Proactive\textsuperscript{1} environmental activism to promote the remediation of mined land and acid mine drainage: a success story from the South African goldfields

Mariette Liefferink\& Elize S van Eeden\*\*

\* CEO: Federation for a Sustainable Environment (FSE), Postnet Suite 87, Private Bag X033, Rivonia, Sandton, South Africa. 2128 & an Associate of the Research Group Sustainable Development: A Human and Social Sciences perspective, at North-West University (Vaal River Campus) PO Box 1427, Vanderbijlpark, Gauteng, South Africa, 1900.

\*\* Professor in History at North-West University (Vaal River Campus) PO Box 1427, Vanderbijlpark, Gauteng, South Africa, 1900.

Abstract

With more information on environmental research reports at the disposal of the general public, a new type of activism has been visible in South Africa since 2007. This “new type” of activism entailed, amongst others, a more informed activist empowered with more freedom of speech and a right to information (according to the rights provided as in the South African Constitution). The formal founding of the Federation for a Sustainable Environment (FSE) for South Africa in October 2007 serves as an example of proactive oppositional environmental activism (POEA). In specifically the former West Rand and Far West Rand goldfields (known today as the part of the Gauteng Province) FSE activists, and some other environmental protagonists, have engaged with mines and the government: Either for immediate relief in mined land, or to address conditions of environmental injustice such as acid mine drainage. An objective was, and still is, to achieve tactical gains to change outdated mechanisms and ideologies regarding man in relation with environment. Other objectives are to secure proper remediation to prevent the escalation of several environmental disasters such as sinkholes, water pollution and dust fallouts. The remediation also focuses on future land use sustainability and to ensure that precautions are in place to avoid the deterioration of health among local inhabitants in especially the poverty stricken areas. The paper will critically debate the success thus far achieved of POEA regarding environmental pollution and the urge for remediation. POEA can create a sound platform to resolve conflict and find sustainable remediation solutions for mines and affected communities in future land use.

Acronyms

AMD – Acid Mine Drainage
DWA – Department of Water Affairs (Before 2009 known as DWAF)
DWAF – Department of Water Affairs and Forestry
FSE - Federation for a Sustainable Environment
FWaWRGF – Far West and West Rand Gold Fields
GGT – Government Task Team
NEMA – National Environmental Management Act, No 107 of 1998
NNR – National Nuclear Regulator
PIP – Public Involvement and Participation process
POEA - Proactive Oppositional Environmental Activism
RAP - Remediation Action Plan
TOX – Team of Experts
WRC – Water Research Commission
WRSC - Wonderfontein Regulators’ Steering Committee

Introduction

Proactive oppositional environmental activism (POEA) regarding mined land in South Africa is a fairly new phenomenon (Tempelhoff, 2004; Liefferink, 2006-2010). For many years, the gold mines of the Witwatersrand had been the cornerstone on which the wealth of the country was built. (Van Eeden, 2006). Until the 1960s, activism in this country was notable for its subdued tone, though it was equally associated with an authoritarian system of government as was the scenario internationally. In the late 1970s, however, a new tone was eminent, supporting a strong Marxist sense of justice, in which the environment played a subsidiary

\textsuperscript{1} Proactive in this context is simply defined as an approach to a situation by causing something to happen rather than waiting to respond to it after it happens.
role (Van Eeden, 2007a). Environmental activism since this era still had many elements of authoritarian domination from both government and mining companies as the injurer (Van Eeden & Brink, 2007).

In the case of what used to be known as the Far West and the West Rand goldfields (currently situated respectively in the Western Gauteng and eastern parts of North West Province) (FWaWRGF) environmental activism, up to the 1990s, was notable for its sectionalist, elitist nature (Van Eeden, 2006). It was driven by self-interest and motivated, for example, by damages suffered by farmers, landowners and occupiers of land affected by pollution caused by local mining operations (Compare Fagan, 2005; Massyn, 2009;). As a rule, the type of relief sought by the affected parties was an interdict compelling the polluting mining company to stop causing a nuisance, or face legal steps. (Van Eeden et al, 2009b; Liefferink, 2006-2010) The mining companies merely responded in most cases by simply buying up the land (Van Eeden, 2006). They would then typically continue with their destructive operations. With the newly adopted National Environmental Management Act (NEMA) in 1998 gold mines found it more difficult to merely continue their operations and environmental destructions unnoticed (Compare Tempelhoff, 2007a; 2007b). An awareness of research reports, as well as a freedom to speak out, provided a platform for proactive environmental activists to regularly whistleblow to make life for government and the mines intolerable (Compare Tesch, D. & W Kempton. 2004; Van Eeden, 2007b). These actions from especially 2007 supported the formal founding of the Federation for a Sustainable Environment (FSE) for South Africa in October of this year to strengthen the activist’s voice. (Liefferink, 2006-2010; Van Eeden, 2007). According to FSE leadership, the FSE: “essentially answers to the call of environmental and social justice, morality and equity. It is not motivated by narrow self-interest, but instead pursues objectives to protect the rights of indigent and sometimes ill-informed members of urban mining communities. It is built on the real voices and engagement of ordinary people”. (Walsh, 2007; Liefferink, 2006-2010; Tempelhoff, 2007c; 2007d; 2007e). In the FWaWRGF the FSE follows a grassroots movement to build capacity, to empower, to inform the disempowered, the marginalized, the disadvantaged and vulnerable members of communities, mostly resident in urban environments that originally had been developed by the mining companies. It is centred on the development of broad-based community involvement and participation. In general the FSE and other environmentally concerned organizations and research institutions, voiced their concerns to support the whistleblowing efforts (Anon., 2007a; 2007b; 2008; 2009; Avni, 2007a; 2007b; 2007c; Von Moltke, 2007). Proper remediation to prevent the further escalation of environmental disasters such as sinkholes, water pollution and dust fallouts were called for. Also the call for remediation focuses on future land use sustainability and to ensure that precautions are in place to avoid the deterioration of health among local inhabitants in especially the poverty stricken areas were, and still are, supported (Compare Parker, 2010; Tang, S. 2010; TAU SA. 2010). All the aforementioned historical and scientific aspects and actions are already widely researched and published, and will therefore not be discussed in the next sections, though some aspects are concisely tabled (See Tables 1 and 2). This paper will therefore mainly critically debate the success thus far achieved through POEA regarding environmental pollution, particularly AMD and the status of proactive action taking in whistleblowing and the environmental remediation in the FWaWRGF.
Land degradation: a concise historical scenario of the FWaWRGF

Gold mining in the area under discussion is to be associated with initiatives since the early 20th Century. After years of difficulty to stabilize the water rich dolomite compartments to be able to exploit the gold faults in the so-called West Wits (Gold) Line, gold exploration eventually became a reality from the 1930’s. To fully understand the subsequent discussion on POEA, requires at least a concise historical account of specifically the South African government of the day’s actions. See Table 1 below (Compare Van Eeden, 1997; Van Eeden et al., 2003; Adler et al., 2007; Turton et al., 2007; Turton, 2008; Stoch et al., 2008; Van Eeden, 2008b; Winde, 2009; Bega, 2009; 2010a; 2010b; 2010c; 2010d; 2010e; Heyl, 2007; Liefferink, 2006-2010; Mitchell & Quinn, 2005):

<table>
<thead>
<tr>
<th>Date</th>
<th>Governmental efforts to understand and manage the effects of mining activities on the environment and AMD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963</td>
<td>Establishment of the State Coordinating Technical Committee on Sinkholes and Subsidence at the Council of Geoscience.</td>
</tr>
<tr>
<td>1966</td>
<td>Establishment of Commission into Water Matters.</td>
</tr>
<tr>
<td>1970s</td>
<td>The Water Research Commission (WRC) established. Other environmental research foci also gained momentum.</td>
</tr>
<tr>
<td>1995</td>
<td>Geologists’ Geo-hydrologists and Environmental Scientists predict West Rand Decant in 2002 – An Integrated Strategic Water Management Plan for the Gauteng Gold Mines. The proposed solution was to form a private water company that will continue to pump extraneous water from the mining basins (Far Western, Western, Central and Eastern) basins, and after a three-phase treatment process make the water commercially available as either: Process water; General effluent water and Potable water. The success of the proposed solution is dependent on the mines, water suppliers, water users and Government adopting an integrated approach – with Government taking the lead role.</td>
</tr>
<tr>
<td>1996</td>
<td>Constitution of the Republic of South Africa passed that, amongst others, promotes conservation and the securing of ecologically healthy and sustainable development. The right of access to information and the mandating of co-operation between all government departments have particular relevance to the monitoring AMD.</td>
</tr>
<tr>
<td>1997</td>
<td>DWAF commences with the monitoring of radioactivity in the Wonderfonteinspruit Catchment (FWaWRGF).</td>
</tr>
<tr>
<td>1998</td>
<td>Pumping operations from some mined out workings stopped (Western Basin).</td>
</tr>
<tr>
<td>1999</td>
<td>Promulgation of the National Nuclear Regulator and the Nuclear Energy Act, No 47 and 46 of 1999.</td>
</tr>
<tr>
<td>2000</td>
<td>Report, “Radioactivity Monitoring Programme in the Mooi River (Wonderfonteinspruit) Catchment”. Institute for Water Quality Studies. DWAF, April. Mining activities are a major contributor to uranium and uranium series radionuclides within the catchment. Concentrations decrease downstream of the sources, indicating removal from the dissolved fraction by interaction with sediments.</td>
</tr>
<tr>
<td>2002</td>
<td>Publication of the “Radioactivity study on sediments in a dam on the Wonderfonteinspruit Catchment.” Conducted by the Council for Geoscience and commissioned by the DWAF. Wade et al. (2002) (WRC).</td>
</tr>
<tr>
<td>2002</td>
<td>Publication of the “Tier I Risk Assessment of Selected Radionuclides in Sediments of the Mooi River Catchment.” WRC Report 1095/102 by P. Wade. Radionuclides are concentrated in sediments downstream of their sources. Sequential extractions showed that these radionuclides are distributed in multiple phases within the sediments and that they may be remobilized by environmentally plausible chemical processes such as AMD.</td>
</tr>
<tr>
<td>2002</td>
<td>Coetzee et al. (2003) of the Council for Geoscience reported on “Uranium and heavy metals in sediments in a dam on the farm Blauwbank”. This study confirmed the findings of Wade et al and used further sequential extractions to characterize the sediments in a dam downstream of mining activities in the Carletonville area.</td>
</tr>
<tr>
<td>2004</td>
<td>Creation of the National Water Resources Strategy.</td>
</tr>
<tr>
<td>2005</td>
<td>Publication of the WRC’s “Impacts of gold-mining activities on water availability and quality in the Wonderfonteinspruit Catchment.” Mining-related impacts such as large-scale land degradation associated with dewatering of karstic aquifers and widespread pollution of surface water and groundwater systems are discussed.</td>
</tr>
<tr>
<td>2005</td>
<td>Publication of “Contamination of wetlands by Witwatersrand gold mines – processes and the economic potential of gold in wetlands” by H Coetzee et al of the Council for Geoscience, Report No. 2005-0106. For more than a century, the mines of the Witwatersrand have discharged contaminated water into the streams and rivers of the area, which led to the formation of a system of large wetlands. Concerns have been raised about their ability to cope with the pollutant loads flowing into them.</td>
</tr>
<tr>
<td>2005</td>
<td>Establishment of a Government Task Team on Mine Closure and Water Management in August. The GTT is tasked with overseeing the establishment of a working Group in each of the Basins.</td>
</tr>
<tr>
<td>2005</td>
<td>First Directive issued by the DWAF to the mines in July.</td>
</tr>
</tbody>
</table>
With time then a large historically rich environment transformed into a “disastrous, polluted and health concerned state” (Compare Jacobs, 2003; Van Eeden et al, 2009a). From the historical outline in Table 1 the novice reader may pick up that Government involvement and actions in environmental issues in the FWaWRGF comes a far way in time. This outline does not even mentions similar research activities that the goldmines sponsored. Despite this all, the wheel of real action by government against FWaWRGF companies did not turn efficiently and fast enough to eventually avoid an AMD disaster.

The AMD problem features at decants in the West Rand goldfields, which is an area also accommodating the Cradle of Humankind (Krige, 2005; Dorling & Du Toit, 2008; Dorling, 2010). Due to POEA more was accomplished in the past three years (2007-2009) regarding creating an awareness on all community levels, and to activate plans of action to remediate, than in the preceding 60 to 70 years of gold mining in the area (Van Eeden & Brink, 2007).

**Activism in the West and Far West Rand: the strategy**

The POEA strategy was developed from a knowledge-base of research done and a research process of collecting research reports, as well as systematically working through scientific academic and official reports. A vast hoard of documents pertaining to the FWaWRGF was thus assembled, augmented from time to time by fresh acquisitions (Liefferink, 2006-2010). In the case of the area under discussion, the role of the activist was seen as basically having the responsibility to disclose the findings of reports to the public in many formats and pathways, to put pressure on the Government to act according to the approved NEMA.
(Compare Tempelhoff, 2007a; Eybers, 2008; Ferreira, 2010; Liefferink, 2006-2010). Some of these formats and pathways are classified in Table 2 below:

**Table 2: A chronicle classification of activism in the FWaWRGF**

<table>
<thead>
<tr>
<th>Method</th>
<th>Number</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshops and site visitations</td>
<td>252</td>
<td>2007-2010</td>
</tr>
<tr>
<td>Academic symposiums, conferences and seminars</td>
<td>84</td>
<td>2007-2010</td>
</tr>
<tr>
<td>Distribution of pamphlets, brochures and questionnaires</td>
<td>16,800</td>
<td>2007-2010</td>
</tr>
<tr>
<td>News media reports, including radio interviews and television screenings</td>
<td>750</td>
<td>2007-2010</td>
</tr>
<tr>
<td>Submissions to Parliamentary Portfolio Committees and Provincial Legislature</td>
<td>12</td>
<td>2007-2009</td>
</tr>
<tr>
<td>Submissions to the South African Human Rights Commission and the Public Protector</td>
<td>6</td>
<td>2007-2010</td>
</tr>
<tr>
<td>Protest Marches, Presentation of Petitions and picketing</td>
<td>35</td>
<td>2007-2010</td>
</tr>
</tbody>
</table>

**Outcomes of proactive environmental activism in the (FWaWRGF)**

**A remediation process gain momentum:**

A significant paradigm shift in environmental transparency, ethics and accountability has resulted from several years of POEA in the area under discussion (Compare Van Eeden et al., 2008a). The first was the development of a Remediation Action Plan (RAP) for the area, as well as the associated Public Involvement and Participation (PIP) process, and in 2008, the establishment of the Wonderfontein Regulators’ Steering Committee (WRSC). This Committee, consisting of officials of all the relevant government departments as well as local authorities, has been at the helm of the process to steer the whole remediation process. The NNR of South Africa chairs the WRSC and, at the time of writing, exercised stricter control over discharges from the mines (Liefferink, 2006-2010).

Also the Department of Environment and Water Affairs (DWA) imposed stricter measures regarding the terms and conditions of all water use licenses in an effort to stop the potential contamination of for example the Wonderfontein Spruit (Stream) in the Far West Rand. Another progressive action from DWA was the appointment of a group, known as a Team of Experts (TOX) in 2008 to identify priority environmental hotspots. The mines were then asked to contribute financially towards the remedial work to be done, as per the findings and recommendations of the TOX (Liefferink, 2006-2010).

From 2009 progress was made with the developing of an implementation plan for the remediation of the FWaWRGF. Remedial action will commence as soon as is practically feasible. The FSE’s representative was appointed as Convener of the PIP process and as a member of the Implementation Task Team (ITT). In many ways this milestone approach from DWA to acknowledge the value and importance of environmental activists and activism endeavours in the area under discussion, reflects enormous progressive strides for valuing environmental activism in South Africa in general. The South African Minister of Energy also followed the same route by tasking the FSE representative to act as Director of the Board of the NNR and so representing the interests and concerns of communities affected by nuclear activities, including mining. Concerted and continuous initiatives to maintain broad-based public participation and involvement in the remediation initiatives on the FWaWRGF.
are still supported through the mechanisms of environmental activism (Liefferink, 2006-2010).

**On Acid Mine Drainage (AMD)**

Due to years of environmental negligence by mines in the FWaWRGF, the problem of AMD in became a fierce debate by 2008. (Compare Naicker *et al*., 2002; Salgado, 2009; Prinsloo, 2010). It required a substantial input of activism to raise awareness on AMD from foot soil communities to government level (Compare Masondo, 2010a; 2010b).

In response to a statement presented by civil society organisations on 3 December 2009 on the issue of AMD in the underground mining basins, in which the government, in its role as custodian of South Africa’s precious and scarce water resources, was called upon to disclose the various options for dealing with the problem of AMD in the Witwatersrand Basin (Coetzee *et al*., 2006; Hobbs, 2007; 2008; Cobbing, 2008; Coetzee *et al*., 2009; Funke, 2010). At present, government is planning to engage with civil society to find an effective solution to the problem (Liefferink, 2006-2010) The intention is to act with a sense of urgency. Failure to take a decision is considered to be a choice in itself for which civil society would also hold government accountable. The GTT on Mine Closure and Water Management responded as follows, in an official statement (Oberholzer, 2010):

> The GTT recognizes and understands the urgency of the issue…. The GTT appreciates the scale of the problem of the surface and underground water quality in Gauteng (Witwatersrand area). As a result, the Government Departments represented on the GTT have made strides in finding solutions and management measures to the problem of AMD.

A media statement was released by the DWA on 11 February 2010. It detailed the management of AMD in the West and the Far West Rand region, and the need to take urgent steps to counter the threat posed by AMD to the environment. Some of the urgent steps, that could also be seen part of the as successful and progressive strides resulting from activism, are:

- A public private partnership has been formed between the Government and the mining houses to treat the mine water and to discharge treated water to meet Resource Quality Objectives, and to augment stressed water systems.
- On 18 March 2010, the Minister of Water and Environmental Affairs, Ms Buyelwa Sonjica visited the decant area in the West Rand basin and donated R6.9 million for the interim treatment of the AMD.
- The Deputy Minister of DWA, Ms. Rejoice Mabudafhasi, in her speech in parliament on the Environment Budget Vote, delivered on 16 April 2010, acknowledged and recognized the urgency and seriousness of the AMD situation.

Mabudafhasi 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” (RSA, SAGI, 2010).

To environmental activists these supportive remarks from government are a welcome change and regularly as well as fiercely fought for in the past decade. Continual POEA will remain
an obligation in future environmental campaigns to ensure that commitments and promises are kept (Liefferink, 2006-2010).

**Conclusion**

A new approach to environmental activism within the gold mining industry, labelled as POEA, started mainly from 2007 with an active whistleblowing campaign in newspapers and supported by the proactive actions of the FSE, based on research reports done over decades but not made available to the general public in the past. Eventually, after three years, a platform was successfully developed as a point of departure to pay attention to the requests of activists and to work towards a constructive environmental remediation in the FWaWRGF.

Gold mining companies have aligned themselves with the FSE and other activist bodies in the FWaWRGF. Some are even sponsoring awareness campaigns in communities where they have operations. They realize that activists can act as watchdogs as well as partners. That is, activists (consisting out of a wide network of professionals as well as informed and passionate environmentally concerned supporters) can use their inside knowledge of the partnership to ensure that the agreed partnership objectives are being met and that the partnership is taking full account of local community needs and expectations. (Business Partners for Development, 2000. www.barefootguide.org)

Furthermore, POEA in the area under discussion has resulted in policy changes, and still continues to do so. One example is the promulgation of the National Environmental Laws Amendment Act, 44 of 2008, which provides for the retrospective application of the “polluter pays principle”. POEA has also brought about the pursuit of the necessity of remediation obligations by mines before their future closure (DMR, 2008; 2009). Also a greater cooperation in vertical and horizontal spheres (local, provincial and national), between different organs of state, indirectly was as a result of a proactive environmental activist approach.

Time, and an ongoing POEA process only will witness the degree of success and the efficient monitoring of decades’ long environmental impacts. The “end product” is to resolve conflict and to strive finding sustainable remediation solutions for mines and affected communities in future land use.

**References**


Anon. 2007b. “100 Years of uranium pollution.” *Finweek*. 1 November.


Bega, S. 2010c. “Acid crisis keeps flowing. Environmentalists say department’s plan to stop toxic pollution is like confetti at a wedding.” *Saturday Star*. March 27.


Oberholzer, M. Correspondence.(Chairperson, Government Task Team) / Mariette Liefersink (CEO- FSE), 2 February, 2010.


Parker, F. “Don’t drink the water”. Cancer plagues people living near Westonaria mine.”


Van Eeden, E.S. & I. Brink. 2007. “Factors that Determine the Facilitation of Stakeholders and Roleplayers in Environmental Management – Some Philosophical-Historical Thoughts with the Merafong Area as Example”. Koers, 4(3).
Winde, F. 2009. “Uranium Pollution of Water Resources in Mined-Out and Active Goldfields of South Africa - A Case Study in the Wonderfonteinspruit Catchment on Extent and Sources of U-Contamination and Associated Health Risks.”