

# **ARD – a Sustainable Development Issue**

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## **ABSTRACT**

In the sustainability context, Acid Rock/Mine Drainage (ARD) (and metal leaching) is primarily considered an environmental issue, and specifically a water-related one. Environmental issues all have their community considerations, and this is especially the case for water issues which can drive conflict. Water related conflict is predicted to increase, exacerbated by changes in climate, population growth and movement and changes to land use patterns. So to what extent do community approaches need to include coverage of ARD and – on the flip side – how much consideration do community issues need in ARD strategies? This question takes on some urgency from the 2010 UN declaration of water as a Human Right. This establishes that there are indeed significant company responsibilities to communities vis-à-vis water which would arguably extend to ARD. What does this actually mean for companies? This presentation makes a case for further linkages between ARD/environmental work and social and community approaches.

Key Words: sustainability, ecosystem services, human rights, communities, conflict, grievance mechanism

## **INTRODUCTION**

Acid Rock (or Mine) Drainage and metal leaching (referred to as ARD in the rest of the text) is a well-known phenomena in mining. Indeed, many would say it is the most potentially significant environmental issue for the industry.

Using the UN definition of sustainable development<sup>1</sup> ARD is quite categorically a sustainability issue, both because of its environmental impacts as well as its long-term, cross-generational nature. That said, ARD is generally considered a ‘pollution’ or ‘water’ issue rather than a ‘sustainability’ one. This paper will examine ARD within the sustainability context, particularly linking ARD to the social dimension. The first section sets the tone by exploring how the Ecosystem Services Approach connects environment impacts and people. The following sections focus on conflict, human rights and how ARD relates to these issues. A number of community and human rights initiatives and resources are identified throughout the paper which are seldom referenced in the context of ARD and which may provide new and interesting sources of information for ARD experts.

## **WHAT IS AN ‘ECOSYSTEM SERVICES’ APPROACH AND WHY IT IS RELEVANT**

ARD has its primary ramifications at a local level in terms of impacts on ecosystems, biodiversity and communities. These impacts are inextricably linked; ARD can affect water systems, which can have

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<sup>1</sup> The United Nations 2005 World Summit Outcome Document refers to three pillars of sustainable development: economic development, social development, and environmental protection. The UN Brundtland Commission defines Sustainable Development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

impacts on flora and fauna, which can also affect people. This linkage between people and ecosystems and biodiversity is captured within the concept of *Ecosystem Services*.

Two major recent initiatives form the basis of our understanding of Ecosystem Services; the **Millennium Ecosystem Assessment** (MEA) and **The Economics of Ecosystem Services and Biodiversity** (TEEB). The former provided an in-depth analysis of the state of the Earth's ecosystems and the latter focussed on understanding the true economic costs of ecosystem services.

In summary, an ecosystem services approach is one which looks at a whole ecosystem and all the services it provides to people. These broadly fall within four categories:

- (i) provisioning (e.g., production of food and water);
- (ii) regulating (e.g., control of climate and disease);
- (iii) supporting (e.g., nutrient cycles and crop pollination); and
- (iv) cultural (e.g., spiritual and recreational benefits).

This may appear as simply a new way to categorize impacts. However, the value in this approach is twofold: the emphasis on people (it's all about how changes to ecosystems impact people); and it provides a framework with which to systematically consider potential impacts – particularly indirect, knock-on impacts as well as cumulative impacts - which may be overlooked. For example, if changes in water quality were to result in impacts to local insect populations, the Ecosystem Services Approach would focus on things like how disease regulating might change (rather than just looking at the impacts on water quality and insects).

This approach has growing support across the conservation and development community and international conventions such as the United Nations Convention on Biological Diversity. Perhaps the most significant recent adoption has been within the International Finance Corporation's (IFC) Performance Standards, which set out sustainability responsibilities for projects receiving IFC funding (including mining projects). These standards have also been adopted by banks which are signatory to the Equator Principles<sup>2</sup> and act as an international benchmark for good practices. The 2010 update of these Standards has much stronger inclusion of Ecosystem Services. They require companies to identify ecosystem services and - where a project is likely to adversely impact them - carry out a systematic review with the involvement of affected communities in order to identify the priority ecosystem services. The key message is that Ecosystem Services are 'socio-ecological'; inter-disciplinary approaches must be applied and communities need to be involved. Companies operating in accordance to the IFC standards need to demonstrate this is occurring.

An ecosystems services approach is relevant for ARD as it is a means of focussing on impacts to people (e.g., how might ARD impact water access, crops, disease control etc. both now and in the future). The World Resources Institute has developed the Corporate Ecosystem Services Review which could provide fresh perspectives on the linkages between ARD and communities<sup>3</sup>. The fact that this approach is growing in importance in the finance sector and international fora implies that there are much greater expectations around making this link.

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<sup>2</sup> Over 70 banks worldwide adhered to the Equator Principles. The principles are applied where total project capital costs exceed US\$10 million. See <http://www.equator-principles.com/>, downloaded Dec 2011.

<sup>3</sup> See <http://www.wri.org/project/ecosystem-services-review>, downloaded Nov 2011.

## **WATER AND COMMUNITY CONFLICT**

Many would agree that globally, there is a connection between water resources and conflict and security. Indeed the Pacific Institute has developed a Water Conflict Chronology<sup>4</sup> which maps out water conflicts across the world to try and better understand this correlation. This list currently includes only one incidence that is indirectly connected to mining, but it is a useful demonstration of the link between water and conflict, and how this can escalate to an issue of international security.

That said, for the mining sector, there are many examples of community concerns relating to water, and specifically potential water pollution (ARD clearly falls within this category). These have sometimes contributed significantly to conflict around mining, and they are usually tied up with other issues for local communities. This is not surprising given that when communities feel that their access to clean water is threatened, there are far-reaching implications for sanitation, health, irrigation and livelihoods.

In this context, it's worth making the point that ARD can be a source of community conflict in arid countries. ARD is more commonly recognized as an issue in water abundant areas (as water is required for the ARD process), however it can be equally problematic in dry environments. As outlined in the Global Acid Rock Drainage Guide (GARD Guide) developed by the International Network for Acid Prevention (INAP) "mine waters from acid generating deposits in arid climates tend to be more acidic and metalliferous" as downstream dilution is better in wet climates than in dry ones.<sup>5</sup> This underscores the importance of always carrying out appropriate ARD prediction programs. Indeed, in water scarce areas, water is such a pervasive issue that potential ARD impacts on communities arguably need much closer scrutiny than they have had in the past.

In future, water related conflict is expected to increase. Population growth and movement as well as changes to land use patterns will exert pressure on water related issues. Climate change is the other factor. As predicted by the International Panel on Climate Change (IPCC 2007), "water and its availability and quality will be the main pressures on, and issues for, societies and the environment under climate change."<sup>6</sup> Climate change is expected to have an effect on the physical process of ARD, with larger, sudden increases in ARD concentrations released with resulting increased danger to aquatic life (Nordstrom 2009). However, as climate change impacts on water scarcity and quality, local community conflict around ARD issues also have the potential to be exacerbated.

Within this context, the private sector is increasingly realizing it has a role to play. Perhaps the most significant platform for business leadership around water issues is the CEO Water Mandate. This initiative is a public-private one which exists as a part of the United Nations Global Compact. The number of financial institutions involved in the Global Compact make this a unique forum for addressing the emerging crisis around water issues, the range of risks for the private sector and current water-management practices which are considered to be inadequate. The Mandate has developed work on a number of water topics and although this initiative does not specifically address ARD, it is bringing attention to the role of business in relation to water and community issues and could be a useful resource for those involved in ARD.

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<sup>4</sup> <http://www.worldwater.org/conflict.html>, downloaded Nov 2011

<sup>5</sup> GARD Guide, INAP, [http://www.gardguide.com/index.php/Chapter\\_2](http://www.gardguide.com/index.php/Chapter_2), downloaded 30 Nov 2011

<sup>6</sup> IPCC 2007

## **WATER AS A HUMAN RIGHT**

In 2010, the UN General Assembly recognized access to safe drinking water and sanitation as a human right. This means that there are indeed significant company responsibilities to communities vis-à-vis water which would arguably extend to ARD when it affects access to water.

There exists a growing body of work on human rights for the mining sector and the International Council on Mining and Metals (ICMM) includes this element in its principles: “to uphold fundamental human rights and respect customs, cultures and values”.<sup>7</sup> Although human rights analysis for the mining sector generally focuses on topics such as security, Indigenous Peoples, conflict, or resettlement, it provides a good reference for considering implications for water.

The most significant, and internationally endorsed, body of work on the responsibilities of companies around human rights has been the work of Professor John Ruggie, the former Special Representative of the UN Secretary-General on the issue of human rights and business. Ruggie’s “Protect, Respect and Remedy” Framework was unanimously endorsed by the UN Human Rights Council in 2008. The framework outlines the distinct, albeit complementary roles of states and corporations. The framework is built around three core components:

1. The state duty to protect against human rights abuses by third parties, including businesses;
2. The corporate responsibility to respect all human rights; and
3. The need for more effective access to remedies in the event of disputes over the human rights impacts of companies.

This establishes that governments have the primary responsibility for the protection of human rights, not companies. Companies do however have a responsibility to respect human rights and to actively ensure that their operations do not infringe on them. “Because this represents a baseline expectation, companies cannot compensate for human rights harm by performing good deeds elsewhere.” (ICMM 2009)

Applying this thinking to water would mean that companies do not have the primary responsibility to protect (or arguably to provide) access to safe, clean water. However, they need to ensure ARD doesn’t deny people access to safe drinking water.

So what should companies be doing?

## **CORPORATE APPROACHES TO HUMAN RIGHTS AND THE LINK TO ARD**

In 2008, the UN Human Rights Commission appointed Catarina de Albuquerque as Independent Expert to explore human rights obligations related to access to safe drinking water and sanitation. This work did not explicitly cover mining companies, however it underscored the importance of companies recognizing *the right to water* and also endorsed *community consultation* on water issues.<sup>8</sup> This echoes the IFC’s requirements on Ecosystem Services and provides the high-level context to a business approach.

Professor Ruggie’s framework is useful for examining in more detail how ARD relates to corporate strategies on human rights. Specifically, what does ‘*respect human rights*’ and ‘*effective access to remedies*’ mean for companies?

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<sup>7</sup> <http://www.icmm.com/our-work/sustainable-development-framework/10-principles> Viewed 12 January 2012.

<sup>8</sup> A useful overview of leading corporate approaches to human rights and water is provided in a white paper developed for the CEO Water Mandate “The Human Right to Water: Emerging Corporate Practice and Stakeholder Expectations” (Morrison 2010).

### **Respecting human rights – due diligence**

A company's responsibility to respect human rights can be implemented through its process of due diligence. This is outlined by Dr. Ruggie as being the steps taken to "become aware of, prevent, and mitigate adverse human rights impacts".<sup>9</sup> He describes four parts of an effective due diligence process:

- (i) establishing a human rights policy,
- (ii) assessing human rights impacts of company activities,
- (iii) integrating those values and findings into corporate culture and management systems, and
- (iv) tracking and reporting performance.

When a company is designing a general human rights due diligence approach, access to water and sanitation (and potential ARD impacts) can and should be incorporated into each stage. However, not all sites will have active human rights due diligence systems though they may have ARD. In these cases, ARD is too specific an issue to warrant a dedicated human rights policy. However, it's worth mentioning some specific ARD considerations for the relevant systems which such sites would normally have (impact assessment, management systems and tracking performance).

Assessing the potential impacts of ARD on people's access to safe water requires an appropriate level of investment in technical prediction research. It also requires a thorough understanding of water catchments and community usage of water within the catchment – including *potential* usage as a result of pressures on other water sources. This means going beyond technical ARD prediction research and drawing on community expertise and land use analysis at a regional level.

Historically, decision making within companies and management systems have not always drawn sufficiently on social and community information - or ARD data for that matter. The declaration of water as a human right raises the importance of understanding both where people access water and how ARD might impact this. This information is needed for decision making: from the design of waste rock dumps or ARD mitigation measures such as the use of wetlands or dry covers, to the right water treatment options which make sense for people using water in the region.

Good practices around ARD monitoring and reporting are well developed<sup>10</sup>. An ARD mine site monitoring program needs to assess the effectiveness of ARD mitigation measures (so as to adjust these measures as required). Potential impacts to people's water access should be a 'touch point' within the monitoring program that triggers appropriate mitigation and communication measures. The technical nature of ARD also means that it can be extremely challenging to communicate the related risks and actual impacts to people. The need for a considered communication plan in an appropriate format for the communities cannot be underestimated, and the support of community specialists may be required for this.

Community involvement in water monitoring is one approach which can help build trust and which is relevant in the context of ARD. A useful resource is "Participatory Water Monitoring: A Guide for Preventing and Managing Conflict" by the Office of the Compliance Advisor/Ombudsman (CAO) for the World Bank Group. This document was developed from experiences at the Yanacocha Mine in Peru

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<sup>9</sup> Business & Human Rights Resource Centre, <http://www.business-humanrights.org/SpecialRepPortal/Home/Materialsbytopic/Companyoliciespractices/Duediligence>, downloaded 30 Nov 2011

<sup>10</sup> See GARD Guide Chapter 8 Monitoring, [http://www.gardguide.com/index.php/Chapter\\_8](http://www.gardguide.com/index.php/Chapter_8), downloaded 30 Nov 2011

where uncertainty regarding the mine's impact on water has been a significant source of conflict. Participatory monitoring was one aspect of a broader roundtable initiative between the mine and the community that has helped improve the situation. In 2010, Yanacocha even received the Peruvian Ministry of the Environment's Business Eco-efficiency Award for responsible water management. "Participatory water monitoring can [be helpful preventing conflict. However, it] presents unique challenges [...] because of the complex and highly technical nature of assessing impacts to water and the controversy surrounding competing demands." (CAO 2008)

### **Effective access to remedies – grievance mechanisms**

John Ruggie's report also attaches much importance to systematic approaches for dealing with local level concerns and grievances. ICMM has developed a pilot guide for Handling and Resolving Local Level Concerns and Grievances which aims to help companies design complaints procedures (ICMM 2009). Complaints processes are relevant in the context of water and ARD as a means to resolve water related complaints before they escalate to fully blown conflicts. They can do this, for example, by promoting external awareness of the complaints mechanism particularly as a means to raise water concerns, or, by ensuring company responsiveness and making sure the appropriate people are made aware of water/ARD concerns that are raised.

### **CONCLUSION**

Community water issues continue to grow in importance at both the local and international levels. At the same time, ARD represents an ever-present long term risk to mining companies. It is increasingly apparent that the need to consider the impacts of ARD in a holistic rather than a purely technical or engineering field will not abate. Indeed, increasing requirements to use an ecosystem services approach – which links environmental issues to people – is an indication of this trend.

The environmental impacts of ARD have long been a contentious area for the mining industry with far reaching implications to its sustainability. With the pressures on water availability – and water conflict – predicted to increase, and water recognized as a human right, it is apparent that the social impacts of ARD have raised significantly in profile and will continue to do so. The human rights approach provides some interesting considerations for ARD/water, for example around communications, monitoring and grievance mechanisms. It will be interesting to see how practical experiences around this develop in the next ten years.

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