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QUICK GUIDE

Water, Mining and Communities:

Creating Shared Value through Sustainable Water Management

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Strategic Context

Water is life or death for people and mining projects. Water, more than any other natural resource, should be approached and valued from multiple perspectives. Water is a shared resource and access to it is a human right. Increasingly, communities, governments, and companies around the globe are worried about water quality and availability.

For the mining industry, water management is more than a technical and economic challenge. A quick media scan or review of mining cases from World Bank Group's Compliance Advisor Ombudsman (CAO), an independent recourse mechanism that responds to complaints from project-affected communities, shows that water can be a lightning rod for conflict. The social and environmental dimensions of water have a profound impact on the cost of closing old mines, the development of new projects, and the expansion of existing ones. The economic value of water can be established using existing methodologies, but the environmental, social, and cultural value of water is more difficult to capture since it may be perceived differently by diverse stakeholders.

Mining companies face growing water risks related to operations, regulations, reputation, and investor expectations. Project water risk can affect the viability of extracting a mineral resource. In the exploration and feasibility stages of a project, asset valuation may not include full water management costs through postclosure. International regulatory trends toward steeper water pricing may dramatically increase operational costs in many jurisdictions. Meanwhile, water use data are often not projected or tracked. Compliance with new, more rigorous environmental legislation and lender requirements is causing mining companies to evaluate water differently, designing corporate-level strategies for the first time. Many in the industry are embracing new water efficiency and recycling methods, driven by the necessity to cut or better predict costs.

Too often, the social management of water earns little attention early in operations, when stakeholders are less active and critical engineering choices are made. This is changing, as numerous companies and consultant studies report that failure to earn social license—a community's tacit approval of a project—is one of the greatest risks facing mining companies. Several mining companies have had operations shut down because of avoidable community-led protests, many centered around water issues.

Instances of water and community-related issues affecting mines have been seen before (e.g., Marlin, Guatemala), and they are still occurring (e.g., Minas Conga, Peru). Marlin erupted onto front-page news in January 2005, and distrust is still rife despite massive postcrisis ameliorative efforts on all fronts. In Peru, Yanacocha's issue with mercury was well documented and thoroughly addressed. However, trust is hard to rebuild and civil society organizations are again voicing concerns about issues such as water management, community development, and environmental stewardship. Water is one of a host of issues that concern local stakeholders, but it is highly emotional and galvanizes people into action.

In addition to these social complexities, the dynamics of climate change, industrial competition, population growth, and food security are adding to a global anxiety around water that often plays out locally. To understand the risks and opportunities around water, there are a growing number of tools and examples. For example, a new report by the Carbon Disclosure Project and Eurizon (2013) suggests that mining companies that take the initiative to mitigate water risks report better financial performance. Investment firms now recognize the long-term impact of water management on mining companies' financial outlook. Morgan Stanley has developed a Sustainable + Responsible Valuation Framework to evaluate companies based on their attention to and investment in reduced water consumption and risk. The International Council on Mining and Metals produced a series of water management case studies, which are available at www.icmm.com/www.icmm.com/water-case-studies.

For the last three years, IFC has been convening the mining industry and related stakeholders to explore concerns and good practices around inclusive water management. Drawing from the experiences of IFC, industry partners, civil society, academics, and government, this guide outlines water-related risks that mining companies and their host communities face. The result is a simple three-dimensional strategy for comprehensive stakeholder engagement and beyond the fence water management supported by robust technical assessment and conservation practices.[1]

"Without trust, facts don't matter."

—Gillian Davidson, Teck Resources

This rest of this guide is organized as follows.

Section 2 traces water through the mining life cycle. Section 3 discusses water as a lightning rod for conflict. Section 4 focuses on creating shared value through effective water management. Section 5 provides details on laying the groundwork with sound technical systems and stakeholder engagement. Section 6 presents details on the above-mentioned three-dimensional water management strategy, which includes internal alignment across company functions, employing strategic communications (listening and talking), and co-managing knowledge and resources with other decision makers. Included in section 6 are brief case studies illustrating engagement with diverse stakeholders throughout the mine life cycle for sustainable water solutions. Section 7 discusses integrating the three dimensions for a shared approach to water management, including a case study from Mongolia. Section 8 concludes with a discussion of collaboration for a sustainable future where much more practice sharing is needed.

[1] In response to IFC investment experience, the new IFC Performance Standards on Environmental and Social Sustainability (2012) emphasize water conservation plus identification and mitigation of water resource impacts within the wider ecosystem services context. For more guidance, see the following Performance Standards (PS) and accompanying Guidance Notes: (i) PS 1: Assessment and Management of Environmental and Social Risks and Impacts; (ii) PS 3: Resource Efficiency and Pollution Prevention; (iii) PS 4: Community Health, Safety, and Security; and (iv) PS 6: Biodiversity Conservation and Sustainable Management of Living Natural resources. http://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+Sustainability/Sustainability+Framework/Sustainability+Framework+-+2012/Performance+Standards+and+Guidance+Notes+2012/.

Tracing Water Through the Mine Lifecycle

All mines manage water to construct, operate, and close a project. Total water consumption depends on the type of mineral or metal being extracted, as well as company practices. Physical location can either stress or mitigate water issues, since access to desalination, groundwater, and surface sources are all site-specific. Since companies are responsible for tracking their own water use, data on overall consumption are limited. A Teck Sustainability Report published in 2010 revealed 125 million cubic meters of water withdrawals (groundwater, surface, other), with a recycling/reuse rate of 90 percent. Anglo American wants to achieve water-neutral mines by 2030 where 80 percent is recycled and 20 percent is clean to standard. Achieving high recycling and reuse rates is an important way to show commitment to water conservation, quality standards, and investment in technology. Figure 1 graphically displays water use during a project life cycle.

Figure 1. Water Use during Project Life Cycle

Exploration		
Comparatively large water use during drilling	Risk of contamination from drilling additives and sumps; stormwater management	The affected community's perception of uncontrolled water extraction
Planning and Construction		
Runoff, spills, sediment, settling ponds	Possible chemical contamination, monitoring needed	Develop process to account for water use
Operations		
Demand during mineral processing, dust suppression, and evaporation losses	Manage wastewater discharge, seepage, groundwater from mine pit dewatering, and runoff	Account for water in all operation cycles incorporating data from all prior phases
Closure and Postclosure		
Long-term contamination risk, potential need for water during postclosure land use	Rigorous monitoring needed	Water plan and program legacy

Water availability

Industry concern around access to water is exacerbated by mineral deposits increasingly being located in water-scarce regions. Just as mining in water-scarce regions is on the rise, so too is the competition for water within the mining industry (e.g., multiple water concessions for mining companies drawing from the same source) and across industries including commercial agriculture, subsistence farming, livestock herding and fisheries, tourism, logistics, and manufacturing. Population influx tied to resource development and related infrastructure results in even greater water usage. These factors plus the uncertainty of climate change may drive companies or governments to lock up water supplies as legislation allows. In many contexts, no single entity, including the government, has sufficient information and clout to make sound judgments regarding who has which water rights over time and with what impact. This makes coordination of data and water use across a watershed even more critical. A new focus on cumulative environmental impacts of multiple industry projects can help promote common risks and opportunities for shared value across one region. In many contexts, local stakeholders do not have sufficient knowledge about the water cycle to form and voice opinions about policies and practices.

Water quality

Companies are more stringently self-regulating after experiencing many legal proceedings, costly fines, and reputational hits caused by water mistreatment and contamination problems, such as mercury spills and lining ruptures in tailings dams, which have hurt people, the planet, and profits. Various forms of participatory water monitoring have helped to manage quality while also building the trust and credibility of diverse stakeholder groups, including companies. For example, bringing community leaders to a reservoir to catch, cook, and eat local fish together with company managers can be more constructive than showing technical lab test results processed in another country.

> “Water conflict is about people…it’s not just an environmental issue… and needs more than a technical fix.”
>
> *–CAO Office, World Bank Group Ombudsman*

However, not all current water risks have clear responsible parties. Legacy issues involving water contamination or ongoing water impacts by inactive sites translate into financial and reputational costs for the whole industry. Communities living with negative impacts from a project long discarded are motivated to guard fiercely against any further damage. In countries with little regulatory oversight and minimal data collection or disclosure, societal anxiety related to water can quickly lead to action against a project. In some cases this can be driven more by fear than by fact.

Water as a Lightening Rod for Conflict

Whether a local impacted community, a national civil society organization, or an international nongovernmental organization (NGO) leads the call to action, conflicts around water can bring reputational, operational, legal, and financial risks to a project. Triggers for conflict include water scarcity, lack of access, unclear rights, water excess, impacts on water quality, unequal voice, and a general lack of trust. Ineffective regulatory environments may incorrectly signal to traditional water users that mining companies can take what they want at the expense of others and without oversight. The threat and consequences of water pollution can cause conflict, particularly when a potentially impacted community relies on the water source for livelihoods such as agriculture, fishing, or animal husbandry. Perceptions of high water use by a new entrant are often sufficient to trigger tensions and even conflict.

Finally, an often underestimated trigger for water conflict is cultural attachment to water compounded by a lack of trust in industry and government or across social groups. This tension is exacerbated by a lack of inclusive decision-making processes and knowledge imbalances. There is a growing list of companies whose experience with water and conflict indicate that it is more expensive to recover from conflict than to prevent it. Broken trust takes longer to repair than a concentrator or pipeline.

> “Water becomes the issue when there is a vacuum of trust.”
>
> *–Chris Anderson, Rio Tinto*

Creating Value Through Effective Water Management

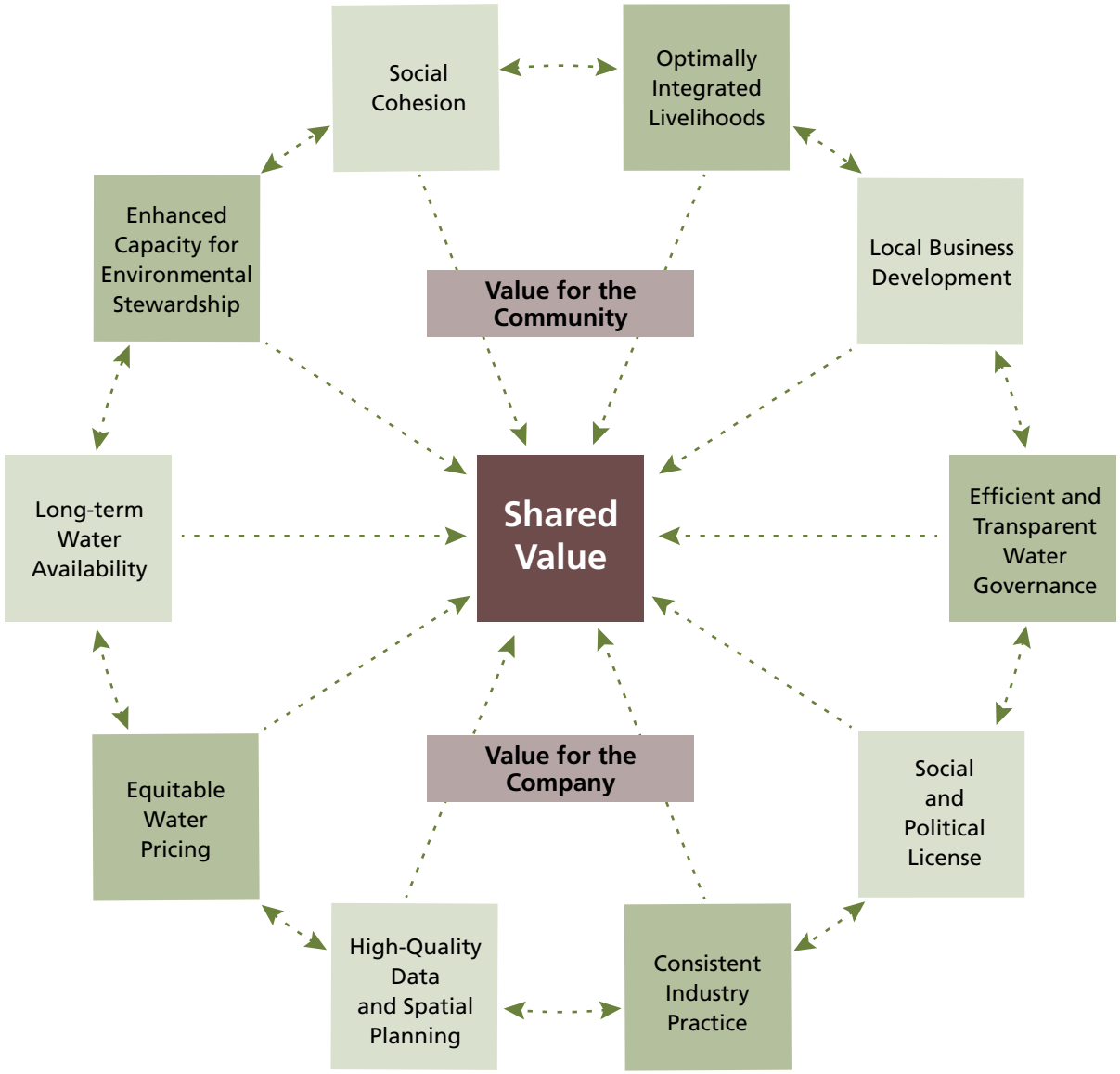
A shared value approach to water management can turn risks into opportunities for both companies and communities. For instance, companies clearly benefit from a water management approach that results in the accurate assessment of asset value and compliance with international financial institution lending requirements. Companies can also increase the value of a project by implementing leading social and technical water management practices that can expedite permitting processes, facilitate mine expansion, and secure water access. Managing impacts on ecosystem services related to water such as provisioning, regulating, and cultural respect/preservation, provides opportunities for ensuring the sustainability of the business and improving relationships with local communities.

The involvement of stakeholders outside the fence can lead to innovation, inclusion of key local knowledge, improved social license, and enhanced reputation. Communities stand to gain from bolstered local capacity for environmental stewardship and expanded economic opportunities. In addition, taking a co-management and monitoring approach to water through collaboration with other industrial actors can smooth operations, increase efficiency, and help companies plan for real costs and enduring investment agreements. Effective benefit sharing requires sophisticated water management practices that optimize tradeoffs and cooperation while minimizing conflict. These benefits will likely be realized during the life of the current project and can also carry over to future endeavors via expansion, winning new licenses, and replicating efficient practices.

Figure 2 graphically presents value drivers for a variety of stakeholders.

> "We spend millions of dollars on technical water fixes only to find out that sometimes the problem was really social."
>
> *–Nick Cotts, Newmont*

Figure 2. Overview of Value Drivers



Laying the Groundwork: Sound Technical Systems and Stakeholder Engagement

When stakeholders perceive a problem during exploration, development, or mining operations, it generally becomes a problem for the company, whether or not there is scientific evidence of responsibility. When there is a relationship built on trust between the company and those in the community, dialogue and meaningful participation can assuage fears and anxieties. Including stakeholders early in the planning process brings benefits to all sides. Raising awareness on the technical aspects of mining and water, understanding traditional beliefs and incorporating them into water management, and providing opportunities for stakeholders to share decisions in the development and monitoring of water plans can reduce misconceptions.

Small technical teams, such as geologists undertaking exploration, are often not equipped to understand the downstream social implications of their activities. These "tip of the spear" personnel set the tone for ongoing engagement, and therefore need suitable training and support before and during fieldwork. Strategies for developing trust need to be part of the toolkit of such personnel—from geologists and consultants to senior managers. In some companies, systems are in place to ensure that any manager who visits a site can engage with workers at any level or with community members about local activities. When authentic, this interaction helps engender a sense of ongoing company interest in the well-being of the community.

Identifying stakeholders and learning their concerns can help in the development of a water management plan that effectively integrates social and technical priorities within and beyond the company fence. Acknowledging multiple realities, including that of the company and those of the communities, may help bridge differences. It is important to be aware of gender-specific impacts; women may be more negatively affected if water collection requires additional time and effort. However, they may also prefer a community-level water collection process over individual access. Preferences cannot be assumed. Although women have been shown to promote more sustainable community decision making and improvements in household welfare, they are often left out of decisions regarding extractive industries and the environment. Ultimately, the reality of the community—which includes many diverse groups—must be the reality for the company.

Table 1. Two Realities: Reality of Community must be Reality for Company

Company View	Phase	Community View
Small footprint Don't want to raise expectations Likelihood of project is low Negative legacy from previous exploration	Exploration	Defensive due to previous bad experience with other companies Hope mine will bring jobs/services Anxiety due to lack of information Don't understand mining process
Locals should be grateful for infrastructure Sometimes construction and social engagement are on different schedules	Planning and Construction	Fear traditional ways will be lost because mine will deplete water Weak rule of law erodes trust in company's investment agreement
Providing treated water to locals Undertaking consistent, robust environmental monitoring Going beyond government compliance Politically opportunistic actors create distrust regardless of facts	Operations	Fear that all water is polluted Lack of access to data or technical capacity to analyze and understand Distrust in company's findings No way to be heard by company or government except by blocking roads
Blamed for potential pollution May have to pay for others' damage Compliant with the local laws but people still angry	Closure and Postclosure	Loss of access to clean water that company provided during operations Concern with whom to hold accountable for postclosure water quality/quantity problems

One way to approach this challenge is to begin with project impact assessment integrated with local context analysis to build a comprehensive picture of stakeholders, opportunities, and risks. This has to start at the beginning of field efforts, regardless of whether the company expects minimal ongoing impacts. Review, and adjust if necessary, company policies to include mitigation and trust building, specifically through a water lens. These can be project-specific policies. Ultimately, companies should work toward a co-management plan in which stakeholders participate meaningfully on the topic of water. Investing time and effort early in this process will help avoid conflicts later. Note that high personnel turnover rates across the project cycle will impact the timeline and continuity of this investment.

Good technical practices underpin any comprehensive water management strategy. Using robust water baselines with environmental and social impact assessments, companies must have a solid understanding of surface and groundwater resources and their overlap with community needs and expectations. Developing and using a rigorous Environmental and Social Management System will enable a cascading risk management approach based on application of avoidance, management, mitigation, and continuous improvement measures.

Reducing water use is a key method for mitigating social and financial risks. During the design phase and throughout operations, companies can identify opportunities to reduce the amount of water used.[2] This should be explored through the integration of new technologies (for example, filtered and paste tailings), treatment of discharge for reuse in the mining process, water audits of existing operations to determine inefficiencies in the use of water, and other best practices.

[2] More guidance is provided in IFC PS 3: Resource Efficiency and Pollution Prevention, and PS 6: Biodiversity Conservation and Sustainable Management of Living Natural resources; http://www.ifc.org/wps/wcm/connect/5aebfd004d5e3818b83cfa2389a1bab4/PS_Objectives_English.pdf?MOD=AJPERES.

Water, Mining and Communities: A 3D Approach to Shared Water Management

After understanding existing perceptions and diverging realities, the following three-dimensional (3D) approach is recommended: (1) create internal alignment across company functions, (2) employ strategic communications within companies and across stakeholder groups, and (3) find ways to co-manage water with other stakeholders. These three dimensions are interventions along a spectrum of a company's control over actions and outcomes. Internal alignment is fully within a company's control, while co-management requires shared control and decision making with other stakeholders. Strategic communications involves outreach, listening, and managing perceptions; therefore, it falls in the middle of the spectrum. Following a discussion of these three dimensions, the guide will suggest a comprehensive approach for mining companies addressing water use issues.

Throughout the co-management process, it is vital to appropriately align 3D efforts with the technical aspects of the mine's development. Figure 3 presents a hypothetical example of how the social and technical stages of the mine should dovetail. This will look slightly different for every project, but having a shared roadmap across company functions will help keep activities on schedule while presenting a consistent face to the community.

Figure 3. Social and Technical Integration

Dimension 1: Internal Alignment across Company Functions

An integrated approach to water management requires cross-functional alignment within the company. This should be completely within the company's control, unlike some other aspects of water management. To achieve shared goals, it is necessary to have consistent behavior and incentives across the company's operational functions. Companies that define a holistic water vision with co-ownership across departments will likely outcompete their rivals in efficiency and resiliency. The following are recommended to achieve cross-functional alignment:

1. Invest in internal collaboration to overcome silos and promote ownership. Train multiple business functions (operations, finance, legal, human resources, etc.) in the technical and cultural aspects of water management. Provide them with resources to approach water management from the outset of fieldwork. Lead by example—senior management should have a focus on water as part of their field visits and reporting requirements. Reward collaboration across functions with incentive structures that include recognition, bonuses, and promotion.

2. Develop a shared vision for a company-wide water strategy owned by multifunctional teams (operations, environment, community relations, risk, human resources, legal). Solicit input from all levels on priorities, risks, and stakeholder engagement. Ensure that decisions are informed by "boots on the ground" who can provide ongoing field data. Develop Key Performance Indicators for tracking water-related duties and outcomes.

3. Use language that executive-level staff understands. Training can bolster "multilingual teams" able to translate the business case for community engagement around water into financial language that senior management and technical staff relate to. Techniques are readily available to assist staff in quantifying and calculating the potential value lost or preserved through social and environmental actions.

4. Reconcile time frames (technical deadlines vs. stakeholder horizons). The time that Community Relations staff needs to address community concerns before an activity proceeds, and the time frame that construction or operations staff are working within, based on technical or financial objectives, are different. By cooperating, many community concerns can be addressed and potential conflicts prevented. This requires forethought, sensitization, and planning.

5. Create a shared internal database to track engagement and progress. Keeping track of documents and correspondence with stakeholders in a centralized, accessible database can help measure progress on how interdepartmental cooperation, shared community engagement, and trust have changed over time. This accountability can be useful in reflecting on successes and failures.

The two cases below explain how two companies implemented the above-mentioned approaches.

Case 1: Teck Resources' Social Management and Responsibility Toolkit (SMART)

Teck Resources, a diversified resources company with 13 mines in the Americas, and active exploration across the globe, began developing the SMART kit after recognizing that social concerns are a major risk in project communities and can affect operations if conflict arises. Teck also saw the value in professionalizing the management of social- or community-related issues to better understand and manage those risks and consider possible opportunities.

SMART is a practical toolkit that reflects best practices relating to social risk and performance management, engagement, impact management, and sustainable benefits throughout each stage of exploration. The SMART training targets all company exploration groups, projects, and operations teams. Teck is investing in its employees by offering dialogue training to improve community engagement, creating an internal Community of Practice intranet for sharing information, lessons learned, successes, and seeking support among colleagues. SMART also includes plans to incorporate a sophisticated centralized database to track internal activities and progress on all projects.

Case 2: Anglo American's Technical and Social Management Tools

Recently, Anglo American publicly updated its internal water management strategy with the launch of two tools—one that focuses on management and impact assessment and one that focuses on tracking and improving efficiency.

Anglo American's Socio-Economic Assessment Toolbox (SEAT) focuses on establishing a deeper understanding of the socioeconomic environment, identifying potential project impacts, and developing an appropriate management plan. The Water Efficiency Target Tool (WETT) was developed to track water use and savings across projects, encouraging innovations in water reclamation, reuse, and conservation. Combined, the two instruments represent a cohesive effort to address water as a risk to mining operations that requires both social and technical solutions.

Anglo American conducted a pilot implementation of WETT in Rustenburg, South Africa in 2011. AngloPlats' mine in the region and the local municipality agreed to build a water treatment plant to improve treated sewage effluent quality, and also to reuse a portion of a treated effluent in mine operations. This process is in ongoing negotiations between the company and the community, and highlights how monitoring through a tool like WETT can facilitate new innovations in technology and social engagement.

Dimension 2: Strategic Communications—Listening and Sharing Information

Multidirectional communication (receiving and sending signals) is critical to avoiding conflict. Identifying key stakeholders and incorporating their concerns early on, in a culturally appropriate and inclusive manner, is crucial to attaining social license. Research suggests that sharing information openly can build trust, help demystify natural and technical water processes, and minimize rumors related to mining. The following actions are recommended:

1. Form a multidisciplinary communications team, go beyond media relations. This team should focus on listening and understanding first, then articulating thoughtful responses and follow-up with stakeholders. A diverse but tight-knit communications group, which may include men and women with social media, community-outreach, political, engineering and investor relations skills, can serve as a nerve center to engage with internal and external parties instead of using old-school tactics such as relaying information only one way—out. Understanding and reconciling multiple perspectives can create cohesion within the company as well as between the company and government or community groups.

2. Leverage communication as a form of risk management. Do not wait until a crisis has occurred to design response scenarios. However appropriate, a response to a crisis can still come too late to recover damaged relations with the community. Be proactive in setting up a communications infrastructure with continual but also manageable information flows. Crisis response should still be a part of the toolkit. A robust grievance mechanism provides essential early warnings for risk management and relationship building.

3. Communicate throughout the mine life cycle. Communities are more receptive to collaboration if they are a part of a process where communication is open and feedback is incorporated into planning and practice. Exploration, construction, operation, and even closure involve multiple parties internally as well as externally. Transferring information between project stages—across staff and to the community—is often overlooked. Set up protocols for receiving and relaying information (through town hall meetings, notice boards, radio, etc.) to the community throughout the mine life cycle to ensure continuity in relationships.

4. Use local concepts and networks to ensure messages are heard and understood. Translate technical work and documents into local languages and practices. For example, train locals to test water quality on their own schedule, instead of just showing them foreign studies stating the water is safe. Information and awareness raising can be supported by Community Relations teams, noticeboards, local newspapers, community meetings, women's networks, social media platforms, and municipal and community leaders. Use "digital dialogue" or short message service programs from local staff to update the community on new programs and initiatives. Information from any trusted source can be much more persuasive than scientific facts from strangers.

5. Share communications practices to build trust and bolster industry cooperation. If one mining company is not trusted by local people, this will negatively affect other companies. Establishing higher standards of transparency and frequent communication can improve the overall view of the industry and separate the frontrunners from the laggards. In some cases, such as enhancing the population's water and mining awareness, there may be significant economies of scope for companies to capture. Mining companies across countries are demonstrating great demand to learn from one another and collaborate more, but they are also understandably hesitant to raise potential fears of collusion.

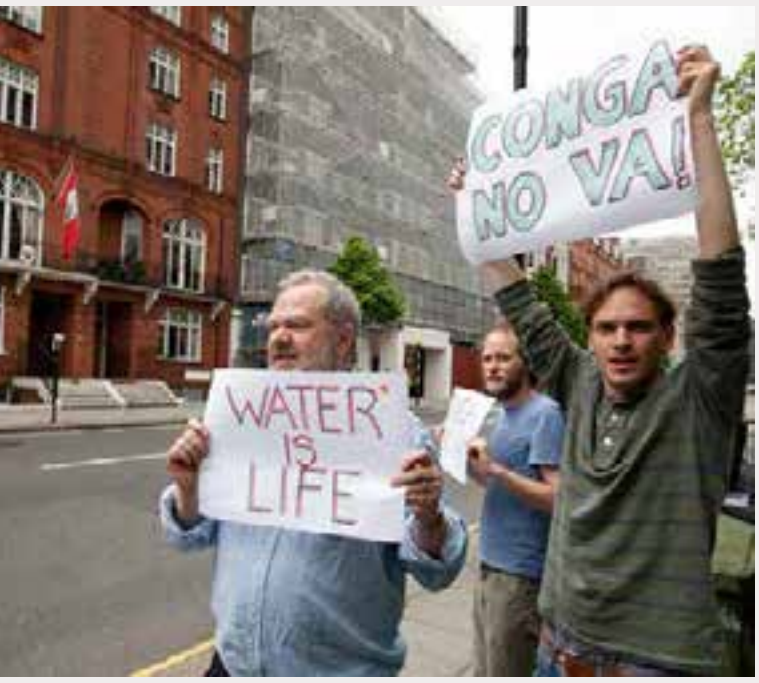
The following cases explain how two companies harness strategic communications.

Case 3: Newmont Yanacocha Mine, Cajamarca, Peru

The experience of the Yanacocha mine in Peru illustrates how the company has engaged the full spectrum of strategic communications, including stakeholder engagement, to reach cooperative solutions, rebuild relationships and reduce social conflict. As one of South America's largest and most storied gold mines, Yanacocha alternates between periods of social peace and conflict with its stakeholders.

In the 12 years between the accidental mercury spill by a contractor in 2000, affecting the health of several hundred people and clashes between police and protesters that led to five deaths in July 2012, two cases were filed against the mine with the World Bank Group Compliance Advisor Ombudsman (CAO) for concerns directly linked to water. In response, Yanacocha recognized the need for internal changes regarding water quality monitoring, information sharing, and responsible environmental management.

A group called Mesa de Diálogo y Consenso, established in part with the CAO, worked for more than four years to create a space for public and private entities to convene and engage in mediation and community capacity-building workshops. Through this forum, a participatory water monitoring program was established to address ongoing concerns over protecting water quality, and to conduct a series of information-sharing workshops aimed at addressing water availability issues with the community irrigation canals. More recently, a groundbreaking Listening Study sponsored by Yanacocha and independently conducted by the Centre for Social Responsibility in Mining in 2012 found that many stakeholders believe the mine is responsible for environmental damage and has disregarded cultural sensitivities. In an effort to convey a sincere commitment to change, the company made several dramatic shifts beginning with moving company headquarters from Lima to Cajamarca to build closer relationships with host communities. The company also sponsors a radio station providing relevant information on a variety of topics to local listeners and is encouraging staff to participate in local organizations, boards, and schools, among other things. This culture shift embraces respect, listening, and relationship building in a proactive attempt to rebuild trust and rapport with local stakeholders. Rebuilding trust is arduous, and it is still to be determined whether the measures implemented by Yanacocha will successfully change perceptions and help obtain informal, but necessary, approval from the regional government and local stakeholders.



Case 4: Teck Resources, Carmen de Andacollo Mine (CdA), Chile

When Teck Resources acquired the CdA mine, they also inherited a water conflict, since the previous owner had not adequately communicated to the community a change in plans that impacted their water supply. This created a ripple effect of protests and legal actions that affected operations and Teck's public image. Teck realized that there would be no quick fix to this problem, and that higher-level changes in the company's action plan would be needed.

In an effort to resolve the conflict at CdA, Teck implemented a set of strategies to engage communities of interest such as:

- Conducting further hydrogeology field surveys and sharing findings with interested groups
- Creating a participatory water-monitoring group, co-owned by Teck and local stakeholders, to hold open discussions and conduct field testing of water quality
- Formally committing to improve quality and quantity of drinking water by signing an agreement with the community to provide higher-quality water and a backup supply in cases of extreme shortage.

"Through ongoing dialogue and collaboration, there is now recognition that water is a finite, shared resource," says Mauricio Gómez, CdA Superintendent of External Relations. "Continual investment and dialogue about water sustainability will be necessary to ensure both CdA's and the community's long-term viability."

Since Teck began implementing new strategies, protests have stopped and the local attitude has shifted to promote company-community partnerships. Teck has committed to maintaining a community of interest water group, participating in co-monitoring programs, and collaborating with local stakeholders on water planning, as part of a greater effort to foster open communication and transparency.

Dimension 3: Co-Managing Knowledge and Resources

Water is a shared resource at the catchment level, seeping beyond any specific project gates or dams that human beings can build. As such, long-term management strategies to optimize the productivity and accessibility of water can only be defined and supervised by multistakeholder partnerships. Co-management of resources in this context can mean collaboration among company-community, company-government, or industry, government, and community. In regions where mining activity is concentrated, cumulative impacts require even more multistakeholder cooperation. Companies are also seeing the benefit of collaborating with each other as well as with government and affected communities on water management strategies. (See box 1 for a discussion of the advantages of a sector-wide approach to sharing information.)

The following actions are recommended:

1. Build a platform to share knowledge with local partners. Examples of this range from an external water board that oversees joint fact-finding and coordinates information sharing, to selecting several members of the project team to meet regularly with people of influence within the community. These meetings are an opportunity to share company information about water use, but also to hear from communities on issues such as changing water patterns, concerns about water quality and availability, and their local knowledge on how to improve water use.

2. Diversify sources of expertise and data. Academic researchers, activist groups, NGOs, elected officials, and local citizens potentially have the capacity and will to collect water quality data related to mining projects. Increasing the breadth of expertise can improve data quality and validity in the public's eye. Engage other parties including civil society, community members, local government, academics, media, donors, and other companies and sectors as appropriate.

3. Establish a common, transparent starting point. Use data from detailed public baseline studies. This information can be used to reach agreement on shared goals and objectives, establish roles and responsibilities, and chart progress over time. This is also an opportunity to collect data on community perceptions around water and mining. The data from these surveys can inform alignment, communications, and co-management strategies. It is also important to update these data at regular intervals throughout the mine life cycle and adjust management strategies accordingly.

4. Design a participatory monitoring program to build awareness, skills, and trust among diverse parties including local communities. This program can be designed and managed through a third party, or through the company with an external board, and should have formal rules for collecting and reporting data. Local stakeholders must have influence over what indictors are tracked. Long-term commitment by the company and other sponsors to provide resources (human and financial) is key to ensuring continuity over time.

5. Capitalize on new technologies. Satellites, cell phones, and spatial mapping make it possible to establish a common comprehensive geodatabase of important water information in a country, region, or community. Today, many different sources of data can be triangulated to improve water management strategies. Implementing new research into desalination, reuse, and treatment methods can engage diverse actors and build new platforms of cooperation and trust. Increasingly sophisticated tools are available to simulate water management scenarios, including multistakeholder negotiations and resource-sharing plans.

The following three cases provide examples of how to co-manage knowledge and resources.

Case 5: Rio Tinto Argyle Diamond Mine, Australia

In arid Northwestern Australia, water is extremely limited, creating a natural constraint to operating the world's largest diamond mine, which produces 20 percent of the world's natural diamonds. When Argyle opened, nearly all of its operating water came from Lake Argyle, a protected Ramsar[3] wetland vital to the region's ecosystems. Concerns about the quality and quantity of water presented a potential conflict between local communities and the mine.

As a proactive response, Rio Tinto began engaging stakeholders and local interest groups to join in groundwater and usage monitoring to achieve their publicly stated water use target. Rio Tinto has invested in advanced technologies to recycle water used in the processing plant and use the water from dewatering the underground mine. Since implementing these projects, the company has reduced the mine's consumption from Lake Argyle by over 95 percent, largely due to reuse. As a social complement to these technical solutions, Rio Tinto signed a binding Indigenous Land Use Agreement with the Traditional Owners to maintain the title and rights of the native population and ensure that important traditional cultural sites that are water-dependent are not impacted.

Case 6: Anglo American Water Co-Management in South Africa

The technical challenges of the mining process can create opportunities to invest in technologies that provide social, financial, and environmental benefits for the company, the project, and the local community. Anglo American has seized this opportunity in South Africa, where water contamination from acid mine drainage is a primary concern in many of the country's 8,200 defunct and operating mines. In the Emahleni municipality, Anglo funded a $45 million wastewater treatment plant to recover drainage to a 90 percent level and sell the treated water back to the municipality and other local businesses. At the company scale, Anglo has continued to demonstrate their commitment to water management and mitigation by recycling 72 percent of water consumed in 2012 and setting a goal for new mines to operate as water-neutral in 2030 (Morgan Stanley 2013). Thus, Anglo American has taken significant steps in each of the three dimensions:

- Internal alignment: In developing a long-term water strategy and goals for reducing consumption
- Strategic communications: Through community outreach and monitoring (launching the SEAT discussed in Case 2)
- Co-management: In partnering with the municipality in recycling and reusing acid mine drainage.

Box 1. Advantages of a Sector-wide Approach to Sharing Information

A sector-wide approach to delivering accurate information consistently in a culturally appropriate way helps build capacity and trust across a region. It strengthens relationships across companies, enabling coordinated approaches to challenges and opportunities with communities. Shared management between the industry and the impacted communities eases tensions and facilitates joint solution finding.

An analysis of projects within Australia's mining sector found that collective efforts across sectors were able to successfully address cumulative environmental impacts. The majority of the collaborations involved diverse stakeholders, including the government, although most were nonbinding efforts.

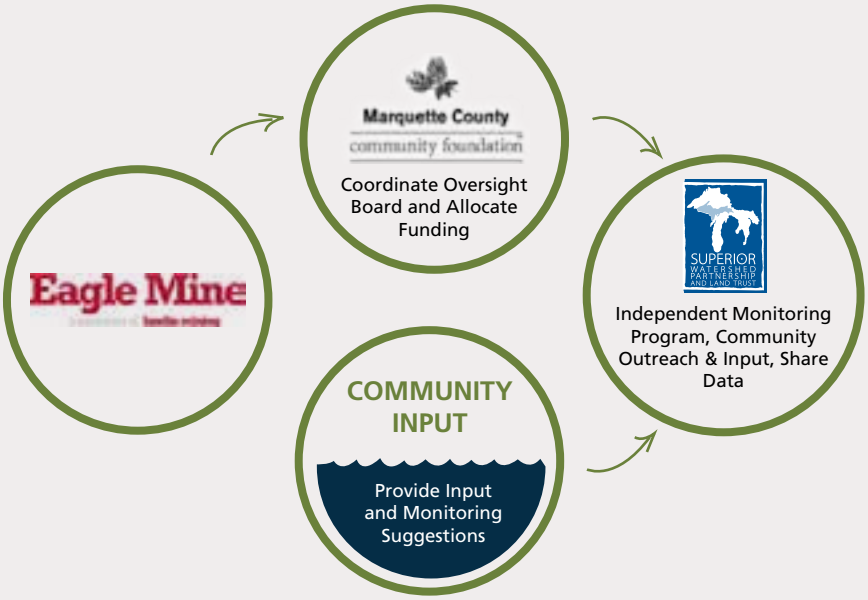
Industry experience shows that successful multistakeholder collaborations include the following steps: selecting an independent chairperson to facilitate, adopting a committee- or board-style structure, using media for public transparency and communicating updates, and holding occasional workshops to engage with local communities and train them.

[3] "The Convention on Wetlands of International Importance, called the Ramsar Convention because it was signed in Ramsar, Iran, in 1971, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources (http://www.ramsar.org/cda/en/ramsar-home/main/ramsar/1_4000_0__).

Case 7: Eagle Mine, Michigan, United States

The 64,000 people in Marquette County, Michigan, were concerned about Rio Tinto (then-owner) securing permits and rights to open a nickel-copper mine located at the headwaters of a pristine river with a rare trout species. To preemptively address these social concerns, which stemmed from a lack of faith in the company and fear of the unknown, Rio Tinto and the Superior Watershed Partnership (a local advocate and scientific group) jointly developed a Community Environmental Monitoring Program (CEMP).

The vision of CEMP was to form a voluntary, legally binding agreement between an economic project (mine) and a community group that empowers the community to collect information on and monitor activities in their environment with the promise of open access, independence, and scientific integrity. The CEMP provides an additional layer of monitoring by creating a neutral and independent board that approves plans and budgets and operates outside the influence of the two groups. The involvement of company staff local to the area in the development of the process helped in building trust. Outcomes from the CEMP are highly transparent information, enhanced quantitative knowledge and skills in concerned stakeholders, and intimate appreciation of the community's fears and needs by staff that might not otherwise have become as invested in the process.



Lessons from the Marquette-Rio Tinto case suggest three main benefits in creating a CEMP: It safeguards the environment against potential contamination, allows a company to establish and earn trust with a community, and reduces stress perceived by the community regarding tradeoffs between economic gains and the environment. The main purpose of co-management is to establish a partnership between a community and industry that mutually benefits both parties by creating joint practices and building trust. In the context of mining, companies will need to engage other stakeholders in decision making and monitoring to effectively manage water risks. Shared resources require shared awareness, responsibility, and control in order to be sustainable.

Integrating the Three Dimensions: A Shared Value Approach To Water Management

The most comprehensive and effective strategy for managing water issues incorporates all three previously discussed dimensions, supported by implementation of best industry practices in water conservation during the project cycle. Proper alignment of internal functions allows mining companies to create accountability, anticipate problems before they occur, and resolve in a timely fashion issues that do arise. By creating a multidirectional communication strategy, companies can transparently engage with stakeholders. Finally, fostering a co-management environment with other parties (companies, local stakeholders, and/or government) in an affected region ultimately benefits the sector as a whole.

The following case describes a water management approach for shared value.

Case Study 8: A Sector-wide, Multistakeholder Water Management Initiative in Mongolia

In the South Gobi region of Mongolia, a primarily nomadic population of 45,000 people is affected by 13-plus mining companies operating in or exploring the arid region. A lack of consultation and transparency among communities, companies, and government around water use contributed to fear that increased water demands for mining activities would dry up crucial water systems, deteriorate pastureland, and have negative cultural and livelihood impacts. In 2013, the local citizens representative council in the South Gobi passed a resolution banning the use of groundwater for mining operations. The mining sector meanwhile failed to recognize water as a shared risk, leading to even greater anxiety for locals, spawning mistrust and inviting conflict. The conflict has been stoked by misinformation, little public data, and poor communication.

In response, IFC along with partners including mining companies and donors, convened the mining sector for a series of roundtable discussions to identify challenges, successes, and common ground for collaboration on the social and technical management of water in the South Gobi region. Through these roundtable meetings, the participating companies developed short- and medium-range action plans to improve internal alignment and use strategic communications on water management.

The internal alignment of technical environmental and social staff within companies and across the industry involves raising awareness of the responsibilities, realities, and challenges of water management across business functions. Mechanisms to do this include company presentations on water management, mine site visits for peer-to-peer learning, and training that integrates both the technical and social aspects of water management. In addition, the roundtable companies are collaborating across the sector to develop symmetric standards and policies, increase public information sharing, and engage communities in participatory monitoring.

Recognizing that deliberate and factual information outreach can aid in demystifying water in mining and facilitate shared responsibility, the companies helped develop a training module for Integrated Water Resource Management (also the new regulatory goal of the Government of Mongolia). The aim is to offer this module to broader stakeholder groups—government, civil society, communities, academia, and media—building knowledge for informed and increased co-management of water. To help drive future interventions, the roundtable companies were engaged in the design of a population perceptions baseline survey on the impact of mining activities on water resources. The data will be made public to inform and align company water management activities with stakeholder perceptions and opinions.

The efforts are expected to reduce social tensions, minimize information asymmetry on water resources, and encourage company-community-government collaboration on water management.

Collaboration for a Sustainable Future

All water issues are local. To effectively manage risks associated with water access and use, companies must engage stakeholders from the very beginning of the project. A concerted, coordinated approach, incorporating all levels and all functions within the sponsor company, is essential as a foundation for success. Sustainable water management creates significant opportunities for companies that are ahead of the game in finding ways to use water more efficiently and manage it more collaboratively.

Companies can prevent or mitigate conflicts over water by investing in internal alignment, strategic communications, and co-management with local stakeholders including communities, governments, and other industry players. This 3D approach requires a critical collaboration of technical and nontechnical staff, and may be vital for starting or continuing economic activity in a region where communities and the private sector depend on water for livelihoods and operations. The case studies presented in this guide are dynamic learning mechanisms for companies to review internal policies, create innovative strategies, and explore new partnerships for managing water. Incorporating social elements through the methods suggested in this guide can lead to establishing trust, open communication, environmental monitoring, and shared value—all factors that have been shown to reduce conflict.

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