

# Chapter 10

## An interest group at work: Environmental activism and the case of acid mine drainage on Johannesburg's West Rand

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Interest groups concerned with environmental advocacy focus on creating awareness and disseminating pertinent legal, environmental, and social information. Indeed, many activists have been mobilised because of the keen environmental awareness and interest these advocacy campaigns have produced. Klein<sup>1</sup> writes that these 'oppositional threads' manifest themselves in many different 'forms and movements' and that 'the spirit they share is a radical reclaiming of the commons'<sup>2</sup>. Some activists may be passive, advocating change from behind their computers, while others are charged and willing to risk their lives for a cause. From the Zapatista movement fighting in the Chiapas forests in Mexico to the offices of Greenpeace worldwide, advocacy is an effective and potent political force<sup>3</sup>.

From an environmental perspective, South Africa faces many challenges that affect both its ecological biodiversity as well as its socio-economic and socio-political security<sup>4</sup>. One of the most prominent challenges is acid mine drainage (AMD) – a by-product of mining<sup>5</sup>.

This chapter analyses environmental interest groups that campaign on the AMD issue on Johannesburg's West Rand. To contextualise these advocacy efforts, the chapter scientifically outlines why AMD is a fundamental problem and what socio-ecological hazards it creates. Then it describes the legislative context that regulates mining in South African before illustrating why the country's environmental advocacy movement is a potential driver for environmental, social, economic and political change. Finally, the chapter profiles the Chief Executive Officer (CEO) of the Federation for a Sustainable Environment (FSE), Mariette Liefferink. A dedicated whistleblower and AMD activist, Ms Liefferink strongly opposes malpractice by large mining corporations and the South African government. Her advocacy agenda and techniques as well as

her strengths and weaknesses all describe the climate within which a South African environmental activist operates.

To conclude, the chapter shows where interest groups and activists can improve their AMD advocacy efforts. For instance, environmental advocates might find it useful to network and build solid and mutually beneficial relationships; they might consider approaching a range of potential funders to increase their independence; and they might need to find financial support for further academic and scientific research that can inform the public about AMD and its effects.

## **The acid mine drainage challenge on the West Rand**

Controversy surrounds mining activities worldwide because while mining makes money for investors and governments alike, it also increases socio-environmental hardship and ecological degradation<sup>6</sup>. Mining affects the environment in a variety of ways. For example, it creates plumes of dust pollution when the wind blows against tailings dumps; it damages the soil by removing topsoil and increasing the soil's acidity and salt content; it contaminates parts of the country's water supply when ground water interacts with chemicals and salts which are part of the mining process; and, when mining-produced acids interact with dolomite formations, sinkholes can occur<sup>7</sup>.

### *An overview of acid mine drainage*

Although there are many sources of mining-related environmental degradation, this chapter focuses on the link between AMD and gold mining activities on Johannesburg's West Rand<sup>8</sup> because it is widely accepted 'that AMD is responsible for the most costly environmental and socio-economic impacts<sup>9</sup>' in South Africa.

Simply put, AMD turns water sources acidic<sup>10</sup>. When groundwater refills underground mining shafts, or when runoff water mixes with open pit mines<sup>11</sup> or tailings dams<sup>12</sup>, it triggers a chemical process. The chemical process occurs when freshwater and oxygen are exposed to sulphide-bearing strata – the so-called 'pyritic formations' that occur naturally underground<sup>13</sup> in association with the gold-bearing reefs. The reaction releases acid, sulphate and metal ions that can migrate into the environment and enter freshwater sources<sup>14</sup>.

AMD may form in the flooded sections of deep mines. This is not a problem in active mines, which artificially depress water levels through dewatering<sup>15</sup> activities. However, when mines are closed or abandoned, pumping stops. This means that the underground mine shafts fill up with water and eventually discharge into subsurface and/or surface water resources<sup>16</sup>. The discharged water is contaminated and typically acidic due to the chemical reactions described above. South Africa has ‘8 000 derelict and ownerless mines<sup>17</sup>’, while in the West Rand goldfield of the Witwatersrand Basin, some 270 unlined mine tailings dumps have caused extensive soil and water pollution<sup>18</sup>.

AMD from gold and coal mining is a serious environmental hazard<sup>19</sup>. Not only does it damage water and soil systems<sup>20</sup>, but it also affects human health – particularly in those communities living close to active or abandoned mines<sup>21</sup>. Unfortunately, the precise effects of AMD on human health are still unclear, and the topic requires further research<sup>22</sup>. However, scientists believe that long-term exposure to, and use of, AMD affected water could cause ‘increased rates of cancer, decreased cognitive function and [the] appearance of skin lesions<sup>23</sup>’.

### *AMD on the West Rand*

Extending from Roodepoort in the east to Randfontein in the west, and including Krugersdorp, the West Rand falls within the greater metropolitan area of Johannesburg. The area to the north is home to some of South Africa’s most picturesque natural resources, including the world heritage site, the Cradle of Humankind<sup>24</sup>.

The gold deposits in the West Rand goldfield proved difficult to mine because of substantial water inflows from adjacent dolomitic aquifers<sup>25</sup>. Therefore, to access the gold, the aquifers needed to be dewatered<sup>26</sup>. While this increased mining profits, it modified the water table, caused sinkholes and increased the levels of water, air and soil pollution<sup>27</sup>. Mining activity (and dewatering) in the area ceased in 1998, and groundwater began to refill the abandoned mines<sup>28</sup>.

In 2002, media coverage of AMD-polluted water, and the health risks it causes on the West Rand, fuelled widespread controversy and concern. Investigative journalists have covered the problem from various angles<sup>29</sup>. For example, stories explore the effect AMD has on people who use polluted water downstream from mines<sup>30</sup>; how farmers who rely on polluted water to irrigate their crops are affected<sup>31</sup>; the lack of official oversight<sup>32</sup>; possible solutions to the AMD

issue<sup>33</sup>; society's reactions to the problem<sup>34</sup>; and how mines have gained financially by externalising environmental costs<sup>35</sup>.

However, government's inaction is the primary cause of AMD pollution on the West Rand. It is widely perceived that, by not enforcing legislation, the authorities are essentially ignoring the environmental impact of mining<sup>36</sup>.

## **The legislative context with which AMD exists and interacts**

Legislation from the mining, water and environmental sectors regulates mining activities in South Africa. According to the Mineral and Petroleum Resources Development Act (MPRDA), the principles set out in Section 2 of the National Environmental Management Act (NEMA) apply to all prospecting and mining operations<sup>37</sup>. This means that any prospecting or mining operation must conform to generally accepted principles of sustainable development by integrating social, economic and environmental factors into the planning and implementation of such operations. The NEMA and the National Water Act (NWA) stipulate that a party responsible for a mining operation must take all reasonable measures to prevent pollution or degradation from taking place<sup>38</sup>. According to the MPRDA<sup>39</sup>, the holder of a mining right or permit is responsible for any environmental damage and pollution as well as rehabilitating the environment affected by mining to its natural state until a closure certificate has been issued<sup>40</sup>.

An applicant for a mining activity-related environmental authorisation must be able to fund the rehabilitation, management and closure of environmental impacts before the Minister of Mineral Resources can issue this authorisation. The holder has to assess the fund annually and adjust it if necessary. The fund has to remain in force until a mine closure certificate has been issued; the Minister of Mineral Resources may, however, retain a portion of the financial provision to rehabilitate the closed mining or prospecting operation<sup>41</sup>.

Implementing this legislation is a vexed task. It is further complicated by the NWA's murky description of fundamental issues such as how high AMD levels are allowed to rise below the surface. Moreover, the lack of official co-operation across national, provincial and local levels of government and their associated departments hampers the process. Also, dealing with the cumulative impacts of mining, which may only become evident decades later, the government and mining companies' reluctance to take responsibility for AMD and related

problems, and deciding who should pay the astronomical cost of environmental remediation<sup>42</sup> are tricky issues to resolve.

## **Interest groups and environmental activism in South Africa**

Given the current predicament, what is the solution? The answer, at least in part, lies with interest groups and the issue advocacy campaigns they conduct, the media and researchers. However, this is easier said than done because mining companies, one of the biggest perpetrators of the AMD problem, are both part of civil society and big (politically and financially powerful) business. The fact that South African society is largely uninformed, disinterested or unfocused on this problem further complicates the matter<sup>43</sup>.

Nevertheless, environmental advocacy is part of the key solution to eradicating AMD. Environmental activism in South Africa (and around the world) uses a range of activities, including research, violent protest, passive resistance and whistle blowing<sup>44</sup>. ‘The environmental movement has no coherent centre and no tidy margins; it is an inchoate sum of multiple, diverse, uncoordinated struggles and organisations<sup>45</sup>’.

The environmental movement is split along at least two divides. One is the green-brown divide. Green activists tend to focus on nature-related issues such as nature conservation and the welfare of animals, while brown activists campaign against people-related impacts on the environment such as pollution, waste and dumping. Others merge the two perspectives to look at people and resources, production and consumption, and nature and the economy through an ‘environmental lens’<sup>46</sup>.

A related, but perceptibly different issue is the growing divide between environmentalism and environmental justice. While environmentalism has historically focused on conserving threatened plants and animals, the environmental justice movement advocates action that is morally correct, rather than legally, scientifically or pragmatically possible. This implies that issues of social justice, health, labour and development should be considered in relation to the environment<sup>47</sup>.

South African environmental advocacy, particularly campaigns that focus on AMD, falls within this diverse and complex discourse. Its efforts are important for at least three reasons.

First, and put so aptly by Bryan Walsh<sup>48</sup>, ‘... the earth is mute. It doesn’t get a vote in any congress or parliament. It doesn’t own blocks of shares in the market. It doesn’t rise up in a

protest rally. It can't even buy a hybrid car. The earth has no voice – so someone must speak for it ... ?

Second, the people most directly affected by environmental problems and specifically AMD are the poorest and least powerful groups in society<sup>49</sup>. Mine closures affect these people by causing unemployment and polluting their soil and water supply. This makes subsistence farming, which is often a last resort for poor families, less feasible<sup>50</sup>. It is crucial that the poor be able to voice their concerns and learn about the risks to which they are exposed<sup>51</sup>.

Finally, civil society's role is to challenge the government when it does not adequately fulfil its obligations. For decades, South African governments have shirked their responsibility to regulate the mining sector<sup>52</sup>. This lack of oversight can largely be attributed to an alliance between the gold mining industry and the government that emerged during Apartheid<sup>53</sup>.

Nevertheless, there are environmental non-governmental organisations (NGOs) that do have an indirect focus on environmental remedial protection in the West and Far West Rand. These include the Chronicle Group, Green Cross, Groundwork, the Legal Resources Centre (LRC), Pelindaba Working Group, Wildlife and Environment Society of South Africa (WESSA) and Earthlife Africa. To varying degrees, these organisations research and report the government and mines that are allowing mining-related environmental destruction to continue<sup>54</sup>. Infractions can be reported through official channels such as the Parliamentary Portfolio Committees, the Human Rights Commission and the Public Protector; or through non-official channels such as the media, mining companies themselves, and individual government representatives. In addition to these NGOs, the media and epistemic community also focus on AMD extensively by writing newspaper reports, screening television programmes (for example *Carte Blanche*), and focusing research projects on furthering knowledge about the problem.

Elize Van Eeden<sup>55</sup> suggests several factors that have assisted AMD activism in South Africa. For instance, more South Africans are aware about the need to preserve the environment. The political environment in the country has also changed and the Constitution protects environmental and socio-economic rights. This means that reporting offences via the channels mentioned above is now a realistic option for activists.

Unfortunately, despite the presence of a lively activist culture, many challenges remain. First, the mining-focused environmental activist, Mariette Liefferink, is a member of most of the aforementioned NGOs. Ms Liefferink is essentially the sole activist focusing on the AMD issue,

and uses her memberships to advocate for a solution to AMD. This means that Ms Liefferink is stretched very thin as she does not have a group of people working with her and sharing her passion and cause. Second, many of these NGOs are reluctant to bite (report or criticise) the hand (in this case often mines and government) that feeds them<sup>56</sup>. Put simply, it is hard for NGOs to be adequately critical of mines and government when these very actors provide the funding necessary for their survival. Third, government and wealthy industrialists, in reality, still have more power to regulate policy and its implementation than the media, smaller political parties, individuals and activists despite the country's liberal constitutional framework<sup>57</sup>.

Clearly, this context affects how an AMD activist, such as Ms Liefferink, and advocacy campaigns in general must operate.

## **Acid mine drainage advocacy on the West Rand**

Advocacy on the West Rand gold fields is primarily oppositional activism – it is highly critical of the damage that multi-national corporations (MNCs) cause to the poor and to the environment. Driving the campaign is Mariette Liefferink, CEO of the Federation for a Sustainable Environment (FSE). The FSE is a leading national public benefit, non-profit NGO that aims to promote the ecological sustainability of development and the wise use of natural resources in South Africa. The interest group affiliates with other national and internationally concerned NGOs and community groups, such as the World Information Service on Energy (WISE), International Women and Mining Network, Stichting Onderzoek Multinationale Ondernemingen (SOMO), Earthlife Namibia and South Africa, Groundwork, Jubilee, Benchmarks, WESSA, Endangered Wildlife Trust (EWT), and Action Aid<sup>58</sup>. In addition, public-interest law firms such as the Legal Resources Centre (LRC) assist Ms Liefferink with applications against transgressor corporations or organs of state. She also participates in research projects funded by the North-West University and the Centre for Applied Legal Studies (CALS) at the Wits School of Law. Ms Liefferink is also on the Board of the National Nuclear Regulator (NNR) and is part of the implementation task team for the remediation of the West Rand gold fields<sup>59</sup>.

*Advocacy agenda*

The FSE's advocacy holds the government accountable by publicising the government's inability to manage gold mining in South Africa; exposing mining companies for any infractions they commit; raising public awareness; and pressurising both the government and the mining sector to remediate environmental damage caused by mines on the West Rand<sup>60</sup>.

As CEO, Ms Liefferink, is particularly interested in the disempowered and vulnerable people who live on land close to mining operations and who cannot defend themselves against AMD and other pollution caused by mines<sup>61</sup>. Ms Liefferink's work advocates environmental and social justice, morality and equity, and takes a moral high ground. She is intent on building capacity and informing the disempowered, marginalised, disadvantaged and vulnerable members of mining communities through community involvement and participation<sup>62</sup>. Her optimism drives her, as does her very strong desire to make a difference despite the challenges she faces daily<sup>63</sup>.

#### *Advocacy techniques*

The FSE's advocacy strategy typically starts with a request to a gold mining company active in the West Rand gold fields for their approved Environmental Management Programmes (EMPs). These EMPs, which are legally binding documents, are used to evaluate the company's environmental performance and management. In addition, evidence is collected from the mining sites in the form of photos, anecdotes, documents and testimonies from affected landowners and occupiers of land. The FSE then reports any perceived infractions to the relevant state departments and asks them to regulate the offending mining companies. Then, these infractions together with photographic and documentary evidence are disclosed to the news media<sup>64</sup>.

The FSE's strategy is based on years of collecting scientific, academic and official reports<sup>65</sup> and on gaining information directly from primary sources such as miners, local people, farmers, environmentalists and the government<sup>66</sup>. As FSE's CEO, Ms Liefferink's role is to disclose controversial information to the public and pressurise the state to act on the findings and recommendations of these reports<sup>67</sup>.

Ms Liefferink interacts with the government through official channels. For instance, she makes oral and written submissions to Parliamentary Portfolio Committees, the Human Rights Commission, the Public Protector, lobbying, petitions and picketing<sup>68</sup>. Furthermore, through her position on the NNR board, Ms Liefferink has access to confidential reports. When they contain



information that potentially threatens the public interest, Ms Liefferink is legally entitled to publicise the report's contents using her media, political party and trade union contacts.<sup>69</sup>

Several mining companies fund the FSE's AMD advocacy work ostensibly because they want to educate people living close to the mines about the health, environmental risks and dangers of mining. Ms Liefferink uses these funds to conduct household surveys, distribute pamphlets and brochures, and host fully catered workshops at which she presents some of the serious and frightening realities of AMD<sup>70</sup>. She makes use of field workers from the communities concerned, who are fluent in the local language and can translate where necessary. Most of the community members are literate and give meaningful and intelligent comments, with a considerable depth of understanding and insight. The community members also make proposals on how to improve their situation; however, it is only the government or the mining companies who have the financial resources to implement change<sup>71</sup>.

Ms Liefferink's work also raises the public's awareness about AMD and other pollution caused by mines. She does so through workshops, presentations at schools, interviews with interested parties, organising tours of the West Rand, community meetings, and attending conferences and seminars. The government's lack of interest and its inability to hold mining companies responsible for their actions are two of her most powerful tools. She has also appeared on numerous investigative television programmes and the media periodically cover her activities and comments<sup>72</sup>.

Typically, Ms Liefferink gives the mining companies three days' warning before going public with the information she has<sup>73</sup> in an effort to maintain her legitimacy with them.

Ms Liefferink, who acts mostly on her own, works very hard to convey her message and to help alleviate the effects of AMD on the West Rand. Her brand of activism has both strengths and weaknesses, and while she has achieved successes, she is faced with several challenges.

### *Strengths and successes*

Ms Liefferink's activism goes beyond protecting the environment for the environment's sake and focuses on the effects environmental damage has on the public's health and wellbeing. Given that the Constitution gives South Africans the right to a healthy and safe environment<sup>74</sup>, Ms Liefferink believes that abusing the environment means gross human rights abuses<sup>75</sup>. This argument forces the government to listen to her.

Apparently, Ms Liefferink bears no malice towards anyone and does not act to support a political or commercial agenda. In fact, her advocacy does not favour any one race or culture and she is proud of her work's transparency. Ms Liefferink believes that this openness and honest intent has prevented her from being sued<sup>76</sup>. Instead, it forces the government to pay attention to her and makes it very difficult for people to discredit her.

Ms Liefferink is also very good at framing the problems she campaigns against. Even though the toxicity levels in the West Rand are much higher than the levels of radioactivity, she has learnt to emphasise the risk of radioactive pollution, because it taps into the public's general understanding of environmental pollution, thanks to the media coverage of incidents such as the nuclear disasters at Hiroshima, Nagasaki and Chernobyl<sup>77</sup>.

FSE's advocacy strategy has achieved a number of successes, especially for the radiological contamination-related AMD issues. In 2008, Ms Liefferink's advocacy produced a Remediation Action Plan (RAP) for the Wonderfonteinspruit Catchment Area (WCA), the accompanying Public Involvement and Participation (PIP) process, and the establishment of the Wonderfontein Regulators Steering Committee (WRSC). This committee, which consists of officials of all relevant government departments and local municipalities, is responsible for steering the remediation process. It is chaired by the NNR and now strictly controls discharges from the mines.

The Department of Water Affairs (DWA) is also trying to ensure that all water use licences are issued to mines as soon as possible in an attempt to stop the contamination of the Wonderfonteinspruit. In addition, a Team of Experts (TOX) was appointed by the DWA and the NNR to identify priority hotspots and the mines were approached to finance the remedial work required by the TOX's findings. The plan to remediate the Wonderfonteinspruit is currently being drafted and remedial actions will start as soon as possible. The whole process relies on the public's participation to ensure that their interests are represented<sup>78</sup>.

In addition, the DWA as part of the Government Task Team on mine closure and water management, together with mining companies have agreed on a model to deal with AMD's impacts on the Vaal and Crocodile River systems. This model will have the following key elements:

- 'Mine water collection and conveyance to a central point

- Development of new infrastructure and refurbishment of existing infrastructure to facilitate the collection and treatment of mine water
- Treatment of the mine water which addresses low pH, high levels of metals and salinity
- Encouraging re-use of treated mine water
- Discharge of treated mine water to meet Resource Quality Objectives, and
- Augmentation of stressed river systems.<sup>79</sup>

It also appears as if the government is increasingly acknowledging the severity of the AMD problem. The Minister of Water Affairs, Ms Buyelwa Sonjica, in the National Assembly Budget Vote Speech No. 37 on 15 April 2010 stated, ‘There is a big problem of acid mine drainage in the Witwatersrand area which threatens our ground water resources and the very integrity of the environment and human survival. Even the famous Cradle of Humankind, a world heritage site, is under threat. We are currently engaged with short-term interventions to alleviate the worst effects, but the time has come for those responsible to account for their actions.’<sup>80</sup> Although the government is not yet pledging enough financial support to resolve the AMD problem, it is nonetheless a positive development to see it finally acknowledging the seriousness and urgency of the situation<sup>81</sup>.

Gold mining companies are also sponsoring FSE’s education and awareness campaigns; although this support is limited to the workshops Ms Liefferink hosts and therefore does not significantly assist her with her advocacy efforts. Apparently, they realise that activists are both watchdogs and partners that guarantee companies keep their obligations and responsibilities and take full account of the local community’s needs and expectations<sup>82</sup>.

Additionally, the FSE’s advocacy campaign has influenced significant policy changes. The promulgation of the National Environmental Management Amendment Act, which allows for the retrospective application of the polluter pays principle<sup>83</sup>, is a perfect example.

These developments demonstrate that the government, mining companies and other stakeholders are aware of FSE and Ms Liefferink’s efforts. These actors have also committed themselves to trying to address the AMD problem and have pledged much needed financial resources. Where previously the government tried to ignore or wish away the negative impacts of mining, Ms Liefferink’s use of scientific information to support her advocacy tactics has

increased the media's awareness of the AMD issue. This in turn has increased public awareness and pressure on the key players to act on the problems in the West Rand<sup>84</sup>.

Ms Liefferink has also made a name for herself with the media over the last seven years – representatives from both the national and international media frequently approach her for interviews. And although media reporters sometimes misquote her, she is still satisfied that they cover the gist of her message<sup>85</sup> with the necessary urgency. Indeed, the science supporting her statements and media releases encourages journalists to dig deeper and approach government officials to respond.

### *Weaknesses and challenges*

The FSE and Ms Liefferink have achieved much during their relatively brief advocacy campaign. However, they still face considerable challenges. Perhaps the most important one is funding. Currently, the FSE relies on money from mining companies to operate. This money gives the FSE a measure of credibility but it also means that the mining companies can, in the case of an accident, state that they paid the FSE to inform people about the dangers of mining and that this should have helped prevent any accident from taking place. Ms Liefferink is, therefore, in the uncomfortable, and some would say unethical, position of accepting money from the very actors whose irresponsible behaviour she is trying to expose. Also, the fact that some mining companies pay her a stipend but do not expect anything in return could be interpreted as an incentive to keep her from exposing them<sup>86</sup>.

However, the FSE's lack of funding severely restricts their advocacy efforts. Additional funding could help Ms Liefferink take offending mines to court. She could also use additional funding to reach an even wider audience and could possibly even start employing people to work with her. Ms Liefferink's stand-alone efforts and fierce independence may be one of the reasons why she finds it difficult to mobilise more funding. She also states that it is very difficult for her to raise additional funds because of human resource and time constraints. Another issue is that NGOs seem to be competing for funds rather than working together, which complicates the fundraising process. Ms Liefferink has recently received two Global Green Grants and has recently been nominated for a highly prestigious international award, which could help support her cause financially<sup>87</sup>.

Ms Liefferink is also concerned about how apathetic South Africans are and wishes that people would take a more active interest in their environment and government. In her campaigning, she emphasises the concept of 'we' because she needs the public to rally behind her and to take ownership of the AMD issue. The reality is, however, that her advocacy campaign relies on her to maintain its momentum.<sup>88</sup>

It is also disconcerting that Ms Liefferink's findings and appeals appear predominantly in the middle-class media and therefore target a narrow population. Moreover, the media often misquotes Ms Liefferink's scientific information. At times, what appears in the media is no longer scientifically accurate or simply quoted out of context. It is difficult to ascertain exactly why the quality of media reporting around this topic is, at times, inaccurate. A significant part of the problem is that this issue is highly complex. If scientists themselves are still struggling to come to grips with the dimensions and nature of the AMD challenge, it is not surprising that civil society and specifically journalists are going to struggle to paint an accurate picture of the problem.

Another challenge for the FSE and Ms Liefferink is the government's continued inability to hold mining companies responsible for their actions. Although Ms Liefferink has managed to put AMD on the political table and convince the government and mining companies to increase their remediation efforts, two-and-a-half years later the situation has still not improved. It appears that in practice, despite growing rhetoric about commitment to change, the government is still unable to co-operate with the mining sector on AMD because many mining companies refuse to accept responsibility for this and other mining-related environmental problems. Furthermore, none of the gold mining companies operating on the West Rand operates according to an approved aligned EMP in terms of the MPRDA. Given this context, efforts such as establishing the WRSC in 2008 to steer the remediation process and to approach the mines to contribute financially towards the remedial work have only been marginally successful<sup>89</sup>.

An additional problem is the legacy of mines that are no longer operational. According to DWA guidelines<sup>90</sup>, the goal of water treatment post-mine closure is to end up with no residual impact. This implies that the mine must fund water treatment programmes until the impact has been eradicated which may not be for hundreds of years. The problem is that very few mines can sustain the cost of treating mine water for an extended period and often only plan for two or three years of after-closure remediation costs<sup>91</sup>, which is not environmentally sustainable. In addition,

according to an official statement by the Department of Mining (DoM), there are currently approximately 8 000 derelict and ownerless mines in South Africa, none of which were asked to fund environmental remediation programmes. The environmental impact of these mines could take 800 years to rehabilitate at a current cost of ZAR100 billion<sup>92</sup>.

The scale and cost of remediation are staggering. It is, therefore, not surprising that the government and mining companies are shying away from this responsibility as the cost of remediating negative environmental impacts far outweighs the profits derived from mining. A further problem is the fact that, given the high unemployment rate in South Africa, gold mining takes priority over environmental protection because it is a job-intensive sector. Added to that, multinational mining companies are powerful actors with considerable economic and legal resources at their disposal. This makes it difficult for anyone, be it the government or an NGO, to oppose them.

## **Conclusion**

This chapter has clearly illustrated that AMD on the West and Far West Rand in Johannesburg is a severe environmental and social concern that demands urgent attention. Interest groups and environmental activists have a critical role to play in encouraging and lobbying government and mines to take responsibility for and act on this issue.

AMD activists have a mixed record of successes and failures<sup>93</sup>. They face a mammoth task, given the severity of the existing environmental problem and the complex socio-political environment within which this issue exists. As is so often the case with complex issues, there are no clear answers about how to make AMD advocacy easier or more effective. Nonetheless, here are some recommendations.

### *The importance of networking*

AMD-focused networks need to be diverse and operate with flexibility<sup>94</sup>. Networking needs interest groups to build stronger alliances between themselves (both within and beyond South Africa's borders) to promote their ability to grapple with the AMD issue and influence public opinion. Networking also needs to increase between interest groups and communities (including schools, local leaders and labour unions), and between interest groups and mines, government and civil society.

Networking is important for a number of reasons. First, complex policy issues, such as AMD, require a complex or trans-disciplinary spectrum of actors to respond to the issue<sup>95</sup>. AMD needs policy makers, scientists, miners, farmers, local communities, interest groups and activists to come up with solutions that are appropriate, pragmatic and sustainable over a long period. Second, networking builds trust, promotes understanding between different actors and the public, and provides a supportive framework from which to respond to difficult issues<sup>96</sup>. Third, networking offers ‘power in numbers’<sup>97</sup>. This is not a battle that can be won by a lone voice. To be realistic, its solution must acknowledge that any challenge to the powerful profit-driven mining sector and a government that benefits from the sector’s profits, is going to be a prolonged and difficult battle. Finally, AMD requires long-term advocacy because it threatens future generations for centuries to come. And to effectively influence the public’s opinion of AMD and keep the issue on the public’s agenda requires a solid and sustainable network of groomed activists. A constructive and affordable solution may be to offer students internships. Besides giving organisations much needed administrative and technical assistance, internships will also help groom young people to further the cause in their work and careers.

However, networking does come with a few drawbacks. Large and diverse networks have to balance the priorities and interests of their different actors<sup>98</sup>. For example, mining companies must generate a profit, governments want to persuade voters and are largely driven by votes, and poor, impacted communities simply want to survive on a daily basis. Similarly, diverse networks must cope with each actor’s perspective and timelines. For example, gold mines work according to a 40-year period because that is when the gold stores will run out, governments think in five-year stretches between election cycles, and scientists tend to research both long- and short-term AMD challenges. Such large networks also mean that actors with very different working styles have to co-operate. For instance, activists and the media tend to latch onto issues that are sensational to gain public sympathy, while scientists tend to be more accuracy driven as their career credibility depends on this. This dynamic may be part of the reason why scientists are reluctant to release their findings and communicate with media and activists<sup>99</sup>.

*Find funding that ‘sets you free’*

South African AMD environmental advocacy is in an interesting and somewhat compromising position. Much of its activism is funded by the very people that must be held accountable; that is, government and the mining industry<sup>100</sup>.

Of course, if it was easy to ‘get funding from somewhere else’, Mariette Liefferink and others would have already done so. The fact that South Africans are largely disinterested in environmental activism<sup>101</sup> makes it particularly difficult to raise funds from citizens. Nonetheless, AMD activists must become less dependent on funds from government and mining companies.

Funding could be sourced by forging partnerships with larger and well funded interest groups and international NGOs, collaborating with local NGOs and pooling available funds to campaign for a certain issue, or trying to diversify ones funding base by approaching multiple mines, governments and concerned civil society actors to contribute to a dedicated advocacy campaign budget.

#### *Enhance information and its dissemination*

Current research on AMD is limited and must be encouraged. From a scientific perspective, there is still much to learn about how to effectively respond to the AMD issue in the long term and about the long-term health and environmental effects that AMD pollution can cause<sup>102</sup>.

However, there are not only gaps in the science about AMD; there is also considerable ignorance, misperception and miscommunication about AMD risks, realities and challenges that scientists have already ascertained. For example: people are unsure which specific areas AMD can and does affect; the risks related to their property and land-use activities; the people they should contact to gain more detailed information about the issue; and, the degree of the threat facing them. Ms Liefferink<sup>103</sup> argues that there is generally very little information and awareness about AMD and the risks associated with it. And, as Philip Hobbs<sup>104</sup> suggests, this information, especially in the form of newspaper articles, is often either poorly substantiated or simply inaccurate.

South Africa needs an AMD education strategy that targets multiple stakeholders. Current efforts need to be extended and presented in a language that is convenient for local



communities who live alongside AMD polluted water. Ms Liefferink simply cannot reach all affected communities on her own.

On a different level, the media needs to provide accurate coverage of the AMD issue to avoid misperceptions and unnecessary panic. The media needs to stop sensationalising mining and government successes and failures, and begin to link complex issues. For example, their stories could balance mining's importance to the national economy with the environmental crises and the need for mines to be more responsible and attuned to issues of environmental and social justice.

That said, the media does need stories that will sell<sup>105</sup>. Given this reality, activists need to consider using new communication tactics. Options such as specialist monthly bulletins, open community information sharing sessions with scientists and mass e-mail may be a way to encourage AMD awareness. A recent meeting of concerned stakeholders in Delmas highlighted the need for an information-sharing platform to discuss the need for accurate information about AMD and to promote issue-specific networks<sup>106</sup>.

The challenges posed by AMD in the complex political-economic environment of the West Rand are enormous. Despite this, the battle to make mining companies and the government take responsibility for this issue must continue in order to secure an environment in which society can continue to flourish, long into the future.

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## Chapter 10 references

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<sup>12</sup> Tailings are the residue of the milling process used to extract metals of interest from mined ores or to clean coal. During this process, ores are milled and finely ground, and then treated in a flotation and/or hydrometallurgical plant. The extracted metal represents a small percentage of the whole ore mass, so the vast majority of the mined material ends up as finely-ground slurry. Tailings contain all other constituents of the ore except for the majority of the extracted metal. These consist of heavy metals and other substances at concentration levels that can be toxic to biota in the environment. Moreover, tailings contain the chemicals added during the milling process, although these levels and types are generally not of major concern. After milling, these contaminants are better available for dispersion into the environment than in the original ore because of their finer particle size and higher surface area. Furthermore, the mechanical stability of the tailings mass is poor because its small grain size and high water content <<http://www.mining.ubc.ca/faculty/meech/MINE290/Tailings%20Dam%20Construction%20Methods.pdf>>.

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