

**RESOURCING THE 'ASIAN CENTURY':  
MINING AND DEVELOPING ASIAN NATIONS**

**Abstract:**

The forward charge of the 'Asian Century' may nowhere be felt more strongly than through the mining industry. For Australia, mineral resources held the top three export positions in 2011, totalling over \$126 billion. Economic growth and increasing resource demands from the likes of China, India, Indonesia and Korea are rising alongside a flourishing Asian middle class with per capita income and buying power never before seen. Moreover, an emergent extractives industry is advancing in less developed Asian nations, including Laos, the Philippines, Myanmar, Kazakhstan, the Kyrgyz Republic and Mongolia, among others.

This paper explores the implications of a new and rapidly expanding minerals economy in developing Asian countries, especially Central Asia. These Asian cases facilitate examination of the growing opportunities, challenges and conflicts related to minerals extraction.

The paper examines social and environmental impacts in relation to current mining practice in developing Asian countries. It applies prior research into corporate social responsibility in mining to suggest five central pillars to underpin responsible mining practice in these burgeoning resources markets. Holistic assessment, ethical community engagement, community-based agreement making, appropriate boundaries and good governance are vital to ensuring rising, mineral rich Asian nations benefit from the reserves which hold the potential to resource the 'Asian Century'.

**Selected Stream: Natural Resources and Politics**

**BACKGROUND: IS THIS THE 'ASIAN CENTURY'?**

Global shifts in economic, political and even socio-cultural power suggest the 21<sup>st</sup> century may very well be the 'Asian Century'. By 2050 China is expected to achieve a global economic dominance reflective of its world status more than 300 years ago (Asian Development Bank, 2011). In that same year, India is tipped to become the world's fifth largest consumer economy (Ablett et al., 2007). Indonesia's stock exchange has more than doubled in value since 2008, making it the third largest in Southeast Asia (Department of Foreign Affairs and Trade, 2012). An estimated 60 per cent of the global population now resides in the region bounded by Mongolia in the north, Indonesia in the south, Korea in the east, and Afghanistan in the west (Brandon, 2011). By 2030, 66 per cent of the global middle class will live in this Asian region, accounting for 59 per cent of total global consumption, up from 28 per cent and 23 per cent, respectively, since 2009 (Pezzini, 2012).

Global goods consumption is also on the rise, fuelled by this rapidly expanding middle class, many of whom are exiting poverty for the first time in history (Mahbubani, 2013). In India, for example, over 291 million people will transition from economic destitution into a consumer class by 2025 (Ablett et al., 2007). Similar shifts in China mean that up to 330 million cars could jam the Asian giant's streets by 2020 (Fangfang, 2013). These consumer products require raw materials—many of them mined—and energy to fuel production and further consumption. Demand for coal is up globally in all nations except the United States where it has been swapped out for cheaper shale gas (International Energy Agency, 2012). China's demand for iron ore propelled record trade levels in 2011 (OECD, 2012). Each year more than 4.2 billion tonnes of minerals are extracted from the Earth to meet these increasing demands (International Council on Mining and Metals, 2012). This is enough material to construct 4,200 Eiffel Towers, covering an area greater than China's Forbidden City.<sup>1</sup> The figures are copious and staggering.

Certain critics argue that the notion of an 'Asian Century' is misleading or somehow faulty. One such argument suggests that the 'Asian Century' fails to acknowledge the ability of Western nations, particularly the United States of America, to maintain structural dominance, primarily through military might (Cox, 2012). Those arguing for a 'zero sum future' (Rachman, 2011) or suggesting 'a post American world' (Zakaria, 2008), underestimate the strength of the *status quo* and overestimate the likelihood of global change, according to sceptics (Cox, 2012). Still others assert that the shift is not so much one to 'Asia'—a troubling and contested term which homogenises extraordinarily diverse nations and cultures—but one to China. Hugh White (2011), for example, implies that, from an Australian perspective, the 'Asian Century' is more rightfully viewed as the 'China Century' and

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<sup>1</sup> By weight. The Eiffel Tower weighs in at an estimated 10,000 tonnes. For the record, the Forbidden City is about 720,000 square meters.

poses serious questions about Australia's continued military alignment with the US in a China-dominant future. These arguments, the assumptions and perspectives they raise are important, although full consideration of their merits and shortcomings is beyond the scope of this paper. What is important here is that, regardless of whether consensus is reached over the nomenclature to best describe our current era, what can be agreed is that a substantial and historically important geopolitical and socio-cultural change is occurring. One which demands our attention.

The forward charge of the 'Asian Century' may nowhere be felt more strongly than through the mining industry. From an Australian perspective, mineral resources held the top three export positions in 2011, totalling over \$126 billion, with iron ore and coal comprising over half the nation's exports (Geoscience Australia, 2013). China is Australia's largest export market for natural resources. Although economists argue the Aussie boom is slowing, production and export will continue for years to come. Australia's assuredness in the viability of its mining industry is based both on rising global demands and on confidence in measures of the remaining quantity and quality of resources, especially iron ore (Mudd, 2009). While other developed nations face depleted resources and dwindling ore quality (e.g. United States Environmental Protection Agency, 2012), recent projections by the Australian Department of Foreign Affairs and Trade anticipate trade in minerals and resources levels running at a 140 year high. Indeed, the Australian mineral economy has recently been described as 'riding a bulk carrier to Asia' (Hayes, 2012). Economic growth and increasing resource demands from the likes of China, India, Indonesia and Korea hold the potential to transform the Australian mining industry.

The significance of Asian markets to Australia's mining industry is clear even before considering the growing demand and in-country operations of developing Asian countries, including Laos, the Philippines, Myanmar, Kazakhstan, the Kyrgyz Republic and Mongolia. Indeed, the contemporary 'Eureka!' is being shouted most often in remote regions previously unreachable to mining technology. Today, developing countries generate more than one-fifth of total global mineral production (International Council on Mining and Metals, 2012). Europe (excluding Russia) and the United States generate only 3.5 per cent and 4.2 per cent, respectively, by comparison (International Council on Mining and Metals, 2012). The shift of mining activity from the developed to the developing world makes mineral extraction an increasingly important component of developing economies, especially within the context of the 'Asian Century'.

The potential to expand Australia's resource export markets and the opportunities to undertake exploration and operations in new frontiers excites many. Such projects hold the promise of social and economic development, offer access to as-yet-untapped resources, and may yield substantial profits over many years. Yet resource export and extraction necessarily involve trade-offs, especially in the

form of social and environmental impacts. Moreover, it is especially important to acknowledge that the impact of mining in developing countries is more severe than that experienced in the first-world. A dearth of strong governance mechanisms, lack of accountability, unethical business behaviour, involvement of paramilitary or private security forces, and tolerance of corrupt practices contribute to environments in which the needs of local communities or environmental protection are often sublimated to economic gain (for but a few examples, see: Ballard and Banks, 2003, Blowfield and Murray, 2008, Dashwood, 2012, Genasci and Pray, 2008, O'Faircheallaigh, 2004, Parker, 2007). Such experiences are so severe and so common, they have been called the 'resource curse' (Auty, 1993). Situations like these are not inevitable. Indeed, they are largely avoidable.

### **AIMS AND RATIONALE**

This conceptual paper, therefore, aims to explore the potential implications of a new and rapidly expanding minerals economy in developing Asian countries, within the broader context of the 'Asian Century'. In particular, the paper examines the potential social impacts of mining in developing Asian countries, based on publicly available data concerning current practice. If this century is the 'Asian Century' and if Australian mining exports and overseas operations engage with Asia to the degree projected, it is vital that such engagements are informed by 'best practice' corporate social responsibility. The paper goes on to outline five pillars of research-identified, socially responsible mining practice which can support and inform future research and corporate engagements into this emergent mining sector. Holistic assessment, ethical community engagement, community-based agreement making, appropriate boundaries and good governance are vital to ensuring rising, mineral rich Asian nations benefit from the reserves which hold the potential to resource the 'Asian Century'.

Two central questions guide the discussion. First, what are the current experiences, concerns and priorities of developing Asian nations with nascent minerals economies? Specifically, what are the likely and possible social and environmental impacts faced by mine-affected communities in these nations? Secondly, what lessons can be drawn from our existing knowledge of 'best practice' social responsibility in mining to inform future engagements? What key steps or activities are necessary to support responsible mining practice in these emergent minerals economies?

### **MINING IN THE 'ASIAN CENTURY': EXAMPLES FROM CENTRAL ASIA**

Strong resources potential exists throughout the Asian region. For example, China holds an estimated 95 per cent of the world's rare earth minerals supply (Tse, 2011). These elements are crucial to modern life. They make iphones, eyeglasses, computer miniaturisation and mirrors possible. Indonesia is home to considerable copper-gold, tin and nickel resources, some of which are partly managed by global mining giant Rio Tinto. Afghanistan possesses an estimated US\$1 trillion in untapped resources, including iron ore, gas and copper (DLA Piper, 2012). Bangladesh is home to a

coal reserve worth US\$3.2 billion, while over US\$3 trillion of resources lie dormant beneath Japan's seafloor (DLA Piper, 2012).

Within this diverse, mineral rich region, the countries of Central Asia, especially Mongolia, Kazakhstan and the Kyrgyz Republic, epitomise both the resources potential and the consequent scale of development and impact likely to be reflected throughout the region. The mining circumstances and the current, known social and environmental impacts of each of these countries are examined, briefly below. This discussion provides a snapshot of the extent and types of impacts an emergent mining industry is introducing into these developing countries. The following section then explores five evidence-based pillars which could support responsible mining in the Asian region (and elsewhere).

### **Mongolia**

Mongolia's mining industry hosts approximately 350 companies (DeSchryver and Johnson, 2009), primarily extracting or exploring for copper, gold and coal. Mongolian government, businesses and communities are currently grappling with rapid mining development in a country commonly characterised by nomadic herders and untouched landscapes. Experiences of traditional Mongolian communities are reflected in recent concerns raised about Rio Tinto's joint venture Oyu Tolgoi copper-gold project in the southern Gobi Desert. Thought to contain one of the world's largest copper-gold deposits, the US\$12 billion investment in Oyu Tolgoi has been plagued by community complaints and environmental concerns (Halifax Initiative, 2012). In an area which receives an average annual rainfall of 80mm per year, herders worry that the mine will soak up or contaminate this sparse resource. Community members report concerns that the presence of an open pit mine and all its heavy equipment accoutrements and safety exclusion zones will defeat their nomadic way of life and endanger their indigenous culture and livelihood (Compliance Advisor Ombudsman, 2012).

In October 2012, community concerns about Oyu Tolgoi coalesced in a visit by the world's first UN Working Group on Human Rights (one year after the unanimous acceptance of the Ruggie Principles for Business and Human Rights) and a complaint submitted to the World Bank's Compliance Advisor Ombudsperson (Compliance Advisor Ombudsman, 2012). The UN Working Group spent 10 days observing business operations and conducting interviews with a range of government, civil society and community representatives, to inform recommendations for how the Mongolian government and businesses can better uphold their human rights responsibilities. While the UN visit focused on both mining and non-mining businesses, its findings demonstrated a need to clarify boundaries between corporate and government responsibilities; include communities in business decision-making; provide publicly available, transparent information; integrate human rights considerations into business operations; and ensure government capacity for monitoring and accountability (Jungk, 2012).

The concerns and measures identified by the UN Working Group highlight the gaps and requirements to support a socially responsible mining industry in Mongolia. Oyu Tolgoi no doubt benefits from the involvement of Rio Tinto—generally considered a global leader in 'sustainable' mining. The company has committed resources to provide training to enhance local employment and has made commitments to community development. Yet the responsibility cannot rest on the good will or 'enlightened self-interest' (Harvey, 2006) of individual mining companies, alone. Mongolia needs strong governance, regulations and enforcement to support best practice mining and protect its communities.

### **Kazakhstan**

Kazakhstan has long been identified as resource rich due to its significant oil deposits. In an area 3.6 times smaller than the continental United States, the Central Asian nation holds an estimated three per cent of the world's oil reserves (Solovyov, 2013). At the same time, approximately 85 per cent of the country's mineral resources—which include the world's second-largest uranium reserves alongside large copper, iron ore and zinc deposits—remain untapped (Solovyov, 2013). The potential social and environmental questions for the burgeoning Kazakh mining industry, therefore, centre primarily on decisions about the early exploitation of non-uranium resources and the further development of its uranium mining. At present, Kazakhstan leads the world in uranium production, providing 15 per cent of global supply (Conway, 2013).

Uranium mining's association with dangerous social and environmental impacts further emphasises the importance of socially responsible mining practices for countries like Kazakhstan. Recent studies, for example, reveal that the Shu river and the former Kurday uranium mine site continue to cause elevated uranium concentrations in the environment (WISE Uranium Project, 2012). Certain, current operations, however, suggest that Kazakhstan is making progress in terms of prevention and mitigation of uranium mining's social and environmental impacts.

The case of Canadian miner, Cameco's, joint venture with Kazakh government-owned Kazatomprom, is one such example. In operation for more than two decades, the Cameco operation, headquartered in the remote village of Taikonur, appears to prioritise local stakeholder relations to reduce community outrage and support consistent mining operations (Conway, 2013). A legal agreement signed with the government required Cameco to provide set amounts of money each year up until the mine came into full operation. Spending, informed by a local council established in consultation with the community, has included a school, water supply system and medical aid station (Conway, 2013). Although the desirability of uranium mining is wholly debateable, the Cameco example demonstrates the possibilities for strong CSR in mining in Central Asia. At the same time, however, it is important to

examine carefully the types of programs and infrastructure offered through such commitments. Where government and corporate boundaries blur, communities face over-dependence upon mining companies, loss of independent decision-making and the potential for development of paternalistic relationships (Author, 2013).

### **Kyrgyz Republic**

Mining in the Kyrgyz Republic is defined largely through the experiences of communities associated with the Kumtor Gold Mine. As the nation's largest mine and in operation since 1997, Kumtor is viewed by many as a bellwether for future mining developments. Operated by Canadian miner, Centerra Gold, the mine is the single largest private sector employer in the Kyrgyz Republic and the single largest source of foreign direct investment (Centerra Gold, 2013). It is also one with a rather notorious history. In 1998 the mine suffered a catastrophic cyanide and sodium hypochloride spill when a truck carrying two tonnes of the chemicals plunged into a local river. The spill "left several people dead, hundreds seeking medical treatment and thousands evacuated" (Norlen, 2000, 1). Later reports concerning the spill found that the company did not immediately communicate the dangers to downstream communities, despite their using the water for drinking and irrigation. Once informed, many villagers reported sores and illnesses and were fearful of the mine (Norlen, 2000). While scientists confirm the spill is no longer harmful, this negative early experience has coloured the local community's perspectives towards the mine ever since (Trilling, 2013).

Today, the Kumtor mine faces ongoing community fears about the use of cyanide, regular community picket lines which block mine access, vocal concern about its impact on local glaciers and endangered snow leopards, and questions about the safety of tailings dams were an earthquake to strike (Trilling, 2013, The Economist, 2013). In May, an estimated 2,000 protestors invaded the mine site, halting operations and sparking fights with police which injured 50, led to 80 arrests and to the national government declaring a state of emergency (The Huffington Post, 2013). Centerra Gold, meanwhile, has been fighting \$500 million in fines demanded by the Kyrgyz Government based on claims that the mine has "excessively low tax rates, corruption and environmental damage" (The Economist, 2013). Centerra Gold maintains that it is in compliance with Kyrgyz laws, with an independent audit reporting the company meets local and European environmental standards (Trilling, 2013).

Local community members complain that the mine does not give enough profit back to Kyrgyzstan and that the company has not delivered expected community development, including "construction of a kindergarten, development of roads or water pipelines, or jobs at the mine" (The Huffington Post, 2013). As with Mongolia and Kazakhstan, there is an emerging expectation that mining companies will provide the infrastructure and services which the government has not had the capacity or funds to offer. This is not to say that mining companies should not contribute to the communities from which they extract their wealth but to note that there appears to be a pattern of expectation for multinational

corporations in Central Asia to take on quasi-governmental roles, at least in relation to mining operations. As noted previously, such dependencies can set harmful precedents and expectations and are not sustainable, considering that mining is a necessarily finite undertaking.

### **FIVE PILLARS FOR RESPONSIBLE MINING IN THE 'ASIAN CENTURY'**

The cases above clearly demonstrate that mining brings both benefits and negative impacts. This is especially the situation in developing Asian nations which have not yet established the governance mechanisms, regulation and social impact prevention and mitigation which is now common in developed, Western mining operations. In the West, such mechanisms matured over time, largely through processes which were reactive. For instance, the 1998 Global Mining Initiative—which certain scholars pinpoint as the genesis of corporate social responsibility in the mining industry (Dashwood, 2007)—eventuated, primarily in response to a litany of community complaints and legal actions (Littlewood, 2000). Today, attention to mining's effects and the duties of companies to prevent, mitigate and respond to those impacts is a widely acknowledged component of the contemporary mining industry and of multinational corporations, more generally.

Major multinationals like BHP Billiton and DeBeers annually earmark at least one per cent of pre-tax profits for community investment, a figure which has become a global benchmark (BHP Billiton, 2012, DeBeers, 2012). The professionalization of community relations roles reflects their expanding importance in the eyes of companies (Kemp, 2010). Community consultative committees are no longer radical but conventional. Each year, major miners dedicate hundreds, if not thousands, of staff hours to data collection and sustainability reporting efforts. ICMM members are required to produce annual Global Reporting Initiative Sustainability reports to an A+ level, meaning they must respond to 90 performance indicators covering economic, environmental, labour, human rights, product responsibility, social and mining-specific concerns. Many are signatories to the UN Global Compact—the world's foremost sustainability framework, based on 10 universal principles. And an increasing number are subject to financial transparency measures, such as the US Dodd-Frank Act (2010) or the Extractive Industries Transparency Initiative.

All of these activities suggest a global mining industry better attuned to social, environmental and governance responsibilities than ever before. As we enter the early stages of the 'Asian Century', as power potentially shifts, economies change and new resource sources develop, it is vital that the mining practices adopted within and supported by Asian nations reflect best practice in terms of preventing and mitigating social and environmental impacts. The five pillars of 'responsible mining' offer one such framework. These pillars include: holistic assessment, ethical relationships, community-based agreements, appropriate boundaries and good governance. Responsible mining therefore brings together strong impact assessment methods and mitigation planning; principled

relationships with local communities which prioritise equal community involvement in agreement making; and sets boundaries for corporate activities and roles in states and communities within a framework of good governance. While a full fleshing out of these pillars is beyond the scope of this paper, it is helpful here to outline the key components to each of these pillars. This framework allows us to begin to consider the dimensions and responsibilities necessary to underpin responsible mining to resource the 'Asian Century'.

### **Holistic assessment**

Many mining operations face requirements (to varying degrees) to test and predict their likely and possible social and environmental impacts, often through legislated impact assessments. While the methods and outcomes of social impact assessments (SIA) vary, the final reports usually aim to elucidate the possible and likely effects of a mining operation by developing a thorough understanding of the socio-economic, traditional, cultural and religious dynamics of local communities. As such SIA holds the potential to act as a democratic means of development (Vanclay, 2003) and seeks to produce ethical, values-based assessment data (International Association for Impact Assessment, 2003) which are responsive to developing communities and set out an agenda of community focused assessments.

In Australia, for example, the most recent State and Territory legislation generally adopts a 'cradle to grave' approach to mine-site licensing, requiring companies to provide reports and plans concerning all phases of the mining project, including closure and rehabilitation, prior to the granting of leases (Ministerial Council and Mineral and Petroleum Resources and Department of Industry, 2010). Regulation of ESIA tends to lag, however, in developing countries. In Mongolia, for example, the recent ESIA completed for Rio Tinto's Oyu Tolgoi mine was produced not because of regulatory requirements but due to the company's "commitment to responsible corporate citizenship" and "as a requirement for financial institutions that are funding the process". In Kazakhstan, no specific requirements for SIA exist, but such assessments may be performed under environmental requirements, especially the 'Interim Instruction on the Procedure of Environmental Impact Assessment (EIA) of Planned Economic Activity in the Republic of Kazakhstan' (1993). The Kyrgyz Republic also lags on the regulation of impact assessment, with recent assessments being undertaken post hoc in light of international NGO and local community complaints (Martsynkevych, 2012).

The institutionalisation of ESIA requirements is vital to responsible mining in Asia. Over time, such assessments can inform decision-making and may boost community involvement and empowerment (Author et. al., 2012). Leading practice SIA is also often comprehensive in its approach to social issues and may specifically consider aspects such as gender, human rights, indigeneity or cumulative impacts. Such processes aim to assist mining companies to formally identify or anticipate their impacts in the first instance, usually before mining commences. The evidence and engagements

possible through such good assessment practice offer a strong starting point for responsible mining in the Asia region.

### **Ethical community relations**

The cases of Oyu Tolgoi and Kumtor highlight the importance of early, open and ethical relationships between mining companies and mine-affected communities. Ethical community relations comprise the second pillar of responsible mining. Community relations practitioners tread difficult terrain in their efforts to understand and address community needs and concerns while prioritising the viability of the mining operation (Kemp, 2010). Ethical perspectives, therefore, must be actively introduced into community relations practice and discussed as a means of addressing the myriad challenges faced by those working at the coal face of mines and communities. Concepts such as a 'social license to operate' (Thomson and Boutilier, 2010) and free, prior and informed consent (FPIC) (Martin, 2007) offer important approaches to ensure stakeholders are properly consulted and participate in decisions that affect their communities and environments.

'Social licence to operate' for example, is a discourse prevalent among leading multinational mining companies, and concerted efforts are being made to measure a social licence in reliable and replicable ways (Thomson and Boutilier, 2011). Certain communities are also adopting the concept as a means of asserting authority in relation to mining developments. Proponents generally agree that a 'social licence' exists when "a mineral exploration or mining project is seen as having the approval, the broad acceptance of society to conduct its activities" (Joyce and Thomson, 2000). Although it remains unclear exactly how a social licence is granted, there appears to be general agreement amongst researchers, mining companies and communities that a social licence must be earned and maintained by the mining company through attention to legitimacy, credibility and trust (Prno and Slocombe, 2012).

Similarly, FPIC offers a framework for ethical community relations, especially where indigenous communities are involved. While definitions vary, the main components of FPIC include community consultations which are free from coercion or pressure from any company or state, and ensure equal participation of women and minority groups (Hill et. al., 2010). For FPIC to be realised, such consultations must occur prior to any major decision being made about a project by government or industry, and before any impacts on environment or community occur (Rumler, 2011). For FPIC to be fully achieved, however, communities must hold the ability not only to grant consent, but to withhold it. This ability to accept or reject projects and any related outcomes should then be supported in legislation (Bridge and Wong, 2011).

### **Community-based agreement making**

Community-based agreement making forms the third pillar of responsible mining. Such agreements are necessarily underpinned by ethical community relations. Thus, principles such as FPIC and stakeholder engagement shape the conversation about the degrees to which mining companies should involve local, affected communities in decisions. Community-based agreement making aims to balance the costs of projects with desired community benefits (Author et al., 2012). Such agreements can be reached through incorporation of local knowledge and concerns into decisions, while providing community members with feedback about and responses to ongoing impacts. Such processes can result in community impact and benefit agreements which aim to secure the significant, continuing involvement of communities in determining their futures, relative to the mining development process.

In cases like that of Kumtor, early engagement and community-based agreements delineating clear expectations for company contributions to jobs and community development, as well as education around the mine's potential environmental damage and use of harmful chemicals, could have forestalled the protests which continue over a decade after the mine's opening. Similarly, strong FPIC processes and community-based agreements could address the formal complaints of Mongolian herders at Oyu Tolgoi. These examples offer important lessons for other mining developments in Central and developing Asia.

### **Appropriate boundaries**

Appropriate roles and duties are also crucial factors in implementing and supporting responsible mining. It is vital that developing Asian nations question the extent to which they can willingly and appropriately hand over infrastructure and services which would normally be the remit of the state, but for which the state lacks current capacity or funding. Governments must consider the long-term sustainability, power structures and conflicts which may arise when such arrangements are agreed. Is it possible to establish sustainable communities when dependence is built upon a necessarily finite industry? Appropriate boundaries between mining companies and governments, especially in relation to provision of infrastructure and services are critical to responsible mining.

Even in the emergent multinational mining operations in Kyrgyzstan, Kazakhstan and Mongolia, we can see a pattern in which governments demonstrate willingness for mining companies to deliver services such as healthcare or education or to provide basic infrastructure. Such practices are not uncommon and comprise a substantial portion of the community investments made by miners worldwide. What is important is that developing Asian nations become aware of the potential conflicts and pitfalls which can arise from such situations. It is important that mining companies contribute to the countries in which they operate. It is equally important that companies do so in

appropriate, useful and sustainable ways which respect and uphold the traditional roles of government.

### **Good governance**

For an agenda of responsible mining to succeed, strong site-, state- and country-level work must be enshrined within a legitimate framework of good governance. Robust, voluntary frameworks in the form of international human rights and CSR initiatives offer a starting point for setting minimum standards. Vigorous, government-backed measures, coupled with transparent, public reporting comprise the fifth pillar for a responsible mining industry. Good governance, therefore, offers a guidepost for the continued reform, monitoring and answerability of the global mining industry to the communities it impacts.

In the Kyrgyz case, for example, such frameworks could offer greater clarity around environmental standards. Front-end regulations requiring environmental and social impact assessment would provide 'year zero' data against which communities could compare changing situations. Such data is equally important for mining companies. The Kyrgyz glaciers whose melting many blame on Centerra Gold, for example, are thought by some scientists to be victims to climate change (Trilling, 2013). Early ESIA data and yearly measurements since the start of the mine would have provided helpful insights into the relationship and extent to which the mine's operations may be related to glacial decay. Similarly, in Mongolia, appropriate, government-based governance mechanisms could have provided a national outlet for community complaints. Instead, traditional landowners made their way to Tokyo to present a formal complaint to the World Bank's Compliance Advisor Ombudsperson. Moreover, company-based community grievance mechanisms have been shown to offer important, accountable outlets for recording and addressing community concerns. Such mechanisms are incorporated into the Global Reporting Initiatives indicators for sustainable mining practice (Global Reporting Initiative, 2009).

### **CONCLUSION**

This conceptual paper has explored the implications of a new and rapidly expanding minerals economy in developing Asian countries, especially Central Asia. The cases of Mongolia, Kazakhstan and the Kyrgyz Republic facilitate examination of the growing opportunities, challenges and conflicts related to minerals extraction, and offer lessons and understandings to inform emerging mining industries in other developing Asian nations. The paper examined social and environmental impacts in relation to current mining practice in these countries. It then applied prior knowledge of corporate social responsibility in mining to suggest five pillars to underpin responsible mining practice. Holistic assessment, ethical community engagement, community-based agreement making, appropriate

boundaries and good governance are vital to ensuring rising, mineral rich Asian nations benefit from the reserves which hold the potential to resource the 'Asian Century'.

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