as the Centre for Environmental Rights (CER) points out, there are many criminal offences created by NEMA and the National Water Act, as well as by the laws governing air quality, biodiversity, protected areas, and so on. In a booklet drawn up to help IAPs bring criminal prosecutions against mining companies, the CER stresses that 'it is a crime to mine without a licence, or without obeying the rules in the licence or the environmental management programme'. It is also a crime to use water without the requisite licence, or to breach the terms of such a licence. 'If the mining company did not consult landowners, occupiers, and affected people before the mining began, it may also have committed a crime.' Moreover, says the CER, 'if the mining company is polluting the air or water or generally causing harm to the environment, it may also have committed a crime' under various provisions of NEMA and other laws.[11]

It is also a crime to use water without the requisite licence, or to breach the terms of such a licence. 'If the mining company did not consult landowners, occupiers, and affected people before the mining began, it may have committed a crime.' Moreover, 'if the mining company is polluting the air or water or generally causing harm to the environment, it may also have committed a crime'.

The penalties visited on mines and their directors may be significant. As Mr Burnell adds, 'mines can be fined and people can be sent to prison for various offences under NEMA'. If a contravention has caused harm to any person, a mine can be ordered to pay damages, as well as the legal costs that have been incurred in securing remediation. Other penal sanctions can also be imposed, while directors have concurrent liability. 'A successful prosecution can thus trigger a whole series of penalties. If you are an IAP, you can get a compensation order and execute it like a civil claim.'[12]

According to the CER, the only disadvantages to the laying of criminal charges are that police investigations may be very slow and the National Prosecuting Authority (NPA) may ultimately decide not to prosecute. In this situation, a private prosecution may instead be brought – but then the state no longer bears the costs. Private prosecutions have thus been uncommon in the past. However, this may be changing as activist organisations gear up to take advantage of NEMA provisions making it easy – and now also potentially lucrative – to bring private prosecutions against mining companies for breaches of environmental rules (see *Private prosecutions*, below).

Permanent environmental liability and financial provision

In a major departure from the previous rules, NEMA now states that every holder of a mining right 'remains responsible for any environmental liability, pollution or ecological degradation... *notwithstanding the issuing of a closure certificate*' by the mining minister. Mining companies are thus expected to take on permanent environmental liability for impacts that cannot be predicted and which may come to light only decades after mining operations have ended. In addition, the latent impacts for which mining companies are now to be held liable in perpetuity include the pumping and treatment of extraneous and polluted water. Yet it may

often be difficult to tell whether the pollution of a river, for example, stems solely from a particular closed mine – or whether it is at least partly the result of previous or subsequent mining operations in the vicinity.[13]

Under NEMA, a mining company seeking an environmental authorisation for mining activities must first (before the mining minister may grant the authorisation) 'comply with the prescribed financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts'. (How this financial provision is to be made available – for example, by payment into an account controlled by the minister, or by obtaining a suitable guarantee from a financial institution – is further described in due course.) If the company subsequently fails to rehabilitate the environment, or to 'manage any impact' on it, the mining minister may use 'all or part of this financial provision' for rehabilitation purposes.[14]

Regulations regarding financial provision

These NEMA rules have been supplemented by the Financial Provisioning Regulations (the 2015 Regulations), which were gazetted by the minister of environmental affairs, Edna Molewa, on 20th November 2015. These regulations were initially due to take effect in February 2017, but this date was postponed to February 2019 as objections mounted. By then, mining companies are expected to increase their financial provision in line with the new requirements, failing which they will face criminal prosecution and fines of up to R10m, prison terms of up to ten years, or both.[15] However, as criticism mounted, an amended version of these regulations was gazetted on 10th November 2017 for comment within 30 days (the 2017 Proposals).[16]

According to the 2015 Regulations, the financial provision to be made available must match the 'actual cost of implementation', for current, closure, and post-closure rehabilitation, 'for a period of at least ten years' going forward. However, as Mr Burnell explains, 'mines objected that they had to set aside money for ten years, and yet still meet annual rehabilitation costs out of operating income. Often, it would be very difficult for them to do both'.[17] The challenge would be particularly difficult for new mines not yet in production.

> *The 2017 Proposals reduce the financial provision required, saying it must at any time be 'equal to the sum of the costs of implementing the activities' that will be needed, both on closure and following closure, 'for a period of three years' looking forward.*

The 2017 Proposals reduce the financial provision required, saying it must at any time be 'equal to the sum of the costs of implementing the activities' that will be needed, both on closure and following closure, 'for a period of three years' looking forward. Annual rehabilitation costs need no longer be included, and must be covered under normal operating costs.

The CER and other activist environmental organisations have objected strongly to this reduction, saying the proposed three-year period is too short and that a much longer period (of 'at least 20 years') would be preferable. The Chamber of Mines counters that having to put aside money for ten or 20 years will sterilise resources that could better be used for current rehabilitation initiatives and increased research into how best to overcome complex environmental challenges. Requiring a high level of financial provision for contingent liabilities that may never come to fruition is also not the best use of scarce resources. In addition, it may be difficult for companies to afford, especially at times when commodity prices are depressed and mines are struggling to sustain their operations.[18]

In addition, the 2017 Proposals make it clear 'no financial guarantee...may be used for the financial provision required for remediation of residual environmental impacts'. In other words, a mere financial guarantee is not considered sufficient for post-closure impacts, and the relevant moneys must instead be paid into a bank account controlled by the minister or into a trust fund. Less money will have to be tied up in this way if the three-year period in the 2017 Proposals is adopted, but objections from activist organisations may yet prevent this.[19]

The 2017 Proposals largely concur with the 2015 Regulations in specifying the information that must be included in annual rehabilitation plans, final rehabilitation and closure plans, and the 'environmental risk report' that identifies latent environmental impacts that could come to light following closure.[20] The level of detail required of mining companies – in addition to their already extensive monitoring and reporting obligations under NEMA itself – is extraordinary. It is thus briefly outlined in the *Box* on page 47.

In addition, mining companies, as earlier outlined, are already obliged to submit detailed annual reports on their progress in implementing their environmental management programmes (EMPs). These EMP reports could easily be modified to include the financial aspect, as the Chamber points out. The Chamber is concerned about the overall compliance burden and would prefer to have a co-ordinated approach to reporting requirements.[21]

Increasing environmental activism

Activist environmental organisations have an important role to play in ensuring appropriate respect for the environment. South Africa has a number of such organisations, which are taking a number of different steps against mining (and other) companies as part of a comprehensive overall strategy. This includes judicial review of administrative decisions in the granting of mining rights and environmental permissions – though not all communities welcome activist interventions that put mining on hold. A communications campaign is also in place, but often seems one-sided and even hostile to mining.

Often, activist allegations are vague and generalised, making it difficult for mining companies to respond. Though details are seldom provided, mines are commonly accused of pushing people into yet more abject poverty by depriving them of their arable lands, contaminating air, polluting water, poisoning livestock, and robbing them of livelihoods. By contrast, activist organisations pay little attention to the innovative steps being taken by many major mining companies to rectify environmental damage (see pages 50-53).

Though details are seldom provided, mines are commonly accused of pushing people into yet more abject poverty by depriving them of their arable lands, contaminating air, polluting water, poisoning livestock, and robbing them of livelihoods.

Activists also seem to overlook the administrative inefficiency which can contribute to environmental problems, as shown in the Blyvoor case. In 2014 an activist organisation laid criminal charges against three directors of the defunct Blyvooruitzicht gold mine on the west Rand, saying they should be held personally liable for acid mine drainage, tailings spillages, major dust emissions, and failing to rectify a R107m shortfall in the mine's financial provision (see pages 55-56). However, the shortfall in remediation funds stemmed largely from the DMR's own inefficiency in failing to grant the mine a new-order mining right. Without that right – and the security of tenure it would have brought – Blyvoor was unable to obtain an insurance guarantee for all remediation costs. If the mining right had been granted, Blyvoor's rehabilitation costs would have been fully funded on the day of its liquidation.[22] The environmental problems at Blyvoor are thus not solely the directors' fault, but they have nevertheless been singled out for prosecution while no attempt has been made to hold the relevant officials accountable.

Some activist criticisms seem to be rooted in hostility to the free market system, as illustrated by this statement by the Bench Marks Foundation in October 2016: 'As long as the industry is built on the profit motive, extracting for profits and short-term gain at the expense of communities and society as a whole, we are slowly but surely walking to our death. Sustainable development and profit-taking do not go together. Profit kills and capital is too powerful, while society is too weak... New models of socialisation of mining by removing profit from the equation would allow us to begin a new debate... Perhaps we need models that give communities ownership, where surpluses made are reinvested, and the excess distributed for community development.'[23]

Activists are also gearing up, it seems, to take advantage of NEMA rules which now make it easy and potentially lucrative for them to bring both civil proceedings and criminal prosecutions against mining companies over alleged infractions that might better be addressed in other ways.

Private prosecutions

Private prosecutions may become particularly common, for NEMA gives activist organisations the right to 'institute and conduct a prosecution' for any breach of an environmental obligation which amounts to an offence, provided they are acting in the public interest or in order to protect the environment.

Activists wanting to prosecute a mining company for any such offence must begin by notifying the appropriate public prosecutor of their intention to prosecute. However, if the public prosecutor does not confirm in writing within 28 days that a state prosecution is indeed to be brought, then the private prosecution may proceed. These rules are very different from the usual ones, under which a private prosecution may be brought only if the National Prosecuting Authority (NPA) has expressly issued a notice of its intention not to prosecute, in what is termed a '*nolle prosequi*' declaration.[24]

In this situation, the activists are excused from having to provide security for the costs of the court proceedings, and also from having to produce the usual certificate confirming that the NPA has declined to prosecute. Why the normal rules regarding private prosecutions have been relaxed in the environmental sphere – but not in a host of other areas of equal importance to society – has not been explained.[25]

If the private prosecution succeeds, the convicted mining company may be ordered to pay 'the costs and expenses of the prosecution', including 'the costs of any appeal against such conviction or any sentence'. Only if the private prosecution is found to be 'trivial, vexatious or unfounded' may costs be awarded against the activists that brought it.[26]

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In addition, if a company is convicted of an offence and ordered to pay a fine, the trial court may instruct that 'not more than one-fourth of the fine be paid' to a person 'who assisted in bringing the offender to justice'.[27] This is likely to provide a further financial incentive for activist organisations to bring private prosecutions.

The penalties that apply on conviction of offences under NEMA are severe. For most of the offences listed in the statute, a fine of up to R10 million, imprisonment for up to ten years, or both of these punishments may be imposed. If a mining company is convicted of an offence under NEMA, the court may also withdraw its environmental authorisation, so exposing it to the cancellation of its mining right.[28]

The first private prosecution under these NEMA provisions has been brought against BP Southern Africa (BP), for having built a number of new petrol stations in Gauteng, in the period from 1998 to 2002, without all the necessary environmental permissions. As the *Mail & Guardian* reports, 'Everyone agrees that it did so without all the environmental paperwork in place, which is not unusual, and that it subsequently paid "administrative penalties" to set things to rights, also not unusual.' Now, however, a close corporation called Uzani Environmental Advocacy, a paper entity whose sole purpose is to prosecute BP, has used NEMA to bring criminal proceedings against the company.[29]

The stakes are high. If the prosecution succeeds, says the newspaper report, 'Uzani could make a great deal of money out of prosecuting BP, before taking the fight to every other petrol company in South Africa in what could amount to thousands of separate criminal counts, collectively costing the oil industry billions of rands'.[30]

BP is trying to have the prosecution quashed on the basis of its 'naked opportunism'. The corporation queries whether there is really any public interest in having the matter proceed, especially as 'there is no environmental wrong they are trying to cure'. The issues of which Uzani complains are 'matters of historical significance...where no one is affected any more, if they ever were'. BP has thus expressed its confidence that the criminal proceedings against it are 'not competent in law' and will be dismissed.[31]

However, the provisions of NEMA are so broad that the prosecution of BP might in fact succeed. Activists are also planning to co-ordinate their efforts and make sure they use the new NEMA provisions to the full. Hence, mining companies could also soon find themselves confronting a host of civil suits and criminal prosecutions. Activists will increasingly be seeking to have directors imprisoned or otherwise held personally liable. As the *Mail & Guardian* recently reported, 'holding directors personally criminally liable is the holy grail of environment law, with cases ongoing around the world to get this sort of judgment.'[32]

Ramifications of South Africa's environmental rules

Speaking at the Johannesburg Mining Indaba in October 2017, Cobus Loots, chief executive of Pan African Resources, said increasing environmental obligations 'threatened the stability of the industry'. He warned that onerous compliance costs could result in 'massive retrenchments' and the closing down of mining companies. Environmental legislation also 'remained mired in confusion', he went on, while its vague and contradictory terms were a further major deterrent to foreign investment. Said Mr Loots: 'We need regulations that work. It is difficult to sit in front of an international investor and to convince them to put money in South Africa...To sit and explain to an investor that the mining charter has not been finalised and now there are issues on the environmental side is a tall order.'[33]

> *At present, mines must still plan to make ten years' financial provision available as from February 2019, which is less than a year away. Yet the financial provision needed could also be brought down to three years, as the 2017 Proposals envisage, or perhaps to some intermediate level (say, five years instead). How then are mining companies to plan for the future?*

The uncertainty around the 2017 Proposals for a reduced amount of financial provision (three years instead of ten) is also debilitating. The 2017 Proposals may not in the end be adopted in their current form, especially as environmental activist organisations are strongly opposed to them. The proposals are beneficial in various important ways, but no one yet knows if they will in fact be implemented. At present, thus, mines must still plan to make ten years' financial provision available as from February 2019, which is less than a year away. Yet the financial provision needed could also be brought down to three years, as the 2017 Proposals envisage, or perhaps to some intermediate level (say, five years instead). How then are mining companies to plan for the future or quantify their contingent liabilities? Particularly for the many platinum mines which are loss-making or only marginally profitable at current platinum prices, these questions are vital to future sustainability.[34]

South Africa's attractiveness to mining investors, as measured each year on the Mining Index compiled by the Fraser Institute in Canada, has significantly deteriorated over the past decade. On the policy perceptions index – which measures the extent to which government policies detract from positive geological factors and reduce willingness to invest – South Africa's score has dropped from 56.9 in 2013 to 42.7 in 2017.[35] This is a sharp decline.

One of the factors measured by the Fraser index is 'uncertainty concerning environmental regulation'. Here, the Fraser index provides only comparative rankings, rather than scores, which are more difficult to assess because the number of mining countries surveyed varies from year to year. Deterioration is nevertheless evident here too. In 2009 South Africa ranked 23rd out of 72 countries surveyed, but in 2011 it ranked 42nd out of 93. In 2015 it ranked 44th out of 112, but in 2016 its ranking dropped steeply to 81st out of 104. This, presumably, had much to do with the introduction of permanent environmental liability

under NEMA, coupled with the onerous requirements in the 2015 Regulations. The country's ranking recovered thereafter in 2017 (to 60th out of 91 countries), probably in response to the government's pledge to revise these regulations (as it has now done in the 2017 Proposals). But South Africa's current ranking nevertheless remains far below where it was in 2012, when the country ranked 38th out of 96 countries.[36]

The government seems to assume that South Africa's exceptionally valuable mineral resources will always be a powerful draw card for investors, irrespective of how greatly the regulatory burden is increased. It does not seem to realise, says James Lorimer, DA shadow mining minister, that investor interest has already largely shifted away. Many mining companies have pinned their hopes on President Cyril Ramaphosa's assumed capacity to usher in real reforms, beginning with the mining charter. Thus far, however, the charter negotiations between the Chamber of Mines and new mining minister Gwede Mantashe have been disappointing, for the minister has shown little willingness to compromise on the ownership requirements that do so much to make the industry 'uninvestable'.[37]

Finding the right balance

In finding the right balance between protecting the environment and ensuring the sustainability of its mining industry, South Africa has much to learn from international experience. Environmental regulations are crucial in constraining negative impacts from mining, but they also raise the costs of opening and operating mines. Direct costs include the additional expenses involved, for example, in acquiring new equipment or taking on more technical and administrative staff. Indirect costs may also arise if spending on environmental compliance crowds out other investments, or if the research and development (R&D) needed in the environmental sphere makes it more difficult to push ahead with conventional R&D. Such factors may undermine competitiveness in the long run, with negative spillover effects for employment, procurement, and the wider economy.[38]

> *Long delays in the granting of environmental approvals may prevent companies from benefitting from narrow investment windows. They can also make it more difficult for companies to raise loan finance. Heavy financial provisioning requirements in the initial stages of a mining project – when costs are high and no income is yet being generated – may be particularly difficult to meet.*

Mining is also capital-intensive, while global mineral prices often fluctuate widely. Long delays in the granting of environmental approvals may thus prevent companies from benefitting from narrow investment windows. They can also make it more difficult for companies to raise loan finance. Heavy financial provisioning requirements in the initial stages of a mining project – when costs are high and no income is yet being generated – may be particularly difficult to meet. Unduly onerous environmental obligations can also provide incentives for mining companies to strip out the most valuable mineral resources as rapidly as possible, rather than seeking to maintain mining activities over many years.[39]

Both the design and the implementation of environmental regulations are important in reducing these potential negative effects. Environmental rules should thus be clear, certain, and reasonable, rather than vague, fluctuating, and unduly onerous. Decisions should be predictable and timely, which calls for standardised procedures, objective criteria, and uniform guidelines for the interpretation of the relevant rules. Integrated permitting systems should be developed, while sufficient numbers of experienced and technically competent decision-makers should be provided. Another way of helping to secure more timely decisions and reduce time-consuming appeals is to put more emphasis on expert-based assessments than on public participation processes, which are often not as well informed.[40]

South Africa's environmental rules relevant to mining are often flawed in their design and implementation. They seek to regulate every aspect of mining operation, but often do so in vague and imprecise terms that open the door to selective interpretation and enforcement. In addition, the relevant rules keep changing in significant ways, which erodes the certainty and predictability required.

Despite the 'one environmental system', the country's permitting process remains split among various entities, making for unnecessary complexity and adding to delays. Major skills shortages within the state further erode the quality and timeliness of decision-making, especially on complicated technical issues. Public participation requirements are difficult in practice to fulfil, which means they can easily be challenged and used to mount a plethora of lengthy appeals.[41]

At the same time, having to review and, if necessary, revise their environmental management programmes every year puts a heavy compliance burden on mining companies. So too does the obligation to report in great detail each year on current rehabilitation, planned closure activities, and likely post-closure latent impacts. NEMA's emphasis on permanent environmental liability following closure is also unduly onerous, while current and proposed financial provisioning regulations make it difficult or impossible to use financial guarantees to cover post-closure impacts.

South Africa's increasingly detailed environmental rules are at odds with global trends. According to the *Extractive Industries Source Book*, the modern trend is to move away from overly prescriptive requirements with heavy compliance costs. Instead, the aim is to develop 'goal-setting' regulations, which are normally backed up by non-mandatory guidance notes. Such regulations set out the objectives to be achieved, but allow flexibility in the methods to be used by companies in doing so. This relieves the regulator of the burden of having to decide in detail on the relevant rules and puts the onus on companies to come up with environmental management plans that are reasonable, responsible, and tailored to their particular circumstances.[42] This 'internal control principle' avoids the problem of ever more prescriptive regulations which cannot easily cater for complex situations and soon become outdated as circumstances change.

In finding a more appropriate balance between environmental needs and the sustainability of the mining industry, South Africa should more fully embrace this 'goal-setting' approach. This would be easier for the country to manage, given the skills shortage within the state. Ideally, moreover, the job of drawing up a co-ordinated set of appropriate goal-setting environmental rules for mining should be given to a specialist agency. This should be funded from tax revenues but staffed by independent experts.

Ideally, the job of drawing up a co-ordinated set of appropriate environmental rules for mining should be given to a specialist agency. This should be funded from tax revenues but staffed by independent experts. This specialist agency should also be responsible for granting all the permissions needed for mining, from air emission permits to waste management licences.

This specialist agency should also be responsible for granting all the permissions needed for mining, from air emission permits to waste management licences. These permissions should be granted in a timely and predictable manner – and on the basis of a single environmental impact assessment that covers all likely impacts and sets out a comprehensive environmental management programme that caters for them all.

The important task of assessing whether mining companies are managing their environmental impacts in reasonable and responsible ways should be given to the same specialist agency. These compliance assessments, coupled with appropriate amendments to environmental management programmes, should generally be required only once in five years, so as to reduce the compliance burden on both the specialist agency and the mining industry.

However, South Africa cannot easily embrace this 'internal control principle' while NEMA rules encourage activist environmental organisations to litigate against mining companies – or even to prosecute them – for what may be technical infringements with no major environmental consequences (as in the current private prosecution of BP Southern Africa). Instead of expecting companies to answer to a range of environmental activists, whose vague allegations sometimes seem rooted in hostility to mining and the free market, the vital issue of whether miners are doing enough to mitigate, remediate, and rehabilitate should be

for this single expert agency to assess. Activist environmental organisations wishing to take the decisions of this specialist agency on judicial review should have to provide security for costs in the usual way – and should not be given financial incentives to litigate. Private prosecutions on environmental issues should be governed by the usual rules (requiring a *nolle prosequi* declaration by the National Prosecuting Authority and the provision of security for costs), so as to uphold the right to equality before the law.

As regards financial assurance, this should suffice to cover three years of rehabilitation for current and closure activities, but not for the post-closure period. Mining companies should make this assurance available via irrevocable financial guarantees or letters of credit. Mining companies should also be obliged to take out insurance cover against any potential unmet environmental liability arising, for example, from bankruptcy or other premature closure. If all mining companies have this obligation, the overall risk will be widely spread and premiums can be kept lower. Where overall closure costs are reduced as remediation proceeds, the financial guarantee or insurance cover required should come down by an appropriate amount. This would give companies financial incentives to rehabilitate as much as possible as mining proceeds.

Permanent environmental liability for latent impacts that become apparent only after closure should not be imposed. Instead, South Africa should introduce a mine rehabilitation fund (loosely modelled on a similar institution in Western Australia) to which all mining companies should contribute an annual levy amounting, say, to 1% of their estimated total rehabilitation costs (up to and including closure). South Africa's fund could then be used to deal with all post-closure latent impacts that become apparent in the future.

Permanent environmental liability for latent impacts that become apparent only after closure should not be imposed. Instead, South Africa should introduce a mine rehabilitation fund to which all mining companies should contribute an annual levy amounting, say, to 1% of their estimated total rehabilitation costs (up to and including closure). This fund could then be used to deal with all post-closure impacts.

This fund could also be used to deal with the rehabilitation of abandoned mines, which is the most pressing priority. However, rehabilitating abandoned mines is primarily the responsibility of the state, not the companies which happen to be engaged in mining today. Hence, the costs of this clean-up should come mainly from tax revenues – and the government should help build up the fund by paying into it a proportion of the overall revenue it receives each year. This may currently be difficult for the fiscus to afford, but the more the ruling party succeeds in encouraging mine investment and putting an end to wasteful and corrupt spending, the easier it will be for it to manage these payments.

The government, with its limited technical capacity and current complicity in corruption, should not be given the task of implementing necessary rehabilitation measures. This job should instead go to the same specialist agency, which should appoint the necessary experts (via competitive and open tendering processes) and oversee their work. Mining companies which are already helping to deal with legacy issues – for example, by countering acid mine drainage and other pollution from abandoned mines and dangerous tailing dams (see Box 2 on page 50) – could contract with this agency to continue their important work. Such contributions to legacy clean-ups by mining companies could also be recognised and encouraged through appropriate tax credits.

The government's 'new vision'

As part of his 'new vision' for South Africa, President Cyril Ramaphosa is seeking to re-ignite the economy by encouraging direct investment, boosting the growth rate, and expanding employment. The mining industry can potentially do much to help achieve these goals.

If the mining industry is to realise more of its great potential, the Ramaphosa administration must act decisively to address the 2017 mining charter and the 2013 MPRDA Amendment Bill, which are the most

potent obstacles to investment. But the industry now also has to comply (in the words of former Harmony Gold CEO Bernard Swanepoel) 'with 2 000 bits of legislation and policies'.[43] Within this already burdensome regulatory milieu, rapidly shifting and unduly onerous environmental rules are further eroding investor confidence, as Mr Loots has warned. Finding the best balance on environmental law would thus address a major source of unnecessarily uncertain, dirigiste, and costly regulation. This in itself would help the government achieve its new vision for an expanding economy and a prosperous and stable South Africa.

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GROUNDING GROWTH: FINDING THE RIGHT BALANCE BETWEEN MINING AND THE ENVIRONMENT

Introduction

South Africa has enormous mineral wealth, but its mining industry has been under major pressure for several years and is at risk of becoming 'uninvestable'. This is partly because the Mineral and Petroleum Resources Development Act (MPRDA) of 2002 is too vague and ambiguous in its provisions, which has opened the way to arbitrary interpretation and selective decision-making by officials. Further damage has been done by proposed amendments to the MPRDA, which still seek to impose price and export controls on a host of mineral products, despite the many legal and practical objections which have been raised over the past five years. Also relevant is the deeply flawed third iteration of the mining charter. This was gazetted in June 2017 and is currently on hold, pending negotiations between the industry and new mining minister Gwede Mantashe on the extent to which it should be changed to help ensure both the transformation and the sustainability of the industry.[1]

The mining sector confronts many other policy challenges too – and particularly in the environmental sphere. Mining inevitably has major environmental impacts. It damages surface areas and undermines their stability, especially where many mines are clustered together along the contours of underground mining reefs. It commonly generates large amounts of waste rock. (The Witwatersrand gold reef, for example, is so thin that a ton of rock must be carved out and crushed to extract 5 grams of gold.) It generally requires the pumping of excess water out of underground stopes (a process known as dewatering), but also uses large amounts of water to cool working surfaces far beneath the ground.

> *Abandoned mines that are no longer being worked are often a particular source of water pollution. When underground gold mining passages fill up with water, this becomes acidic and enriched with heavy metals, making for acid mine drainage into nearby rivers and dams. Abandoned coal mines have similar negative effects.*

Abandoned mines that are no longer being worked are often a particular source of water pollution. When underground gold mining passages fill up with water, this becomes acidic and enriched with heavy metals, making for acid mine drainage into nearby rivers and dams. Abandoned coal mines have similar negative effects, particularly in areas (such as Mpumalanga) where coal has long been extracted. Mining often generates mine 'dumps' or 'tailings dams' which make for airborne dust emissions, some of them radioactive. The crushed rock in gold tailings often combines with rainwater to form sulphuric acid, when then dissolves uranium and other metals present in the rock as it flows over it or seeps into local ground water.[2]

South Africa has been mining intensively for close on 150 years. For much of this time, it did little to protect the environment from the negative impacts of mining. Hence, Gauteng alone (as a 2015 study records) now has some 375 tailings dams and other 'mine residue areas'. It also has some 6 150 'ownerless and derelict mines', which often continue to pollute the surrounding air, soil, and water. Overall rehabilitation costs for these disused mines have been estimated by the auditor general at R30bn or more. (Other countries have even more 'orphaned' or abandoned mines, Australia recording more than 50 000 and Canada having some 10 000.)[3]

South Africa's adverse legacy issues have naturally given added impetus to endeavours to hold current mining companies fully responsible for any environmental damage they may cause. In the late 1990s, the government thus introduced a number of statutes aimed at reducing pollution and ensuring proper remediation and rehabilitation to counter adverse environmental impacts.

Various different environmental permissions are often needed before mining can commence. Most of these permissions have their own distinct requirements and must be separately obtained from different authorities. Some attempt has been made to streamline administrative procedures under the 'one environmental system' introduced in December 2014, but this has only a limited ambit. The resulting administrative complexity adds significantly to the overall compliance burden. So too does a shortage of experienced and efficient officials to administer these various systems in a timely and predictable manner.

The environmental rules affecting mining are many and complex, and cannot be adequately described in this brief overview. Instead, this analysis will focus briefly on some of the key issues: the absence of a single permitting system; the difficulty in ensuring adequate community consultation and a social licence to operate; the introduction of permanent environmental liability; the contested financial provisioning regulations; and the growing role of activist environmental organisations. Also relevant is the key question whether South Africa is striking the right balance between environmental needs and the sustainability of the mining industry. Environmental regulation is necessary to reduce and remedy environmental impacts, but these regulations may also increase the time, costs, and risks associated with opening and operating mines. Environmental regulations should thus be framed and implemented in ways that are effective, but which also limit adverse economic impacts on investment, employment, and the competitive strengths of a vital industry.[4]

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The Constitution and other laws

Section 24 of the Constitution gives everyone 'the right to an environment which is not harmful to their health or wellbeing'. It also gives everyone the right 'to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources'. As the *Mail & Guardian* reports, Section 24 is 'the envy' of the globe, for 'it codifies here environmental rights not promised anywhere else in the world'.[5]

Other constitutional rights are also important. The Constitution gives everyone the right to 'just administrative action', which means that the decisions on mining and other permits made by officials must be fair and properly taken. According to the Centre for Environmental Rights (CER), in a booklet aimed at informing communities about their legal rights, this means that 'everyone with an interest in the decision [must be given] an opportunity to have their say and to have their concerns...taken into consideration'. This in turn means that 'both government and mining companies must consult with communities and individuals affected by any decision to allow mining. However, people cannot be properly consulted without having enough information about the mining, how it will happen, and what its impacts will be'.[6]

In addition, the Constitution gives everyone the 'right to have access to any information' which is held by the government. It also entitles them to any information held by private persons (including mining companies) if this is needed to protect their human rights. Communities thus have a right to comprehensive information about proposed mining operations. Where mining is proposed, companies must explain fully to affected communities how they plan to protect the environment and safeguard people from pollution.

Once operations start, mines must also provide communities with the information they need to monitor the company's performance and the extent to which it is complying with its environmental obligations.[7]

Before mining can begin, a mining company must have, at minimum, a mining right, an authorised environmental management programme, an environmental authorisation and a water use licence. The company may also have to demonstrate compliance with legislation on air quality, the protection of biodiversity, the safeguarding of 'protected' areas, and the management of waste. The National Environmental Management Act (NEMA) of 1998 is the umbrella statute, and provides over-arching principles for decision-making in all matters relevant to the environment.[8]

South Africa does not have an integrated permitting system. However, mining companies try to cover all relevant issues in one environmental impact assessment, which they submit to the Department of Mineral Resources (DMR), the Department of Environmental Affairs (DEA), and relevant provincial authorities, along with the Department of Water and Sanitation (DWS). All these entities are supposed to co-ordinate their activities. In practice, however, the system is highly convoluted and mining companies must deal with multiple authorities, all of which have their own timelines, guidelines, and requirements. It may thus be difficult to obtain all the necessary permissions at anything like the same time.[9]

Water use licences, for example, can be particularly difficult to obtain, with time periods for approvals ranging from six months to six years or even longer. Yet the MPRDA requires mining companies to start mining operations within 12 months of obtaining their mining rights, failing which their mining rights may be cancelled under the 'use it or lose it' principle. But if a mining company starts mining without a water licence, this is a criminal offence for which the potential penalties are severe. According to a statement by the DWS in November 2017, at least 36 mines are operating without water use licences.[10]

Water use licences, for example, can be particularly difficult to obtain, with time periods for approvals ranging from six months to six years or even longer. Yet the MPRDA requires mining companies to start mining operations within 12 months of obtaining their mining rights, failing which their mining rights may be cancelled under the 'use it or lose it' principle.

In recent years, various attempts have been made to streamline the environmental provisions in NEMA and the MPRDA. When the latter statute took effect in 2004, it was uncertain whether the necessary environmental approvals for mining had to be obtained from the mining minister, the environmental one, or from both of them. This third option was endorsed by the Cape Town high court in 2010 in the *MaccSand* case. Here, the court ruled that companies cannot simply ignore a relevant statute. Hence, it was not enough for a mine to obtain permission under the MPRDA when its activities also fell under NEMA. The dual obligation confirmed by the *MaccSand* judgment added significantly to the regulatory burden. It also raised questions as to whether a mining company which had been awarded a mining right – but was still awaiting the necessary environmental authorisation from the DEA – could lawfully begin mining within 12 months, as required under the MPRDA. Yet a failure to comply with this obligation could also result in the cancellation of the company's mining right.[11]

In an attempt to resolve these difficulties, the mining and environmental ministers agreed in 2008 that there should be 'one environment system' for the country. This was finally achieved in December 2014, when the MPRDA's environmental requirements were effectively replaced by an amended version of NEMA. Under these revised rules, the responsibility for issuing the environmental authorisations needed for mining has shifted away from the DEA and is now vested in the mining minister.[12]

Under regulations issued by the DWS in 2017, combined decisions on mining and water licences are now supposed to be made within 300 days. This shift is intended to bring an end to long water licensing delays, sometimes running into years, during which mining operations have often continued in defiance of water laws. However, the compressed 300-day assessment period has also been criticised for making it

more difficult for the DWS fully to assess the likely impacts of mining on water before a decision must be made.[13]

The environmental authorisation required

According to the amended NEMA rules, no mining company may begin mining unless the mining minister has granted an environmental authorisation. Every environmental authorisation must, 'as a minimum, ensure that adequate provision is made for the ongoing management and monitoring of the impacts of the [relevant] activity on the environment through the life cycle of the activity'.[14]

Before considering an application for an environmental authorisation, the mining minister will generally require the submission of an 'environmental management programme' (EMP). An EMP must provide information on the 'proposed management, mitigation, protection, or remedial measures' that will be used to address environmental impacts at all stages of the mining operation, from planning and design to closure. It must also set out the measures that will be taken to 'rehabilitate the environment...to its natural...state' or 'to a land use which conforms to generally accepted principles of sustainable development'.[15]

The EMP must further explain how the company plans to 'control or stop' any activity which causes pollution or environmental degradation; how it will deal with 'the pumping and treatment of polluted or extraneous water'; what steps it will take to 'avoid pollution or the degradation of the environment'; and how it will build an awareness among its employees of the environmental 'risks which may result from their work'. The minister may require changes to the EMP either before or after he grants the necessary environmental authorisation.[16]

> *Under the 'polluter pays' principle, the mining company is 'responsible for any environmental damage' resulting from its operations. Its directors may also be held 'jointly and severally liable for any negative impact on the environment, whether advertently or inadvertently caused'.*

The mining company must 'manage all environmental impacts in accordance with its approved environmental management programme'. It must not only make rehabilitation 'an integral part' of the mining process, but also ensure adequate remediation (removal of contaminants and pollutants) when mining comes to an end. Under the 'polluter pays' principle, the mining company is 'responsible for any environmental damage' resulting from its operations. Its directors may also be held 'jointly and severally liable for any negative impact on the environment, whether advertently or inadvertently caused by the company which they represent'.[17]

In deciding whether to grant an environmental authorisation, the mining minister must 'take into account all relevant factors'. These include the applicant's ability to 'implement mitigation measures' and comply with all environmental obligations. Also relevant is its 'ability to comply with the prescribed financial provision' for remediation costs, as further described below. The minister must also take account of the views of other organs of state, especially those with jurisdiction over matters affecting the environment. In addition, he must consider any relevant 'guidelines, department policies, and environmental management instruments' that may have been adopted by the minister of environmental affairs from time to time.[18] This final requirement makes for significant uncertainty as to what DEA policies may in fact apply at any given point in time.

Though the mining minister now decides on the granting of an environmental authorisation, the DEA remains responsible for generating and adopting all relevant regulations. The DMR is also responsible for enforcing NEMA rules relevant to the extraction and primary processing of minerals in mining areas. Many activist environmental organisations have objected to giving the DMR the right to grant environmental authorisations and enforce environmental obligations, saying that the department's key role is to promote mining, not ensure that the environment is adequately protected. They also complain that the DMR lacks

the capacity for the enforcement task. Says Melissa Fourie, an environmental lawyer who used to work for the DEA and now heads the CER: 'There's an inherent conflict between promoting mining activity and policing it.' In addition, the DMR 'still lacks expertise and experience in managing environmental impacts', which limits its capacity to act.[19]

Annual audits of environmental management programmes (EMPs)

In order to obtain their environmental authorisations, mining companies must generally draw up detailed environmental management programmes (EMPs). As earlier noted, these must deal with all potential environmental impacts of the proposed mining operation, from planning to closure. Once mining begins, companies must also conduct annual audits of their EMPs, so as to monitor their performance against undertakings made. If any obligation has not been met, the annual audit must set out measures to improve compliance in the future.[20]

If the situation on the ground has changed since the last audit, the mitigation measures earlier identified may not longer be appropriate. Better methods may also have become available and must be taken into account. The EMP will then have to be changed, which generally requires the approval of either the environmental or the mining minister.[21]

Once mining begins, companies must also conduct annual audits of their EMPs, so as to monitor their performance against undertakings made. If any obligation has not been met, the annual audit must set out measures to improve compliance in the future.

Amending an EMP is often a complex process. Any proposed expansion of mining operations will clearly have additional environmental impacts, which will have to be identified, mitigated, and sufficiently endorsed by all those with an interest in the matter. But even where mining operations are to be reduced – limiting the impacts earlier anticipated – approval of the change may still be difficult to secure. If the environmental authorisation was granted on the basis that the mining operation would generate a certain number of jobs and reduced activities mean that fewer people are now to be employed, this 'changes the balance of interest', as environmental lawyer Matthew Burnell points out. This may also evoke the anger of mine communities, which may have anticipated a higher number of local jobs to offset adverse environmental impacts.[22]

The importance of community consultation

As the CER stresses in its advisory booklet for communities, 'the environment includes the land, water, air, people, plants, and animals, as well as buildings and houses, all of [which] can be affected by mining activities'. A mining company wanting to obtain a mining right is thus obliged, as NEMA confirms, to notify and consult with all 'interested and affected people' (IAPS) on the potential impacts of mining operations in all these spheres. Consultation is also required for a water use licence, while the DWS may ask for a water impact assessment setting out how dirty water will be kept away from clean water sources and then treated to acceptable standards.[23]

The MPRDA and other statutes thus require consultation with IAPs at various points in the application process. In practice, however, mining companies often try to cover all these obligations via a single consultation exercise. Consultation is not the same as consent, so a mining right can still be granted even if an affected community does not want the land to be mined. However, consultation has to be done properly. In addition, it must extend not only to land owners and occupants but also to people with relevant land claims, neighbouring communities, local councillors, civil society organisations, and (according to the CER) 'any other person that wishes to be consulted'.[24] On this basis, the obligation to consult is entirely open-ended.

Comprehensive information must be made available. According to the Constitutional Court in the *Bengwenyama* case, the mining company must explain likely impacts on water, air, and soil; how mining will be carried out (on a 24-hour basis, or only during the day); how noisy it may be; and whether it will be neces-

sary for people to be relocated and the terms on which this will be done. The mining company must also be willing to negotiate in good faith – with a genuine intention to reach agreement – with all those affected by its plans.[25]

Various technical and specialist reports are commonly also required. These include scoping and environmental impact reports, which must set out the activities proposed, the alternatives considered, and the environmental impacts likely to arise. Scientific reports on ground and surface water, biodiversity, air quality, and likely social impacts are generally also required. All these documents (including a social and labour plan explaining how the mine will benefit the community) must be made available to all IAPs. Translations may also have to be provided, as a mining company (in the words of the CER) 'cannot claim to have informed the community, as it is required to do, if the community cannot understand the information given'.[26]

As the CER explains, mining companies generally appoint environmental authorisation practitioners (EAPs), who then advertise in newspapers and put up public notices calling IAPs to meetings or inviting them to post comments on websites. These processes allow people to ask questions of the EAP and request more information. Any comments made by community members must be given full consideration by both the company and, in time, the DMR.[27]

In practice, however, it can be very difficult to ensure adequate community consultation for two main reasons. First, it is challenging to secure adequate understanding and engagement with all IAPs on technically complex issues. Says Mr Burnell: 'The EAP must try to break the information down so that it's easier for people to understand. He will then engage with IAPs [and seek to obtain a] reasonable degree of consent... But it's very easy to challenge the public participation process and argue that it has not been enough – that the reports were not clear enough, or that they were not made sufficiently available, or that the community did not really understand the explanation provided.' When people give their comments, it can also be argued that 'these views were not taken seriously enough, that there was not a proper sense of engagement', but rather a 'tick-box' approach in which legitimate concerns were brushed aside.[28]

In practice, it can be very difficult to ensure adequate community consultation for two main reasons. First, it is challenging to secure adequate understanding and engagement with individuals on technically complex issues. Secondly, those who purport to enter into agreements with mining companies may not in fact have the legal authority to do so.

The second problem is that those who purport to enter into agreements with mining companies may not in fact have the legal authority to do so. Says Mr Burnell: 'This often arises with tribal authorities... Often, it is difficult to know who exactly has the ultimate authority. Sometimes factions are in dispute over leadership positions. At other times, arguments can develop later about how the flow of money is to be directed – and a traditional leader who was accepted before will be disputed now. Often companies don't know what to do. Customary law provisions are difficult to follow, and objections can always arise.'[29]

In addition, even where leaders with the requisite authority agree that community consultation has been sufficient, damaging disputes can still arise thereafter. Often these are over mine procurement contracts. In October 2017, for instance, a group of 30 people who insisted that all procurement activities should be channelled through them issued death threats to existing contractors and blocked access to the site of the R1.7bn Elikhulu tailings project being developed by Pan African Resources near Evander in Mpumalanga. The group ignored a court interdict obtained by the company and continued with its disruptions. Pan African CEO Kobus Loots said the company was on the cusp of launching civil claims against all the individuals involved, as it could not allow the group to 'capture its procurement' and acquiesce in what amounted to a 'protection racket'.[30]

Similar problems have arisen on platinum and chrome mines near Steelpoort (Limpopo), where mine vehicles have been torched and employees prevented from working by small groups demanding procurement contracts from companies. The worst incident came in April 2018 when six mineworkers at the Odikwa

platinum mine near Burgersfort in Limpopo were burnt to death in a petrol-bomb attack on the bus in which they were travelling home. More than 40 other mineworkers travelling on the same bus were also injured in the attack. The area had been the scene of violent community protests over a number of years, with trucks and buses often set alight. However, this was the first time that lives had been lost. Phillip Mankge, a local leader from the National Union of Mineworkers (NUM), blamed local business people, saying they were 'using community members to stop the mines from operating so that they could gain access to contracts'.[31]

Appeal and enforcement procedures

Dissatisfaction among communities and other IAPs may also manifest in the lodging of appeals against the granting of mining rights, environmental authorisations, and water use licences. Appeals against the granting of mining rights lie to the mining minister, appeals against the issuing of environmental authorisations to the environmental minister, and appeals against water-use licences to the minister of water and sanitation. The lodging of an internal appeal (to the relevant minister) against an environmental authorisation suspends its operation and means that mining cannot start until the matter has been resolved. An internal appeal against the issuing of a water use licence has a similar effect. Where internal appeals are dismissed, dissatisfied communities and IAPs may take these decisions on review to the high court.[32]

IAPs who believe that environmental obligations are being breached may also complain to the DMR, the DEA, and the DWS, all of which are empowered to appoint environmental management inspectors (the Green Scorpions) with broad powers to question people, seize documents, and take samples in the course of their investigations. Complaints under NEMA can be lodged in various ways. The DEA has a hotline where anyone can report non-compliance. Complaints of criminal misconduct can also be laid with the police, who have many of the same investigative powers as the Green Scorpions. Moreover, the Green Scorpions need not wait for complaints to be laid, but can instead launch inspections of their own accord. Often, they do so on a routine basis, as part of their monitoring function, and not because they suspect a breach of the relevant rules.[33]

> *If the Green Scorpions have 'reasonable grounds for believing' that a legal provision has been breached or the terms of a permit have not been fulfilled, they may issue a compliance notice requiring a mine to take specified steps. If a mine fails to comply, this is a criminal offence. They can also shut down operations. However, stoppage orders are seldom issued.*

In conducting an investigation, the Green Scorpions will look at the environmental management programme (EMP) and the relevant annual audit reports. They will also examine other documents, along with conditions on the ground. If they have 'reasonable grounds for believing' that a legal provision has been breached or the terms of a permit have not been fulfilled, they may issue a compliance notice requiring a mine to take specified steps. The mine must comply with the notice within the stipulated time, unless it persuades the minister to suspend the operation of the notice or successfully objects to its requirements.[34]

If a mine fails to comply, this is a criminal offence for which it can be prosecuted and, on conviction for a first offence, sentenced to a fine of up to R5m or imprisonment for up to five years. (Penalties for any second or subsequent non-compliance are maximum fines of R10m, prison terms of up to ten years, or both.) Adds Mr Burnell: 'The [inspectors] can also shut down operations until a particular problem has been sorted out. If the mine is shut down, it has to rectify before it can begin again. If it fails to do so, then the environmental authorisation can be withdrawn and the mining right will be lost.' However, stoppage orders are seldom issued on environmental grounds, unlike in the health and safety sphere.[35]

Also relevant is Section 28 of NEMA, which empowers the director general of mining to issue a directive against a mine for failing to uphold its duty of care to prevent or rectify 'significant pollution or degradation'. This provision has retrospective operation, for it applies to pollution or degradation that 'occurred before the commencement' of the statute. The director general has the right to 'recover costs for any reasonable

remedial measures' that have been taken or need still to be implemented. However, the issuing of compliance notices is more usual than the handing down of such directives.[36]

Criminal prosecutions

As the CER points out, there are many 'criminal offences created by NEMA, the MPRDA, and the National Water Act, as well as in the laws governing air quality, biodiversity, protected areas, and so on'. In a booklet drawn up to help IAPs bring criminal prosecutions against mining companies, the CER stresses that 'it is a crime to mine without a licence, or without obeying the rules in the licence or the environmental management programme'. It is also a crime to use water without the requisite licence, or to breach the terms of such a licence. 'If the mining company did not consult landowners, occupiers, and affected people before the mining began, it may also have committed a crime.' Moreover, says the CER, 'if the mining company is polluting the air or water or generally causing harm to the environment, it may also have committed a crime' under various provisions of NEMA.[37]

NEMA lists a number of specific criminal offences. These include starting to mine without an environmental authorisation, failing to comply with 'any applicable norm or standard', 'contravening a condition of an environmental authorisation', and 'failing to comply with a directive' or 'compliance notice' issued under the statute. Some of the offences it creates are particularly broad. For example, it makes it an offence 'unlawfully and intentionally or negligently to commit any act or omission (sic) which causes significant pollution or degradation of the environment' or 'is likely to do so'. It also makes it an offence 'unlawfully and intentionally or negligently to commit any act or omission (sic) which detrimentally affects the environment' or 'is likely to do so'. Penalties for these offences include fines of up to R10m, jail terms not exceeding ten years, or both.[38]

The CER points out that the bringing of criminal charges has many important advantages for communities. To start with, it 'sends a powerful message' to the mining company in the dock. In addition, the state must carry the costs of both the criminal investigation and any subsequent prosecution.

In addition to listing these specific offences, NEMA gives the environmental minister broad-ranging powers to provide, by means of regulation, that 'infringements of certain regulations constitute criminal offences' and then to 'prescribe penalties for such offences'. It also allows her, again by regulation, to specify offences under both NEMA and other environmental management laws for which 'alleged offenders may pay a prescribed admission-of-guilt fine instead of being tried by a court'. Where such admission-of-guilt fines have been laid down, a Green Scorpion who has 'reason to believe' that such an offence has been committed may issue the alleged offender with a notice requiring the payment of the relevant fine. The amount so required may not, however, exceed what the minister has stipulated and what 'a court would presumably have imposed in the circumstances'.[39]

The CER points out that the bringing of criminal charges has many important advantages for communities and IAPs. First, it 'sends a powerful message' not only to the mining company in the dock but also to 'all the others that are breaking the law'. Second, mining companies will generally be anxious to avoid criminal records and 'the bad publicity that goes with being prosecuted'. In addition, IAPs do not need the help of lawyers to lay charges, while the state must carry the costs of both the criminal investigation and any subsequent prosecution.[40]

Thus far, few successful prosecutions have been brought against mining companies. In the case of Ankerlig Coal, for example, an Mpumalanga farmer laid charges against the company and its directors for drilling holes in a wetland and other sensitive areas of his farm and then failing properly in to fill these holes. As the CER writes, the company pleaded guilty and entered into a plea bargain agreement in terms of which 'it had to pay fines, fix the damage, and pay R144 000 as compensation to the farmer as the victim of the crime'.[41]

In 2013 Nkomati Anthracite (Pty) Ltd pleaded guilty to eight charges under NEMA and the National Water Act. Its offences included removing indigenous vegetation, constructing roads and infrastructure in an environmentally sensitive area without necessary environmental authorisations, and using water and disposing of waste in a way that harmed the environment. The company was fined R1m, the payment of which was suspended. It was also instructed to pay R4m to the DEA to boost the capacity of the Green Scorpions. The CER welcomed this outcome, but lamented the suspension of the R1m fine. It also regretted that none of the directors of the company had been prosecuted, as NEMA allows.[42]

More recently, however, criminal prosecutions have been brought against directors of mining companies in two instances. In 2014 the Batlabine community laid criminal charges against a director of a sand mining, Blue Platinum Ventures 16 (Pty) Ltd, for having dug up sacred ground to get more sand. Handing down judgment, the court gave the director of Ventures a five-year suspended sentence. If the company completed R38m-million worth of rehabilitation, the director would not need to go to jail, the court went on. No option was provided for a fine to be paid in lieu of the director having to spend time in prison.[43]

In 2014 Mariette Liefferlink, of the Federation for Sustainable Environment (FSE), laid charges criminal case against three directors of the defunct Blyvooruitzicht gold mine on the west rand, saying they should be held personally liable for acid mine drainage, tailings spillages, major dust emissions, and failing to rectify a R107m shortfall in the mine's financial provision (see page 55). However, the shortfall in remediation funds stemmed largely from the DMR's own inefficiency in failing to grant the mine a new-order mining right. Without that right – and the security of tenure it would have brought – Blyvoor was unable to obtain an insurance guarantee for all remediation costs. If the mining right had been granted, Blyvoor's rehabilitation costs would have been fully funded on the day of its liquidation. After it went into liquidation, moreover, it wanted to use some of its existing remediation funds to vegetate a tailings dam so as to reduce dust emissions. However, it was barred from doing so as the necessary regulatory approval was denied.[44] The environmental problems at Blyvoor are thus not solely the directors' fault, but they have nevertheless been singled out for prosecution while no attempt has been made to hold the relevant officials accountable. Judgment in this case is still pending.

The environmental problems at Blyvoor are thus not solely the directors' fault, but they have nevertheless been singled out for prosecution while no attempt has been made to hold the relevant officials accountable.

The penalties visited on mines and their directors may be significant. As Mr Burnell adds, 'mines can be fined and people can be sent to prison for various offences under NEMA'. If a contravention has caused harm to any person, a mine can be ordered to pay damages, as well as the legal costs that have been incurred in securing remediation. Other penal sanctions can also be imposed, while directors have concurrent liability. 'A successful prosecution can thus trigger a whole series of penalties. If you are an IAP, you can get a compensation order and execute it like a civil claim.'[45]

According to the CER, the only disadvantages to the laying of criminal charges are that police investigations may be very slow and the National Prosecuting Authority (NPA) may ultimately decide not to prosecute. In this situation, a private prosecution may instead be brought – but then the state no longer bears the costs. Private prosecutions have thus been uncommon in the past. However, this may be changing as activist organisations gear up to take advantage of NEMA provisions making it easy – and now also potentially lucrative – to bring private prosecutions against mining companies for breaches of environmental rules (see *Private prosecutions*, below).

Permanent environmental liability and increased financial provision

In a major departure from the previous rules, NEMA now states that every holder of a mining right 'remains responsible for any environmental liability, pollution or ecological degradation... *notwithstanding the issuing*

of a closure certificate' by the mining minister. Mining companies are thus expected to take on permanent environmental liability for impacts that cannot be predicted and which may come to light only decades after mining operations have ended. In addition, the latent impacts for which mining companies are now to be held liable in perpetuity include the pumping and treatment of extraneous and polluted water. Yet it may often be difficult to tell whether the pollution of a river, for example, stems solely from a particular closed mine – or whether it is at least partly the result of previous or subsequent mining operations in the vicinity.[46]

Environmental activists have long been urging that mining companies be required to set aside more money to cover the remediation of all potential environmental impacts. According to the CER's Ms Fourie, once mining companies have to factor into their profit calculations the full cost of environmental rehabilitation from the start of operations to the post-closure period, their assessments will start to change. Says Ms Fourie: 'The reality is that, if you ask for proper financial provision upfront, it changes the economics of the project. The process around provisions also needs to be much more transparent, much more rigorous, and it must be peer-reviewed. You can't just...say it will cost R5m to rehabilitate the mine, and that simply gets approved.'[47]

Ms Fourie says that she 'appreciates the importance and need for a mining industry'. However, she adds, 'given the devastating impact of mining activities on the environment and affected communities', mining must be 'tightly regulated'. All its 'externalities' – its negative impacts on health, the climate, water, and soil – must also be properly costed and fully paid for by mining companies. 'The real cost of mining must be reflected and there must be strict regulations, otherwise those costs are merely transferred to the state.'[48]

According to the CER's Ms Fourie, once mining companies have to factor into their profit calculations the full cost of environmental rehabilitation from the start of operations to the post-closure period, their assessments will start to change.

In the past, financial provision for remediation costs was determined under regulations adopted under the MPRDA and a guideline document issued by the DMR in 2005. Only limited provision was required for water management, while latent and residual impacts which might come to light in the post-closure period were generally not taken into account. Relevant financial guarantees had to be updated each year with the DRM, but adjustments could be based on in-house reviews.[49] The rules which now apply are very much more onerous in various ways.

NEMA rules on financial provision

Under NEMA, a mining company seeking an environmental authorisation for mining activities must first (before the mining minister may grant the authorisation) 'comply with the prescribed financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts'. (How this financial provision is to be made available – for example, by payment into an account controlled by the minister, or by obtaining a suitable guarantee from a financial institution – is further described in due course.) If the company subsequently fails to rehabilitate the environment, or to 'manage any impact' on it, the mining minister may use 'all or part of this financial provision' for rehabilitation purposes.[50]

According to NEMA, the mining company must 'assess its environmental liability' every year and each time 'increase its financial provision to the satisfaction' of the mining minister. This wording indicates that the relevant financial provision may only be revised upwards: even where significant rehabilitation has already been achieved, or where struggling shafts have been placed on care and maintenance and overall environmental impacts have been reduced. However, this problem is to be addressed under the National Environmental Management Laws Amendment Bill of 2017 (the 2017 Bill), which proposes changing the word 'increase' to 'adjust'.[51] This would be a significant improvement in wording, but it still remains to be enacted into law.

The company must also confirm 'the adequacy of its financial provision' by submitting an audit report from an independent auditor. If the minister is not satisfied with the assessment made or the financial provision envisaged, he may 'appoint an independent assessor' to 'determine' the amount of the financial provision, while the costs of any such additional assessment must be borne by the mining company.[52] (The 2017 Bill, once enacted, will require this audit report every three years, rather than annually.)

Under NEMA's current provisions, the obligation to maintain the financial provision 'remains in force notwithstanding the issuing of a closure certificate'. In addition, the mining minister may 'retain such portion of the financial provision as may be required to rehabilitate the closed mining or prospecting operation...for the prescribed period'. The minister may use these retained funds to remedy any 'latent, residual, or other' impacts, including 'the treatment or pumping of polluted or extraneous water'. (Under the 2017 Bill, by contrast, the obligation to maintain the financial provision will fall away once a closure certificate is issued. However, the minister will be obliged to retain part of the financial provision in perpetuity – so as to cover the costs of any latent residual impacts – and this portion will have to be ceded to him. This difference in wording makes for further uncertainty for mining companies in trying to plan for the future.)[53]

Regulations regarding financial provision

These NEMA rules have been supplemented by the Financial Provisioning Regulations (the 2015 Regulations), which were gazetted by the minister of environmental affairs, Edna Molewa, on 20th November 2015. These regulations were initially due to take effect in February 2017, but this date was postponed to February 2019 as objections mounted. By then, mining companies are expected to increase their financial provision in line with the new requirements, failing which they will face criminal prosecution and fines of up to R10m, prison terms of up to ten years, or both.[54]

> *The 2015 Regulations confronted the mining industry with 'the near insurmountable task of having, within a relatively short transitional period, to comply with unnecessarily onerous regulations riddled with legislative uncertainties and a myriad of contradictions'.*

In the words of one Johannesburg law firm, the 2015 Regulations confronted the mining industry with 'the near insurmountable task of having, within a relatively short transitional period, to comply with unnecessarily onerous regulations riddled with legislative uncertainties and a myriad of contradictions'. The mining industry objected strongly to the regulations, some of which were clearly *ultra vires* the minister's powers under NEMA. (For example, it is not within the environmental minister's mandate to deal with applications to place struggling shafts under 'care and maintenance', as the 2015 Regulations envisaged, as this is an issue for the mining minister to decide.)[55]

Two mining companies applied for judicial review of the legality, constitutionality, and 'meaning' of the complex and often contradictory Regulations. However, this application was put on hold when the DEA extended the initial transitional period by two years (until February 2019) and began convening meetings with stakeholders to discuss various changes to the 2015 Regulations. An amended version was gazetted on 10th November 2017 for comment within 30 days (the 2017 Proposals).[56] Key differences between the 2015 Regulations and the 2017 Proposals are set out below, but several anomalies (regarding the use of trusts and relevant tax rules) lie beyond the scope of this article.[57]

Ensuring adequate funds for all phases

Both the 2015 Regulations and the 2017 Proposals reaffirm that mining companies are obliged to 'determine and make financial provision to guarantee the availability of sufficient funds' to undertake the rehabilitation and remediation of any adverse environmental impacts. The financial provision made must thus suffice to cover the rehabilitation costs likely to be incurred during mining operations, during the closure process, and in remedying any latent or residual impacts which may become evident at any time in the future.[58]

Planning for unknown impacts that may only become evident many decades after closure is clearly very difficult. The 2017 proposals, like the 2015 Regulations, nevertheless require a mining company to determine the overall financial provision required 'through a detailed itemisation of all activities, based on the actual costs of implementation', of the measures 'identified' for:[59]

- annual rehabilitation;
- final rehabilitation, decommissioning, and closure; and
- 'remediation and management of residual environmental impacts which may become known in the future', with no cut-off point provided.

NEMA's amended provisions, read together with either the 2015 Regulations or the 2017 Proposals, make it clear that mines must now cover the costs of any post-closure pumping and treatment of polluted and extraneous water that may prove necessary at any time in the future. This post-closure responsibility was not previously required, and is likely (notes law firm Cliffe Dekker Hofmeyr) to 'double rehabilitation liability'. This is likely to prove a serious matter at times when mines – platinum ones, for example – are battling to remain viable in the face of stagnant commodity prices and rising operational costs.[60]

The financial provision to be made 'available'

However, not all of the costs of rehabilitation up to and after mine closure have to be provided or secured upfront. According to the 2015 Regulations, the financial provision to be made available must match the 'actual cost of implementation', for current, closure, and post-closure rehabilitation, for a period of 'at least ten years' going forward. The Chamber objected to this, saying: 'T[here]...is double funding for financial provisions in that mining companies would continue funding on-going rehabilitation through operating costs, and at the same time provide for on-going concurrent rehabilitation and environmental management costs in the financial provision kitty, [which would] not be accessible to the [company] for use during the life of the [mine].' In Mr Burnell's more pithy words, 'mines objected that they had to set aside money for ten years, and yet still meet annual rehabilitation costs out of operating income. Often, it would be very difficult for them to do both'.[61] The challenge would be particularly difficult for new mines not yet in production.

'Mines objected that they had to set aside money for ten years, and yet still meet annual rehabilitation costs out of operating income. Often, it would be very difficult for them to do both.' The challenge would be particularly difficult for new mines not yet in production.

The 2017 Proposals reduce the financial provision required, saying it must at any time be 'equal to the sum of the costs of implementing the activities' that will be needed, both on closure and following closure, 'for a period of three years' looking forward. Annual rehabilitation costs need no longer be included, and must be covered under normal operating costs. The new proposals lay down a formula for computing the financial provision required, which must take account of both inflation and value-added tax (VAT).[62]

This proposal is significantly less onerous. However, the CER and other environmental activist organisations have objected to the proposed change, saying the financial provision might then be too limited. Says Ms Fourie: 'The blanket three-year proposal is completely arbitrary.' Often, the state would be left 'to pick up the tab, which is a massive risk to the fiscus'. Mine communities would also be at risk if pollution was not adequately countered by cash-strapped mines nearing the end of their operating lives. The 2015 Regulations requiring that financial provision must be committed upfront for ten years were 'a much-needed improvement' and should not be watered down, the CER stressed. Activist organisations also argue that toxic acid mine drainage is the most obvious of the residual risks likely to manifest after closure – which means that 'a much longer period (at least 20 years) is required'. Ms Fourie discounts the financial burden this proposal would place on mining companies, saying such a concern cannot be allowed to trump the interests of 'the state, the environment, and affected communities'.[63]

The Chamber of Mines counters that having to put aside money for ten or 20 years will sterilise resources that could better be used for current rehabilitation initiatives and increased research into how best to overcome complex environmental challenges. Requiring a high level of financial provision for contingent liabilities that may never come to fruition is also not the best use of scarce resources. In addition, it may be difficult for companies to afford, especially at times when commodity prices are depressed and mines are struggling to sustain their operations.[64]

Other requirements

Under both the 2017 Proposals and the 2015 Regulations, a mining company's financial provision liability may not be 'deferred against assets or mine closure or mine infrastructure salvage value'. Instead, the company must identify the overall financial provision it will need to cover all its environmental obligations – including those which may possibly arise in the post-closure period – and include this information in its application for an environmental authorisation and in drawing up its environmental management programme (EMP). It must also provide 'proof of payment of the financial provision' – or proof of the financial guarantee it has secured – before it begins with any mining operation. The mining minister is barred from issuing an environmental authorisation unless and until these obligations have been met.[65]

Many commentators have assumed that mining companies seeking environmental authorisations will only have to demonstrate their capacity to provide financial provision for the three-year period mooted in the 2017 Proposals (assuming these are endorsed in their current form). This seems improbable, however. A mining company that can make provision for the next three years – but cannot demonstrate its capacity to cope with all remediation and water pumping/treatment costs from inception to an indefinite point after closure – may not be granted an environmental authorisation at all. This is especially so when NEMA makes the granting of an environmental authorisation dependent not only on a company's capacity to provide the stipulated financial provision, but also on its overall 'ability to implement mitigation measures'.[66]

A mining company that can make provision for the next three years – but cannot demonstrate its capacity to cope with all remediation and water pumping/treatment costs from inception to an indefinite point after closure – may not be granted an environmental authorisation at all.

Annual reviews and adjustments

Under the 2017 Proposals, a mining company must annually review not only the financial provision to be made available over the next three years, but also the overall amount of its financial provision. If any shortfall in the available financial provision is identified, the mining company must increase it accordingly. By contrast, if any excess is found, the amount in excess cannot be transferred back to the mining company but must instead be 'deferred against subsequent assessments'.[67]

If the mining minister 'is not satisfied with the determination of the financial provision', either as initially made or as revised on subsequent annual assessments, he may request the mining company either to increase it 'to his satisfaction' or have it 'reviewed externally' and adjusted accordingly. Alternatively, the minister may 'appoint an independent assessor at the cost' of the mining company to confirm or revise the assessment made.[68]

Financial vehicles to be used

According to the 2017 Proposals, the mining company 'make financial provision by one or a combination of' financial vehicles'. It may thus:

- obtain a financial guarantee from a registered bank or other financial institution,
- make a deposit into an account administered by the mining minister, or
- contribute to a trust fund, as provided by Section 37A of the Income Tax Act of 1962.

However, the 2017 Proposals make it clear 'no financial guarantee... may be used for the financial provision required for remediation of residual environmental impacts'. In other words, a mere financial guarantee is not considered sufficient for post-closure impacts, and the relevant moneys must instead be paid into a bank account controlled by the minister or into a trust fund. Less money will have to be tied up in this way if the three-year period in the 2017 Proposals is adopted, but objections from activist organisations may yet prevent this.[69]

The Chamber of Mines is concerned about this restriction on the use of financial guarantees. Says Stephinah Mudau, Head: Environment at the chamber: 'There should be flexibility. Companies should be able to pick and choose among different options and to decide on the basis of their particular circumstances. Many mines already have existing guarantees for their environmental obligations, and they don't want to be confined to using a trust or a bank account. It's important that there should be flexibility and that companies should be able to use the financial provision method which makes the most financial sense to them.'[70]

Where a financial guarantee is used for closure costs, this must be provided by a bank or other financial institution. In this document, the relevant bank, for example, must irrevocably undertake to pay the mining minister the 'guaranteed sum' within five days of receiving a written claim by the minister stating that the mining company concerned is in liquidation, or has failed to execute its final closure plan either 'to the satisfaction' of the minister or at all. If a trust is used, the trustees must pay over to the mining minister so much of the trust funds as are needed for the minister to carry out the closure plan. This undertaking by the trustees is a 'stipulation in favour of the minister', the benefits of which he may accept 'in any manner and at any time'.[71]

If the state cannot manage the relatively simple task of operating wastewater plants efficiently, it is unlikely to be able to deal effectively with the far more complex challenges of mine rehabilitation.

These rules assume that, once the money is in the hands of the minister, it will be well used in countering adverse environmental impacts. However, this may not be so. The government itself is adding greatly to the problem of water pollution by failing to ensure the proper operation of hundreds of municipal wastewater management plants. These receive some 4 900 million litres per day (Ml/d) of sewage flows. But only 1 260 Ml/d (26%) is treated satisfactorily, while the remaining 74% – a staggering 3 640 Ml/d – is returned to the country's rivers as partially treated or untreated sewage.[72] If the government cannot manage the relatively simple task of operating wastewater plants efficiently, it is unlikely to be able to deal effectively with the far more complex challenges of mine rehabilitation.

Reporting requirements

The 2017 Proposals largely concur with the 2015 Regulations in specifying the information that must be included in annual rehabilitation plans, final rehabilitation and closure plans, and the 'environmental risk report' that identifies latent environmental impacts that could come to light following closure.[73] The level of detail required of mining companies – in addition to their already extensive monitoring and reporting obligations under NEMA itself – is extraordinary. It is thus briefly outlined in the Box on page 47.

In addition, mining companies, as earlier outlined, are already obliged to submit detailed annual reports on their progress in implementing their environmental management programmes (EMPs). These EMP reports could easily be modified to include the financial aspect, as the Chamber points out. The Chamber is concerned about the overall compliance burden and would prefer to have a co-ordinated approach to reporting requirements.[74]

Many disturbing provisions remain

The 2017 Proposals significantly lighten the burden on mining companies by reducing the period for which financial provision must be made available from ten years to three. However, activist organisations oppose

this diminution and may yet succeed in reversing it in the final version of the regulations. In addition, the core problems in the amended NEMA requirements and the proposed rules on financial provision remain essentially unchanged.

Mining companies are still burdened with permanent environmental liability, even after they have completed the comprehensive rehabilitation needed before a closure certificate can be issued. Every year they must also put significant financial and human resources – resources that would be better spent on remediation itself – into revising their annual rehabilitation and mine closure plans as well as their environmental risk assessments for the post-closure period. Environmental obligations used to be brushed over too lightly, which is why the country is now grappling with acid mine drainage and other pollution from thousands of derelict mines. However, the pendulum has now swung too far in the opposite direction – and a more appropriate balance has yet to be found (see *Finding the right balance*, below).

Increasing environmental activism

Activist environmental organisations have an important role to play in ensuring appropriate respect for the environment. South Africa has a number of such organisations, which are taking a number of different steps against mining (and other) companies as part of a comprehensive overall strategy. This includes judicial review of administrative decisions in the granting of mining rights and environmental permissions, though not all communities welcome activist interventions that put mining on hold. A communications campaign is also in place, but often seems one-sided and even hostile to mining (see page 53). Activists are also gearing up, it seems, to take advantage of NEMA rules which now make it easy and potentially lucrative for them to bring both civil proceedings and criminal prosecutions against mining companies over alleged infractions that might better be addressed in other ways.

Mining companies are still burdened with permanent environmental liability, even after they have completed the comprehensive rehabilitation needed to obtain a closure certificate. Every year they must also put significant financial and human resources – resources that would be better spent on remediation itself – into revising their environmental plans for current rehabilitation, closure, and the post-closure period.

Judicial review

Environmental activists sometimes take government policies or administrative decisions on judicial review, asking the courts to set these aside for failures adequately to protect the environment. In the mining sphere, two key challenges have recently been brought to prevent mining in protected and sensitive areas.

Barberton Mines

Barberton Mines is a subsidiary of Pan African Resources and commonly produces some 150 000 ounces of gold a year from three mines and a gold tailings treatment plant in the Barberton area of Mpumalanga. However, the company wanted to extend its operations into the 27 800 hectare Barberton Nature Reserve, where it had a prospecting right which the DMR had granted to it in 2006. However, the Mpumalanga Tourism and Parks Agency objected to future mining operations in a protected area and took the DMR decision on judicial review. In 2017 the matter went to the Supreme Court of Appeal, which set aside the prospecting right so as to protect the nature reserve. Environmental organisations applauded the ruling, saying it had made it clear that 'nature reserves and other protected areas in South Africa were now safe from mining and prospecting'.[75]

Atha-Africa

The CER and other civil society groups have for some time been seeking to prevent coal mining in the Mabola Protected Environment near Wakkerstroom in Mpumalanga. Mabola, with its rivers, wetlands and waterfalls, is the source of the Vaal, Pongola, and Tugela Rivers, which supply water to Mozambique,

KwaZulu-Natal, and much of South Africa's Highveld region. When an Indian-owned company, Atha-Africa, succeeded in obtaining a right to mine coal in this area, along with the necessary environmental authorisation and water-use licence, the CER and others (the civil society coalition) took the DMR's decision to grant it the mining right on judicial review. The coalition argued that the proposed coal mine would cause 'unacceptable pollution and degradation of the environment'. It also stated that 'a poor decision-making process' had led to the granting of the right, for junior officials in the DMR had advised against it but had then been overruled by senior ones. Having initially opposed the application and sought a punitive costs order against the coalition, Atha-Africa later reached a settlement agreement which was made an order of court in June 2017. Under this court order, Atha-Africa must give the coalition three weeks' written notice before it begins any mining operation in the Mabola area.[76]

Atha-Africa's environmental authorisation was also suspended, pending an expert hearing into the matter. At this hearing (held in August 2017), the coalition challenged the validity of the environmental authorisation, saying that officials should not have granted it as 'there were simply too many gaps' in the scientific information, especially as regards the impact of de-watering and acid mine drainage. It also argued that the environmental impact assessment report did not contain 'proper and objective' analysis of the likely negative impacts of the project on people's environmental rights. The coalition further highlighted the long-term negative consequences of ground and surface water contamination, which could 'reduce biodiversity in the area' and lead to a decline in eco-tourism.[77]

In response, Atha-Africa argued that the coalition failed to recognise that 'mining projects which are handled in an environmentally responsible manner could be significant socio-economic engines of the communities in which they were located'. It added that the authorisation granted was 'subject to very rigorous compliance conditions' and took full account of the sustainable development principles reflected in NEMA.[78] At the time of writing, the expert panel had yet to give its ruling on these issues.

> *Local residents have rejected the coalition's intervention saying that 'environmental protection would be better served by uplifting the living standards of the impoverished community, which can only happen through sustainable development'.*

The local community has rejected the coalition's intervention. According to community representative Thabiso Nene (in a letter to *Business Day*), the CER had ignored its petition, signed by more than 5 000 people and accompanied by 55 strong letters of objection, arguing against the declaration of Mabola as a protected environment. It had also overlooked the government's response, which was that the declaration would not prohibit mining but simply allow its 'better regulation' in a sensitive eco-system. In addition, the CER and other organisations could have joined the public participation process as 'interested and affected parties'. Instead, they had let the entire process pass them by, only to attack the various mining authorisations after these were granted. In doing so, they had relied on an outdated environmental impact assessment report. They had also overlooked the presence of a nearby abandoned mine, which had closed more than 70 years ago and 'had never affected the quantity or quality of the water in the area'. Added Mr Nene: 'As a resident and representative of the community,...I know that environmental protection would be better served by uplifting the living standards of the impoverished community, which can only happen through sustainable development.' The community had therefore welcomed the proposed mine, but the CER and others had little interest in their views.[79]

A communications campaign

In recent years, environmental activists and other commentators have often painted a disturbing picture of the environmental damage caused by mining. Some of the allegations made have been directed at named companies, particularly the mining majors. Often, however, the activists' allegations have been vague and generalised, making it difficult for mining companies to respond. Some of these unsubstantiated allegations have been repeated at various times, as set out in pages 53 to 55. This repetition has helped to generate

an atmosphere hostile to mining, and paved the way for South Africa's increasingly onerous environmental rules.

The following statement, made by the Bench Marks Foundation in October 2016, is typical of the general allegations often forthcoming:[80]

> 'Mining...is usually portrayed as investment for development, a source of jobs and a contributor to GDP. It is seen as the holy cow of economics and sacrosanct. Not to be questioned or challenged, in spite of the fact that hundreds of thousands of poor people live in abject poverty because of loss of arable land, livelihoods, aggravating health conditions, cultural and social upheaval, all of which manifest in unemployment and push poor communities to the margins of society...
>
> Mining across the world is suffering a crisis of legitimacy...for its great cost on communities and rural life styles, which gives rise to serious health concerns... Mining pretends to be doing good in communities, whereas its story is mostly fiction...
>
> Communities say that dust contaminated with poisonous materials is getting into their clothes and, most dangerous of all, into their lungs. Bad roads, dust from haulage, livestock deaths, polluted air, contaminated water, unauthorised mining activities – these are just some of the complaints...
>
> As long as the industry is built on the profit motive, extracting for profits and short-term gain at the expense of communities and society as a whole, we are slowly but surely walking to our death. Sustainable development and profit-taking do not go together. Profit kills and capital is too powerful, while society is too weak...
>
> New models of socialisation of mining by removing profit from the equation would allow us to begin a new debate... Perhaps we need models that give communities ownership, where surpluses made are reinvested, and the excess distributed for community development.'

Says the Bench Marks Foundation: 'As long as the industry is built on the profit motive, extracting for profits and short-term gain at the expense of communities and society as a whole, we are slowly but surely walking to our death. ...Profit kills and capital is too powerful, while society is too weak.'

Because the allegations made are often so general, they fail to distinguish between the conduct of large and small mining companies, instead tarring them all with the same brush. In practice, however, small mining companies have fewer resources with which to discharge their environmental obligations. This is especially true for many of the junior BEE companies to which coal mining rights in Mpumalanga have been granted since the MPRDA came into effect in 2004.

Writes Kelly Forrest of the Society Work & Development Institute: '[A key part of] the DMR's mandate is to facilitate BEE entrants. Mining is generally a frontier for black elite entry into the economy. Open cast coal mining is a particularly favoured entry point for junior black miners. Regulations give the DMR the power to dispose of mining licences, which it has done abundantly. At least 60% of Mpumalanga is being given over to mining or prospecting, mainly in coal.' Yet many of the new entrants lack the financial and other resources required to succeed in mining or counter its environmental impacts. As a result, says Forrest, 'abandoned coal mines already litter the landscape, raising the spectre of acid mine drainage'.[81]

Forrest is one of few commentators to draw a distinction between the environmental performance of majors and juniors, though in the end she seems to find them all equally to blame, writing: 'Many mines [in the Delmas area of Mpumalanga] have extracted without water licences. They have also illegally mined through wetlands. They have illegally pumped water from a river and released polluted water into maize fields, roads, and streams... [At the same time] coal dust has stunted maize growth and leached into ground water. Mine-blasting has fractured the water chambers of South Africa's major Botleng Aquifer,

resulting in the pollution and impediment of water flow into municipal and farm boreholes. Many mines have failed to remediate on closure, causing acid mine drainage runoff into wetlands, dams, and the Olifants River... Some observers point to junior black miners as the worst offenders. [However,] the research finds that all mines – majors and BEE juniors, foreign and local, black- and white-owned – have transgressed water laws without serious consequences.'[82]

Mining geologist Oliver Barker goes beyond what Forrest has said. In Barker's words, the granting of coal mining rights to many small firms in Mpumalanga has been 'a disaster', as they simply 'don't have the capacity to clean up as they go, let alone afterwards'. The province, he adds, has 'lots of small miners on the sides of the big operators, with owners that come and go. There is no way they are able to meet NEMA requirements' Mining, with its heavy operational costs, many technical challenges, and major environmental impacts, is also no easy route to riches, as the MPRDA seems to assume. Hence, it should be confined to big corporations with 'deep pockets' and the overall capacity to manage all its ramifications, including the environmental ones.[83] However, the inability of small operators to manage their environmental impacts seems to attract little attention from activist environmental organisations.

Civil litigation against mining companies

According to the CER, civil cases against mining companies are 'part of a concerted and ongoing effort by civil society to uphold and advance environmental law'. Says Ms Fourie: 'There are enormous amounts of potential litigation because they are generally low levels of compliance. There are just so many violations and criminal offences, each at the scale that should shut down a facility'.[84]

> *Activists and environmental lawyers are engaged in what they describe as 'phase one' in a longer-term strategy. They are currently going after what they call 'the low-hanging fruit': companies which are polluting rivers and people's air. The aim is to 'win enough cases so that companies start to think seriously about complying with the law'.*

Activists and environmental lawyers are thus engaged in what they describe as 'phase one' in a longer-term strategy. They are currently going after what they call 'the low-hanging fruit': companies which are polluting rivers and people's air. The aim, in the words of one legal firm, is to 'win enough cases so that companies start to think seriously about complying with the law'. Each case sets a precedent and makes the next one easier. Against this background, the focus will in time shift to bigger issues – particularly, the way in which mining companies are allowed to put minerals extraction before the needs of the environment and the interests of affected communities.[85] The ultimate aim, it seems (as indicated in the Bench Marks statement earlier cited) is to give 'communities' the power to veto all mining operations to which their often self-proclaimed leaders object.

Various provisions in NEMA facilitate civil litigation of the kind the CER has in mind. Under NEMA, a mining company may be held responsible in civil litigation 'for any environmental damage' or 'ecological degradation' which results from its mining operations. It may also be held responsible for any 'pumping or treatment of extraneous or polluted water' that may become manifest at any time after closure – an additional obligation under the revised NEMA rules and one with major financial ramifications.[86]

NEMA also seeks to pierce the corporate veil and override the limited liability for which the Companies Act of 2008 provides. Under NEMA, thus, the directors of a mining company may be held 'jointly and severally liable' in civil proceedings 'for any negative impact on the environment, whether advertently or inadvertently caused by the company which they represent, including damage, degradation, or pollution'.[87]

Litigation against mining companies may further be encouraged by the fact that NEMA readily grants activist organisations legal standing *(locus standi)* to come before the courts and 'seek appropriate relief' for any breach of its provisions. Legal standing may also be claimed in even broader circumstances: whenever activists are seeking to enforce 'any other statutory provision concerned with the protection of the environ-

ment or the use of natural resources'. In addition, such cases need not be brought before the high court, as magistrates' courts will generally also have jurisdiction over them.

If a court application seeking environmental relief fails, costs need not be awarded against the activists. If it succeeds, however, the magistrate's court may order costs 'on an appropriate basis' to the lawyers 'who provided free legal assistance' in bringing the civil suit. The court may also order the mining company to pay to the activists who launched the litigation 'any reasonable costs incurred in the investigation of the matter and in preparation for the proceedings'.[89]

In practice, the detailed rules regarding financial provision now being introduced could also encourage more civil litigation against mining companies. The difficulty of accurately predicting what financial provision is needed over long periods of time will greatly increase the scope for activists to litigate over the amounts that companies have decided. Intrinsic uncertainties over how much is required may then make it relatively easy for activists to convince magistrates, many of whom will have little expert knowledge of mining or the remediation challenge, that companies have not set enough money aside.

The detailed information that will have to be provided every year in the annual, closure, and post-closure reports required under both the 2015 Regulations and the 2017 Proposals (see Box on page 47) may also encourage litigation over a host of issues. To give but some examples, the publication of these plans will allow activists to challenge:[90]

- any discrepancies between what companies have promised to do in their annual rehabilitation plans and what they have in fact achieved;
- the adequacy of the 'cost methodologies' and 'cost assumptions' that have been used in computing likely rehabilitation expenses;
- whether future cost estimates are sufficiently accurate (for example, whether cost projections for closures that lie between five and ten years away are indeed 80% accurate, as the rules require); and
- whether post-closure risks could not have been mitigated during concurrent rehabilitation or in the closure process.

If a court application seeking environmental relief fails, costs need not be awarded against the activists. If it succeeds, however, a magistrate's court may order the mining company to pay to the activists who launched the litigation 'any reasonable costs incurred in the investigation of the matter and in preparation for the proceedings'.

If a civil suit brought on any of these grounds succeeds, the magistrate's court may order the company to provide 'any appropriate relief' for 'any breach or threatened breach of any statutory provision concerned with the protection of the environment or the use of natural resources'.[91] This wording suggests that damages may be payable even where the breach of a statutory provision – the 80% accuracy of a future cost estimate, for example – has not resulted in any actual harm to the environment.

Private prosecutions

Activists will also be encouraged to bring private prosecutions against mining companies. They are entitled under NEMA to 'institute and conduct a prosecution' for any breach of an environmental obligation which amounts to an offence (see below), provided they are acting in the public interest or in order to protect the environment.

As earlier noted, the offences listed in NEMA range from starting mining operations without the necessary environmental authorisation to any failure to comply with a condition in an approved environmental management programme. It is also an offence 'unlawfully and intentionally or negligently to commit any act or omission which causes significant pollution or degradation of the environment' or is 'likely' to do so. Under still broader wording, NEMA also makes it an offence 'unlawfully' and either 'intentionally or negligently'

to commit any act or omission 'which detrimentally affects the environment' or is 'likely' to do so. This last provision, in particular, is inordinately broad.[92]

Activists wanting to prosecute a mining company for any such offence must begin by notifying the appropriate public prosecutor of their intention to prosecute. However, if the public prosecutor does not confirm in writing within 28 days that a state prosecution is indeed to be brought, then the private prosecution may proceed. These rules are very different from the usual ones, under which a private prosecution may be brought only if the National Prosecuting Authority (NPA) has expressly issued a notice of its intention not to prosecute, in what is termed a *'nolle prosequi'* declaration.[93]

In this situation, the activists are excused from having to provide security for the costs of the court proceedings, and also from having to produce the usual certificate confirming that the NPA has declined to prosecute. Why the normal rules regarding private prosecutions have been relaxed in the environmental sphere – but not in a host of other areas of equal importance to society – has not been explained.[94]

If the private prosecution succeeds, the convicted mining company may be ordered to pay 'the costs and expenses of the prosecution', including 'the costs of any appeal against such conviction or any sentence'. Only if the private prosecution is found to be 'trivial, vexatious or unfounded' may costs be awarded against the activists that brought it.[95]

Activists wanting to prosecute a mining company must begin by notifying the appropriate public prosecutor of their intention to prosecute. If the public prosecutor does not confirm in writing within 28 days that a state prosecution is indeed to be brought, then the private prosecution may proceed. These rules are very different from the usual ones requiring the issuing of a nolle prosequi *certificate.*

In addition, if a company is convicted of an offence under NEMA (or under various other environmental management acts) and is then ordered to pay a fine, the trial court may instruct that 'not more than one-fourth of the fine be paid' to a person 'who assisted in bringing the offender to justice' or whose evidence led to the conviction.[96] This is likely to provide a further financial incentive for activist organisations to bring private prosecutions.

The penalties that apply on conviction of offences under NEMA are severe. For any of the offences outlined above, a fine of up to R10 million, imprisonment for up to ten years, or both of these punishments may be imposed. If a mining company is convicted of an offence under NEMA (or under other environmental management laws), the court may also withdraw its environmental authorisation, so putting it in breach of the MPRDA and exposing it to the cancellation of its mining right. The court may also disqualify the company from obtaining another environmental authorisation for a period of up to five years.[97] These provisions undermine the security of mining titles in South Africa.

At the same time, NEMA includes a 'catch-all' penalty provision for mining companies convicted of listed offences under various other environmental management statutes – including those dealing with air quality, biodiversity, protected areas, and waste. The offences which are so listed (in Schedule 3 of the statute) expressly include all the specific offences for which NEMA itself provides.[98]

Where a company is convicted of a 'Schedule 3' offence which has 'caused loss or damage' to the state or any other person, the trial court may 'inquire summarily...into the amount of the loss or damage' in issue. On proof of that amount, the court may order the company to pay this sum to the aggrieved party, while its judgment will have the same 'force and effect' as if it had been handed down in a civil action. If the company has derived any financial advantage from its offence, it may also be ordered to pay damages or fines of an equivalent amount.[99]

In addition, a mining company's conviction on a Schedule 3 offence provides 'prima facie evidence that its directors are guilty' of the same offence. Unless these directors can show that they took 'all reasonable

steps that were necessary to prevent the commission of the offence', they will be subject to the same penalties as the company itself – including the obligation to pay damages for any loss caused or advantage gained. Directors unable to discharge this onus of proof thus face R10m fines and 10-year prison terms – along with liability for any resulting loss or gain – for such broadly-phrased NEMA offences as 'negligently committing any act or omission (sic) which...is likely...to detrimentally affect the environment'.[100]

Criminal liability may also be attached to the 'managers, agents or employees' of a mining company if they carry out acts which they are tasked with performing, but which would be offences for the company itself to carry out under any of the provisions listed in Schedule 3. In this situation, these individuals are 'liable to be convicted and sentenced' for the relevant offences 'as if they were the employer' and 'in addition' to any conviction and penalty handed down to the company itself.[101]

These provisions may now be encouraging activist environmental organisations to launch private prosecutions, which might not only boost their own coffers but also result in the directors of mining (and other) companies being sent to jail. The private prosecution of BP Southern Africa which was launched last year may thus be a harbinger of many more such cases to come.

A private prosecution of BP Southern Africa

Environmental activists have begun using their NEMA rights to embark on the private prosecution of companies. The first such prosecution has been brought against BP Southern Africa (BP), for having built a number of new petrol stations in Gauteng, in the period from 1998 to 2002, without all the necessary environmental permissions. As the *Mail & Guardian* reports, 'Everyone agrees that it did so without all the environmental paperwork in place, which is not unusual, and that it subsequently paid "administrative penalties" to set things to rights, also not unusual.' Now, however, a close corporation called Uzani Environmental Advocacy, a paper entity whose sole purpose is to prosecute BP, has used NEMA to bring criminal proceedings against the company.[102]

> *If a court finds BP guilty and levies fines on it, Uzani could be awarded a percentage of those fines. That money could then be used by it to bring many more private prosecutions – especially as Uzani has already given the NPA notice of some 2 500 separate instances in which it wants to prosecute.*

The stakes are high. If the prosecution succeeds, says the newspaper report, 'Uzani could make a great deal of money out of prosecuting BP, before taking the fight to every other petrol company in South Africa in what could amount to thousands of separate criminal counts, collectively costing the oil industry billions of rands'.[103]

Uzani is putting the new NEMA provisions to the test, while using its corporate identity to protect the activists behind it from any personal liability. According to the CER's Ms Davies, Uzani's present case against BP could also set an important precedent. Says Ms Davies: 'Environmental crimes are far more prevalent in South Africa than most people realise. Our authorities are not properly resourced to deal with all of them. The NPA has few resources to invest in cases aimed at punishing violators for the damage wrought on our people and resources by pollution. The private prosecution provision in NEMA could be a powerful tool to start to rectify this imbalance.'[104]

Uzani also sees financial benefit in the path it is pursuing. If a court finds BP guilty and levies fines on it, Uzani could be awarded a percentage of those fines. That money could then be used by it to bring many more private prosecutions – especially as Uzani has already given the NPA notice of some 2 500 separate instances in which it wants to prosecute. The 28-day period in which the NPA is entitled to object has already expired, leaving the way clear for Uzani to bring private prosecutions in all these matters.[105]

According to Gideon (Kallie) Erasmus, the primary activist behind Uzani, the objective over time is to establish a bigger organisation that will have both a non-profit and a commercial side. Other activist organisations will be drawn in, as Uzani does not itself have the capacity to prosecute all the companies which are

in breach of environmental rules. Says Mr Erasmus: 'No single initiative has the capacity to undertake that number of prosecutions, not even the NPA. We fully expect other institutions to adopt a similar approach, and we would hopefully be extending an invitation for co-operation among institutions.'[106]

BP is trying to have the prosecution quashed on the basis of its 'naked opportunism'. The corporation queries whether there is really any public interest in having the matter proceed, especially as 'there is no environmental wrong they are trying to cure'. The issues of which Uzani complains are 'matters of historical significance...where no one is affected any more, if they ever were'. BP has thus expressed its confidence that the criminal proceedings against it are 'not competent in law' and will be dismissed.[107]

However, the provisions of NEMA are so broad that the prosecution of BP might in fact succeed. Activists are also planning to co-ordinate their efforts and make sure they use the new NEMA provisions to the full. Hence, mining companies could also soon find themselves confronting a host of civil suits and criminal prosecutions. Activists will increasingly be seeking to have directors imprisoned or otherwise held personally liable. As the *Mail & Guardian* recently reported, 'holding directors personally criminally liable is the holy grail of environment law, with cases ongoing around the world to get this sort of judgment.'[108]

Ramifications of South Africa's environmental rules

Speaking at the Johannesburg Mining Indaba in October 2017, Cobus Loots, chief executive of Pan African Resources, said increasing environmental obligations 'threatened the stability of the industry'. He warned that onerous compliance costs could result in 'massive retrenchments' and the closing down of mining companies. Environmental legislation also 'remained mired in confusion', he went on, while its vague and contradictory terms were a further major deterrent to foreign investment. Said Mr Loots: 'We need regulations that work. It is difficult to sit in front of an international investor and to convince them to put money in South Africa...To sit and explain to an investor that the mining charter has not been finalised and now there are issues on the environmental side is a tall order.'[109]

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In the past three years, the mining industry has had to deal with:

- the 2014 NEMA amendments, which established the 'one environmental system' but failed to introduce a truly integrated approval system, given all the other statutes under which necessary permissions must still be sought;
- the introduction of permanent environmental liability for all latent impacts that manifest at any time after closure, which adds greatly to the environmental liabilities of mines at a time when many are battling to survive;
- the 2015 Financial Regulations, which require the setting aside of financial provision for ten years, conflict with relevant trust and tax rules, and include provisions on the care and maintenance of mines that are clearly *ultra vires* the powers given to the environmental minister under NEMA; and
- the National Environmental Management Laws Amendment Bill of 2017, which (in seeking to streamline South Africa's plethora of environmental statutes) makes further changes to the NEMA provisions that took effect in December 2014 and so creates further doubt as to precisely which rules are to apply.

The uncertainty around the 2017 Proposals for a reduced amount of financial provision (three years instead of ten) is also debilitating. The 2017 Proposals may not in the end be adopted in their current form, especially as environmental activist organisations are strongly opposed to them. The proposals are beneficial in various important ways, but no one yet knows if they will in fact be implemented. At present, thus, mines must still plan to make ten years' financial provision available as from February 2019, which is less than a year away. Yet the financial provision needed could also be brought down to three years, as the 2017

Proposals envisage, or perhaps to some intermediate level (say, five years instead). How then are mining companies to plan for the future or quantify their contingent liabilities? Particularly for the many platinum mines which are loss-making or only marginally profitable at current platinum prices, these questions are vital to future sustainability.[110]

Still more uncertainty has resulted from a 'draft mine water management policy' which was tabled for comment in 2017 by the then minister of water and sanitation, Nomvula Mokonyane. If this policy is introduced in its current form, mining companies will find themselves having to comply with additional, and sometimes conflicting, rules on the same water issues.[111] The DWS policy ignores this risk. Instead, it seems to assume that neither NEMA nor its financial provisioning regulations deal with the impact of extraneous and polluted mine water, when clearly this is not so.

The DWS draft policy is thus unnecessary. It could also add substantially to regulatory confusion and the overall regulatory burden if it indeed introduces (as it proposes):[112]

- a new system of classifying mines according to the water risk they pose;
- additional rules regarding the 'infrastructural management plans' that must be implemented throughout the mining cycle and also in the post-closure period;
- an additional role for the DWS in 'imposing sanctions and apportioning liabilities' on water issues;
- an environmental levy, in addition to the financial provision that mining companies must already make;
- new rules limiting the choice of water treatment technologies that mines may use; and
- a new principle barring the granting of a mining right unless the applicant can prove that the socio-economic benefits of its proposed mining operations outweigh all potential environmental impacts, especially water-related ones.

In the past three years alone, major resources (from the state's side) have been put into drafting and re-drafting increasingly detailed and often contradictory regulations. As a result, major resources have also been needed (from the mining industry's side) to understand the new rules, get to grips with conflicting requirements, and lobby departments for constructive change.

In the past three years alone, major resources (from the state's side) have been put into drafting and re-drafting increasingly detailed and often contradictory regulations. As a result, major resources have also been needed (from the mining industry's side) to understand the new rules, get to grips with conflicting requirements, and lobby departments for constructive change. The mining industry has also had to put ever more of its human and financial resources into establishing and maintaining increasingly complex monitoring and reporting systems. All of this has taken key public and private resources away from the most important need – which is to ensure that adverse environmental impacts, including legacy ones, are properly mitigated and remediated.

Getting it right on the environment is particularly important, moreover, when various other mining laws are also deeply damaging. At present, onerous environmental regulation comes on top of:[113]

- the vague provisions of the MPRDA, which lend themselves to uneven and selective interpretation and sometimes to abuse and corruption;
- the dirigiste interventions in the MPRDA Amendment Bill of 2013, which seek to impose export and price controls on a host of mineral products; and
- the often unlawful provisions of the disputed 2017 mining charter, under which the ownership target seems likely to remain at 30% and the mining minister may keep demanding additional BEE deals (to restore the 30% level) wherever black investors sell out in circumstances which he regards as unacceptable.[114]

Against this background, it is not surprising that South Africa's attractiveness to mining investors, as measured each year on the Mining Index compiled by the Fraser Institute in Canada, has significantly deteriorated over the past decade. On the policy perceptions index – which measures the extent to which government policies detract from positive geological factors and reduce willingness to invest – South Africa's score has dropped from 56.9 in 2013 to 42.7 in 2017.[115] This is a sharp decline.

One of the factors measured by the Fraser index is 'uncertainty concerning environmental regulation'. Here, the Fraser index provides only comparative rankings, rather than scores, which are more difficult to assess because the number of mining countries surveyed varies from year to year. Deterioration is nevertheless evident here too. In 2009 South Africa ranked 23rd out of 72 countries surveyed, but in 2011 it ranked 42nd out of 93. In 2015 it ranked 44th out of 112, but in 2016 its ranking dropped steeply to 81st out of 104. This, presumably, had much to do with the introduction of permanent environmental liability under NEMA, coupled with the onerous requirements in the 2015 Regulations. The country's ranking recovered thereafter in 2017 (to 60th out of 91 countries), probably in response to the government's pledge to revise these regulations (as it has now done in the 2017 Proposals). But South Africa's current ranking nevertheless remains far below where it was in 2012, when the country ranked 38th out of 96 countries.[116]

One of the factors measured by the Fraser index is 'uncertainty concerning environmental regulation'. In 2015 South Africa ranked 44th out of 112 countries, but in 2016 its ranking dropped steeply to 81st out of 104. This, presumably, had much to do with the introduction of permanent environmental liability under NEMA.

The government seems to assume that South Africa's exceptionally valuable mineral resources will always be a powerful draw card for investors, irrespective of how greatly the regulatory burden is increased. It does not seem to realise, says James Lorimer, DA shadow mining minister, that investor interest has already largely shifted away. Many mining companies have pinned their hopes on President Cyril Ramaphosa's assumed capacity to usher in real reforms, beginning with the mining charter. Thus far, however, the charter negotiations between the Chamber of Mines and new mining minister Gwede Mantashe have been disappointing, for the minister has shown little willingness to compromise on the ownership requirements that do so much to make the industry 'uninvestable'.[117]

Without substantial reforms to mining rules, including current environmental ones, hopes of a 'new dawn' under President Ramaphosa will dim. Investments of the 'stay-in-business' variety will continue for a period, so that mining companies can reap the full benefit of the resources they have already committed to mining in South Africa. However, substantial new investments – of the kind most needed to turn mining from a sunset industry into a sunrise one – are unlikely to be forthcoming. On this basis, a mining sector still vital to growth, jobs, export earnings, and tax revenues could be a shadow of its present self within 15 to 20 years.

Finding the right balance

In finding the right balance between protecting the environment and ensuring the sustainability of its mining industry, South Africa has much to learn from international experience. Across the world, as Kristina Soderhölm and other analysts write, something close to 'an international consensus' has emerged on the need for mining companies to limit adverse environmental impacts and fulfil their rehabilitation obligations. Most international mining companies are exposed to constant 'scrutiny and pressure from the public, banks, and shareholders to pursue appropriate environmental conduct' and are anxious to avoid adverse publicity. They also know that 'the most modern and cost-effective mining processes are generally the most environmentally friendly ones', and tend to employ these processes in all the jurisdictions in which they operate.[118] However, the way in which environmental rules are designed and implemented also has important ramifications for the profitability and competitiveness of mining companies.

Environmental regulations are crucial in constraining negative impacts from mining, but they also raise the costs of opening and operating mines. Direct costs include the additional expenses involved, for example, in acquiring new equipment or taking on more technical and administrative staff. Indirect costs may also arise if spending on environmental compliance crowds out other investments, or if the research and development (R&D) needed in the environmental sphere makes it more difficult to push ahead with conventional R&D. Such factors may undermine competitiveness in the long run, with negative spillover effects for employment, procurement, and the wider economy.[119]

Mining is also capital-intensive, while global mineral prices often fluctuate widely. Long delays in the granting of environmental approvals may thus prevent companies from benefitting from narrow investment windows. They can also make it more difficult for companies to raise loan finance. Heavy financial provisioning requirements in the initial stages of a mining project – when costs are high and no income is yet being generated – may be particularly difficult to meet. Unduly onerous environmental obligations can also provide incentives for mining companies to strip out the most valuable mineral resources as rapidly as possible, rather than seeking to maintain mining activities over many years.[120]

Both the design and the implementation of environmental regulations are important in reducing these potential negative effects. Environmental rules should thus be clear, certain, and reasonable, rather than vague, fluctuating, and unduly onerous. Decisions should be predictable and timely, which calls for standardised procedures, objective criteria, and uniform guidelines for the interpretation of the relevant rules. Integrated permitting systems should be developed, while sufficient numbers of experienced and technically competent decision-makers should be provided. Another way of helping to secure more timely decisions and reduce time-consuming appeals is to put more emphasis on expert-based assessments than on public participation processes, which are often not as well informed.[121]

Environmental rules should be clear, certain, and reasonable, rather than vague, fluctuating, and unduly onerous. Decisions should be predictable and timely. Integrated permitting systems should be developed, while sufficient numbers of experienced and technically competent decision-makers should be provided.

Incentives for improved environmental performance should be provided, while the administrative burden of compliance should be reduced as much as possible. Reassessments of likely impacts and costs should not be expected on an annual basis, but rather at intervals of five to ten years. Where necessary – and particularly where new technologies must be developed and tested – extended periods for compliance should be permitted. Mining companies may be asked to make reasonable contributions to the rehabilitation of abandoned mines, but should not be saddled with onerous obligations to rectify environmental impacts from the past. The regulatory framework should also be co-operative and consensus-seeking, rather than combative and litigious.[122]

As regards mine closure, most countries now require mining companies to develop timely decommissioning and rehabilitation plans. Financial assurance is often also required, so that the funds to implement these plans are available to governments if companies prove unable or unwilling to carry out the necessary work. The 'post-closure' stage is also receiving more attention, but this is a particularly complex issue. Companies may be expected to allocate a specified percentage of their financial assurance to the maintenance and monitoring of the steps they have taken in the closure process. They may also be asked to rectify unanticipated adverse impacts that come to light within a stipulated and reasonable period after closure. However, companies should not be expected to do more, as future risks are difficult to predict and remediation costs for latent residual impacts are even harder to foretell. Some of the relevant rules in other important mining jurisdictions are outlined below to illustrate what obligations can realistically be required.[123]

In Western Australia, the aim of the financial provision required is to ensure that adequate funds are

available at the time of closure, rather than beyond this point. The methods used in calculating this financial provision must be transparent and verifiable. Critically, however, the mine owner does not have to transfer the amount in issue into a trust fund or bank account, but may instead make adequate provision in its corporate accounts. A Mining Rehabilitation Fund has also been established, so as to give the state government the means to rehabilitate abandoned mines, along with those where companies fail to fulfil their closure obligations. Most mining companies pay into this pooled fund each year, via a levy set at 1% of their estimated total mine closure costs.[124]

In Queensland (Australia) the necessary financial assurance to cover closure costs and 'a residual risk payment' for the post-closure period may be provided by means of a bank guarantee which is unconditional and irrevocable. The amount required can also be reduced in various ways: for example, through progressive rehabilitation as mining proceeds.[125]

In British Columbia (Canada), financial assurance must aim at covering reclamation costs during the life of the mine and at the closure stage. The assurance can be provided in various ways, including irrevocable standby letters of credit. Similar rules apply in Chile, where financial assurance must cover all closure obligations and may be provided by means of a financial guarantee approved by the relevant authority.[126]

As this brief overview indicates, South Africa's environmental rules relevant to mining are often flawed in their design and implementation. They seek to regulate every aspect of mining operation, but often do so in vague and imprecise terms that open the door to selective interpretation and enforcement. In addition, the relevant rules keep changing in significant ways, which erodes the certainty and predictability required.

Despite the 'one environmental system', the country's permitting process remains split among various entities, making for unnecessary complexity and adding to delays. Major skills shortages within the state further erode the quality and timeliness of decision-making, especially on complicated technical issues. Public participation requirements are also difficult in practice to fulfil.

Despite the 'one environmental system', the country's permitting process remains split among various entities, making for unnecessary complexity and adding to delays. Major skills shortages within the state further erode the quality and timeliness of decision-making, especially on complicated technical issues. Public participation requirements are difficult in practice to fulfil, which means they can easily be challenged and used to mount a plethora of lengthy appeals.[127]

At the same time, having to review and, if necessary, revise their environmental management programmes every year puts a heavy compliance burden on mining companies. So too does the obligation to report in great detail each year on current rehabilitation, planned closure activities, and likely post-closure latent impacts. NEMA's emphasis on permanent environmental liability following closure is also unduly onerous, while current and proposed financial provisioning regulations make it difficult or impossible to use financial guarantees to cover post-closure impacts.

South Africa's increasingly detailed environmental rules are at odds with global trends. According to the *Extractive Industries Source Book*, the modern trend is to move away from overly prescriptive requirements with heavy compliance costs. Instead, the aim is to develop 'goal-setting' regulations, which are normally backed up by non-mandatory guidance notes. Such regulations set out the objectives to be achieved, but allow flexibility in the methods to be used by companies in doing so. This relieves the regulator of the burden of having to decide in detail on the relevant rules and puts the onus on companies to come up with environmental management plans that are reasonable, responsible, and tailored to their particular circumstances.[128] This 'internal control principle' avoids the problem of ever more prescriptive regulations which cannot easily cater for complex situations and soon become outdated as circumstances change.

In finding a more appropriate balance between environmental needs and the sustainability of the mining industry, South Africa should more fully embrace this 'goal-setting' approach. This would be easier for

the country to manage, given the skills shortage within the state. Ideally, moreover, the job of drawing up a co-ordinated set of appropriate goal-setting environmental rules for mining should be given to a specialist agency. This should be funded from tax revenues but staffed by independent experts.

This specialist agency should also be responsible for granting all the permissions needed for mining, from air emission permits to waste management licences. These permissions should be granted in a timely and predictable manner – and on the basis of a single environmental impact assessment that covers all likely impacts and sets out a comprehensive environmental management programme that caters for them all.

The important task of assessing whether mining companies are managing their environmental impacts in reasonable and responsible ways should be given to the same specialist agency. These compliance assessments, coupled with appropriate amendments to environmental management programmes, should generally be required only once in five years, so as to reduce the compliance burden on both the specialist agency and the mining industry.

However, South Africa cannot easily embrace this 'internal control principle' while NEMA rules encourage activist environmental organisations to litigate against mining companies – or even to prosecute them – for what may be technical infringements with no major environmental consequences (as in the current private prosecution of BP Southern Africa). Instead of expecting companies to answer to a range of environmental activists, whose vague allegations sometimes seem rooted in hostility to mining and the free market, the vital issue of whether miners are doing enough to mitigate, remediate, and rehabilitate should be for this single expert agency to assess. Activist environmental organisations wishing to take the decisions of this specialist agency on judicial review should have to provide security for costs in the usual way – and should not be given financial incentives to litigate. Private prosecutions on environmental issues should be governed by the usual rules (requiring a *nolle prosequi* declaration by the National Prosecuting Authority and the provision of security for costs), so as to uphold the right to equality before the law.

As regards financial assurance, this should suffice to cover three years of rehabilitation for current and closure activities, but not for the post-closure period. Instead, South Africa should introduce a mine rehabilitation fund to which all mining companies would contribute a reasonable annual levy, and which could be used to deal with post-closure impacts.

As regards financial assurance, this should suffice to cover three years of rehabilitation for current and closure activities, but not for the post-closure period (which should be dealt with in other ways, as outlined below). Mining companies should make this assurance available via irrevocable financial guarantees or letters of credit. Mining companies should also be obliged to take out insurance cover against any potential unmet environmental liability arising, for example, from bankruptcy or other premature closure. If all mining companies have this obligation, the overall risk will be widely spread and premiums can be kept lower. In addition, companies should pay an annual levy (set, say, at 1% of estimated total rehabilation costs) into a mine rehabilitation fund loosely modelled on that in Western Australia (see below). Where overall closure costs are reduced as remediation proceeds, the financial guarantee or insurance cover required should come down by an appropriate amount. So too should the amount payable under the annual levy. This would give companies financial incentives to rehabilitate as much as possible as mining proceeds.

Permanent environmental liability for latent impacts that become apparent only after closure should not be imposed. Instead, South Africa should follow the example of Western Australia and introduce a mine rehabilitation fund to which all mining companies would have to contribute the annual 1% levy earlier outlined. South Africa's fund could then be used to deal with all post-closure latent impacts that become apparent in the future.

This fund could also be used to deal with the rehabilitation of abandoned mines, which is the most pressing priority. However, rehabilitating abandoned mines is primarily the responsibility of the state, not the companies which happen to be engaged in mining today. Hence, the costs of this clean-up should come

mainly from tax revenues – and the government should help build up the fund by paying into it a proportion of the overall revenue it receives each year. This may currently be difficult for the fiscus to afford, but the more the ruling party succeeds in encouraging mine investment and putting an end to wasteful and corrupt spending, the easier it will be for it to manage these payments.

The government, with its limited technical capacity and current complicity in corruption, should not be given the task of implementing necessary rehabilitation measures. This job should instead go to the same specialist agency, which should appoint the necessary experts (via competitive and open tendering processes) and oversee their work. Mining companies which are already helping to deal with legacy issues – for example, by countering acid mine drainage and other pollution from abandoned mines and dangerous tailing dams (see Box 2 on page 50) – could contract with this agency to continue their important work. Such contributions to legacy clean-ups by mining companies could also be recognised and encouraged through appropriate tax credits.

The government's 'new vision'

As part of his 'new vision' for South Africa, President Cyril Ramaphosa is seeking to re-ignite the economy by encouraging direct investment, boosting the growth rate, and expanding employment. The mining industry can potentially do much to help achieve these goals.

According to PWC's *SA Mine*, the 30 or so major mining companies it reviewed in 2017 (all of which are listed on the JSE, have market capitalisations exceeding R200m, and operate mainly inside the country, rather than abroad) earned some R370bn in revenue and had assets worth close on R700bn. However, their net profits amounted to a meagre R17bn. Though this was a 137% improvement on the R46bn loss they had recorded in 2016, their overall returns were still paltry. In June 2017, moreover, the market capitalisation of these companies (at R420bn) was 25% down on the equivalent figure (of R560bn) in June 2016. This sharp decline had much to do with the gazetting in June 2017 of the disputed mining charter, showing how great an impact poor policy can have. (After the charter was placed on hold and hopes rose that it would be substantially revised, the market capitalisation of the companies recovered to around R500bn in August 2017.)[129]

The government, with its limited technical capacity and current complicity in corruption, should not be given the task of implementing necessary rehabilitation measures. This job should instead go to a specialist agency, which should appoint the necessary experts (via competitive and open tendering processes) and oversee their work.

As PWC reports, 'the 2017 financial year was another tough one for stakeholders in the mining sector'. There were important gains in the prices of coal, iron ore, manganese and chrome, but 'decreases in precious metal rand prices put a lot of pressure on the profitability and sustainability of conventional deep-level platinum and gold mines'. Major risks identified by mining companies included volatile commodity prices and exchange rate fluctuations, an onerous regulatory framework, the depressed socio-economic environment around many mines, fractious labour relations, high operating costs, infrastructure constraints, and the difficulty of complying with environmental standards.[130]

Despite the many challenges it confronts, the mining industry adds significant value to South Africa and its people. This added value is distributed among various stakeholders, with employees receiving the most (40%), the government taking 19% in taxes and royalties, and 16% being reinvested in mining operations. However, in a further pointer to the difficulties currently confronting the industry, the proportion reinvested in 2017 was sharply down from the 41% of added value that was reinvested in 2013.[131]

In 2017 shareholders again received much less than employees and the government, with dividends amounting to a mere 2% of added value. This low figure was once more in keeping with a long-standing pattern. As PWC points out, 'average distributions to shareholders over the last ten years (as a percentage

of market capitalisation and total assets) have been merely 3.1% and 3.4% respectively... These low yields can be earned on a risk-free basis by investing in government bonds with much higher returns'.[132]

Shareholders in South Africa's listed mining companies could thus readily secure higher and less risky returns on their capital elsewhere. Mining companies are also battling, in PWC's words, 'to increase the size of the pie, [so as] to create more value for all stakeholders, in an environment of ever-increasing costs, reducing margins, and increased volatility'.[133] Some of the challenges confronting the industry – depressed platinum prices, for example – cannot easily be addressed by the government. However, the regulatory environment is well within its power to restructure and reform.

> *Finding the best balance on environmental law would address a major source of unnecessarily uncertain, dirigiste, and costly regulation. This in itself would help the government achieve its new vision for an expanding economy and a prosperous and stable South Africa.*

If the mining industry is to realise more of its great potential, the Ramaphosa administration must act decisively to address the 2017 mining charter and the 2013 MPRDA Amendment Bill, which are the most potent obstacles to investment. But the industry now also has to comply (in the words of former Harmony Gold CEO Bernard Swanepoel) 'with 2 000 bits of legislation and policies'. Within this already burdensome regulatory milieu, rapidly shifting and unduly onerous environmental rules are further eroding investor confidence, as Mr Loots has warned. Finding the best balance on environmental law would thus address a major source of unnecessarily uncertain, dirigiste, and costly regulation. This in itself would help the government achieve its new vision for an expanding economy and a prosperous and stable South Africa.

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BOX 1: FINANCIAL PROVISION AND ANNUAL REPORTING REQUIREMENTS

Introduction

As noted in the main text, the Financial Provisioning Regulations now required under the National Environmental Management Act (NEMA) of 1998 were gazetted by the minister of environmental affairs, Edna Molewa, on 20th November 2015 (the 2015 Regulations). These regulations were initially due to take effect in February 2017, but this date was postponed to February 2019 as objections mounted. In response to these criticisms, amended regulations were gazetted on 10th November 2017 for comment within 30 days (the 2017 Proposals).[1]

Since it remained uncertain at the time of writing whether the 2017 Proposals would be adopted, this analysis of the annual reporting requirements now to be imposed on mining companies – in addition to already heavy obligations under NEMA itself – outlines the situation under both the 2017 Proposals and the 2015 Regulations. As regards these reporting requirements, however, the differences between the two are small.

The 2017 Proposals largely concur with the 2015 Regulations in specifying the information that must be included in annual rehabilitation plans, final rehabilitation and closure plans, and the 'environmental risk report' that is supposed to identify all the latent environmental impacts that could come to light following closure.[2] To provide some insight into the level of detail required every year, the information to be included in each of these reports is briefly summarised below.

The 2017 Proposals largely concur with the 2015 Regulations in specifying the information that must be included in annual rehabilitation plans, final rehabilitation and closure plans, and the 'environmental risk report' that is supposed to identify all the latent environmental impacts that could come to light following closure.

Annual rehabilitation plans

Under both the 2017 Proposals and the 2015 Regulations, the annual rehabilitation plan must contain a plethora of prescribed information. It must not only deal with the goals and budget for the next 12 months, but must also 'identify and address' any rehabilitation 'shortcomings experienced in the preceding 12 months'. In addition, the plan must explain how the activities to be carried out in the coming year relate to the mining company's 'closure vision', and how 'pertinent closure objective and performance targets' are being achieved in every year.

The document must also provide a detailed 'review of the previous year's rehabilitation activities', including 'a comparison between activities planned in the previous year's plan and actual rehabilitation implemented'. If the area actually rehabilitated differs by more than 15% from the area planned for rehabilitation, this variance must be explained and justified. Accurate costings must also be included, along with explanations of the 'cost methodologies' and 'cost assumptions' being used. In addition, the plan must 'evaluate and update, based on market-related figures, the cost of rehabilitation for the next 12-month period and for closure, for purposes of supplementing the financial provision' that has been made.[3]

Mine closure plan

The 2017 Proposals again echo the 2015 Regulations in laying out 'the minimum content' required in a final rehabilitation and mine closure plan. However, the 2017 Proposals put much greater emphasis on what must be done to meet the needs of (undefined) 'stakeholders', who would presumably include interested and affected people and communities. These obligations to stakeholders could in practice prove more onerous than those set out in the 2015 Regulations.

According to the 2017 Proposals, the mine closure plan must identify a post-mining land use that is 'feasible', 'appropriate', and that takes account of the 'requirements of stakeholders'. The plan must set out its objectives and targets, 'clearly indicate the measures that will be taken to mitigate identified risks' and 'describe the nature of the residual risks that will need to be monitored and managed post-closure'. It must also explain what 'alternative closure and post closure options' were considered, and show that 'the most appropriate closure strategy' has been adopted, based on the 'findings of an environmental risk assessment'. In addition, it must describe the 'specific technical solutions' that will be used for all areas and activities, and 'identify knowledge gaps' while explaining how the latter are to be overcome. It must further set out 'any uncertainties associated with the preferred closure option', while any such disclosure must then be used to 'identify and define any additional work that is needed to reduce the level of uncertainty'.[4]

> *A mine closure plan must 'detail full closure costs' over the life of the mine, with 'increasing levels of accuracy' as the closure date comes closer. Where operations are between 30 and 10 years away from closure, an accuracy of some 70% is needed.*

At the same time, this plan must 'detail full closure costs' over the life of the mine, with 'increasing levels of accuracy' as the closure date comes closer. Cost estimates for mining operations that are more than 30 years away from closure are allowed 'an accuracy of about 50 per cent'. However, where operations are between 30 and 10 years away from closure, an accuracy of some 70% is needed. Cost projections must be 80% accurate where closure is anticipated within five and ten years, and 90% accuracy is needed for operations with five or fewer years still to run. According to the 2017 Proposals, 'the closure cost estimate must be updated annually during the operation's life to reflect known developments'. The updates made must include any changes arising from annual reviews of 'closure strategy assumptions and inputs'. They must also cover 'scope changes, the effect of a further year's inflation, new regulatory requirements, and any other material developments'.[5]

Under the 2017 Proposals, the obligations of mining companies to 'stakeholders' are considerable. The plan must explain the 'stakeholder issues and comments' that informed its content. It must include 'a reassessment' of the environmental risk assessment that informed the closure strategy to determine whether 'residual risks' are being avoided in a way that is 'acceptable to the mining operation and to stakeholders'. The 'design principles' underpinning the closure plan, along with a 'closure vision' that is in line with 'stakeholder expectations', must also be included, while the final post-mining land use must (as earlier noted) also take account of stakeholder expectations. The plan must explain the monitoring, auditing, and reporting requirements to be fulfilled each year, and ensure that any updates to the plan are disclosed to stakeholders.[6]

Environmental risk assessment for post-closure period

The 2017 Proposals again largely echo the 2015 Regulations in specifying 'the minimum content' of the environmental risk assessment report that is needed to 'identify and quantify the potential latent environmental risks related to post-closure'. Such a report must set out the 'risk assessment methodology' used and explain why each risk 'was not or could not be mitigated during concurrent

rehabilitation' or in implementing the mine closure plan. It must also provide 'a detailed description of the drivers that could result in the manifestation of the risks', an assessment of the 'expected time frame' within which each risk could manifest, and 'a detailed description of the triggers' that might show the risk to be imminent.[7]

Proposed mitigation strategies must be set out, with a full explanation of 'why the selected alternative is the appropriate approach' and 'a detailed explanation of how it will be implemented'. Costings must be provided, and should seek to differentiate between 'capital, operating, replacement, and maintenance costs'. Cost estimates must also increase in accuracy over time, from some 50% for operations more than 30 years away from closure to roughly 90% for those expected to close in five years or less. 'Annual updates to the plan' must also be provided, which must explain all 'changes to the risk assessment results'.[8]

> *Collecting and analysing all the information needed to compile these three documents – and then to revise each of them every year – will be extremely complex and costly in itself. Companies may also struggle to identify risks so far in advance, and to justify their choice of the interventions to be used to counter or reduce them.*

Ramifications of these reporting requirements

The relevant rules take up some eight pages of closely-written text in the 2017 Proposals, and are in fact far more extensive and demanding than these brief summaries suggest. Collecting and analysing all the information needed to compile these three documents – and then to revise each of them every year – will be extremely complex and costly in itself. Companies may also struggle to identify risks so far in advance and to justify their choice of the interventions to be used to counter or reduce them.

Trying to provide accurate and detailed costings of mooted actions that lie far in the future will also be challenging, while discrepancies between the interventions planned and the steps ultimately taken will have to be comprehensively explained and justified. Uncertainties are sure to abound and will have to be acknowledged. Such disclosures may then be used by the mining minister to demand significant increases in the financial provision, adding yet more to the overall compliance burden.

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BOX 2: THE CONTRASTING VIEWS OF MINING COMPANIES AND ENVIRONMENTAL ACTIVISTS

Remediation and rehabilitation by mining companies today

Both the government and environmental activists seem to assume that mining companies today are generally as careless of their environmental responsibilities as their predecessors so often were. But major listed companies, in particular, put significant resources into mitigation, remediation, and rehabilitation. They are well aware of the growing international consensus on the importance of miners' meeting their environmental responsibilities. They are also well aware that failing to comply with environmental legislation puts their mining rights at risk.

Full analysis of what is being done by the mining majors lies beyond the scope of this study. What follows, however, are some examples of how some big companies are finding innovative ways to counter water pollution, limit water usage, increase water availability, reduce dust emissions, and rehabilitate tailings dams.

Water pollution

How best to cope with acid mine drainage (AMD) is one of the biggest problems. For some years, the Department of Water and Sanitation (DWS) has been working with the Trans-Caledon Tunnel Authority (TCTA), a parastatal, to stop or prevent the 'decanting' or leaking of acid mine water into Gauteng's rivers and dams. The TCTA, in turn, has been drawing on the expertise and resources of major mining companies in order to achieve this.

> *On the west Rand, where the decanting problem is most acute, the TCTA in 2013 contracted with Sibanye Gold (now Sibanye Stillwater) to treat AMD in the western basin of the Witwatersrand. The average cost of treatment is R5/kl, of which Sibanye contributes one third.*

On the west Rand, where the decanting problem is most acute, the TCTA in 2013 contracted with Sibanye Gold (now Sibanye Stillwater) to treat AMD in the western basin of the Witwatersrand. An existing AMD treatment facility has been upgraded to treat 30 to 50 million litres a day of AMD water. Acidity, metals, and uranium are removed, while the sludge is co-disposed with tailings in the basin. Further spillages from the underground workings are being contained. At the same time, the in-basin disposal of reworked mine tailings has led to a significant reduction in acidity and metals, including iron and manganese. The average cost of treatment is R5/kl, of which Sibanye contributes one third.[1]

A similar initiative has been implemented in the central basin of the Witwatersrand, where the TCTA has contracted with DRDGold for the use of land and infrastructure belonging to ERPM (East Rand Propriety Mines), a gold mine which closed in 2008. Here, the TCTA has built a pump station to intercept AMD and treat it to 'grey' or industrial quality. Similar initiatives are in place to counter AMD in the eastern basin. As *City Press* reported in 2017, between 150 and 200 megaliters per day

of AMD water is now treated by the TCTA's three plants before being discharged into rivers. These plants are helping to solve one of the country's most pressing environmental problems. Moreover, the more acid mine water can be treated and then used for commercial and industrial purposes, the more this will reduce demand on Gauteng's limited potable water supplies.[2]

Like other major mines, Sibanye also seeks to ensure that all water discharged from its mines complies with government standards. To this end, it has developed a water technology innovation hub, which is equipped to simulate various water treatment methods, including membrane purification and various forms of demineralisation. This technology allows the recovery of uranium, rare earths, and other valuable metals, while significantly improving water quality.[3]

Water usage and availability

Sibanye Stillwater is seeking to reduce its water usage and aims at reaching a point where it no longer needs to purchase water from municipalities or water boards. Anglo American plc is also taking steps to reduce its water usage and bring its reliance on 'new' water down to zero through various recycling initiatives. In 2015 the group was able to meet 64% of its operational water requirements from recycled water. It aims to increase this level to more than 80% through the application of advanced technology. It is also trying to reduce its reliance on potable water, which now accounts for only 8% of all new water used by its mines across the globe.[4]

Kolomela has implemented a technically sophisticated pilot initiative to recharge underground aquifers that would otherwise be depleted through the dewatering operations needed to keep the mine dry. Water piped from the mine is pumped to boreholes drilled into remote intermittent watercourses, at rates appropriate to each borehole.

In the semi-arid Northern Cape, Anglo's Kumba subsidiary is taking steps to counter the impact of mine dewatering and increase the availability of ground water at both its Kolomela and Sishen iron ore mines. Kolomela has implemented a technically sophisticated pilot initiative to recharge underground aquifers that would otherwise be depleted through the dewatering operations needed to keep the mine dry. Water piped from the mine is pumped to boreholes drilled into remote intermittent watercourses, at rates appropriate to each borehole, so as to replenish underground aquifers. A fully automated pump station controls the water flow, which is continually monitored to ensure that the capacities of the recharge boreholes are not exceeded. These boreholes are equipped with piping, water-level sensors, air valves, and expansion chambers, and are deep enough to reach below the normal level of the water table.[5]

Now that this pilot project has proved its worth and some 36 000 cubic meters of water per month can be recharged, the plan is to extend the Kolomela operation and start implementing the system at Sishen as well. The overall aim is to use all excess water in this way. Sishen already separates clean from dirty water and ensures that most of the clean water extracted from aquifers is discharged into a regional water supply network so as to boost water availability for all consumers. Mine-affected water is generally recycled for use in Sishen's process plant.[6]

DRDGold, which garners gold from the retreatment of tailings dams, rather than from underground mining, is also intent on reducing its water usage. It recently commissioned a R22m filtration plant, situated at a waste water treatment plant on the east Rand, which now provides it with up to 10 million litres per day of recycled water for use in its reclamation activities. A similar filtration plant in the central Johannesburg area will provide 20 million litres per day to the Crown Mines tailing complex. This recycled water will be used both for reclamation and to sustain the vegetation programme which helps to counter wind-blown dust (see below).[7]

These major water saving projects have been accompanied by various small-scale innovations, many of which aim at reducing the usage of both water and electricity. Engineer and inventor Richard Wood, for example, has invented a non-abrasive slurry pump that saves both water and energy. After gold-bearing rock has been crushed into small particles to extract the gold, the resulting 'slurry' has to be pumped to the tailings dams. But the slurry is like liquid sandpaper and highly abrasive, which means that conventional pumps quickly wear out. Mr Wood has devised a pump which transfers energy from clean water to slurry without the clean water coming into contact with the slurry. The lack of wear means there is more efficiency and water is saved.[8]

Mr Wood has also developed an efficient underground cooling system, which likewise saves on both water and electricity. Using the force of gravity, the system sends cold water underground to cool the stopes where people are working, while the energy of the falling water is used to pump dirty water out and keep the mine dry. This invention has great export potential to other mining countries in Africa, where costly diesel generators are often still used to produce electricity.[9]

DRDGold has spent some R800m over the past eight years on controlling dust emissions, generally through the vegetation of tailings dams on the Reef. In 2016 alone, it vegetated 24ha at the Crown Complex, while its various mitigation and rehabilitation measures have brought about a steady reduction in dust fall-out.

Dust emissions

Controlling dust from tailings dams is also a major challenge, particularly at times when little slurry is being deposited and top surfaces are drier than normal. Sibanye has thus developed a water-spray system that helps keep side slopes damp. This also promotes the growth of natural vegetation and reduces dust liberation. The water needed is taken from return water dams, so as not to add to overall water usage. To understand the sources of dust more fully, Sibanye has also developed a multi-directional dustfall monitoring system which is a significant improvement on the established international method.[10]

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Tailings dams

DRDGold's business is to reclaim discarded mining material from tailings dams, many of which have been created by companies which no longer exist and cannot be held to account. In the words of DRDGold, it 'deals with legacy issues', and is 'steadily rehabilitating land previously sterilised by mine residue dumps', including land contaminated by radiation. It is currently shifting its activities to tailings dams in the central and east Rand areas, and plans to rehabilitate many more hectares of previously sterilised land. It also plans to develop a 'super tailings facility', which will be self-sustaining and, unlike its predecessors, will have no detrimental impacts on local communities.[12]

On the west Rand, Sibanye also has a tailings retreatment project – the product of eight years of extensive metallurgical test work – which has demonstrated its capacity to extract value from surface resources and counter pollution. A large-scale central processing plant is now to be built to

extract gold, uranium, and sulphur from tailings dams across the west Rand. The residues will be re-deposited, in line with modern practices, in a regional tailings storage facility. Ultimately, all tailings on the west Rand, including those not owned by Sibanye, will be cleaned to help local communities and improve the environment. Extracted gold and uranium will be sold to help cover costs and ensure financial viability.[13]

The allegations made by environmental activists and others

In recent years, environmental activists and other commentators have painted a disturbing picture of the environmental damage caused by mining. Some of these allegations have specifically been directed at named companies, particularly the mining majors. Often, however, the allegations made are vague and generalised, making it difficult to question or counter these assessments. Often, the same unsubstantiated allegations are repeated, suggesting that the aim is to stigmatise the industry and help pave the way for ever more onerous environmental regulation.

General allegations

Examples drawn from newspaper reports over some 18 months (from October 2016 to March 2018, and arranged in date order) include the following allegations:

- The government should 'prohibit mining or the use of practices that may violate human rights or cause substantial harm to the environment on which communities depend' (Centre for Environmental Rights and five other activist environmental organisations in a joint submission to the United Nations Human Rights Council on South Africa's alleged failure to comply with guaranteed rights);[14]
- The constitutionally enshrined right to a healthy environment is not being enforced and 'excessive pollution is allowed to continue', marked by 'acid water, dust, air pollution, and destruction of arable land' (civil society organisations in their report to the UN Human Rights Council); [15]

> *'Mining is seen as the holy cow of economics and sacrosanct. Not to be questioned or challenged, in spite of the fact that hundreds of thousands of poor people live in abject poverty because of loss of arable land, livelihoods, and aggravating health conditions.'*

- 'Acid mine drainage has contaminated water bodies that residents [in the Johannesburg area] use to irrigate crops, water livestock, wash clothes, and swim. Dust from mine waste dumps has blanketed communities. The government has allowed homes to be built near and sometimes on toxic and radioactive dumps' (Harvard Law School International Human Rights Clinic in its report to the UN Human Rights Council on environmental failures in South Africa);[16]
- 'Mining...is usually portrayed as investment for development, a source of jobs and a contributor to GDP. It is seen as the holy cow of economics and sacrosanct. Not to be questioned or challenged, in spite of the fact that hundreds of thousands of poor people live in abject poverty because of loss of arable land, livelihoods, aggravating health conditions, cultural and social upheaval, all of which manifest in unemployment and push poor communities to the margins of society' (Bench Marks Foundation, as cited more fully in the main text on page 32;[17]
- Arbor, near Delmas, is being 'dumped upon by coal dust. People have been relocated, their homes have cracked, and the air is polluted by the local mines', while 'much of the highveld resembles the post-apocalyptic nightmare of an already dead and dying land' (GroundWorx, 'The Destruction of the Highveld Part 1: Digging Coal');[18]
- 'Mines in South Africa are often ringed by shanty towns housing migrant workers, while environmental damage to surrounding areas threatens the livelihood of local communities.... There

should be circumstances in which communities are...accorded the right to say "no" to mining' (Centre for Applied Legal Studies, presenting five case studies on different types of mines);[19]

- 'Residents are frustrated at the violation of environmental regulations, which is leading to pollution of water sources, which in turn leads to death of livestock, loss of grazing and ploughing land and destruction of houses through blasting activity... The anger in the communities is rising and may reach boiling point if the department doesn't rein in mining companies for failing to ...adhere strictly to environmental regulations. Mining companies have spared no effort to exploit the mineral wealth in Sekhukhune. Whole villages have been relocated to soulless townships developments in exchange for as little as R20 000. The dead have been exhumed, friendships transcending generations have been broken, and water sources and grazing land polluted. Those who remain close to the mines are subjected to a torturous life characterised by all forms of pollution, uncertainty, and harassment. Those relocated to the townships face an uncertain future with no work and no land to live off. The governing party's Freedom Charter declaration that the country's mineral wealth shall be restored to the people remains just that – a declaration on a piece of paper with no real practical meaning to the people on the ground' (Lucas Ledwaba, author of *Broke and Broken: The Shameful Legacy of Gold Mining in South Africa);* [20]
- '[Mines] seeking to exploit our natural resources must understand that we cannot place profit ahead of people's well-being' (Johannes Nobungu, chief executive of the Mpumalanga Tourism and Parks Agency);[21]

> *'In the mining sector, communities face a multitude of challenges... [They] complain daily of...being fobbed off when they approach mines about the negative effects they have on their livelihoods, such as cattle dying from drinking polluted mine water.... Miners seem unable to tackle these issues, lacking capacity or the will to do things differently.'*

- In the mining sector, communities face a multitude of challenges... [They] complain daily of... being fobbed off when they approach mines about the negative effects they have on their livelihoods, such as cattle dying from drinking polluted mine water.... Miners seem unable to tackle these issues, lacking capacity or the will to do things differently... Mining communities face grossly skewed power relations. Mining companies have access to a range of expertise and specialist consultants. Communities are left on their own. Access to information, especially digestible information,...is just about non-existent, preventing communities from making informed decisions. As a result, communities are angry, disillusioned, and their frustration is increasing daily' (Bench Marks Foundation);[22]

- 'The state and mining companies [must] respect the right of communities to say no to mining.' Particularly worrying are the 'capitalist modes of production' used in mining and other 'large scale industrial systems', which have 'exacerbated climate change, resulting in droughts, floods, and erratic weather conditions' (Alternative Mining Indaba);[23]
- 'Mining has bequeathed our country with a terrible legacy of a degraded environment, polluting our water resources and destroying our fauna and flora while laying agricultural land to waste. On a human level, the collateral damage is immeasurable. Mineral and energy industries continue to puff dark clouds of smoke into the atmosphere and groundwater, creating hellish conditions for surrounding communities.... Clearly, the smash-and-grab approach to mining...has left a trail of destruction, while, in the main, only a narrow interest group has benefited' (Jeff Magida, a former organiser for the National Union of Mineworkers).[24]

As this sample shows, many of the allegations made are general accusations which cannot easily be countered. Where more specific allegations have been made against named companies, those companies can more easily respond – though how much their denials count in the hostile atmosphere that is being generated is difficult to tell.

A one-sided approach to Blyvoor

As *The Mining Yearbook 2017* reports, the Blyvooruitzight Gold Mining Company (BGMC) owned and operated the Blyvoor mine near Carletonville on the west rand from 1942 to 1997, a period of more than 50 years. DRDGold then bought BGMC and operated it until 2012, with a BEE partner, Khuma BHathong, acquiring a 26% stake in 2005. In 2012 DRDGold agreed to sell its 74% stake in BGMC to Village Main Reef. The sale was subject to certain conditions, including the granting of a new order mining right to Blyvoor by the Department of Mineral Resources (DMR). Village took over full operational control of the mine in the interim.[25]

In the closing months of 2012, however, Village experienced a 64% drop in earnings per share. This was large due to industrial action and safety-related stoppages at Blyvoor. In July 2013 it thus decided to halt further funding for Blyvoor, prompting the BGMC board to place the company under provisional liquidation. Both DRDGold and Village Main denied having ownership of Blyvoor at the time of its liquidation. When the mine was shut and in time abandoned, the area was invaded by illegal mineworkers, while uncontrolled acid mine drainage filled up shafts.[26]

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In 2014 Mariette Liefferlink, of the Federation for Sustainable Environment (FSE), laid charges against the directors of DRDGold, Village Main Reef, and BGMC. She alleged that they should be held personally liable for adverse environmental impacts, including acid mine drainage, tailings spillages, and major dust emissions from waste dumps. The directors were also charged with having failed to rehabilitate slimes dams, provide annual assessments of Blyvoor's environmental liability, and rectify a R107m shortfall in financial provision of which they had been notified by the DMR in August 2013. (These charges were laid under the MPRDA, under which mining companies remain responsible for any environmental liability until a closure certificate has been issued, but not for latent impacts which come to light thereafter.)[27]

In January 2017 Lawyers for Human Rights (LHR) published a report on Blyvoor, in which the organisation claimed that the liquidation process was being used to dodge the full expenses of mine closure and rehabilitation. Wrote the LHR: 'The Blyvooruitzicht example deftly illustrates that, while the practice of casting off under-performing assets by invoking insolvency proceedings may be an effective way to safeguard shareholder profits, the negative impact on South Africa's environment and communities is tremendous.' It urged that the law be changed to ensure that rehabilitation measures were fully implemented before a mine was allowed to go into liquidation.[28]

In response to the LHR report, Niël Pretorius, CEO of DRDGold, pointed to inconsistencies and gaps in relevant legislation and urged that, until these complex problems were resolved, 'all stakeholders should collaborate to avoid at all cost the collapse of a mine'. Added Mr Pretorius: 'When DRDGold handed over Blyvoor to Village Main Reef in May 2012, there was a full stores inventory, the mine was debt-free, it was making a profit, and it was adequately capitalised'. But the situation changed fundamentally over the next year, largely in response to 'prolonged production interruptions

due to labour unrest and union turf warfare', compounded by safety stoppages under Section 54 of the Mine Health and Safety of 1996. Seismicity, water ingress, and high costs also played a part in the decision to close the mine.[29]

The LHR report had made much of the fact that Blyvoor had inadequate closure or rehabilitation funding, Mr Pretorius went on. But earlier mining legislation had allowed a rehabilitation fund to be built up over the life of a mine. By contrast, 'the MPRDA requires a fully-funded guarantee upfront to cover these costs in the event of premature closure. These instruments are available through insurance policies, provided that security of tenure is provided, which means the right to mine the specific mineral needs to be secured, typically through a new-order mining right. Blyvoor was ready and able to provide such a guarantee. It was ready in 2007 when it first applied for the conversion of its old-order rights to new-order rights and it remained ready over the next six years. If the mining rights of Blyvoor had been converted to new-order mining rights at any stage during this period, Blyvoor's rehabilitation cost would have been fully funded on the day of its liquidation. But for administrative delay, the debate about the adequacy of funding would not have existed.'[30]

Much had also been written about dust emission from Blyvoor, Mr Pretorius went on. Yet the trustees of the Blyvoor rehabilitation trust had requested permission from the regulator to use trust funds to vegetate [a major] tailings dump ...under the direct supervision of the regulator. However, trust funds are ring-fenced and fall outside the liquidation process. [As a result,] the regulator had been unable to get adequate legal clarity about its capacity to provide such a directive. The effect is that money is sitting in a fund and is unavailable for its intended use because of red tape.'[31]

The LHR report had made much of the fact that Blyvoor had inadequate closure or rehabilitation funding. If the mining rights of Blyvoor had been converted to new-order mining rights, Blyvoor's rehabilitation cost would have been fully funded on the day of its liquidation. But for administrative delay, the debate about the adequacy of funding would not have existed.

The criminal prosecution of three directors of BGMC and Village Main is nevertheless proceeding. Following a three-year investigation by the Green Scorpions, three men, Dalubuhle Ncube, Paul Saaiman, and Mark Burrell, appeared in the regional magistrates court in Merafong on the west Rand in March 2017. They are being charged, among other things, with failure to clean up tailing spillages and implement dust management measures 'even after having been instructed to do so'. Ms Lefferink says she is 'eagerly awaiting a judgment which will establish an important, long-awaited, and much needed legal precedent regarding the...liabilities of directors of mining companies, who apply for liquidation and winding up that leave in their wake ecologically...unstable and polluted sites' to the great detriment of mining communities and the state.[32] However, administrative failures have also contributed to the current malaise at the mine – and yet no official is likely to be called to account either by environmental activists or the DMR itself.

Mining majors and the CER's Full Disclosure *reports*

In 2015 the Centre for Environmental Rights (CER) began compiling annual reports on mining companies and the extent to which they were upholding environmental rules. It did so under the title, *Full Disclosure*: *The Truth about Corporate Environmental Compliance in South Africa*. According to the centre, one of the aims of its *Full Disclosure* publications is to make it easier for shareholders to 'assess the environmental risks posed by a company's operations' and so encourage more shareholder activism. Another is to put pressure on mining companies to become more transparent about the environmental costs of their operations.[33]

In its first *Full Disclosure* report in 2015, the CER identified a number of major companies – ranging from African Rainbow Mineral to Lonmin and Sasol – which it said had been found guilty of environmental offences between 2008 and 2014. Its 2016 report listed some 30 companies which, it said, had failed adequately to disclose serious environmental violations, including atmospheric emissions, water pollution, and soil contamination. Tracey Davies, programme head for corporate accountability and transparency at the CER, said the report provided yet 'more evidence that some listed South African companies were exposing investors to potentially devastating risk by committing serious environmental violations and failing to disclose this adequately to shareholders'.[34]

However, many of the companies thus 'named and shamed' criticised the accuracy of the *Full Disclosure* reports. Responding to the 2015 one, AngloGold Ashanti, for example, said it did in fact report extensively on its environmental obligations and compliance, and that it was not contributing in any significant measure to acid mine drainage in the Witwatersrand Basin. In addition, there had been no 'death of grazing cattle as a result of radioactive contamination' for which it was responsible, but rather a single incident where an animal appeared to be sick but had been found by a veterinarian to be suffering from a tick-borne disease.[35]

Similar denials and refutations have been made by other major companies, including Anglo American, DRDGold, Glencore, Gold Fields, and Impala. These responses can be found by digging deep enough into the CER website. Most people, however, are unlikely to have any knowledge of them. Hence, it is the dramatic headlines accompanying the release of the CER reports – 'Mining heavyweights outed in environmental violations report' and 'Biggest SA companies named as polluters' – that are likely to stick in the public mind.[36] This helps to reinforce perceptions that mining companies are too focused on profits to care much about the environment. In focusing on this narrative, however, the *Full Disclosure* reports overlook or play down the costly and often highly innovative efforts that many major companies are making to control and counter pollution.

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DRDGold and Bench Marks' 'Waiting to Inhale' *report*

In 2017 DRDGold was sharply criticised by the Bench Marks Foundation, which accused it (and other entities) of harming the health of people living near tailings dams in Soweto. In a report entitled *Waiting to Inhale*, Bench Marks said that residents of the four communities it had monitored had been found to be suffering elevated levels of respiratory and skin diseases. They were also being exposed to radioactivity as a result of dust blowing and water running off the dumps.

A newspaper report on the Bench Marks analysis put it thus: 'Radioactive sand from mine dumps is frequently collected, sold, and used in cement for houses in Soweto... With dust blowing off mine dumps, tainted water and asbestos roofs, the sand appears to be contributing to abnormally high levels of respiratory disease, birth deformities, and skin and eye ailments in four communities studied.' It quoted a resident as saying: "The [toxic] dust is a truth. My lungs can't help me to breathe any more. Our children have eczema and eye problems and they are born small." Children in Soweto are also exposed to toxic acid mine draining in many unfenced pools and dams, the report said.'[37]

DRDGold was one of the companies implicated (through its work on tailings dams in the area), prompting CEO Niël Pretorius to respond to the allegations made. Mr Pretorius noted that it was

the government which had allowed both municipal housing schemes and informal settlements to encroach on necessary buffer zones around these tailing dams. In addition, some of DRDGold's vegetation achievements had been undone by fires and the theft of irrigation equipment. The company had nevertheless reduced emissions to the point where there was hardly any dust coming through unless the wind was blowing at 50 knots from the south east.[38]

Said Mr Pretorius: 'There is only one institution that is pumping money into rehabilitating tailings dams. DRDGold has spent more money on rehabilitation in the last ten years than on paying dividends.' However, Bench Marks described his response as 'fatuous', saying it was 'defensive' and 'lacking in meaningful substance'.[39]

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