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Sustainable Mining Management and the Next Generation: An Integrated Perspective
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Introduction

The Philippine mining industry was included in the 2011 mandatory list of annual Investment Priorities Plan which the Trade Department endorsed to Malacanang to further drive national economic growth. In effect, the mining companies will enjoy tax and fiscal incentives to accelerate exploration of Philippine natural resources (Hudtohan, 2011). With President Aquino declaring a total log ban to protect our rain forests, environmental advocate Gina Lopez (2011) questions his national policy on natural resources. She said, "You can't ban logging and allow mining in the same breath".

At the conference of the Chamber of Mines of the Philippines, DENR Sec. Ramon Paje, Jr. publicly announced that he is 'not anti-mining'. However, he admitted he cannot prevent Congress or other sectors to review the Mining Act. He said he would address the issue of open pit mining in South Cotabato where Xtrata and Indophil Resources NL are determined to use open pit mining method for their US$5.2 billion Tampakan copper and gold project (Manila Standard Today, Mar. 26, 2011).

On January 26, 2011, The Manila Standard Today reported the benefits derived from the corporate social responsibility programs of the mining industry. Chieftain Gideon Salutan of the Kiblawan Municipal Tribal Council in Davao del Sur announced the support of the Balaan tribe for the $ 5.9 billion copper-gold project in nearby Tampakan, South Cotabato. He said, "We have a national law that allows responsible mining while at the same time this project should abide by the national law on environment protection". He is aware of the South Cotabato environmental code that bans open-pit mining in the entire province, which contrary to the provisions of the 1995 Mining Act. But he added, "Our tribe is for the protection of environment. But we are also for responsible mining". The benefits received include: scholarships, health services, and jobs because of the mining project. Some 3,000 households were enrolled under the health program of Sagittarius Mines Inc., the government

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contractor for the Tampakan project and the company is maintaining at least 14,000 elementary, high school and college students.

The Mining Journal of the Philippines (2009) admitted that there are groups opposing mining, such as the Catholic Church, environmentalists and New People's Army (NPA). The local mining companies are more knowledgeable about cultural sensitivities, and are more acceptable to the local communities. However, on December 26, 2010 The Philippine Daily Inquirer reported that "Seven major mining companies have threatened to withdraw from northwestern Mindanao, saying they could no longer meet high extortion demands from the communist New People's Army (NPA).   The revolutionary tax increased from P15 million to P20 in 2011. Philippine mineral deposit is estimated worth of US$ 1trillion."

There is a 10 million signature campaign and a television advertisement against destructive mining to save the natural resources of Palawan. Behind this campaign is the Save Palawan Movement composed of a coalition of nongovernment organizations, indigenous peoples, youth groups, Church and local media to preserve the ecological treasure of the Philippines. The death of environmentalist-journalist Gerardo Ortega who openly opposed the destruction of natural resources in Palawan gave birth to this movement (Editorial, Manila Standard Today, Mar. 9, 2011).

No doubt, the investment policy of the Philippine Government on mining is driven by a need for economic gains. However, the environment and social costs involved must be addressed in the context of sustainable development that will benefit not only the present generation but more importantly the future generations of Filipinos.

I was invited by Mayor Dr. H. Lukman Abunawas, SH, MSi and Environment Chief H. A. Azis Harun, SKM, MKes of Konawe, Sulawesi, Indonesia to join their international conference on mining on February 7, 2011. In May 19, 2009, I was also their speaker in a similar conference where I delivered a paper on Corporate Social Responsibility and Sustainable Mining Development. This year I was tasked to discuss the impact of mining the next generation. This means mining environmental management must be seen in terms of sustainable mining for

the next generation. The question is whether the natural metal resources taken from the earth should only serve the present generation or should it leave something for the next generation.

Areas of Concern

Predominantly Muslim Indonesia and Catholic Philippines come from an Abrahamic religious tradition. Both religions acknowledge respectively Allah and God as creator and supreme being; both have dogmas and doctrines on faith as ultimate guide of human behavior. Their respective religious-cultural experience is a key factor in developing a theocentric framework for sustainable development in the face of increased Asian mining activities. It appears that Asian spirituality is empathetic to the constructs of a sustainable development; Asian anthropological and cultural heritage serve as drivers of sustainable development; and Asian spiritual and religious values balance the material pursuit for profit by enhancing common good through political governance for national progress and supporting civil society's initiatives for sustainable development.

The paper presents five sustainable frameworks in viewing mining industry's current and future economic undertaking which impacts on governance, civil and ethnic societies, business practices, and more importantly on the socio-theological interpretations of religious leaders. Thus, the question of mining sustainability and the future generation begs for an Asian framework from the religious leaders of the Philippines and Indonesia whose influence has been felt by their respective governments, civil society, ethnic citizens and business corporations.

As proof of the negative impact of mining, I have chosen as examples the Marcopper case of the Philippines and the Ok Tedi case of Eastern Papua New Guinea. The two cases are convenient samples in understanding the recommendations of World Resource Institute whose study on mining specifically mentions the problems in the Philippines and Eastern Papua New Guinea.

This paper seeks to answer the following questions: 1. What is the appropriate sustainable development framework for the mining industry in Southeast Asia? 2. What is the story of the mining companies in the Philippines and Papua New Guinea? 3. What are the recommendations of the mining study of World Research

Institute specific to Philippines and New Guinea? 4. What is the responsibility of the present generation in managing mining and related resources for the Next Generation?

Methodological Perspective

Due to time constraint, the paper makes use of narrative and descriptive methods to explain the above cited areas of concern. Most of the data presented are gathered from secondary printed sources and documents and some were gathered through electronic research. The approach to the impact of sustainable mining on the next generation is taken from the point of management. It is assumed that the government, business, civil society and religious organization have established organizational objectives and they accomplish their mission and vision by effectively allocating and using all human, material, and financial resources.

The question therefore is that of common good and common interest and not sectoral and private interests impinging on the rights of the other sectors, especially the less empowered sector like the citizens and ethnic minorities. In effect, sustainable development issues are addressed in order to discover the values behind economic, social, political and religious activities. Answers to mining issues are taken from an axiological point of view; these are legal, ethical, and spiritual valuation of respective stakeholders whose interests are passionately pursued.

The paper has a futurist vision: long term commitment of the three sectors for and in behalf of future stakeholders. Most of the literature on sustainability revolves around the debate of these three sectors urging actions now (Gore's Inconvenient Truth and Di Carpio's Eleventh Hour) to save the future of our planet. A plethora of sustainability literature focuses on changing people attitude, creating new technologies, and reinventing institutions. Lasan, 2000) and Perlas (2000) are for tripartite cooperation. Redfield (1993) looks for that critical mass that would trigger Gladwell, (2008) tipping point. Sachs (2006, 2008) deals with social responsibility by calling for the power of One person to meet the urgent challenge of dwindling resources and increasing population demands. Laszlo (2006) predicts federated global governance of interstate organization for out future survival. Senge (2008) and Wheatley (2005) call for a necessary revolution among individuals and institutional

4

structures. Page (2005), Powell (2003) and Rifkin (2003) tap the spirit, spiritual and religious dimensions of our humanity for global action through renewal of individuals and institutions.

The approach in unpacking the above issues is from the view of axiology, taking into account the legal, ethical, and spiritual valuation of the stakeholders from civil society and ethnic groups, business and government. It is not a question of sectoral interest, rather it is relocating common values and interests that would synergize the various sectors to include the interest of the next generation. The next generation is not only a beneficiary of sustainable development; they are the invisible driver for ultimate world and cosmic sustainability.

Sustainable Development Frameworks and Mining

Based on my review of related literature, there are three existing sustainable development frameworks. These are proposed by 1. the World Council for Economic Development (WCED), 2. Center for Alternative Development (CADE), and 3. Integral Sustainability. In 2009, I used Christine Page's Gaian Galaxy theory to develop a fourth framework for sustainable development. For this paper I upgraded the three Ps of WCED to four Ps to create a fifth framework I call Theocentric Sustainable Development. Framework. I designed it in response to sustainability issues faced by theocratic Asian countries like the Philippines and Indonesia.

WCED Framework

According to the WCED, development is sustainable where it "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Report, 1987). Based on this idea of the 1987 Commission, sustainable development has since then covered three major areas: the economic, environment and social dimensions of development.

Jonathan Harris (2000) of Global Development and Environment upholds these three elements of as basic in discussing the principles of sustainable development. It advocates a triple-bottom-line: 1.An economically

5

sustainable system must be able to produce goods and services to maintain manageable levels of government and external debt, and avoid extreme imbalances which damage agricultural or industrial production.; 2. An environmentally sustainable system must be able to maintain a resource base, avoiding over-exploitation of renewable resource system or environmental sink functions and depleting non-renewable resources only to the extent that investment is made in adequate substitutes. This includes maintenance of biodiversity, atmospheric stability and ecosystem functions ordinarily not classes as economic resources; 3. Socially sustainable system must achieve distributional equity, adequate provision of social services including health and education, gender equity, and political accountability and participation. (Harris, 2000).

Based on WCED sustainable framework, the mining industry must be seen not only as an economic enterprise but it must be an enterprise that addresses its direct impact on the environment and the people whose present and future survival is dependent on the land and sea resources ecologically linked with mining. The mining business must embrace its role as driver of economic development, social development and ecological sustainability.

CADI Framework

From WCED 1987 triple bottom-line perspective, the Center for Alternative Development Initiatives (CADI) targeted seven development areas. In addition to the economic, social and environmental issues, CADI underscored the human, cultural, political and spiritual dimensions of development. CADI expanded the WCED business oriented development approach to a broader humanistic perspective on development in 2000 (Perlas, 2000).
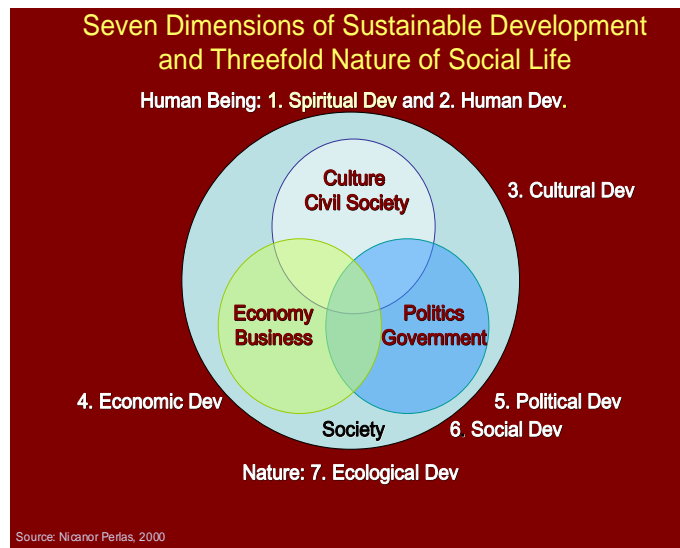
Figure 1. CADI Sustainable Development Model

Its comprehensive humanistic framework inspired the Philippine Agenda 21 for sustainable development policy guidelines. Agenda 21 is multidimensional; the seven dimensions have beneficial interaction between the legitimate interest of business and the economy, government and polity, and civil society and culture; the physical and material level challenges Philippine society to care for the ecosystems, landscape ecology, and the biosphere of the earth, and nature; and the spiritual level contextualizes the caring capacity of the individual and society to highest dimension of living (Amarillo, 2008). Agenda 21 included the soft values of development, human, cultural, and spiritual dimensions which tilts the balance from pure economic interest to human development.

Integral Model

The soft values of development in 2000 were further explored by Ken Wilbur in Integral Sustainable Development in 2005. His 'being-in-the-world' examines the individual and collective's interior and exterior realties; culture is a unifying element of the six other integral factors.

The Integral framework of Wilbur views the individual, society and environment in terms of four basic quadrants: the interior and exterior of individuals and groups/collectives as shown in Figure 2. The quadrants are four realities seen from four different perspectives. The individual interiors (Upper Left) are psychology and

consciousness; individual exteriors (Upper Right) are behavior and the physical body; collective interiors (Lower Left) are culture and worldview; and collective exteriors (Lower Right) are systems and the physical environment.

According to Wilbur (2004), the quadrants as "dimensions of being-in-the world are most simply summarized as self (I), culture (we) and nature (it). Or art, morals, and science. Or the beautiful, the good and the true…If you leave out science, or leave out art, or leave out morals, something is going to be missing, something will get broken. Self and culture and nature are liberated together or not at all."

	INTERIOR	EXTERIOR
COLLECTIVE	**CONSCIOUSNESS** ***What I experience.*** Areas studied: 'I' subjective realities, self 'and consciousness, states of mind, psychological development, mental models, emotions, will **UL**	**BEHAVIOR** ***What I do.*** Areas studied: 'It' objective realities: brain and organism, visible biological features, degrees of activation of various bodily systems **UR**
INDIVIUAL	**CULTURE** **LL** ***What we experience*** Areas studied: 'We', intersubjective realities: shared values, culture and worldview, webs of culture, communication and relationships, norms, boundaries and customs	**LR** **SYSTEMS** ***What we do.*** Areas studied: 'Its', intersubjective realities: social systems and environment, visible societal structures, economic system, political orders, natural resource management

Figure 2. Ken Wilbur's Integral Sustainable Development Model

Barrett Brown (2006) presents the following bottom line insights which, to me, calls the attention of the mining industry, the government, and civil society: 1. The more what is known about the influences of consciousness, behavior, culture, and systems on sustainable development, the more effectively programs can be designed and implemented. 2. The innumerable forces emerge out of every stakeholder's interior that directly impact any approach to sustainable development. These forces influence both the cause and cure of systemic imbalances. Thus, mindfulness of individual consciousness (belief system, mental model, motivations, etc.) is vital when

attempting to address all the major influences on a sustainable development initiative. 3. A comprehensive approach to sustainable development initiative would, at the very least, document the individual behaviors that significantly contribute to a successful and enduring implementation, as well as the real threats to an individual's life. 4. An integral Sustainable Development practitioner strives to be constantly conscious of the underlying pressure of cultures, worldviews, norms, traditions, rituals, and rules of the group—and respond accordingly. 5. To work with the collective exterior means to incorporate and be open to the truths and perspectives from all levels of collective institutions and systems, including the physical environment. 6. Predominantly systemic approaches to sustainable development are more likely to be effective if replaced by comprehensive, synergetic responses that account for the major forces in all quadrants. 7. Sustainable development initiatives have a greater chance of success if they respond to all the major influences that arise from each quadrant (consciousness, behavior, culture, and systems). Approaches that fail to do so face the real threat of sabotage by forces and factors in quadrants left unattended. 8. There may be more powerful offering that we can bring to the world stage than action which arises from a deep awareness of who we truly are and how we are called to serve. It is thus our responsibility to consciously and continuously develop this awareness, which in turn will fuel the actions that manifest our greatest potential (Brown, 2006).

For me, Wilbur's metaphysical and phenomenological view on social development prepared the ground for the Gaian Galactic perspective of Christine Page, which I use as a basis for holographic framework for sustainable development. In a hologram, the inner reality within an individual is reflected outwardly by reality surrounding that individual. The New Science in postmodern era is driving non-metaphysical disciplines to recreate a sustainable worldview. Sustainable development which puts the individual at the center must see the individual in a new light and explore the metaphysical powers within that person to create a sustainable world.

A super-macro perspective on sustainable development is mirrored by the concept of Christine Page on Gaian Galactica whom she considers as the Great Mother. As experienced by women in menstruation, "she enters the void and taps into this immense power of the feminine before emerging newly born. And so we return from our journey into the Great Mother having surrendered ourselves for the opportunity to experience her trinity: the void,

the elixir of creative power and her powerful breath which expels us back out into the world to commence the next cycle."

Social Economists and Bottom-up Sustainable Development

According to Peter Senge, 'sustainability is widely used to express the need to live in the present in ways that do not jeopardize the future. When a process is sustainable, it can be carried out over and over again without negative environmental effects or impossibly high costs to any involved. The belief that we can attend only to our 'own needs and goals is tantamount to discounting the value of the children, families, communities and business that will inhabit that future'.

For Jeffrey Sachs (2010), "Sustainable development means prosperity that is globally shared and environmentally sustainable. In practice sustainable development will require three fundamental changes in our business-as-usual global trajectory. 1. Develop and adopt sustainable (high-S) technologies for combined high prosperity and with lowest environmental impacts. 2. Stabilize global population, and 3. Help poorest countries get out of poverty trap".

Yunus (2007) says, "We need to put our minds together to outline the basic features of a new, globally sustainable lifestyle so that we know in what direction our technology, our innovations, and our creativity have to be directed." David Goleman beckons every earth citizen to exercise ecological (2009) intelligence, in addition to being emotionally (1995) and socially (2007) intelligent. Sachs (2008) warns 'Sustainable development may be acceptable in theory but not reached in practice if public policies and market forces do not lead to the needed investments."

A Theocentric Framework for Asian Sustainable development

The road to environmental sustainability has been articulated in the 3 Ps bottom for business, addressing economic sustainability through profit, human resource sustainability through humanitarian concern, and environmental sustainability through planetary concern. The mining business is being tasked to be socially

responsible in all three aspects. In theocratic countries like the Catholic Philippines and Islamic Indonesians, a fourth driver for sustainability can be now added: spirituality. Thus, we come out with four Ps: profit, people, planet and prayer. A metaphysical cosmology of viewing mining as an economic activity is tempered not from a humanist perspective but also from a spiritual worldview that subsumes all of creation – human or divine – under God or Allah.

Craig Sorley (2008), an eco-evangelist, calls upon believers to care for God's creation. Still, a lot of work remains to be done before conservative Christians embrace conservation as a matter of faith. "Our worldview on this topic is still more often defined by politics, by secular economic thought, by our materialistic culture, and by a knee-jerk reaction to the extreme ends of the environmental movement, than it is by Scripture. It is time to change that, he says.

Prisco Cajes (2002) suggests to develop a Trinitarian ecological theology and to complement the CBCP and PCP II theology of stewardship that reflects the 'diokonia dimension' of the Church's constitutive processes with a theology of communion. In 1988 a group of concerned Christians, associated with Asian Social Institute of the Philippines (ASI), The Center for Ecozoic Living and Learning (CELL) of Malate Parish, GeoChrist Foundation, Inc and the Institute for Ecozoic Spirituality (IES) recommended a celebration of Creation Day and Time for Creation every September 1 to October 4. ASI added a third P to the triple P bottom of business: Profit, People, Planet, and Prayer.

According Georg Ziselsberger (2003) this theological framework must be reflected in the liturgical or worship dimension, in the world of ritual and celebration. The power of the liturgy in forming the conscience and consciousness of the people through prayer and implore Divine Creator to enlighten people everywhere regarding their duty to respect and carefully guard creation. (Venice Declaration). Ecumenical Patriarch of Dimitrios I of Constantinople in 1989 in his Message on the Day of Prayer for Creation said, "prayers and supplications to the Maker of all, both as thanksgiving for the great gift of Creation and as petitions for its protection and salvation."

In organization and management development, John Newstrom (2007) notes that "A new term has crept into the managerial vocabulary – spirituality". This term focuses on the desire of employees to know their deepest selves better, to grow personally, to make a meaningful contribution to society, and to demonstrate integrity in every action taken.

Powell (2007) defines spirit intelligence as "the ability of your spirit being, he core of you, to make the best life choices. Choices in what you do with your body – your actions; the thoughts you focus on in your mind – your thinking, and the emotions you choose to pursue – your feelings. While Powell describes spiritual intelligence as "choices, beliefs and practices in relating with the Infinite Intelligence called God, Allah, Jehovah or Brahms". Wiggleworth (2009) views it as one's "ability to behave with compassion and wisdom, while maintaining inner and outer Peace, regardless of the circumstances. "It transcends religion from skill to work – organization as well; It is a tool to shift from ego-self to higher self. (www.consciouspursuit.com.)

While Max Weber (1930) explored the influence of ethics and religion on the development of capitalism, Rifkin (2003) also explored the influence on globalization by eight major spiritual denominations (Roman Catholicism, Protestantism, Islam, Hinduism, Buddhism, and Baha'I Faith, Tribal and Earth-based religions, including those in Papua New Guinea, which can serve as background to the spiritual dimension of sustainable development.

Earth-based religions are closest to nature and are very protective of the environment. The Philippine aetas in Zambales and atis in Panay and the original inhabitants of Papua New Guinea are sustained by the forest and nature but they do not over harvest the fruits of the earth or abuse the environment. Today, eco-tourism in the Philippines and worldwide is promoting their best-practices in natural living.

Senge, Scharmer, Jaworski, and Flowers (2004) recognize the presence of higher power named Allah, God, Spirit or Energy. The various 'spirit' or 'energy' traditions are shown as a spiritual dimension of a human person in Figure 3. This 'power' resides in the individual and it is described in different languages and hermeneutics according Islamic, Christian, Jewish, Taoist, and Buddhist traditions.

1. Islam/Sufism: 'opening of the heart'.

2. Christians: 'grace', 'revelation', and 'holy spirit.'

3. Jewish Kabballah:12 variants of God's presence in the human body.

3. Taoist: vital energy (qing = ching) into subtle life force (qi = chi), and into spiritual energy (shin).

4. Buddhist: Self and World dissolve at various energy centers of chakra.
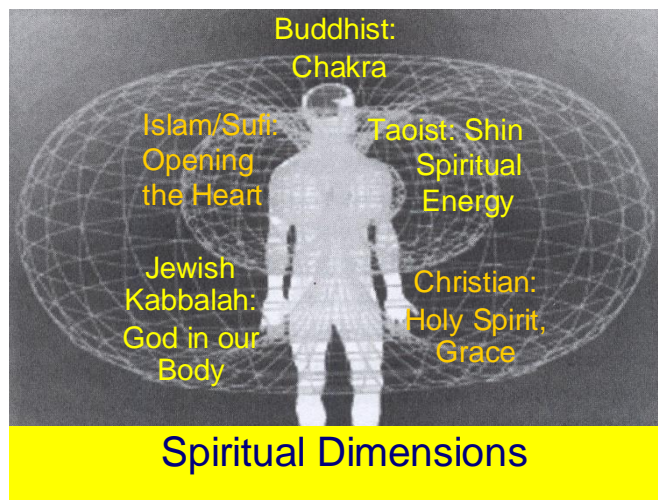

Figure 3. Spiritual Dimensions: Foundation of Theocentric
Sustainable Development Framework (Hudtohan, 2011)

Christine Page (2007) describes the new cycle of the 21st based on the Mayan calendar. This new cycle "is about our Earth, a vital being in its own, raising its frequency to join with the other planets so that our solar system can take its place in the greater scheme of the galaxy and the Universe, this is its destiny." While it was wrongly assumed by Copernicus that the earth was the center of the universe, Galileo scientifically proved that it was not so because of the solar system. While it used to be assumed that ethical conduct emanated from our human civilization that dictated what is right or wrong which created a man-centered ethical conduct, we are now moving to a biospheric democracy which puts the universe as the center of our ethical concern. This new ethics has been triggered by the demands of climate change and environmental consideration. A cosmic view is challenging our humanistic perspective the future of sustainable development of our civilization.

But the ability to discern appropriate actions based on one's faith as lived out and experienced in an established church are determined by its divine leaders priests and ministers. Thomas Moore (2010) observes, "I sense that value is doing everything to protect the planet and under I cannot understand why religious leaders and spiritual communities are not more active in leading the people in a loving care of the earth. But most traditions teach that cosmic self and human self are like two sides of a coin. They are deeply implicated in each other…He has to understand that spirituality is not abstract and ethereal and the planet is perhaps the first object he encounters as he tries to transcend the limits of personal self." He continues, "Anyone serious about being spiritual has to become an ecologist…I recommend care over cure…care of our environment is care of the soul. Work is prayer – not *ora et labora*; it is a spiritual practice making work and prayer as one. Care for my world and my self (soul) is the basis of my spiritual life. Care of the planet requires a spiritual point of view. You have to foster a vision that takes you past your immediate needs and allows you to honor the natural world". He concludes, "The world is not a commodity to be exploited for our physical needs; it is also a source of our spirituality". Carol Gilligan's (1982) ethics of care and Val Plumwood's (1992) ecofeminism support Moore's environmental care.

Asian Theocentric Framework

According to Georg Ziselsberger (2003), an ecological theology framework should be reflected in the liturgy and worship. Liturgy through prayers are opportunities to form the conscience and consciousness of the people. The teachings of God/Allah ought to enlighten people everywhere regarding the duty to respect and carefully guard creation.

The Philippines and Indonesia are culturally religion-based with a strong theocratic influence in governance, business and civil society. Christianity, and in particular Catholicism, is the dominant religion in the Philippines and the largest in Asia, Islam is the dominant religion; Indonesia is the largest Muslim country in Asia and worldwide. It is thus important to include the spiritual dimension of sustainable development, in addition to the three Ps: People, Profit, and Planet. The Asian Social Institute of the Philippines added a fourth P to WCED's 3Ps The fourth P is prayer; through prayer rituals the horizontal relationship all stakeholders on earth has an added vertical relationship with God/Allah not only in a global perspective but a cosmic, heavenly context.

Christian and Muslim religious doctrines advocate social and theological virtues embedded and defined in their respective dogmas, morals and worship rituals. They likewise espouse the concept of God/Allah as the absolute owner of all of creation and therefore Muslims and Christian should recognize that they stewards of the earth and its natural resources. Both religions have religious rituals to affirm the supremacy of God/Allah, the importance of being a faithful follower who living up to their respective teachings based on Abrahamic tradition. Their earthly journey has its final reward not only here but also hereafter.

FIVE FRAMEWORKS FOR SUSTAINABLE DEVELOPMENT					
Sustainable Develop.	WCED 3 Ps 1987	CADI 2000 Humanist Sevenfold	AQAL 2005 Integral Sust. Dev.	Gaian Sust. Dev. 2009*	Theocentric Sust. Dev. 4Ps 2011*
1.Economic	Eco x	x	x	x	
2. Social	x	x	Collectives x	x	Social virtues X
3. Environ.	x	x	x	x	Steward X
4. Cultural		x	Cultural x	x	Abrahamic tradition X
5. Political		x	x	x	
6. Spiritual		x	x	X	Religious rituals X
7. Human		Human x	Individual x	Sustainable x Self	X Spiritual Self
8.Cosmic				Gaian x	Heavenly views X
		*Source: ETHudtohan (2009;; 2011)			

Figure 4. Hudtohan (2011): The Five Sustainable Development Frameworks for Mining

The five sustainable development frameworks in Figure 4 show eight (8) elements of sustainable development. Business organizations should consider the economic, environmental, cultural, political, spiritual, human and cosmic impact of the enterprise on the present and future generations. In particular, the mining industry is challenged to address the 3 Ps of WCED, the 7 humanist dimensions of CADI, the Integral focus on collective and cultural aspects of development, the Gaian sustainable self and galactic concerns, and the fourth P [prayer] of theocentric framework intended for religious Asian countries like the Philippine and Indonesia.

The Asian CSR Forum in 2003 ensured that corporations should go beyond profit by addressing common public good beyond its own corporate interests; beyond compliance by adhering to higher standards and principles beyond the law; and beyond from creating a skin-deep image through public relations and advertising (Maximiano, 2003). The Gaian framework raises the level of corporate social responsibility challenges to an evolutionary sustainability development beyond common good on the planet earth by addressing the issue of galactic harmony among planets. A theocentric framework calls our attention to the basic doctrine of creation; sustainable development from a stewardship theory means utmost care and proper use all created resources because they all belong to the Creator. Joel Bakan (2004) in *The Corporation* has a long list against corporations that behave as if they are the sole owners of all resources.

The Mining Cases from the Philippines and Papua New Guinea

Introduction

I am presenting the mining story of Marcopper in the Philippines and Ok Tedi Copper Mine in Papua New Guinea. Marcopper is a classic example of mining disaster in the Philippines and is discussed in business ethics (Maximiano, 2003). Ok Tedi Copper Mine is a hands-down choice because it is also presented as case study in business ethics by Velasquez (2006) and was the subject of World Resource Institute (WRI) study on rock mining.

The Philippines is the world's second largest-island archipelago after Indonesia. It consists of 7, 107 islands, with a total land area of 299,764 sq. km. The Philippines situated within the well-defined belt Ring of Fire of volcanoes around the Pacific and has the greatest number of proven deposits of metallic and non-metallic minerals among the Southeast Asian countries. (Philippines Mining Journal. 2009). Papua New Guinea is divided into two political territories: eastern Papua New Guinea is governed by Indonesia and western Papua New Guinea, after it gained independence from Australia in 1975, is run by the government of Papua New Guinea.

16

The Case of Marcopper Mining

One of the many classic examples of mining disasters in the Philippines is the Marinduque Mining Corporation, Marcopper, a multinational enterprise that operated in Marinduque for 25 years. In 1995, it earned a net profit of P80 million. But on March 24, 1996, the residents of 20 barangays along the Boac River noticed dead fishes and animals floating along the river. The water in the river turned to grayish mud which signaled the toxic flow toward the sea, announcing the death of Boac River. Marcopper's toxic spill people who ate fish from the river were tested positive of sulthemoglobinenmia, anemia and neurologic disorders that suggested chronic exposure to toxic materials and there were reported cases of physical deformities in newborn babies." (Michael Umaming, Philippine Daily Inquirer, April 2, 1996. The disaster was triggered by the discharge of 6.2 million cubic meters of sludge from the Tapain pit.

Marcopper immediately released P2milllion from it Environmental Guarantee Fund for the relief and rehabilitation of the residents along the Boac River. Subsequently, it earmarked P5 million to compensate the farmed and fishermen for damages to their livelihood. It also spent P9.5 million to cushion the impact of the disaster on damaged roads and footbridges and additional P.8 million for food and medical services (Maximiano, 2003).

Marcopper was found to have violated several conditions of its Environmental Clearance Certificate (ECC). These conditions included dumping mine tailings in the Tapain pit only until it could comply with the recommendations of the Environmental Management Bureau to install a submarine disposal system. Marcopper also was supposed to ensure that no runoff of silt should reach Mogpos or Boar Rivers and, if this happened, to take immediate steps to repair the damage.

In 1996, the United Nations mission to the Marinduque mining disaster discovered two things. One, that the Department of Environment and Natural Resources impact assessment process to permit mine tailings deposit in Tapain pit was deficient, meaning the government agency in charge had bee remiss. Two, the mother company of Marcopper, the Place Dome, Inc. (PDI) of Canada, did not give high priority to environmental management of

Marcopper mining, neglecting its social responsibility. This violated the basic principle of the environmental charter of the International Council on Metals and Environment (Dumlao, 1996; Nuguid, 1996). In 1999, Marcopper planned to reopen its San Antonio mine, which was estimated to hold 662,000 tons of copper and 6.9 million grams of gold. Until 2003, no legal decision has been made that would totally prohibit Marcopper's re-operation.

Since the Marcopper mining disaster, the Philippine government has instituted policies to regulate the mining industry. These are: 1. Republic Act No. 7942, Mining Act institute a New System of Mineral Resource Exploration, Development, Utilization, and Conservation; signed March 3, 1995; 2. Department of Energy and Natural Resources administrative code order No. 40, Series 1996; 3. Revised Implementing Rules and Regulations of Republic Act 7942; 4. Philippine Mining Act of 1995; 5. Presidential Decree No. 1899, Small-Scale Mining Law issued on 23 Jan. 1984 established small-scale mining as a new dimension in mineral development; 5. Republic Act no. 7586 made provision for the Establishment and Management of National Integrated Protected Areas System, Defining its scope and coverage, and for other purposes [Sec. 12].

The Writ of Kalikasan is part of the comprehensive judicial reform of the Supreme Court of the Philippines to strengthen environmental justice by addressing delays in litigation and lack of courts. Thus, 117 Green Courts were designated in 2008 to resolve some 3,000 cases regarding violation of laws on the environmental, mining, integrated protected areas, and indigenous people.

The Case of Ok Tedi Copper Mine

In 1976, the newly established government of Papua New Guinea decided to develop the large mining deposits on the western side of Papua New Guinea. It chose Broken Hill Proprietary Company limited (BHP) to mine Mount Fubila which is about 1,800 meters above sea level at the headwater of the Ok Tedi River, which flows down into the Fly River, through lowlands until it empty into the Gulf of Papua on Coral Sea.

BHP is owned 52 percent of the mine, the government of Papua New Guinea owned 30 percent, and Inmet Mining Corporation, a Canadian company, owned 18 percent. In 1976, the government of Papua New Guinea passed the Ok Tedi Agreement Mining Act, which defined the obligations and rights related to the development of the Ok Tedi Mine. In 1980 the Ok Tedi Mining Limited Company, a joint-venture company was tasked to develop the Ok Tedi Mine with a proviso to construct a dam to minimize the environmental damage, including a facility to store 80 percent of the tailings and waste products. In 1983, the initial structure of the dam was destroyed by landslide, yet the government allowed operation without waste storage. It resulted to an environmental disaster.

The BHP's operation for "two decades has been discharging 80,000 tons of mine tailings and 120,000 tons of waste rock a day into the Ok Tedi River, Fly River and through the large delta of Papua New Guinea. Thus, it was destroying the ecology of the tropical rain forest and the wetlands through which the rivers flowed and had already devastated 120 riverside villages, whose 50,000 inhabitants had depended on the rivers for subsistence fishing and mining. The villagers and the government of Papua New Guinea were now economically dependent on the mine" (Velasquez, 2006).

In November 2000, BHP Environment and Community Report (Velasquez, 2006) stated "BHP has indicated to the other shareholders of Ok Tedi Mining Limited that it thought the best approach to this dilemma was to close the mine early in a manner that sought to mitigate further environmental impacts while addressing further social issues. However, the PNG government has advised that it considers that the balance of environment, social and economic issues means that the mine should run for its economic life [until 2010]".

In 2001, BHP announced that it had reached agreement with PNG government and its stakeholders. BHP agreed to transfer its 52 percent share to a trust under the PNG Sustainable Development Program to fund social projects for the PNG government. However, the mine would operate until 2010 with dredging but without containment of tailings. It was expected to be economically productive and lucrative prior to its closure.

The World Research Institute Report

The World Research Institute in partnership with Papua New Guinea NGO Environmental Watch Group and the Philippines Environmental Science for Social Change conducted on hard rock mining which concentrates on metals and precious gemstones. The study focused on three areas: 1. Vulnerability: the likelihood of destruction or degradation arising from a natural environmental hazard, such as destruct of an intact ecosystem or damages to an aquatic system form water pollution; 2. Natural hazard events like earthquakes or floods that can cause or exacerbate mine-related problems; and 3. Risk: the probability of a hazard occurring, such as the probability that an earthquake of a given magnitude will occur in a particular period.

The findings of that study published in *The Mining and Critical Ecosystems: Mapping the Risks* of Miranda, Burris, Bingcong, Shearman, Briones, La Vian, and Menard (2003) show that:

1. More than one quarter of Papua New-Guinea's fragile forests occur within mining, oil, and gas;
2. In the Philippines, more than half (56 percent) of all exploration areas and mining leases overlap with areas of high ecological vulnerability; and
3. Two thirds of exploratory concessions and more than half of active mines in the Philippines are located in areas of high seismic risk.

In Papua New Guinea and the Philippines, WRI conclude that:

1. Although mining in legally protected areas and ancestral domain claims is difficult to justify in the Philippines, some mine claims overlap with these areas, producing latent claim conflicts;
2. Three quarters of active mining and exploratory concession in Papua New Guinea and 40 percent of concessions in the Philippines exhibit multiple vulnerabilities and hazards, indicating that investment in mining project in these countries is likely to require greater due diligence to ensure that development does no result in high environment and social costs.
3. The Porger and Ok Tedi mines in Papua New Guinea demonstrate the danger of dealing with multiple hazards by adopting environmentally risky alternatives in a country where governance and capacity for informed decision making are weak.

Recommendations

Based on the recommendations of WRI, it is clear that in order to resolve the mining problems in Indonesia and the Philippines involves the business sector and immediate market, government and civil society must work together for the common good. From the point of view of the mining industry, it must go beyond its philanthropic social responsibility; it must seriously consider the stakeholder theory, going beyond the interest of the stockholders.

The Mining and Critical Ecosystems: Mapping the Risks study recommends the following:

For the Business Sector
1. Banks and insurers should use indicators like those developed for this study to rate the environmental and social sensitivity for mining projects.
2. Financial institution should subject all environmental and social impact assessments of proposed mining projects to review by an independent, external panel of experts. A key weakness of current risk evaluation procedures used by the financial sector is reliance on company-funded environmental impact assessments to evaluate the potential risks to investor.
3. These expert reviews should be made publicly available, further raising the level of oversight. For especially sensitive projects, free prior informed consent with local stakeholders should considered a necessary condition for project financing.

For the Governments and Civil society
1. government policymakers and NGOs should use methodologies like the one developed for this study to identify areas that may be social and environmentally sensitive to mining. For instance, the government of Papua New Guinea could use a similar approach to identify areas that are ecologically constrained with respect to a range of industries, including mining, oil, and gas. Papua New Guinea has no effective mechanism for protecting areas using national parks, 'no-go zones' or enforceable protected species legislation.

   In the Philippines, decision makers could use better information on areas that are vulnerable to the impacts from mining to help them deter mine where mining activities conflict with other land uses. Because much of the Philippines can be considered environmentally or socially sensitive, the potential impacts of poorly planned mining could be easily costly to ecosystems and those who depend upon them for natural services such as clean water and flood protection.

2. Government should support ant-corruption measures aimed at the mining sector, such as mandatory disclosure of payments made to governments by mining companies. Such information should be disaggregated to show individual company revenue flows as well as the distribution payments at the sub-national level. Lack of transparency is a major problem in the mining sector, especially in countries that depend heavily on mineral wealth.. Launched by the UK government at the World Summit on Sustainable Development, the Extractive Industries Transparency Initiative seeks to address corruption in the mining, oil, and gas sectors by encouraging companies to disclose payments made to governments. NGOs are campaigning to make the disclosure of such information a requirement mandated by security exchange regulations in Europe and the USA.

For Mining Industry and Metal Product Buyers.
1. The mining industry should use indicators like the ones developed for this study to identify areas that are environmentally and socially vulnerable to the impacts of mining ad to identify probable 'no go' areas. In May 2003, the International Council on Metals and Mining (ICMM), a global industry association, released a Sustainable Development Framework outlining key environmental and social principles that member companies agree to abide by. While adoption of these principles is an important first step, more needs to be done to make them operationally relevant through providing metrics and benchmarks against which company performance can be evaluated.

2. Mining companies should make firm commitments not to develop mines in an expanded set of 'no go' areas, including those identified using this and related methodologies. The ICMM principles also call on mining companies to 'respect legally protected areas.' As a first step, ICMM members should support IUCN Amman Resolution 2.82 and commit not to develop mines in strictly protected areas, that is, IUCN categories I-IV. Moreover, this study demonstrates the need for companies to go beyond the Amman Resolution to consider other areas that are environmental and/or social sensitive

to mining and should be designated probable 'no go' areas. Our results show that active mines and exploratory sites also overlap areas of high conservation value that are not yet subject to strict legal protection. Companies should pursue the framework indicators developed for this study to help them identify other environmentally and /or socially sensitive areas. Such 'pre-investment' criteria would help companies avoid costly investments in properties that are likely to be unfeasible for environmental or social reasons.

3. Mining companies should also agree to disclose payments made to governments as call for in the Extractive Industries Transparency Initiative. Such action would be in keeping with ICMM principles, which commit member companies to 'implement policies and practices that seek to prevent bribery and corruption.

4. Metal product buyers, such as jewelry retailers, electronics manufacturers, and telecommunications companies, should commit to sourcing their materials only from environmentally and socially responsible mines. Such commitment would require metal product buyers to consider the environmental and social risks associated with sourcing materials from specific mines and thus could help persuade mining companies to change their practice. Although further detailed analysis is necessary to identify site-specific risks, mines located in areas that are environmentally or socially vulnerable, or that use risky practices, should be of concern to metal product buyers seeking to implement responsible purchasing commitments.

In the Philippines, the joint foreign chambers, led by John Forbes of the American Chamber of Commerce in the

Philippines developed a 2011 road map for the government. The following are recommended:

1. Remove redundant approvals and non-performing claims. The Mining and Geosciences Bureau should cancel permits after years of non-performance.
2. Grant exploration and similar permits transparently at region level within six weeks. Renew them in a day at a one-stop shops.
3. Reduce the processing time for environmental clearance certificates.
4. Allow pre-clearance access to potential project lands.
5. MGB should adopt Philippine Mineral Ore Resources Reserve Reporting Code.
6. Develop model best-practice regions.
7. Work closely with indigenous peoples. Involve IPs as partners from project commencement.
8. Achieve 50 percent increase in direct mining and milling costs allocated for community development.
9. Implement faster release to LGUs of their share of mining taxes paid to the GRP.
10. Improve salaries and practical skills of MGB staff.
11. Develop mining engineering programs at universities.
12. Implement current Mining Act and avoid arbitrary application of the Writ of Kalikasan.
13. Continue Minerals Development Council.
14. Carry out a public information campaign and increase dialogue with concerned groups. Inform public about responsible mining that minimizes environment impact.
15. Find common ground solutions with LGUs, NGOs, religious leaders, and local communities to issues raised against specific projects.
16. National government should persuade LGUs not to have mining bans that conflict with national policy.
17. Encourage downstream processing and manufacturing.
18. Endorse the Extractive Industries Transparency Initiative. Middle Eastern countries are rich because they sell oil, Philippines could be rich by selling gold. (Wallace, 2011)

Responsibility for the Next Generation

The question of responsibility for the next generation may be addressed from an ethical perspective. According to Alber Lyngzeidetson (2000), "This pertains to areas of conduct within the corporation, the community, or the society which, though not regulated by law, are nonetheless governed by implicit expectation and prohibitions regarding acceptable practice". Thus, our discussion on the impact of sustainable mining management will touch on the right of the next generation and justice for the next generation vis-à-vis the operations of the mining industry.

The impact of the mining industry on people and nature raises the following questions when we think of the future generations: 1. Does the Next Generation have rights to be protected? 2. What is our obligation to the Next Generation? and 3. What do the ethical, philosophical and spiritual views tell us what to do?

Rights of the Next Generation

Assuming the next generation have rights, then ecological ethics will be supportive in making sure that the natural resources are not depleted. Ecological ethics protects the right of the next generation because it advocates that the nonhuman parts of the environment deserve to be preserved for their own sake, regardless of whether this benefits human beings (Velasquez, 2006). For example, the next generation may run out of mineral resources. Using the exponentially rising rates of depletion brought about by extensive mining, aluminum would have been exhausted in the year 2003, tungsten in 2000, zinc in 1990, and copper and lead in 1993, iron in 2025, manganese in 2018, molybdenum in 2006, and nickel in 2025 (Davis, 1982).

If biocentric (respect for humans and non-humans) view is adapted by the mining industry, then it has no choice but to desist from mining practices that harm humans and non-humans. Eco-centrism which stresses the importance of species, habitats and ecosystems will no doubt condemn the 'un-natural' mining operations. These two philosophical perspectives, biocentricism and eco-centrism support the proposition that the next generation's right to life be protected by preserving living and non-living resources.

Thomas Berry (1994) interprets integrity of creation to mean that all of creation has intrinsic value, dignity and reason for being and that it is a system that is interconnected and interdependent. The human community is considered subordinate to an ecological community and the ecological right of species is not derived from human ethics. Rather, human ethics is derived from an ecological imperative and the ethical norm is the well-being of the comprehensive system: earth ethical system and universe, cosmic ethical system. Integrity of creation advocates biospheric democracy.

According to McDonough (1994), it is possible that the traditional Christian position on human dignity and value of the human person may have to be contextualized in biospheric democracy which primarily considers the intrinsic value of human beings, all creatures and all of creation [non-life]. Biospheric democracy, when properly understood by mining companies, will trigger responsible mining and innovative corporations working with the government and civil society may yet find new ways to respond the needs of the current generation and protect the interest of the next generation.

Extreme anthropocentrism would interpret mining activities as the right of humans to protect and exercise 'dominion' over all the earth. While it is for the supreme interest of humans over animals and other non-human resources, the ultimate result would eventually lead to a disastrous future of the next generation.

The Next Generation: No Rights

Golding (1972) and DeGeorge (n.d.) opine that it is a mistake to think that generations have rights because they do not now exist and may never exist. It is argued that if they have rights, we will be forced to sacrifice our present civilization for their sake. Lastly, the question of rights presupposes interest of the holder of rights; in the case of the next generation we are in a quandary as to their particular interest.

Social ecology further supports the no-rights position of Golding and DeGeorge. According to Murray Bookchin (1991) environmental crises are rooted in the social systems of hierarchy and domination that characterize our society where one group holds control over another. He says, "We must look into the cultural forms of

domination that exist in the family between generations…in all institutions of political economic, and social management, and very significantly in the way we experience reality as a whole, including nature and nonhuman forms.

Justice and Care for the Next Generation

John Rawls (1971) proposes that the present generation ought to imagine themselves as parents who are willing to save for their immediate descendants against what they would feel entitled to claim of their immediate predecessors. He asserts that earlier generations in justice owe to later generations by making sure that hand to the next generation a situation no worse than we received from our previous

generation. He says, "Each generation must not only preserve the gains of culture and civilization, and maintain intact those just institutions that have been established, but it must also put aside in each period of time a suitable amount of real capital accumulation."

The ethics of care also demands conservation policies that are similar to those advocated by Rawl's views. From a utilitarian reasoning Attfield used Lockean principle in support of Rawl's argument that "each should leave enough and as good for other." Thus, the current generation must leave the world as productive as they found it.

Velasquez (2008) admonishes us, "Our responsibility for more distant future generations, however, is diminished especially insofar as we are unable to foresee what effects our present actions will have on them because we do not know what needs or technology they will have." Shepherd and Wilcox believe that the needs and demands of future generations, as well as the potential scarcities that lie far in the future are so heavily 'discounted' by market that they hardly affect prices at all". The factors that fail to account the scarcity of future resources are: 1. multiple access, 2. time preferences and myopia, 3. inadequate forecasting, 4. special influences, 5. external effects, and 6. distribution.

In conclusion, the only means of conserving for the future, then, according to Velasquez is voluntary (or politically) enforced policies of conservation.   In practical terms, "we should not sacrifice the cultural advances

we have made, we should adopt voluntary and legal measures to conserve those resources and environmental benefits that we can reasonably assume our immediate posterity will need if they are to live lives with a variety of available choices comparable, at least, to ours…we should take steps to ensure that the rate of consumption of fossil fuels and minerals does not continue to rise…we should search for substitutes for materials that we are too rapidly depleting" (Velasquez, 2006). Mining as an industry may have to re-invent itself and re-create substitutes for the minerals they mine.

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