JEWELS OF RESPONSIBILITY FROM MINES TO MARKETS: COMPARATIVE CASE ANALYSIS IN BURMA, MADAGASCAR AND COLOMBIA

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Sarah Wade Dickinson DeLeon

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Thesis Examination Committee:

_____Advisor
Saleem H. Ali, Ph.D.

_____
Curtis L. Ventriss, Ph.D.

_____Chairperson
Michael A. Gurdon, Ph.D.

_____Vice President for Research
Frances E. Carr, Ph.D. and Dean of Graduate Studies

Date: **March 27, 2008**

ABSTRACT

Artisanal and small-scale mining (ASM) are important sources of income for impoverished rural populations in many developing countries. Poor labor and environmental conditions often prevail because governments lack the capacity and sometimes the will to responsibly control ASM. At the other end of the supply chain, corporate social responsibility (CSR) strategies increasingly require jeweler's suppliers to control social and environmental aspects of mining. In a sense, jewelry and mining corporations are voluntarily taking the issue of governance into their own hands. A combination of CSR and revenue-centric development strategies has the potential to further marginalize poor, rural populations who depend on ASM. It is therefore important to examine how ASM has been affected by global social responsibility trends, why it is often left out and to find ways that ASM populations can be successfully integrated into planning for sustainable development and socially responsible business.

Gemstones and gold are economically the most important global commodities for ASM populations and precious colored gemstones are rarely mined on a large-scale. Ethnographic research was undertaken to explore how global social responsibility strategies interact with local realities of ASM colored gemstone and gold production. Burma, Madagascar and Colombia each present cases with clear interaction between global CSR trends and ASM, and combined provide a range of public policies with regards to rural populations who depend on ASM. Informal interviews and industry observations were conducted with a range of stakeholders in the global precious mineral trade and mineral development sector. Semi-structured interviews were recorded with key informants for each case study and these were triangulated with internal documents, press releases and articles. Burma illustrates a case where global CSR is attempting to halt ASM because of poor governance and human rights violations. Madagascar illustrates a case where governance and education are improving but widespread poverty and a legacy of corruption has so far prevented the direct integration of ASM into CSR strategies. In the case of Colombia, one region has successfully connected ASM with the global CSR dialogue by designing and implementing a certification program to effectively valorize and govern ASM production. Major findings reveal that (1) CSR in the mineral sector is a contentious and political issue with a range of stakeholder viewpoints; (2) a bottom-up, process-oriented approach can successfully drive economic and social improvement in ASM commodity chains; and (3) community empowerment, education, youth leadership and social networking appear to be key factors for driving production of ASM minerals that can comply with social and environmental standards.

DEDICATION

To my grandmother, *Talitha Clark Jamieson*

She taught me to see that life is an adventure full of learning and inspired me to explore.

and

To my parents, *Richard and Margaret Dickinson*

They taught me the value of looking at the world from many viewpoints
and encouraged me to experience it from unusual angles.

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CHAPTER 1: Context and Overview of the Research

1.1 Introduction and Purpose

The social, environmental, political and economic challenges associated with mineral extraction are widely discussed today, both in the public discourse and in the realm of policy experts and scholars. A perusal of any major newspaper in the United States is bound to include an article about oil, an advertisement about diamonds and/or gold, and a reference to challenging global issues like poverty, social injustice, climate change, rainforest conservation or water scarcity. While oil extraction is handled completely by large-scale mining corporations, the precious minerals used to produce engagement rings and other jewelry are extracted not only by corporations, but also by small-scale mining enterprises and artisanal operations in many developing countries. Artisanal mining activities are conducted by some of world's most impoverished people, often illegally, using rudimentary techniques like hand-digging pits and sieving gravels with hand-made tools in natural waterways. Small-scale mining activities use some mechanized machinery and are generally somewhat more organized-- with an owner or manager-- than typical artisanal operations. Although environmental degradation and negative social consequences have been associated with artisanal and small-scale gold and diamond mining, there is general agreement that these activities have significant potential to make advancements toward the Millennium Development Goals if the right policies can be implemented.

For the businesses involved directly and indirectly in the gold and gemstones sectors of the global mineral economy, the challenges of corporate social responsibility are a particularly cogent topic at this time in history. A series of NGO campaigns beginning in the late 1990s has targeted corporate jewelry retailers, attempting to hold them accountable for some of the social and environmental harms that have been fueled by poorly governed extraction of diamonds and gold. This reframing of ethical responsibility as a flow through mineral commodity chains has been met with an organized response: corporations, governments of diamond-producing and diamond-consuming countries, human rights and environmental NGOs, jewelry retailers, mining organizations and trade associations are increasingly coming together to collaborate in drafting innovative mineral governance policy instruments that they aim to implement vertically across supply chains. Taking a cue from renewable resource commodity chains like timber, coffee and other agricultural products, some of these collaborative initiatives are working to design voluntary certification programs that would allow buyers and consumers to differentiate between jewelry products based on various production processes and their impacts. Similarly, non-certification initiatives are designed to control mineral commodity flows in ways that could allow them to be branded in connection with responsible production policies. Policy entrepreneurs choosing how to frame the story and craft the principles of these new mineral governance initiatives have different takes on the meaning of social responsibility with regards to mineral extraction, but they seem to share a common desire to ensure that mineral business practices will not prevent nor get in the way of the long-term maintenance and development of healthy,

sustainable economies and environments, especially in fragile, developing countries.

This study considers the impact that "socially responsible" mineral governance initiatives may have on artisanal and small-scale gold and gemstone mining and the relationship of these initiatives to global sustainable development goals. The first widely discussed mineral certification policy to be implemented was the Kimberley Process Certification Scheme [KPCS], which attempts to prevent the sale of diamonds to fund weaponry and other needs of terrorists and insurgents. Successful implementation of the KPCS has been documented in some case studies, while egregious failures of its implementation have been documented in others. It is logical that the efficacy of collaborative mineral governance policy is causally linked to a complex web of endogenous and exogenous variables that may have effects at any of the stages of the policy cycle. Little is known about these variables in the context of mineral policy because of the emerging nature of these collaborative initiatives. The purpose of this research is to develop a clearer understanding of (1) the evolution of market-driven mineral governance programs that exist to promote goals of social and environmental responsibility in gold[1] and gemstone mining regions[2] and (2) the types of variables that determine the efficacy of these programs. Because these sectors of the mineral economy

[1] Global dollar demand for gold reached a record high of US$79 billion in 2007 and approximately 68% of world demand for gold comes from jewelry consumption (World Gold Council, 2008). India, the United States, China are the top three respective consumers of gold for jewelry (World Gold Council, 2008).

[2] There is considerable demand for precious and semi-precious gemstones, other than diamonds, in the United States. The U.S. International Trade Commission [ITC] reports that $909,556,000 of rough and polished natural colored gemstones (HTS4 code 7103) were imported in 2007, and this was a 9.8% increase over 2006 (2008). To give some perspective, the ITC reports $3,514,367,000 that of coffee (HTS4 code 0901) was imported in 2007, and this was a 14.1.% increase over 2006 (U.S. International Trade Commission, 2008). While the coffee consumer market is significantly larger than the U.S. market for colored gemstones, demand has been growing measurably in both markets for over a decade. Japan and Hong Kong represent the world's other largest consumer markets for natural colored gemstones.

are enmeshed in the social issues of artisanal and small-scale mining [ASM], my analysis will attempt to unpack the ways that various policy options address issues of poverty and environmental degradation in ASM. In this study, efficacy will be constituted by ability to ameliorate ASM mine management, contribute to sustainable capacity building in ASM and other economically disadvantaged groups, and provide and protect market access for ASM mines that are managed in socially and environmentally responsible ways. Some of the policies directly address ASM practices while others have only indirect effects such as creating competitor and consumer demand for and awareness of responsibly produced ASM commodities.

I intend to document the unfolding narratives of three "socially responsible" ASM mineral governance programs, begin to understand impacts, factors of success and barriers that these programs have identified through implementation, and reveal key lessons that may be useful for development of effective programs in the future. In so doing, I hope to shed some light on how policy-makers can use definitive characteristics to guide the decisions that must be made in the processes of agenda setting, policy formation, legitimization, implementation, evaluation, and policy change to successfully navigate toward sustainable economies and healthy, diverse environments in mineral-rich developing countries.

1.2 Comprehensive Literature Review

Broad Economic Impacts of Mineral-Dependency

Developing countries with rich oil, gas and mineral-resource endowments are an

enigmatic topic for economists, development specialists and political scientists. While one might logically assume that the presence of mineral deposits is fortuitous and should allow these countries to raise initial revenue needed to build healthy, diverse economies and accompanying participatory, democratic societies, empirical research has shown that mineral wealth may be more of a curse than a blessing. Proponents of the "resource curse" theory claim that "not only may resource-rich countries fail to benefit from a favourable endowment, they may actually perform worse than less well-endowed countries" (Auty 1993: 1124). Fluctuating and unpredictable mineral commodity prices coupled with imperfect government policies can result in a development "curse" inclination for minerals-based economies (Auty 1994; Auty & Evans 1994; Roemer 1985; Nankani 1979).

The tendency for some economic sectors to lag as developing sectors grow, often seen in emerging mineral economies as the shrinkage of capital and production in non-mineral sectors, is a related pattern termed the "Dutch Disease." Booming mineral economies seem to provide optimal conditions for inoculation of the disease, and as comparative advantage shifts, the losing sectors must adapt to compete in a new long-run economic equilibrium (Davis 1995). When there is a lack of structural support for readjustment, this disease can lead to growth in unemployment, poverty, inequality and associated social problems (Good 2005).

Critics, who have re-examined the "resource curse" theory, question whether the underperformance of mineral-dependent economies is actually caused by mineral endowments; they assert that a more plausible causal relationship can be found between

weak governance and civil society structures, and limited industrialization and undiversified economic growth (Davis 1995; Good 2005). Although the debate on whether or not mineral endowments have usually promoted or hindered economic development remains unresolved, mineral policy experts agree on the point that when managed appropriately, mineral wealth has the potential to contribute positively to social and economic development (Pedro 2006; Davis & Tilton 2005; Davis & Tilton 2003). Graham Davis and John Tilton pose a central question emerging from common points within the debate (2003: 2):

> The consensus on this issue is important, for it means that one uniform policy toward all mining in the developing world is not desirable. The appropriate public policy question is not should we or should we not promote mining in the developing countries, but rather where should we encourage it and how can we ensure that it contributes as much as possible to economic development and poverty alleviation.

One prevalent aspect of the answer to this challenge addresses prevention of violent conflict associated with mineral resources. A review of recent research shows that economic dependency on oil increases the likelihood of violent conflict, and production of "lootable" commodities like gemstones and drugs tends to lengthen pre-existing conflicts, but reveals no strong relationships between agricultural commodities or other non-mineral primary commodities and civil war (Ross 2004a). In an examination of all countries that are dependent on mineral economies (mineral exports worth more than 5% of GDP; approximately 25% of countries in the world) including scrutiny of the 27 countries with economies that are highly-dependent on minerals (mineral exports worth more than 20% of GDP), Michael Ross asserts that "to avoid violent conflict in the

extractive region, governments, firms, and local communities should promote transparency; establish multi-stakeholder dialogues before projects begin; and take special care to protect human rights and security" (Ross 2004b: 3). These themes, along with a fundamental emphasis on strengthening good governance and enforcing environmental protection, are echoed in debates about how development agencies can shape mining projects to alleviate poverty in developing countries (Miranda 2004).

In recent years, International Finance Institutions, multilateral and bilateral aid agencies and peace-keeping organizations have developed the realization that ASM is fundamentally connected to the poverty-cycle in many mineral-rich developing countries. However, a long history of distrust, together with a dearth of community-backed approaches are understandably a barrier to the germination of federal programs to improve livelihoods for those engaged in ASM (Hilson 2006; Hilson and Potter 2003). World Bank and mining sector reforms have been implicated as the root of explosive growth in poverty and illegal artisanal gold and gemstone mining in both western and sub-Saharan Africa (Hilson 2007; Banchirigah 2008). Recently, the United Nations Economic Commission for Africa recognized that artisanal and small-scale mining [ASM] "has the potential to catalyse SME development, to foster local economic multipliers and micro minerals cluster formation" and identified a need to "promote cooperation for constructive change and build synergies between ASM and large-scale mining" (Pedro 2006: 11). The importance of peasant mining production and its importance for developing countries as well as its reconcilability with sustainable development is not unique to Africa and has also been raised by academics with a focus

on Latin America (Graulau, 2001).

Localized Social and Environmental Impacts of Mineral-Dependency

a) Multinational Mining

The social impacts of large-scale mining projects are closely linked to economic and environmental impacts. I have already discussed the debate with regard to country-wide human and economic development and mineral-dependency so here I will focus mainly on social and environmental impacts of mines on local communities and habitats. However, due to deforestation, use of fossil-fuels for transport, and choices with regards to reclamation of mined lands, mining projects can have significant impacts on the global environmental issue of climate change, and while little quantitative information exists on this topic, it should not be overlooked.

The environmental-management challenges associated with large-scale mining have come to the forefront of the mining discourse in the past two decades. The United Nations Environment Programme (UNEP) summarizes these challenges in three categories: general environmental impacts, pollution impacts and occupational health impacts (UNEP 2000: 7). Natural habitat destruction, siltation and flow modification affecting river ecology, alterations of water-tables and landforms, dangers posed by failure of structures and tailing dams, and abandoned sites, equipment, and buildings are some of the general environmental impacts of industrial mining. Pollution impacts refer to emissions and effluents from mining operations that could contribute to toxics in the environment, air pollution and water pollution. Occupational health impacts are

constituted by exposure to unnatural environmental hazards like dust and chemicals used in mining, as well as physical risks involved in mine work.

Deterioration of riverine ecology due to siltation, flow modification and water pollution, and terrestrial habitat destruction due to mining, associated waste disposal, pollution and influx of settlers can result in economic hardship for local people who depend of these habitats for fish, game, non-timber forest products, and other living resources (Minerals, Mining and Sustainable Development Project [MMSD] 2002). These environmental impacts can therefore exacerbate social problems and elevate poverty on a local scale. The presence of multinational mining projects can improve availability of health, education, and infrastructural resources for localized, rural populations but unless efforts are made to connect locals to these resources, they may have little to no impact on wellbeing (MMSD 2002). While case studies have confirmed that mining projects can increase access to production and human capital resources for local populations, they have also corroborated the MMSD's findings that local access to natural and social capital resources may be worsened by mining (Bury 2004; MMSD 2002). Displacement of settled communities, mass migration to mining areas-- especially when they offer one of the only viable economic alternatives, disruption of pre-existing social networks, and changes to the balance of power within communities are common local outcomes of multinational mining projects (MMSD 2002). Nonetheless, comparisons between mining company towns have shown a great deal of variation in socio-economic conditions; more research that tracks the context in which mining occurs and the differences in resource types may shed light on the causes of these variations

(Wilson 2004).

b) Artisanal and Small-scale Mining (ASM)

While national mineral strategies have traditionally focused on large-scale mining projects, small-scale and artisanal mining is also prevalent in many developing countries and it is estimated that close to one-sixth of global mineral output comes from small or informal mines (Jennings 1993). It is important to recognize the socio-economic importance of artisanal and small-scale mining (ASM) even though most recent research on ASM operations has analyzed the negative aspects of the industry (Hilson 2002a). The International Labor Organization (ILO) estimated in 1999 that between 11.5 and 13 million people are employed by ASM and that 30 million people depend on the incomes it generates directly and indirectly. In 1993, an international seminar on "Guidelines for Development of Small- and Medium-scale Mining" reached a consensus that potential business benefits of small-scale mining outweighed its negative aspects, small-scale mining was a motor driving entrepreneurship, and equipment needed by small-scale miners could in fact be manufactured in developing countries thus promoting economic diversification (Hilson 2002a). In many instances, ASM is financially viable where mineral deposits are sub-optimal for large-scale mining companies, and thus ASM has the potential to make irreplaceable contributions to foreign exchange revenue through exports, and to the creation of secondary service industries (Kumar and Amaratunga 1994).

Precious metals and gemstones have a high value per unit weight, which makes them the most economically important minerals mined on a small-scale, and the most studied

sectors in ASM (Hilson 2002a). Pollution problems resulting from small-scale gold mines are well documented. Because many of these operations use mercury to amalgamate gold from the mined ore, they are notorious as sources to toxic methylmercury leaking into water supplies and contaminating fish populations, rendering them unsafe for human consumption. Other common environmental impacts from small-scale mining activity include deforestation, air pollution as a result of ore roasting, erosion, siltation of streams, acid mine drainage from discarded tailings, and land degradation resulting from incomplete mine closure—the open pits and shafts left behind can fill with water and act as breeding grounds for malaria vectors like mosquitoes (Hilson 2002a). Gemstone mining does not utilize any toxic chemicals to operate, and therefore in theory it has less potential for environmental harm than gold mining. However, the shadowy socio-political networks associated with the gemstone trade, and the disorganization associated with informal gemstone mining make it a difficult arena for environmental regulation. In some countries where valuable reserves of biodiversity coexist with underground gemstone veins, infringement of informal mining into protected conservation areas is extremely difficult to prevent or control (Duffy 2005).

Although the most serious problems associated with small-scale mining are environmental (Hilson 2002b), the industry is also associated with a number of negative social impacts that tie into the larger problem of widespread poverty in the developing world. Unsafe labor practices abound and ASM "has acquired a reputation for being inherently unsafe and inhumane" (Hilson 2002b: 866). Insufficient and nonexistent training, improper inspection of mines by government authorities, widespread

informalization, and violation of regulations combine to permit continued safety problems. Health issues like waterborne diseases, poor sanitation and overcrowding in mine "boomtowns," poor nutrition, cholera and diptheria outbreaks, and AIDS also pose major challenges. Exploitation of women and child laborers continues to be a problem throughout the ASM industry. "With operations increasing in abundance throughout Africa, Asia and Latin America, it is imperative that governments begin tackling key small-scale mining issues with improved strategy" (Hilson 2002b: 863). Many governments have already revised mining regulations for the ASM sector and begun to craft policies that encourage formalization.

Diamonds from small and informal mine sites have been associated with civil war and other violent conflicts. Because a diamond can pack a huge amount of economic value into a tiny, "lootable" package that is difficult to trace, diamonds are a favored contraband for rebel groups seeking weapons and other military supplies. Small, informal mines often lack the security afforded by larger operations and are therefore relatively easy for rebels to invade and control. The moral issues raised by a direct connection between diamonds and violent conflict have spurred a cascade of activity in global civil society networks, governments of diamond-bearing countries and jewelry business communities in recent years. The issue of social responsibility in global mineral commodity chains is a challenge that is currently under heavy deliberation.

Theories, Drivers and Practices of Corporate Social Responsibility

Mining companies and other multinationals that compete in the jewelry retail business

have recently expanded their strategies with regards to corporate social responsibility (CSR) (see Global Mining Initiative 2002; Council for Responsible Jewellery Practices 2006). The drivers behind this expansion are varied but generally derive from a stakeholder approach to management. Since its inception, the discourse around CSR has been closely tied to the ideas inherent in both stakeholder theory and the principles of sustainable development . There is no universally accepted definition of CSR, but in general, definitions encompass interactions and relationships between business and society. The World Business Council for Sustainable Development [WBCSD] states that CSR is an integral part of sustainable development and gives the following definition developed in dialogue at an international meeting of 60 representatives from inside and outside of business:

> Corporate social responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large (WBCSD 1999: 3).

Stakeholder theory has emerged as the dominant theoretical framework in CSR (McWilliams & Siegel 2001). Introduced by Freeman in *Strategic Management: A Stakeholder Approach* (1984), the theory holds that corporations are beholden not only to shareholders but also to other legitimate groups. Legitimacy is related to effects of business on these groups and to power of these groups to impede or alter the corporation's business objectives. Much of Freeman's seminal book and subsequent literature has dealt with strategies for identifying and cultivating relationships with legitimate stakeholders including customers, employees, suppliers, communities,

governments, advocacy groups, the media and interested academics. The corporate social performance (CSP) paradigm, a predecessor to stakeholder theory, emphasizes the evolving definition of CSR, the social issues a corporation must address and the philosophy it needs to develop for addressing them (Carroll 1979). CSP and stakeholder theory were effectively merged for CSR field research when Clarkson proposed "a framework based on the management of a corporation's relationships with its stakeholders" as a useful way to analyze CSP, and presented ten years of data from the CSP field to demonstrate the effectiveness of this approach (1995). Around the same time, Donaldson and Preston advanced the theoretical discourse on CSR by crystallizing three aspects of stakeholder theory that are "mutually supportive:" normative (ethics), instrumental (social science), and descriptive (1995). Investigation of the relationship between the instrumental and normative aspects of stakeholder management has revealed that trust and cooperation between firms and stakeholders are byproducts of the instrumental approach that embody incentives for firms to sincerely commit to ethical behavior (Jones 1995), and that firms without a strong normative commitment to CSR will generally fail to reap instrumental (economic) benefits (Orlitzky 2005: 51). Positive correlations between corporate financial performance (CFP) and CSP indicate that commitment to CSR is either a determinant or a result of strong CFP, or potentially both (Orlitzky 2005). The debate on whether environmental performance (one piece of CSP) impacts CFP is unresolved; some studies have found that strong environmental performance confers a competitive advantage on firms in particular industries (Russo & Fouts 1997), while broad cross-sector studies have found that environmental performance

and CFP show no strong relationship (Orlitzky 2005). The argument that imposing strict environmental regulations on firms interferes negatively with their financial viability and ability to compete in the marketplace is well-known: Porter and van der Linde argue that if firms are allowed to approach environmental regulation challenges in innovative ways, it can improve their resource productivity, and lead to improved competitive standing (1995).

A recent analysis of environmental regulation in developing countries that compete to attract investment from foreign mining corporations supported the race-to-the-bottom theory of globalization: governments tended to adjust regulations to be less stringent when competing nations had less stringent regulations, but failed to adjust when competing nations had more stringent regulations (Woods 2006). While stringent, consistently-enforced regulations demand environmental and social management of mines in developed countries, they do not appear to be a major driver in developing countries. Using a stakeholder approach, Hoffman identifies the predominate drivers of environmental protection as a business policy by categorizing them as coercive drivers (domestic regulation and international regimes), resource drivers (shareholders, lenders, suppliers, buyers, and insurance companies), market drivers (consumers, trade associations, competitors, and consultants), and social drivers (environmental non-governmental organizations [NGOs], the press, the courts, religious institutions, the community, and academia) (2000). These drivers can place pressure on firms to commit to environmental protection as well as social responsibility in general.

"Ethical sourcing" and "ethical trade" emerged in the 1990s as new terms relevant to

the debate around the role and goals of trade in the realm of sustainable development (Blowfield 1999). Enterprise initiatives of individual companies and sectoral business associations, as well as social and environmental labeling programs that often entail some kind of certification are ways of promoting ethical trade. "Fair Trade" is one approach that attempts to contribute to sustainable development "by offering better trading conditions to, and securing the rights of, marginalized producers and workers—especially in the South," including goals of improving livelihoods, well-being and market access of producers, raising consumer awareness of conventional trade's negative effects on Southern producers, protecting human rights through social justice, responsible environmental practices, and economic security, and changing conventional rules and procedures of trade by setting positive examples, campaigning and actively promoting development opportunities for disadvantaged, uncompetitive producers (Moore 2004: 73-74). Another approach to adopting ethical trade as a policy is through responsible chain management initiatives that aim to continuously address expectations of stakeholders with regards to how an organization's production process, including the processes used by its suppliers, impacts society (De Bakker & Nijhof 2002). In order to manage environmental and social impacts of supply chain production processes, certain organizational capabilities come into play. These capabilities, which draw on a firm's internal and external actors and resources, show a balance between interpretation of responsibility, integration of responsibility into practices, monitoring of impacts and indicators, and transparent communication of results and adjustments (De Bakker & Nijhof 2002). The efficacy of ethical sourcing initiatives, which are one component of

responsible chain management, can be heavily impacted by external supply network conditions. Four supply network characteristics have been found as perceived barriers in firms considering the introduction of ethical sourcing codes of conduct: "Number of links between supply network member demanding code of conduct and stage of supply network under scrutiny, diffuseness of stage of supply network under scrutiny, reputational vulnerability of different network members, [and] power of different members of supply network" (Roberts 2003: 168). Creating effective ethical sourcing policies will be a necessary challenge for jewelry corporations given the diffuse nature of supply from ASM components of the gemstone and gold sectors, the fact that jewelry supply chains are generally long and complicated, as well as embedded in long-standing family networks, the wealth and power divisions associated with jewelry component commodities, and the symbolic nature of high-end jeweler's reputations.

Of particular interest with regards to emerging patterns of CSR in firms that deal with gold and gemstones, is the emphasis on developing collaborative stakeholder partnerships, both with an internal, supply-chain focus, and with an external "tri-sector" focus. Joint action by the industry and effective stakeholder involvement have been identified as important and useful strategies for developing effective chain management programs in industries—like gold and gemstones-- that face multiple supply network challenges (Roberts 2003; De Bakker & Nijhof 2002). In addition to industry-oriented initiatives that convene stakeholders along the jewelry supply chain (see CRJP 2006), firms, especially those involved in jewelry retail, have begun reaching out to environmental NGOs, human rights NGOs, public policy institutions, development

agencies and academia to convene dialogue on how to address social and environmental issues that plague the mining industry. Hard-rock mining companies are not directly accountable to consumers of precious metals and gemstones (with the exception of DeBeers which operates as both a mining and a jewelry retail company), however, consumers do have leverage over large retailers that buy minerals and "that have the technical ability to distinguish clean from dirty mines" (Diamond 2005: 467). The efficacy of policies initiated by entrepreneurs in jewelry firms is likely to tie into their abilities to engage stakeholders at various links of the supply chain, interpret and negotiate expectations of powerful stakeholders with social and environmental interests, integrate concerns of marginalized producers in the global South, monitor and verify improvements in social and environmental conditions along the supply chain, and communicate effectively with a diverse network of stakeholders and consumers possessing different interests related to the policy objectives.

Governing Resource Flows through Product Certification

Global Commodity Chains (GCCs) and associated networks have recently received significant scholarly attention in a number of interdisciplinary fields that deal with governance and economic policy. Sociologists who study globalization and flows of material and information in the global economy have noted that the clear-cut boundaries between the state, the market and civil-society have begun to blur and new governing agents and arrangements designed by non-state actors are emerging to regulate global flows (Mol and Spaargaren 2006). Political-economy literature has highlighted the

complex inter-relationship between globalization, neo-liberalism and deregulation of world trade that arguably set the stage for ethical trading initiatives to make their debut. Microeconomic analyses of specific GCCs-- systems of production, circulation and consumption of goods-- has revealed the powerful part played by retailers and brand manufacturers in governing commodity networks (Hughes 2001). Other scholars focus on political action within the spaces through which global commodities flow and have identified the space of consumption as an effective political arena to advocate for changes in governance of these flows (Hughes 2001). Thus it is becoming widely-accepted in the academic community that governance is no longer conducted solely by governments, and that NGOs, corporations and multi-sector networks are taking an active role in governing the activities embedded in GCCs. Market rewards are seen as the primary motivator behind effective industry self-governance policies and quasigovernmental organizations, like trade and business associations, have been proposed as appropriate intermediaries to implement policies and bridge the gaps inherent in self-regulation (Press and Mazmanian 2005). One approach to this new style of market governance is the development, implementation, monitoring and verification of certification standards. In general, certification standards use accountability to promote responsible management of labor, pollution, community impacts and other goals of social responsibility either at one management unit of production, throughout the production process, or both. They assume either that buyers are willing to pay more for responsibly produced commodities, or that proof of responsible production will become a necessary product characteristic in order for producing and manufacturing companies to compete in the marketplace. One of

the most widely known and studied systems of certification pertains to commodities that come from forests. Under this system, various certification standards policies have been developed by competing groups, and forest owners can choose to pay for certification of their land-use management practices (forest certification) while timber product retailers and manufacturers can work with their suppliers to obtain certification of finished products through a chain-of-custody tracking program (timber product certification). Since the mid-1990s when these systems were developed, other industries interested in developing and implementing social and environmental standards for their products and practices have looked to them as an example. A research study conducted by the World Wildlife Fund found that certification would indeed be feasible for units of mined land and recommended more research to sharpen the specifics of how this could apply to various sectors of the mineral economy (Solomon *et al.* 2006). A review of lessons gleaned from certification policy experience in other natural resource commodity flows will give an idea of the types of factors that facilitate or hinder effective amelioration of conditions in the economic, social and ecological spaces surrounding GCCs through this style of policy program.

Forest certification was perhaps the most innovative response to failure of other regulatory approaches to halt tropical deforestation. "Certification was developed as an alternative to the perceived inefficiency of international initiatives, government policies, and boycotts in reducing deforestation and promoting sustainable forest management" (Elliott and Donovan 1996: 4). Various NGO-organized coalitions undertook consultative processes in the early 1990s to develop standards of sustainable forest

management that could be applied at different scales, ranging from broad international standards that could be adapted locally, to detailed, mirco-level standards for specific forest regions.

Consultation for development of standards is an important step in designing a certification policy that is to be implemented by more than one organization in the structure of a GCC. However, participants and planners are likely to view the purposes and issues of consultation in diverse ways. Jamison Ervin (1996) adopted Bolman and Deal's (1990) four frameworks for analyzing organizations to examine consultative processes used in creation of forest product certification standards from different perspectives: structural, human resources, political, and symbolic. Stakeholder expectations of a consultative process may be based on one of these perspectives or combinations of perspectives. Structural expectations emphasize gathering missing information through research; human resources expectations emphasize improvement of working relationships between participants; political expectations emphasize maintenance of a forum in which negotiation between stakeholders can occur; and symbolic expectations emphasize the process as a metaphor for something larger like sustainable development, north-south equity, etc (Ervin 1996: 15). Limitations to consultative processes for certification standards can be stated from these perspectives as well, and include the reality that without careful design and facilitation, consultation can exacerbate conflict between parties who view the objectives of the process differently. Adoption of "a learning-process approach" to policy development-- like that used in development of standards through consultation-- requires "learning to be effective,

learning to be efficient, and learning to expand" (Korten, 1980), all of which constitute structural limitations because they require high time and resource investment with minimal initial return in information. Human resource limitations exist because not all stakeholders will be able to participate in consultation, and representation is often skewed toward parties from developed countries. Political limitations include polarization and participants clinging to positions rather than discussing mutual interests. Finding consensus, often an important symbol of equity and democratic ideals, can prove extremely difficult to achieve for certification standards (Ervin 1996: 27-28). These angles and limitations of stakeholder decision-making for forest certification policy may also apply to policies being developed for mineral governance. Nonetheless, negotiations, mediations and advisory committees seeking consensus have all been shown to have higher rates of success than less consultative approaches at improving substantive quality of policy decisions, resolving conflict among competing interests, building trust in institutions, and educating and informing the parties involved as well as incorporating their values into policy decisions (Beierle and Cayford 2002).

The Forest Stewardship Council (FSC), a partnership of several forest conservation NGOs, developed the first set of global standards for environmental forest certification and "[as] an organization attempting to operate under a new sustainable development paradigm, it was held to strict democratic and participatory principles" (Ervin 1996: 19). Two trends in the policy deliberations around forest certification could not have been predicted during policy formation: intense competition between FSC and industry-initiated certification programs meant to give less stringent options, and North American

and European interests as the primary support for forest certification battles even though the impetus for the policy idea was tropical forest management (Cashore et al. 2004). Certification has yet to take off in developing countries, but there are pockets of interested forest managers and a study of sixteen cases with four each from South America, Africa, Eastern Europe/Russia, and the Asia-Pacific revealed four key factors to account for the observed diversity in regional, subregional, and actor support for certification: dominant forestry problems, public policy responses, land ownership patterns, and market orientation (Cashore et al. 2006). Where forest certification *is* being implemented, a range of effects and policy challenges have emerged. While positive consequences of policy implementation were reported in all of the sixteen case studies undertaken on developing country forest management units-- particularly consistent was improved market access-- the likelihood of unintended and complicated negative impacts, resulting from unadressed policy challenges or limitations, is important to hold for policy redesign and change.

Comparisons have been made between timber certification policies and Fair Trade certification policies for coffee in terms of their abilities to effect market-based social and environmental change. One study found that the Fair Trade coffee certification initiative has been more successful than FSC at creating consumer demand for certified products, in part by establishing direct, personalized ties between producers and end-conumers, and that FSC's "assumption of much of the conventional market's logic presently hinders its ability to justify a more effective approach to protecting Southern forests" (Taylor 2005a: 143). The idea that Fair Trade certification programs and forest certification programs

could learn valuable lessons from one another has been suggested by several scholars, and propositions that equity and efficacy of certification policies depends on the inclusion of rules modeled on the principles of Fair Trade are common (Macqueen *et al.* 2007; Klooster 2006; Taylor 2005b). Investigation and comparison of all of the major certification and labeling initiatives in the global coffee sector has led to expectations that market policies seeking to promote social and environmental improvements will continue to face increasing competition from private policies that seek to uphold the status quo, and that efficacy will depend on private regulation working in tandem with public regulation to verify sustainability (Raynolds *et al.* 2007). Formal governance of the Fair Trade coffee certification system by the Fair Trade Labelling Organisation (FLO) and producer cooperatives, while one of the most important accomplishments of the program, also includes factors that could threaten its efficacy. Maintenance of democratic governance structures in certified grower groups that allow for *both* business competitiveness *and* broad producer support that stems from transparency and broad participatory decision-making is difficult to achieve (Taylor 2005a; 2005b). For FLO, an ongoing challenge is increasing stakeholder representation and facilitating effective communication between diverse actors with heterogenous interests in the coffee commodity chain (Taylor 2005a). External factors that have the potential to weaken Fair Trade coffee certification labeling through FLO have also been identified; As coffee farmers become empowered through Fair Trade market access, they are increasingly able to connect to direct access channels outside the Fair Trade market, which could weaken the efficacy of the Fair Trade label for coffee, and rising corporate interest in Fair Trade

coffee products has begun to birth an array of corporate "Fair" labels that seek to compete with FLO labels (Taylor 2005a). The tendency for industry-initiated certification labels to redefine civil-society and public forms of market regulation in ways that confuse issues of appropriate levels of social and environmental protection is consistently seen as a threat to the efficacy of this approach to production governance, and it has been suggested that up-to-date education of producers and consumers in certified supply chains is necessary to protect certification viability.

The Kimberley Process Certification Scheme for Diamonds

Unlike environmental certification for timber, and Fair Trade certification for coffee and other commodities, which attempt to track only a portion of the products in international markets and deal primarily with private production managers, the Kimberley Process Certification Scheme [KPCS] attempts to track all diamonds traded legally in the international market and deals mainly with national governments who are charged with monitoring diamond production, trading, processing and importing in their home countries. The KPCS took effect in 2003 after standards and implementation protocols were developed through a three-year consultative process between governments, international NGOs, and diamond mining and processing industry leaders (called the Kimberley Process because it began in Kimberley, South Africa). Its original purpose was to prevent "conflict diamonds"-- a multi-million dollar traffic of diamonds used by rebel armies to buy weapons and execute wars, mainly in Africa-- from entering the global diamond market. It effectively covers the entire diamond production chain,

including diamond producing nations (see Thesis Appendix D for a complete list and production ranking), countries like Belgium and Switzerland where diamond sorting and trans-shipment businesses are housed, cutting and polishing centers like Israel, India and China, and countries with major diamond retail businesses like the United States and Japan. There are three core provisions of the KPCS: governments of diamond-producing nations use chain-of-custody arrangements to trace diamonds from the mine to the point of export and issue tamper-proof certificates to guarantee that stones leaving their borders do not originate from rebel-controlled areas; all rough diamonds moving between countries are accompanied by government certificates and customs officers around the world will seize diamonds that arrive without certificates and levy penalties to the importer; governments of countries that import rough diamonds use "chain-of-warranties" systems to track the diamonds until they reach a cutting and polishing factory or until they are reexported allowing governments to certify that diamonds being reexported are not "conflict diamonds" (For a picture of a KPCS certificate accompanying rough diamonds in transport, see Thesis Appendix E). Unlike timber which can be marked for tracking and is transported in large, consolidated bundles from the same land unit, or coffee which is transported in sacks of fairly uniform beans from the same production cooperative, diamonds-- the most concentrated form of wealth on the planet-- are small, not easy to mark reliably, often impossible to connect to a geographic source using physical or chemical characteristics, and often transported in mixed parcels from various mines, making them very difficult to trace. Requiring chain-of-custody certificates to accompany them from mine to export is a relatively flexible and

inexpensive way to track them that all governments have the technology and resources to implement.

The collaboration and relative speed of certification scheme development demonstrated by the divergent stakeholders who participated in the Kimberley Process reflects "an intriguing development in global governance and multi-track diplomacy" as well as "a positive start in seeking to put an end to the trade in conflict diamonds" (Grant & Taylor 2004: 399), but it is not without controversy, implementation challenges, and other problems. Several problematic issues have been documented by scholars, independent auditors sponsored by NGOs, the Kimberly Process [KP] Secretariat who sponsors voluntary audits, and diamond retailers who prefer the Canadian government's certification program for diamonds produced in Canada to the KPCS (PAC 2006; Grant & Taylor 2004). The certificate of origin used to track diamonds through the KPCS chain-of-custody in the producing country is easily undermined by counterfeiting, secrecy, and a general lack of transparency of records in some national diamond industries. In addition, due to their small size, light weight and resilience, diamonds are easy to smuggle unless customs agents use x-ray devices and even these can be evaded when diamonds are hidden on (or in) a person's body. The relative porosity of international borders in regions of Africa and South America also pose governance challenges related to smuggling. When diamonds are smuggled into a country with weak monitoring of the chain-of custody, they may be paired with certificates of origin for that country. There is also controversy over the extent to which diamond jewelers and retailers are enforcing compliance with the chain-of-warranties to ensure consumers that

diamonds have been purchased from non-conflict sources. Without coordination of purchasing guidelines by all segments of the diamond industry, market channels will remain open for non-certified diamonds. Two important elements were missing from the KPCS when it was adopted in 2003: a comprehensive system for the data collection and analysis of diamond production and trading statistics, and no consensus was reached on how to ensure monitoring and compliance (Smillie 2004). In 2003, a statistical tracking system was agreed upon and gradually implemented though not all nations report statistics consistently, and a general peer review monitoring system was devised whereby teams composed of government, industry and NGO representatives visit countries that volunteer for a review. "This, NGOs argue, falls well short of the universal mechanism needed in an industry so tainted with illicit behavior, but it is perhaps a start, one that NGOs can supplement with their own ongoing research and investigations" (Smillie 2004: 61). At the end of 2006, an investigation conducted by The Diamonds and Human Security Project of Partnership Africa Canada [PAC], one of the NGOs that has taken on a role as independent monitor of the global diamond industry, reported the following:

> Broadly, the KPCS has demonstrated that it can work. Reduced volumes of conflict diamonds, increasing official exports in countries emerging from conflict, a mechanism to verify trade and production figures, and a monitoring mechanism that has sent teams to more than 30 participating countries all testify to this. The expulsion of the Republic of Congo from the KP in 2004 because it could not explain the origin of its diamonds, or the absurdly low value it had placed on high quality goods, showed that the KPCS has teeth if it cares to use them. Recently, however, there has been an upsurge in "car theft." New systems are needed, but the police act as though they are asleep at the switch, the most serious investigations are being done by NGOs and the UN, and KP politicians deny the need for serious change

(PAC 2006: 4).

This report reviewed failures in Brazil, Guyana, Cote d'Ivoire, Ghana, Togo, and Venezuela that had been exposed in the first three years of KPCS operation. Diamonds produced in these countries come from alluvial sources, worked mainly by artisanal and small-scale diggers. One of the major challenges with which the KPCS must deal to improve its efficacy is how to enforce internal controls in participating countries with alluvial diamond fields and growing ASM sectors. Other recommendations given by the PAC are tied to needs for strengthening the following: the peer review process and research capacity of the KP; statistical underpinnings and outsourcing of analysis work; dependable financing to allow expansion; system of penalties for non-compliance with graded responses depending on severity of violations; government spot checks and third party audits of diamond trading companies; closing of loopholes in diamond cutting and polishing industries (PAC 2006).

In response to a recognition that the underlying problems of Africa's alluvial diamond operations and its estimated artisanal miners lie beyond the KPCS, several NGOs, industry representatives and donors founded the Diamond Development Initiative [DDI] and launched it in October 2005. The initiative's mission statement centers around the optimization of "beneficial development impact of artisanal diamond mining to miners and their communities within the countries in which the diamonds are mined" (DDI 2007). In attempts to encourage better work environments and wages for diggers, the DDI plans to increase education and access to credit and artisanal mining equipment for

miners, promote training in diamond valuation and government intervention to help streamline marketing, and improve labor laws (DDI 2007). It is hoped that these objectives will foster sustainable development and poverty alleviation for artisanal diamond miners, and it is possible that by improving the contextual environment in which the KPCS is implemented, diamond certification will also become more efficacious.

The Physical Science of Tracing Gemstones and Gold

Transparency and credibility of any certification system depends on whether it can be understood and verified by a third-party auditor. In order for diamond and gold commodity chains to be managed for auditing, it would be useful to check that the true sources of stones or gold in various stages of the chain match with sources that are recorded in management documentation. Using chemistry and physical science techniques to check mineral commodity characteristics against known characteristics of minerals from the documented source is by no means easy to do. Nonetheless, some headway has been made, and identification techniques ranging from low-tech solutions to high-tech microscopy, x-ray, ultrasound, and spectrophotometric analysis exist.

Of the relevant jewelry components, diamonds are potentially the most difficult to match to a source because they are composed primarily of carbon with little variation in chemical composition, and to the naked eye, most cut diamonds on the market exhibit only subtle differences in color and clarity. Furthermore, they are not usually marketed in association with a country, and since the logistics of producing diamonds has historically been tied up with De Beers, mixing together rough diamonds from many sources is accepted practice. Diamond experts can usually determine the origin of a

parcel of diamonds provided that they are all from the same mine or alluvial region, but if the parcel consists of a mixture of alluvial and kimberlitic diamonds or diamonds from different mines and regions, it may not be possible to accurately assess the origin of each individual diamond in the group (Grant & Taylor 2004). There is currently no technology that can allow auditors to determine a diamond's origin with *absolute* certainty, but if studies aimed at documenting morphology, surface features and inclusions (or 'impurities') found in diamonds from each of the world's diamond producing countries, a library could be developed to allow auditors to match diamonds to their rough origins.

Colored gemstones exhibit a wide range of variability in color and chemical composition. Many of the stones in the market, especially rubies and sapphires, have been heat-treated to improve their color, usually in Thailand or Sri Lanka. Emeralds, which are more fragile than diamonds, sapphires, and rubies, are often treated with a plant-derived resin to fill in surface fissures and protect them. All of these characteristics provide useful fodder for detecting a stone's origin. The oxygen isotopic ratios (18-O/16-O) of rubies and sapphires from primary deposits are a good indicator of their geological origins and can be used to track them to the region of origin provided data of all the primary deposits in the country of origin has been collected (Giuliani *et al.* 2007). Stones from secondary deposits (placers) where much artisanal mining occurs are more difficult to trace accurately using oxygen isotope measurements, but can be matched to a range of possible d 18-O ratios as has been done for some placer deposits of sapphires in Madagascar (Giuliani *et al.* 2007).

Gold mined on a small-scale is delivered to a refinery in the form of small, gold flakes. At this stage, it could be possible to verify the origin of individual flakes as well as whether flakes were amalgamated using toxic chemicals (Hylander & Plath 2006). By examining gold flakes under a light microscope, scientists have been able to accurately separate "clean" flakes produced without the use of any toxic chemicals from "dirty" flakes that relied on mercury or cyanide in production. The surface of the flakes show distinctive patterns related to production methods and their geographic origins. Hylander & Plath have created a preliminary micrograph library that gold auditors could use to match flakes to a particular placer deposit where they were mined (2006).

Given the availability of data and potential for developing thorough libraries of photomicrographs and chemical signatures for minerals from any country that wishes to be considered for new mineral certification schemes, reliable auditing of these schemes is a realistic possibility. The barriers to developing and managing the necessary data are a viable consideration for this study since they could impact the overall efficacy of new mineral governance policies. Moreover, the need for cooperation and communication between mining operations, refiners and cutters, and certifiers is highlighted by the scientific requirements for auditing; mixed parcels of stones and gold flakes are a threat to the establishment of reliable and cost-efficient mineral certification.

1.3 Overarching Research Questions

The over-arching and subsequent research questions that inspired this study are as follow:

- How are interactions between governments, businesses and non-governmental organizations transforming environmental and social performance of ASM mining areas?
- What lessons have emerged from cross-sector mineral governance policy instruments that aim to achieve sustainable development goals in the ASM sector?
- What are the internal strengths and weaknesses of existing initiatives?
- How can policy-makers adapt initiatives to penetrate barriers and address challenges for sustainable development in regions prone to fall to "the resource curse"?

1.4 Overarching Methods

For my methods, I chose to use qualitative interviews supplemented by document analysis, observation of participants in relevant policy networks, observation of key supply chain segments, and available, secondary quantitative research. Semi-structured qualitative interviews with key informants and stakeholders of each policy instrument allowed me to engage with respondents to explore dynamic perspectives and unique aspects of each program. Combining interview narratives with observations, static written accounts from various points in the policy process, and relevant quantitative measurements of consumer interest and policy impacts enabled me to develop a more complete mosaic of the evolving CSR mineral policy landscape and its relationship to artisanal and small-scale miners.

Appropriate ethnographic methods were customized to each case to test various research approaches that are grounded in sociology theories of development and CSR.

Since all three cases attempted to narrate experience and decipher emerging lessons, ethnography was an appropriate approach. Triangulation and complementary secondary research to compile quantitative indicators of experience sought to address some of the limitations of ethnography inherent in its nature of social construction. Each case was written up as a journal article, and the style and tone is tailored to make a timely contribution to the journal chosen for submission. I plan to submit the Burma case to *The Journal of Corporate Citizenship;* the Madagascar case to *Natural Resources Forum;* and the Colombia case to either *Sustainability: Science, Practice & Policy* or *Resources Policy.*

1.5 Summary of Key Findings

"Socially responsible" mineral governance initiatives spurred by global CSR trends and the U.N. Millennium Development Goals, can take on a wide range of forms as shown by the following three cases. Stakeholders within the global mineral sector converge on major principles to strive for in the ASM sector, but disagreement characterizes the landscape of perceptions about how best to chart a course toward achieving these moral ideals. The case studies of Colombia and Madagascar confirm that bottom-up, integrative development approaches that aim more for fluid learning than static achievement deadlines are effective ways to progress toward ASM based economic and social improvements. In the coastal Pacific region of Colombia, traditional ASM has become linked to environmental protection, while in Madagascar reconciling mining and the environment is an ongoing, somewhat intractable challenge. In all three cases

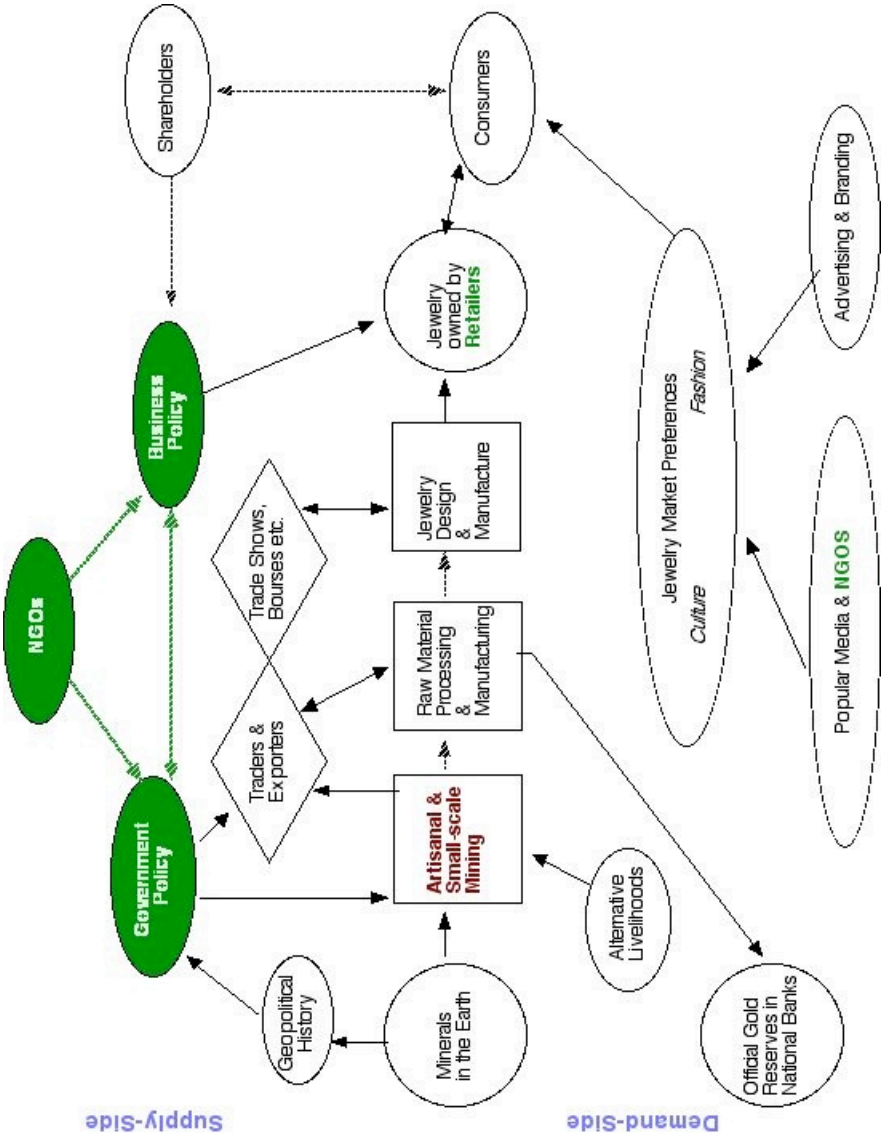
education and proactive social networking emerged as central pillars for the construction of programs that can encourage production of ASM minerals to move closer to compliance with social and environmental standards. In the two less problematic cases, youth leadership and community empowerment emerged as useful for producing an effective problem definition to drive the policy cycle of sustainable development in ASM regions.

The case of Burma illustrates that when government engagement with sustainable development discourse is absent or superficial and the government develops a reputation for human rights violations, CSR driven sanctions and boycotts may bring ASM to a halt in the offending nation. While there is debate about the efficacy of economic sanctions for driving amelioration and sustainable capacity building in the long-run for ASM in the effected country, there is general agreement that the short term economic harm that sanctions can impose on impoverished rural people should be offset by increased humanitarian aid to the affected areas in order to achieve a balanced strategy of social responsibility. Western businesses, as represented here by the jewelry industry, are increasingly likely to take governance into their own hands on matters of human rights such that CSR will have negative short-term impacts on ASM where it does not find ways to become incorporated into the sustainable development paradigm of alignment between economic, social and environmental accountability.

Together, the three cases can be considered as illustrative pieces of the globalized mosaic of physical and socio-political pools and flows that make up the ASM dependent portion of the world precious mineral economy. Figure 1 depicts a simplified model of

this economic system and the way that peripheral forces can interact with it. Producer country government policies, business policies, and NGO policies (shown in green in Figure 1) all have the potential to design and implement mineral governance initiatives and may choose to do so proactively or defensively in response to pressure from other actors and the media. Three initiatives were studied, one from each perspective of government (the Madagascar case), business (the Burma case), and civil society/NGOs (the Colombia case). Results showed that some level of cooperation and alignment of objectives from all three perspectives may be needed to achieve efficacy. Processes on the supply-side of the system are generally time consuming, logistically difficult, and involve learning, planning and ongoing research. Processes on the demand-side of the system can often proceed rapidly and unexpectedly, placing pressures and strains to achieve the seemingly impossible on the supply-side actors. Thus the lessons and guidelines outlined in this study provide a useful starting place for supply-side actors to think proactively about ASM related sustainable development planning and a jumping off point for effective policy design.

Figure 1. Opportunities for Governance Influence from ASM Mines to Markets



This flow chart portrays how ASM precious minerals flow through the global economy and how socio-political entities can facilitate or interfere with the system. Circles represent mineral stocks; squares represent physical transformation processes that add value and reap economic benefits from the minerals; diamonds represent social actors who have the knowledge and networks to move minerals between transformation stations; ovals represent socio-political entities that can impact mineral and economic flows with social and environmental governance initiatives and goals. Intensity of interactions between the different components of this system are not demonstrated in this figure because it was not within the scope of this master's thesis to quantify intensity.

CHAPTER 2: Journal Articles

New Dimensions of Voluntary Regulation: The Jewelry Industry and U.S. Foreign Policy toward Burma

Introduction

Economic sanctions and voluntary export boycotts are forms of international governance, which are rooted in the peaceful tradition of civil disobedience, that can be used to demand improvements in the social conditions of a producer State. Traditionally government and civil society have been the ones to incite sanctions and boycotts as a path to demanding social improvements. This paper narrates a transition wherein sanctions and publicized boycotts are becoming an aspect of corporate social responsibility in the jewelry industry. Rather than waiting for pressure from civil society or direction from government, some jewelry corporations and business forums are taking a leadership approach and directing the adoption of sanctions while publicizing their own voluntary boycotts as part of their core identities.

Human Rights, Democracy and Gemstones in Burma, U.S. Foreign Policy

In 2007 a long-standing debate in the American jewelry industry, and in foreign policy circles, flared up in response to Burma's attempted Saffron Revolution. Direct imports from Burma have been illegal in the United States since 2003, but precious and semi-precious gemstones that originate in Burma are still imported legally by most of the colored gem trade as long as they have been treated, and/or cut and polished in a third country (for more details on gemstone mining in Burma, see my report in thesis appendix A, titled "Artisanal Ruby Mining in Myanmar: Environmental and Social Impacts") .

Pending legislation will close this loophole and ban the import of all gemstones that were mined in Burma regardless of where they were transformed. The Block Burmese JADE (Junta's Anti-Democratic Efforts) Act of 2007 amends the Burmese Freedom and Democracy Act of 2003 with strengthened sanctions on gemstones.[3] Having passed the Senate and the House in December 2007, the Bill is expected to become law in 2008.

Burma, also called Myanmar, is governed against popular will by a military dictatorship with a long history of human rights violations, violence and corruption. Before widespread peaceful demonstrations against the government in August and September 2007, there had not been an obvious popular uprising in Burma since the student led demonstrations of August 1988, which ended in a violent and brutal military crackdown. The democratically elected leader of Burma and Nobel Peace Prize winner, Aung San Suu Kyi, has been held by the government under house arrest almost continuously since then and has called on the world to pressure the acting regime to engage in talks with her party—the National League for Democracy (NLD)—and representatives of the ethnic minority groups so that the country can move toward national reconciliation. The United States has responded with foreign and economic policies, including the two laws that will be explored in this paper.

International Human Rights Governance and Corporate Social Responsibility

The question of how corporate citizenship is contributing to the evolution of domestic and international law is a timely one. New expectations for global business in

[3] Additional amendments in the Block Burmese JADE Act include strengthened visa bans, freezing and blocking of assets for Burmese citizens with ties to the junta, and a continuation of import restrictions enacted in the first law without the need for annual renewals of these sanctions.

society have emerged from a broadening of the defined roles and responsibilities of business by a wide range of stakeholders (Warhurst, 2005). By international agreement, states are legally bound to promote basic human rights but companies are only bound when national governments transform the relevant elements of the international human rights framework into binding national laws for business. Voluntary standards and agreements formed through multi-stakeholder partnerships between industry, institutions of international law and civil society have recently blossomed as a new form of international governance that places responsibility for global human rights regulation on multinational enterprises and calls on national governments to support the implementation of agreed industry policies. The Kimberley Process Certification Scheme (KPCS) for the international trade in diamonds is one example of an industry-initiated regulatory structure. Launched in 2003, the KPCS was a response to publications and a campaign that exposed how the diamond trade was fueling violent conflict and inhumane practices in West Africa by the respected human rights NGO, Global Witness. The need to make multinational enterprises (MNEs) subject to international law and the role of NGOs as monitoring agencies has been stressed in the discourse on corporate social responsibility (Jones, 2006; Winston, 2002). The goal of this paper is to explore the roles played by corporate stakeholders in the evolution of U.S. national law that attempts to govern the flow of resources to and from Burma. The research seeks to understand how and why corporate social responsibility strategies in the jewelry industry have changed in the context of Burma and human rights.

Research Design

This paper draws on ethnographic research performed over a one and a half year period in 2006-2007 with key informants in the gem and jewelry trade and the civil society network of Burmese human rights activists in the United States. It grew out of a larger comparative case analysis of the costs and benefits of artisanal gemstone mining in Burma, Brazil and Madagascar (Ali *et al.,* 2007). The paper undertakes a stakeholder analysis of the evolution of voluntary and regulatory policies that impact the Burmese gemstone sector. It compares the perspectives of business actors and a key NGO in the 2003 and 2007 legislative processes that resulted in new regulations on trade with Burma and highlights the role of the media in each instance. This case study of U.S. human rights policy is used to inductively build new ways of thinking about corporate citizenship and industry self-regulation.

Theoretical Orientation

By seeking to understand issues as seen by different stakeholder groups, business managers can better anticipate threats, manage risks and capitalize on opportunities for competitive advantage, innovation and growth. However, the field of stakeholder theory is broader than the strategic workings of business managers, and also encompasses planning and strategy for stakeholders external to the corporation, as well as analyses of the roles that various stakeholders play with regards to advancing or impeding larger concepts, like sustainable development and universal human rights (Steurer, 2006). Secondary, or external, stakeholders who are likely to take an interest in corporate activities include government actors, non-governmental organizations (NGOs), local

community groups, individual consumers, suppliers, and organizational buyers. Given the "natural fit between the idea of corporate social responsibility and an organization's stakeholders" (Carroll 1991: 43), stakeholder analysis has been a dominant approach used in research on corporate social performance and corporate self-regulation with regards to environmental and social impacts of business.[4]

The emergence of voluntary approaches to governance of business practices is predicated on the potential for market forces to provide incentives for industry to self-regulate. Market forces are determined by supply and demand for products and services, and demand derives in large part from consumer preferences while supply derives from the external availability of raw materials and capital needed for production, which is controlled by government regulations, suppliers, and shareholders. Therefore market forces are directly dependent on the perceptions, actions and decisions of a firm's primary stakeholders. Perceptions and behaviors of primary stakeholders can be influenced by secondary stakeholders as well as by social norms and society at large. Thus a stakeholder analysis framework is a logical way to assess changing strategies and processes of industry regulation with regards to facilitation of national reconciliation and human rights in Burma.

[4] Christmann and Taylor used a stakeholder analysis framework to examine characteristics of a variety of voluntary environmental initiatives [VEIs] (2002). They also outlined a roadmap of strategies for business managers to consider strategic decisions about VEIs based on a firm's particular stakeholder landscape in relationship to the environmental issue addressed by a VEI. Several other studies have employed stakeholder analysis frameworks to measure general corporate social performance and argued that stakeholder management is a key to corporate social responsiveness (for reviews see DeBakker & Nijhof 2002; Waddock et al. 2002).

Stakeholders for the Case Study

It was not possible to directly interview stakeholders in Burma because access to mining areas was denied and the government is not a reliable source of information. Gemologists with experience in Burma were chosen as the best available representatives of information about stakeholders in Burmese gem mining regions. The U.S. Campaign for Burma (USCB) was directly involved in advising and advocating for legislation in both rounds of law making, and is the only Burma oriented human rights NGO known to have engaged directly with jewelry corporations so it was chosen to represent the perceptions and behaviors of a secondary stakeholder in this case study. Semi-structured interviews ranging from 40-120 minutes were conducted with representatives from two well-known jewelry corporations—Tiffany & Co. and Cartier—both of which hold seats on the board of Jewelers of America, a board member and the campaign director from the U.S. Campaign for Burma, two gemologists with extensive experience in Burma, a representative of the international gem trade, which supplies colored gemstones to jewelry corporations, and a foreign policy expert with research experience on Burma.

Methods

My method for studying the evolution of corporate social responsibility in the jewelry industry with regards to human rights in Burma was primarily ethnographic meaning that systematic social, cultural and historical description were emphasized based on first-hand observation and participation. This approach to researching corporate

citizenship has been successfully utilized to decipher emergent trends and issues in the field (see Poncelet, 2003 as an example). It is an appropriate qualitative research strategy for developing a clear picture of new or poorly understood cultural behaviors because it stresses: 'a strong emphasis on exploring the nature of particular social phenomena, rather than setting out to test hypotheses about them; a tendency to work primarily with "unstructured" data, that is, data that have not been coded at the point of data collection in terms of a closed set of analytic categories; investigation of a small number of cases, perhaps just one case, in detail; [and] analysis of data that involves explicit interpretations of the meanings and functions of human actions, the product of which mainly takes the form of verbal descriptions and explanations, with quantification and statistical analysis playing a subordinate role at most' (Atkinson and Hammersley 1994: 248).

Semi-structured interviews detailed above were supplemented with observation of the largest gem trade show in the United States in Tucson, Arizona in 2006 and participation in The Madison Dialogue, a cross-sector initiative established by the Council for Responsible Jewelry Practices (CRJP) and others seeking to promote communication and collaboration for best practices, sustainable economic development, and verified sources of responsible minerals. In addition to primary ethnographic research, careful analysis of online media and industry publications was conducted to assess the availability of information and the roles of the media and internet in the jewelers debate about social responsibility and Burma. Relevant press releases and statements from jewelry firms, industry organizations and human rights NGOs were triangulated with information collected from interviews and observation.

Results

1. The Process of Establishing Sanctions

1.1 Voluntary Boycotts of Burmese Gemstones

For several years, two prominent members of Jewelers of America—the largest trade association representing retail jewelers—have had voluntary policies against purchasing precious gemstones that were originally mined in Burma. In 2002 Leber Jeweler, a small family-owned business in the Chicago area, was officially the first American jeweler to publicly adopt an ethical sourcing policy with regards to Burma.[5] Tiffany & Co., arguably the most world-renowned American jeweler, publicly adopted a policy against sourcing any gemstones that originated in Burma two days before the Burmese Freedom and Democracy Act of 2003 became effective as federal U.S. law. This Act made it illegal for Burmese products to legally be imported into the United States. At the time of its passage, Leber Jeweler and Tiffany & Co. were the only jewelers who formally spoke out and took a stance that they would no longer sell any products made with Burmese gemstones.[6]

Gemstones that originate in Burma are generally imported from other international centers of gem treatment, cutting & polishing, so stones continued to come into the United States as imports from Thailand, China, India, Sri Lanka and other

[5] Leber sells a variety of gemstone jewelry, including some pieces featuring rubies from countries other than Burma.

[6] Since the world's highest quality rubies, jadeite and spinel have always been associated with Burma, Tiffany made the decision to cease purchase of these three types of precious stone altogether because the company prides itself on using only the highest quality stones.

nations. Brian Leber, the owner of Leber Jeweler and a long-time member of the U.S. Campaign for Burma, attempted to organize others in his industry to cease purchasing stones that originated in Burma by writing articles in trade publications, speaking at industry gatherings, and including information about the ethics of sourcing stones from Burma on his company website. As he states on the website, "we at Leber Jeweler Inc. believe in both the letter and the spirit of this law and strongly endorse a ban on the importation of all gems originating from Burma. Sadly, only a small handful of jewelers support or understand this position" (Leber, 2007).

When he couldn't convince other jewelers to adopt a voluntary boycott, Brian Leber adopted a softer strategy. He founded the Jewelers Burma Relief Project, an industry-specific fund through which jewelers could support humanitarian aid and education inside Burma and on its border in Thailand. While his main motivation for creating this project was compassion for the people of Burma, the project still achieved one of the goals he had set for an economic boycott: further dialogue and progress toward reform. It made good business sense as it showed his customers that although he wasn't sending any money to Burma through the gem trade, he was still directly supporting improved quality of life for the Burmese people. Other jewelers who decided to contribute to the fund could use it as a way to enter into dialogue with their customers and others in the trade, hopefully moving more businesses toward an economic boycott supplemented with appropriate humanitarian aid.

Meanwhile Tiffany decided to make the legal dimensions of the U.S. sanctions clearer for the whole industry. When their competitors continued to purchase gemstones

from Burma through other channels, they were concerned that their principled position did not make good business sense (Buckley 2008). Rather than taking a step backward by revoking the policy, they took a leadership strategy with an aim to clarify the law for the entire industry. About a year after the sanctions took effect, they applied to U.S. Customs and Border Protection for a ruling on whether the concept of "substantial transformation" applies to rubies from Myanmar. Customs regulations on country of origin state "further work or material added to an article in another country must effect a substantial transformation in order to render such other country the 'country of origin' within the meaning of this part"(Beard, 2005). The Customs ruling found that cutting, polishing and heat treatment of Burmese-origin rough gemstones constitute "substantial transformation" and stones undergoing any of these processes outside Myanmar may be legally imported into the United States. The majority (approximately 97%) of gemstones mined in Burma were imported from third-party countries before the law was passed, and thus the passage of the law has had a negligible effect on the Burmese gem trade.

1.2 Redefinition of Human Rights Responsibility in the Jewelry Industry

After the law was clarified, Tiffany notified their suppliers that they would soon begin purchasing stones that originated in Burma as long as the suppliers could warrant and provide written documentation of where substantial transformation of these stones had taken place. It was not long after this that *Professional Jeweler,* a highly regarded trade publication, featured an article on Tiffany's decision. The author[7] quoted Brian Leber saying, "Our business will continue to refuse to purchase any goods of Burmese

[7] Peggy Jo Donahue who is now the director of Public Affairs for Jewelers of America

origin because we believe it is unethical to do so. The same military government that continues to hold Burma's duly-elected leader Aung San Suu Kyi under house arrest and is guilty of countless human rights abuses also owns a majority share in all Burmese mines as well as runs the gem auctions in Rangoon" and the seeking of a legal exemption by industry members "will only be read as a self-serving act that, when it inevitably enters public debate, will cast a negative shadow on our entire industry" (Donahue 2005b). The owner of a leading U.S. jade supply company stated that "Tiffany & Co. has been the conscience of our industry, so this action is important" (Donahue, 2005b). Because Tiffany is a business leader in the American jewelry industry, many other businesses pay close attention to how it behaves and base some of their own decisions at least in part, on what Tiffany does.

The article also appeared online at the Business & Human Rights Resource Centre, a leading independent research organization that compiles research about the human rights records of companies worldwide. Two weeks after the initial publication of the article in *Professional Jeweler* Tiffany's VP of Media Relations provided a response statement to the Business & Human Rights Resource Centre that read:

> As noted in the *Professional Jeweler* article of Feb. 16, 2005, that is reproduced on your web site, Tiffany & Co. is following the guidance provided by U.S. Customs and Border Protection. When the U.S. Congress enacted the Burmese Freedom and Democracy Act of 2003, Tiffany ceased purchase of all rubies, spinel and jadeite. We were among very few companies to do so. We asked Customs for clarification and are now abiding by its ruling (Buckley 2005).

In response to the information, the U.S. Campaign for Burma (USCB) contacted Tiffany & Co. to express their concern. This contact included a draft of a negative press release that USCB threatened to put out if Tiffany rescinded its moratorium on gemstones from

Burma. Three days after the statement from Tiffany appeared on the Business & Human Rights Resource Center, the C.E.O. of Tiffany—Michael Kowalski—publicly announced that despite the ruling by U.S. Customs, the company would continue its moratorium on gemstones that originated in Burma.[8] At Tiffany's, careful consideration and internal debate between corporate managers resulted in agreement that, "to us [the customs ruling] is a legal construct… we felt strongly that the only choice that we had was to continue the purchase moratorium, that despite the customs ruling the rubies that met our quality standards were of Burma mines and therefore were still subject to the ban" (Buckley 2008). The press release stated:

> "We believe the right thing to do is continue our moratorium." Kowalski said. "Despite the Customs ruling, mining of these gems supports the existing Burmese regime. We support democratic reforms and an end to human rights abuses in that country. We believe our customers would agree with our position" (Tiffany & Co. 2005).

In the days following this announcement, several human-rights websites published a statement from UCSB thanking Tiffany & Co. for their principled stance on the issue of Burma. The co-founder of USCB said, "Tiffany's deserves our praise and patronage for making this ethical decision" (US Campaign for Burma 2005). *Professional Jeweler* published a follow-up titled *Human Rights Group Hails Tiffany Refusal to Buy Myanmar-Mined Gems* and included a brief summary of political history and human rights abuses in

[8] Overall, the staff and board members of the U.S. Campaign for Burma think of Tiffany & Co. as one of the most responsible companies with which they have dealt, because of their responsiveness on these issues. Prior to the of fall 2007 following the Saffron Revolution, the U.S. Campaign for Burma and its predecessor, the Free Burma Coalition, had never targeted any exclusive jewelers other than Tiffany & Co, but they had targeted some stores that sell a lot of jewelry, like Target and Wal-mart, which were much less responsive to their concerns.

Burma (Donahue, 2005a). The position of Jewelers of America (JA)[9] on Burmese gemstones was that their members should make sure to abide by the law and that "if a retailer, JA member or otherwise, chooses not to sell Burmese stones imported via other countries, that is their right. However, JA is not encouraging or recommending retailers to take that step" (Beard 2005).

1.3 The Evolution of Binding U.S. Legal Regulation of Burmese-origin Gemstone Imports

Before the passage of federally enforced sanctions on direct imports from Burma in 2003, local and state-level governments had already attempted to adopt their own sanctions in response to citizen concerns and USCB had campaigned aggressively for American based corporations to cease direct business with Burma.[10] Although the federal government overruled state and municipal legislation on the grounds that the responsibility of foreign policy does not lie outside of Washington, the case had been made for citizen support of sanctions and thus lay the groundwork the Burmese Freedom and Democracy Act of 2003.

Tiffany & Co. did not play a role in demanding this first round of sanctions, but did take a leadership role in enforcing and clarifying them for the jewelry industry. The gemstone loophole that was solidified by a customs ruling resulted in a dilemma of

[9] JA has three main functions as an industry membership association: knowledge sharing and education, advocacy for professionalism and high social, ethical and environmental standards in the jewelry industry, and improvement of business skills and profitability of member firms (Jewelers of America 2008).

[10] Prior to the 2003 sanctions, UCSB and its transnational predecessor organization, the Free Burma Coalition, had used a mix of consumer and shareholder pressure and municipal procurement power to successfully pressure 90 companies to cease all business with Burma. One piece of the strategy employed by the NGO movement was lobbying and support for the 1996 passage of the Massachusetts Burma Law, which instated selective purchasing for public institutions such that suppliers would have to sever ties with business conducted in Burma, and was overturned by the U.S. Supreme Court's *Crosby* decision along with all of the state and municipal selective purchasing policies that had been used to pressure the government of South Africa during the anti-apartheid movement of the 1980s.

corporate social responsibility for Tiffany that was resolved with input and slight pressure from USCB when the corporation chose to go beyond compliance with the law and publicly set a foreign human rights precedent for the industry. Eventually leading jewelry companies, including Tiffany, collaborated through an industry membership association to ask Congress to close the gemstone loophole so that jewelers would not have to regulate gem suppliers themselves. In the case of the Block Burmese JADE Act of 2007, it was not an NGO-led campaign that generated support for gemstone sanctions but another form of civil society manifested in JA.

After the attempted Saffron Revolution ended in violence against unarmed civilians, the board of JA decided that political action was the best way to address the expected rising tide of public questions about gemstones and Burma. They sent letters to advise their 11,000 member stores of their deep concern about the human-rights situation in Burma and to suggest that members take steps to ensure they source gemstones in a manner that respects human rights. Once the letters to members had gone out, a press release was issued, including the following statement:

> In light of the continuing lack of democratic freedoms in Burma, as evidenced by recent events in the country, JA has asked Congress to amend the Burmese Freedom & Democracy Act of 2003, which bans the importation of products from Burma, so that it includes gemstones mined in that country. JA also has asked that this amendment remain effective until such time as Burma agrees to the democratic reforms articulated in a proposed January 2007 resolution put before the United Nations Security Council (Jewelers of America 2007).[11]

Quoted in the press release, the CEO and President of JA, Matt Runci, said:

> JA members believe it is their responsibility to support and respect the

[11] The proposed UN resolution called for national reconciliation and democratization of Burma, release of all political prisoners, an end to human-rights abuses, and inclusion of all ethnic minority groups in a transparent dialogue to move the country toward a democratic transition. While all western democratic countries on the U.N. Security Council supported the resolution, it did not pass because China used veto power to block it.

> protection of international human rights within their sphere of influence and to make sure the sourcing of gemstones is not complicit in human rights abuses, in line with the commitments[12] they assume as members of Jewelers of America. These commitments include adherence to the principles of U.N. Global Compact, which JA has agreed to support (Jewelers of America 2007).

Members were advised to contact their suppliers to ascertain whether any gems in their supply are from Burma, and on all future orders to seek written assurance from suppliers that they will not knowingly provide any stones mined in Burma until further notice. JA emphasized that this plan of action—discussion and requirement of written assurances from suppliers and the legislation of all-encompassing sanctions—is the "quickest way possible to make certain our members can assure themselves, and their customers, that they are doing their part to help end the human rights abuses ongoing in Burma"(Jewelers of America 2007).[13]

2. Stakeholder Perspectives on the Sanctions

2.1 Primary Stakeholders: The availability and quality of information available to businesses considering a voluntary ban of Burmese-origin gemstones improved between 2003 and 2007 such that jewelers faced with a decision on the issue could react with more confidence in stakeholder viewpoints than was possible when Tiffany's was forced to decide. Since Tiffany & Co. had already set a precedent that appeared to have met with support from shareholders and customers the major area of remaining uncertainty with primary stakeholders lay with suppliers. Economic, social and legal improvements in Madagascar since 2003 have bolstered stability of a high quality, open gemstone supply that can replace the supply of colored stones from Burma, and a few other isolated

[12] See JA Statement of Principles in Thesis Appendix B.
[13] Brian Leber, a prominent member of JA and USCB, also wrote a round of personal letters to several key members of Congress asking for stronger sanctions that would prevent stones mined in Burma from legally entering the United States.

business deals have secured market availability of supplies of high quality non-Burmese origin rubies[14]. In light of these socio-political changes, jewelry supply businesses were ready to respond with alternatives to Burma when the attempted Saffron Revolution caused a global paradigm shift. Table 1 gives an overview of information that JA could review in 2007. A stakeholder analysis in 2003 would have resulted in much more uncertainty about relevant viewpoints.

Table 1. Primary Stakeholder Analysis for Burmese Gemstone Risks

Primary Stakeholders	Relevant Information for a 2007 Stakeholder Analysis
Shareholders/Owners	• A trend that is relevant to publicly traded corporations is that shareholder activism on Burma has been increasing, and Wal-Mart—the world's largest jewelry retailer—has been targeted. • Tiffany & Co. has met with support from shareholders for its four-year voluntary moratorium on purchasing Burmese-origin gemstones. • Brian Leber, owner of a medium size jewelry company, has effectively grown his business and attracted customers while publicly boycotting Burmese-origin gemstones. • Some other owners of small to medium size jewelry enterprises have reservations about adopting sanctions because it is impossible to accurately predict how they will impact poverty in Burma, and suspect they may economically harm bystander countries that also produce rubies.
Employees	• Cartier's decision to voluntarily require suppliers to produce documentation about the origin of gemstones and not to knowingly supply the company with Burmese-origin gemstones was driven mainly by employee reactions to pictures and news about the violent crackdown on the attempted Saffron Revolution in Burma.
Suppliers	• Months after the crackdown, a leading large manufacturer and distributor of jewelry and jewelry-related products, Stuller Inc., has already launched a line of natural Madagascar rubies in response to the pending demand for non-Burmese origin rubies. • Other suppliers who can guarantee reliable sources of non-Burmese origin rubies have also begun utilizing the questionable ethics of Burma in strategies to boost sales of rubies originating in Malawi and Greenland.
Customers	• A 2005 article on Burma in *Professional Jeweler* magazine referred to a trend where "educated consumers are increasingly concerned about buying gems that

[14] Columbia Gem House signed an MOU with the Government of Malawi in early 2007 to continue development of the Nyala Ruby Mine, True North Gems is marketing rubies from Greenland, and Stuller Inc. is marketing rubies from Madagascar (Casselman 2005; Yonick 2008).

	directly or indirectly support unsavory regimes, wars or terrorists." • A survey conducted by the Jewelry Consumer Opinion Council found that consumers are increasingly concerned about where gemstones originate and many are inclined to pay more for jewelry that appeals to their sense of ethics.

2.2 Secondary Stakeholders:

Despite long-standing debate within the industry about whether or not sanctions and boycotts would really help the situation in Burma, a secondary stakeholder analysis of official positions after the attempted Saffron Revolution shows that all American stakeholders were likely to support strengthened sanctions on gemstones (see Table 2). The only statement warning against blanket style sanctions came from the International Gem Trade Association (ICA), which has over 500 members in 46 countries and aims to represent the international colored gemstone industry.

Informal interviews with individuals in the gem and jewelry trade about their personal positions on sanctions and boycotts revealed a mosaic of political contention and ethical uncertainty underlying the picture of unified, public support from representative institutions portrayed in Table 2. This democratic mosaic reflects a point-counterpoint piece published after the 2003 sanctions took effect. In *Banned! Burmese Gems in the Crossfire,* Richard Hughes, a prominent American gemologist, recognized authority on rubies and sapphires, AGTA Gemological Testing Center administrator, and long-time adventurer with a particular affinity for travel in Southeast Asia engaged with Brian Leber's efforts to promote voluntary boycotts (Hughes & Leber, 2005). Published on the website associated with his famous book, *Ruby & Sapphire*, Hughes argued against gem sanctions, and Leber argued in favor of them. Hughes explained the logic behind his position that blanket sanctions were not likely to change anything in Burma and were not

in the best interest of poor families there. He argued that in order for sanctions to work, they would have to be adopted on an international basis and that China, the Burmese regime's heftiest business partner, would never adopt sanctions. He further extrapolated that a policy of sanctions will harm the poor since the regime is likely to take out its anger about such a policy on its own citizens. Finally he pointed out that gems are easy to smuggle out of Burma and that less scrupulous gem dealers will continue to sell them anyway since they can import them through other channels.

Like USCB, Leber sees an economic boycott as only the first step in a process of moving toward freedom and democracy in Burma. Because some industries [jewelry] have ignored the voluntary withdrawal from Burma by the majority of western business, the sanctions are needed; they will lend credibility and support to those working within Burma for democracy generate awareness as an effective form of international civil disobedience against the regime. With the sanctions in place and abided by, Leber advocates for the next steps: increase international scrutiny on the Burmese regime and bring the measure before the United Nations in an effort to pressure China to "exercise diplomatic pressure against Burma to begin a process of reformation towards democracy"(Hughes & Leber, 2005).

Table 2. Secondary Stakeholder Positions on Gemstone Sanctions in Burma

Secondary Stakeholders	Responses & Positions as relevant to the September 2007 military crackdown on peacefully protesting civilians in Burma
Jewelry Trade Association (JA)	• The public affairs coordinator of JA discovered through conversations with members that many jewelers were not aware of the 2003 Burmese Freedom and Democracy Act so had not considered whether or not to implement a ban on Burmese origin gemstones. • The actions of JA were implemented to protect the ethics of the industry because "our consciousness was raised as an industry by the events that we saw taking place in August and September, and then the sense that we had gemstones that we knew came from Burma, therefore we needed to do something about it" (Peggy Jo Donahue quoted in Farabaugh 2007).
Human Rights NGO (USCB)	• The voluntary actions of jewelers and JA's request for Congress to close the sanctions loophole surprised UCSB and drew their quiet support. In response to the events of August and September 2007, UCSB had prepared a "Burma Blood Bling" campaign strategy to pressure boycotts but had not yet implemented it when the jewelry industry began to take action on their own terms. • Bill sponsors in the Senate and the House called on USCB for research and administrative support to draft and implement realistic legislation that could close the sanctions loophole for gemstones.
U.S. Government	• The President and Secretary of State aggressively and immediately raised the 2007 crackdown as a pressing human rights issue in international forums and with leaders of nations in the region of Burma. • The President worked with the Department of Treasury to freeze assets in U.S. jurisdiction of Burmese senior officials, and with the State Department to block entry of officials, their families and others complicit in preventing a democratic transition in Burma. • Statements from members of the Senate and the House of Representatives and from the First Lady all expressed outrage at the crackdown and ongoing human rights violations in Burma. • After JA asked Congress to close the gemstone loophole in the 2003 sanctions, the First Lady publicly recognized the association for their ethical leadership.
United Nations	• In January 2007, a resolution proposed in the UN called for national reconciliation and democratization of Burma, release of all political prisoners, an end to human-rights abuses, and inclusion of all ethnic minority groups in a transparent dialogue to move the country toward a democratic transition. While all western democratic countries on the U.N. Security Council supported the resolution, it did not pass because China used veto power to block it.
Gem Trade Associations	• The American Gem Trade Association (AGTA) issued a statement in full support of strengthened sanctions after JA requested them from Congress and proclaimed vigorous support for provisions to increase humanitarian aid to the people of Burma.

[15] The 2007 ICA statement in response to debate in Congress over sanctions stressed the following: "ICA further warns against any hasty decisions towards a systematic ban to trade with Burmese gemstones and strongly recommends that all parties cautiously consider the negative impact and collateral damage that indiscriminate measures could inflict upon independent and

	• The International Colored Gemstone Association (ICA) fully supported the U.N. resolution, condemned the violent repression of democracy demonstrations in Burma, and exhorted members to cease doing business with government sources and marketing organizations. Notably, the ICA warned against systematic sanctions[15].
Gemological Laboratories	• AGTA maintains a gemological testing laboratory that issues gemstone origin determinations for Burma. As stated above, AGTA supports sanctions. • The Gemological Institute of America (GIA) is the most respected American education institute in the field of gemology and maintains labs that issue gemstone origin determinations for Burma. GIA does not advise on political decisions. Scientists at GIA have already seen an increase in demand for their origin determination services due to boycotts, and expect that sanctions will increase demand even further. • An article in *Colored Stone* magazine, a respected trade publication in the gem industry, emphasized that gemology is not an exact science, and different gem labs commonly disagree when it comes to origin determination. The article raises the question: "Does this mean, then, that all rubies must be boycotted—judged guilty of being Burmese unless proven geologically innocent?"
Gem Traders inside Burma	• Preliminary news reports including interviews with gem traders in Burmese border towns indicate that business has slowed in response to boycotts and pending sanctions. One trader stated "if business goes on like this I'll have to quit" (The Financial Express: http://www.thefinancialexpress-bd.com/search_index.php?page=detail_news&news_id=26732).
Competitors	• As shown by the experience of Tiffany's semi-voluntary boycott of Burmese-origin gemstones in 2003, the competitive nature of the jewelry business presents a problem of collective action when in comes to social responsibility. JA's movement to organize cooperation amongst competing jewelers begins to address this problem. Binding legislation would force "social responsibility" and create more competition for non-Burmese origin gemstones.

Discussion

In the United States, human rights advocacy NGOs and subnational governments responded to Suu Kyi's requests to put economic and political pressure on the regime in the 1990s. Eventually, targeted campaigns on corporations and localized legislation that was overruled at the federal level paved the way to a broader and more effective approach: federally legislated sanctions in the form of the Burmese Freedom and

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poor populations engaged in mining, processing and trading activities in Myanmar and other countries" (International Colored Gemstone Association 2007).

Democracy Act of 2003. This act is an example of civil society pressuring business and collaborating with government to pass legislation that forces business to comply with their interpretation of international human rights law. This type of NGO-business-government interaction has been well documented in the field of corporate social responsibility. The Block Burmese JADE Act of 2007 is an example of business leaders voluntarily collaborating, and seeking support from government to translate relevant elements of the international human rights framework into binding national law to regulate their industry and the supply chains on which it depends. Leaders in the jewelry industry catalyzed social change through a business association, essentially negating the norms of the past, which suggest that this change-making role traditionally belongs to NGOs. This allowed the relevant human rights NGO to focus its limited resources on its congressional research and advisory role instead of splitting them with a corporate pressure campaign.

This case has revealed a shift in corporate social responsibility (CSR) wherein business is effectively using trade membership associations to beat NGOs at the game they invented and reconfigure the role of NGOs from catalyst for change to support for industry-led change. Increasing secondary organization and collaboration around issues of social responsibility within the jewelry industry[16] has apparently resulted in improved capacity for the industry to collectively respond to societal concerns that can arise suddenly and unpredictably. Collaboration and education through membership

[16] The growing emphasis on best practices, ethics and supplier codes of conduct at Jewelers of America, the World Jewelry Confederation, the American Gem Trade Association, and the International Colored Gemstone Association is evidence of this organization and collaboration. The establishment of the Council for Responsible Jewelry Practices in 2005 is another innovative product of this collective movement toward membership associations to voluntarily regulate the industry.

associations enabled rapid responsiveness to the Burmese military crackdown of September 2007 such that jewelry businesses were able to address the issue faster than NGOs were able to launch a corporate attack. While this is a promising sign that business is ready and willing to protect human rights and pressure industry laggards to act, the lack of room for democratic debate gives some cause for concern[17]. By acting almost immediately in response to internet news and international media stories, advising members on how they should respond and asking for sanctions right away, JA practically closed off the opportunity for meaningful public debate. In this case, drastic and immediate action may have been appropriate but the precedent that it sets could result in a co-optation of public ideas in the future. However, the idea of industry lobbying government for more stringent social regulations is interesting given that the opposite is considered the norm.

In this new age where corporations are taking global social and environmental governance into their own hands, the media and the efficient communicative power of the internet is playing an essential role. This case study has revealed that social governance policies adopted by publicly traded corporations, regardless of their effectiveness at achieving governance goals, may rely on media attention for financial justifiability. It wasn't until word spread from an industry-oriented publication through the internet to a Burma focused human-rights NGO that Tiffany received any notable attention from the

[17] From an American perspective, the gemstone sanctions are mainly symbolic given that estimates suggest 99.9% of the gemstones produced in Burma are jade and are sold to China. Consumer demand for jade is low in the U.S. while demand for rubies, and other colored stones, is much higher. However, voluntary boycott policies by multinational brands like Tiffany and Cartier have the potential to effectively globalize the sanctions and eat into some of the global demand for Burmese jade. A strong message from the U.S. could also bring unprecedented pressure on China to adopt a policy of constructive engagement with the Burmese regime, especially in 2008 when China is scheduled to host the Olympics.

general public for their original choice to follow the letter and the spirit of the Burmese Freedom and Democracy Act, and without this attention the moratorium would have been dropped. Business membership organizations bring an aspect of control through rewards for industry leaders because they can work with the media to attract public attention to CSR leadership strategies whereas NGOs often only draw on the media for public attention to highlight negative aspects of corporate behavior.

While the research has produced some useful findings, it is not without limitations and gaps that should be addressed in future work. One outstanding question is that of whether sanctions will be an effective way to move toward democracy and sustainable development in Burma. The publicly stated goal of forced national reconciliation may not be realistic, but it is likely that it masks the real, unarticulated goals of upholding international human rights norms and deterring future military crackdowns (U.S. General Accounting Office 1992), which are still admirable CSR objectives. In addition, carefully targeted sanctions have been shown to generate political change even when resulting economic hardship is minimal (Kaempfer & Lowenberg, 1988). A broader investigation of how the U.N. Global Compact has changed business strategies and behaviors across industries would be a useful follow-up to this case study. It was beyond the scope and time limitations of this research, but a further investigation of jewelry and gem industry involvement in the provision of humanitarian aid to Burma would also be a useful complement to broaden the CSR theory on sanctions and boycotts to address human rights concerns.

Conclusion

The case study of the evolution of Burmese gemstone boycotts and sanctions gives a model of a new approach to industry self-regulation. Business membership associations (BMAs) can increase industry responsiveness to society's moral concerns about human rights and other social issues. By compiling and organizing relevant information, educating and advising member businesses, coordinating with the media, and requesting government support when appropriate, BMAs can enable a collective industry response to sudden societal concerns thus eliminating the need for NGO campaigns to solicit a response from businesses. NGOs can be useful partners to provide support and relevant information to BMAs, or, as was the case here, to work with government to craft legislation that complements industry.

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A Jeweled Path to Poverty Alleviation: The Madagascar Model for Managing Gemstones

Abstract

Research on the relationship between gemstone mining and poverty in Africa has primarily focused on diamonds, and governance of colored gemstone mining has been characterized as ineffective and impossible. This paper draws lessons from Madagascar to highlight ways that the colored gemstone sector has been harnessed for effective economic and social development. A case study of the *Institute of Gemology of Madagascar* (IGM), a program begun by the *Mineral Resources Governance Project* (PGRM) is examined to identify factors that allowed this program to successfully contribute to economic development. The primary factors of the program's success include (i) consistent support from the World Bank and the President of Madagascar, (ii) localized investment in human and social capital, (iii) a young, dynamic and committed staff, (iv) flexible timelines, and (v) leadership guidance from a knowledgeable gem industry expert with international business experience. Political interference from government officials and sustainable financing constitute ongoing challenges that could reduce the program's efficacy. Overall the paper shows how macro-level policy improvements coupled with bottom-up learning and adaptive management have allowed Madagascar to capitalize on its mineral wealth,, and also highlights areas where improvements remain to be made to ensure long-term development.

Keywords:

Africa, Gemstones, Sapphires, Rubies, Governance, Development, Exports, Mining

1. Introduction

As the experience of Africa shows, where poverty and alluvial gold and gemstones coincide spatially, there will be artisanal mining that is difficult to control from a governance perspective (Banchirigah, 2008; D'Souza, 2002; Duffy, 2007; Hilson, 2006; Sarrasin, 2006). The available alternatives to mining for uneducated, rural people are generally not profitable enough to facilitate improvements in education and health that could allow the next generation to step out of poverty. Theorists of "the resource curse" continue to debate the pros and cons of mineral development as a foundation for poverty alleviation, but regardless of the debate, mining will continue as long as there is a market for mined products and a dearth of alternative livelihoods. Drought and degradation of arable land, caused by numerous factors including global climate change and slash and burn agriculture, are putting further strain on rural agricultural populations such that more people are forced to turn to artisanal mining for income, at least on a part-time basis. If desperate people with no other means of survival could not turn to mining, then what would they do instead? For governments, international development agencies, and foreign investors trying to maintain reliable business in an African country, the possibilities are worrisome.

Academic coverage of gemstone mining in Madagascar has highlighted potential negative social, political and environmental impacts with little focus on positive impacts or steps that have been taken to successfully harness the nation's gem bounty for social and economic development (Cardiff & Andriamamalina, 2007; Duffy, 2005, 2007;

Walsh, 2003). This article is an attempt to fill that gap and refocus the debate from the question of whether or not gemstones are a curse, to the question of how to structure programs that effectively harness gemstone flows for positive change. While uncontrolled gemstone mining is environmentally damaging, subsistence farming and herding have been causing widespread ecological damage in Madagascar since long before precious gemstones were discovered there in the mid-1990s. Some of the most unique and biodiverse forests in the world remain in Madagascar, several in close proximity to gemstone mining areas but since rural people do not accrue many direct benefits from the preservation of these "eco-gems," they cannot be expected to stop mining simply because international environmental NGOs and government donors want them to do so. Since most gemstone diggers are migrants who hope to earn enough money to buy land, zebu and other capital to establish subsistence farms, gemstone mining areas would not likely be so rush intensive and chaotic if there were more attractive ways for rural people to establish a sustainable livelihood (Tilghman *et al.*, 2007). Gemstone mining is likely to continue to support disorganized and chaotic micro-societies of Madagascar's poorest and least educated people. Alternative livelihoods that are appropriate and attractive to these populations coupled with support for rural economic development and education would probably reduce the number of miners and hence improve the manageability of the situation in rush areas. However, given Madagascar's status as a heavily indebted poor country that depends on taxes from international trade for the majority of public financing, domestic funding for these types of programs is still quite limited.

2. Governance and Mining in Madagascar

International Financial Institutions and donor agencies have been engaged with the government in recent years around addressing the Millennium Development Goals. After a period of political turmoil, in 2002 Marc Ravalomanana was declared the newly elected president of Madagascar to replace Didier Ratsiraka and was subsequently re-elected in 2006. The new government finalized a *Poverty Reduction Strategy Paper (PRSP)* in 2003 with the IMF and the World Bank, and this was presented as the country's official development strategy. In 2006, the Ravalomanana administration published the Madagascar Action Plan (MAP), a report which gives an overview of the poverty reduction strategy and the *National Environment Action Plan* (PNAE) in a format that is appropriate and enticing to a larger cross-sector of society than bureaucratic reports and strategy papers. The *Mineral Resources Governance Project* (PGRM)—one of fifteen programs that were created under the auspices of the PRSP—has four components outlined in the World Bank Project Information Document (PID) of 2003: (1) Strengthening transparency and governance in mining; (2) Key institutional reforms to facilitate the decentralized management of mineral resources; (3) Promoting private investments and value added in the sector; (4) Project coordination and management. On a broad level PGRM was to facilitate sustainable development and poverty alleviation as follows:

> The overall objective of the project is to assist the Government of Madagascar in implementing its strategy to accelerate sustainable development and reduce

> poverty in Madagascar through the strengthening of governance and transparency in the management of mineral resources, with special emphasis on small-scale and artisanal mining (De Sa, 2003).

The project is a scale-up of the *Mining Sector Reform Project* (MSRP), which was designed as a preliminary step and funded by a Learning and Innovation Loan from the World Bank with the assumption that it would evolve into a larger, more ambitious approach to mining sector development and sustainability. In light of the change in government during implementation of the MSRP and Ravalomanana's proclaimed war on corruption, PGRM was undertaken with $32 million USD in approved financial support from the World Bank, the U.S. Agency for International Development (USAID), and the French and South African Governments. The willingness of international donors to support the new government with substantial loans and aid was an important shift indicating renewed confidence that transparency and responsible governance is possible (Duffy, 2007; Mikolajczyk, 2008; Walser, 2006).

In the short-term the PGRM aimed to achieve several specific goals by the end of its first year, including set-up and establishment of the following priorities (De Sa, 2003):

- One-stop shop for mineral exports
- Certification and evaluation structure for gemstones
- Antananarivo gemstone exchange market
- Training program in cutting and polishing gemstones

In the medium-term the Government expected the project to decentralize administration of the sector, and engage communities affected by mining in development processes.

Specific aims over the medium-term were described in the World Bank Project Information Document of 2003 (De Sa, 2003):

- Capacity building in the Provincial mining administration
- Improved alignment between central Government and Provincial implementation
- Fiscal revenues increase to communes with decentralization of tax collection
- Effective tools for community empowerment and participation
- Public/private partnerships with responsible mining companies to invest in development of human, physical and social capital
- Technical assistance to community associations and municipal governments to incorporate mineral resource management into their participatory development plans

Project implementation began in mid-2003 after loans were approved, and adequate progress was made each year, especially toward the short-term goals, all of which were at least planned in the first year and have since resulted in sustainable economic development programs (Cushman, 2006; Phillips, 2008; Walser, 2006). The medium-term goals have proved more illusive. Some pilot projects in communes with gold mining have resulted in an increase in fiscal revenues to the municipal governments of those areas. By partnering with local NGOs, a few cases of community empowerment and participation have taken seed and resulted in improved social infrastructure (Phillips, 2008; Walser, 2006). However, capacity building and communication between centralized civil servants and Provincial administrators is still lacking overall. Technical

assistance is also severely underdeveloped, but efforts to implement assistance have resulted in valuable lessons that are shaping plans for the next phase of governance in regions with newfound gem deposits (Phillips, 2008).

The PGRM's focus began to shift fairly early on in the program's implementation. Promotion of foreign direct investment in large-scale mining of industrial materials and metals would be a more important revenue-generator for the cash-strapped government than small scale and artisanal mining, even though the latter would be a more important employment generator (Phillips, 2008; Walser, 2006). The new legal and regulatory frameworks, begun under the MSRP, successfully made Madagascar more inviting to foreign mining investors and attracted mining companies from around the world in PGRM's first year (World_Bank, 2005). A few foreign companies registered for gemstone claims with the stated intention to operate medium-scale mechanized sapphire mines. However, almost all of these companies never broke ground to develop sapphire mines either because planning analyses showed that the operations would not be economical, or because the principals had dishonorable intentions (Cushman, 2008; Mikolajczyk, 2008). Foreign investments to open large-scale sapphire mines have been delayed (for more details refer to section 3.2). Registrations of small mining claims have risen indicating that some level of Provincial administration is working well. By 2005, some restructuring of the project was undertaken to "address important remaining barriers to large scale mining investments, mostly in relation to institutional limitations and constraints"(World_Bank, 2005). Environmental protection also became a clearer emphasis of the project with the establishment of a Mining/Forestry

Committee at the national level to harmonize mining sector expansion and formalization with conservation goals of the PNAE. The mid-2006 Status of Projects in Execution Report of the World Bank summarizes that "further progress remains to be achieved in relation to small-scale mining and the environment. Major improvements have been achieved to formalize the trade of gemstones and gold" (World_Bank, 2006). Due to legal reforms and restructuring of the gemstone export process, illicit trade of gemstones has decreased and gem smuggling has almost been eliminated[18] (Cushman, 2008; *The_Economist*, 2007). Development indicators show an unprecedented rate of improvement in Madagascar since Ravalomanana was elected (see Table 1). Economic growth, poverty reduction, improvement in management of trade in minerals, and improving conditions for business stand out as clear trends from 2002-2005.

3. Employment, Income and Revenue from Gemstone Mining

3.1 Small-scale and Artisanal

The artisanal and small-scale gemstone mining sectors provides some of the most desirable jobs available to the rural poor in Madagascar. In gemstone mining areas the average income for mining was found to be around $230 USD (2,500,000 FMG) annually in 2006, while the average income for rice growers was around $45 USD (500,000 FMG) annually and the average income for livestock breeding was around $140 USD (1,500,000 FMG) annually[17] (Phillips, 2006). Although uncontrolled gemstone mining is

[18] Reliable gemstone export statistics from 2005, 2006 and 2007 are not available at this time because the government does not keep consistent computerized records of this data. In 2004 it was estimated that 3,100 kg of sapphire were being illegally exported and the value of undeclared gemstone exports was $100 million USD (Yager, 2004). The majority of gemstones imported to Sri Lanka come from Madagascar and import statistics show a notable difference between 2004 and 2005 (See Table 2)(Roskin, 2005). Customs procedures in Sri Lanka and Thailand require an invoice showing the number, weight, rate and value per stone.

still a reality with some unfortunate social and environmental ramifications, the environmental impacts of other rural livelihoods are also extremely problematic *and* often lack the individual economic benefits of small scale and artisanal mining (Barrett, 1999; Casse *et al.*, 2004). In Madagascar, income in the artisanal and small-scale mining industry as a whole is estimated to be five to nine times more on average than small-scale farming and herding[19] (Phillips, 2006). In addition to miners, many other impoverished rural people find badly needed employment through the mining sector. Most stones that are sold to foreign traders in Ilakaka, Sakaraha, Antsirabe and other major gem market areas have already passed through the hands of four (or more) rural Malagasy people, each of whom derived some economic benefit from them (Cushman, 2008). The miners and Malagasy traders who are directly involved in the transport of stones from the earth to the hands of a gem cutter or foreign trader are only a fraction of the rural people who receive extra income because of the gemstone sector. Others run formal and informal businesses to provide supplies and services to members of the gemstone mining and trading chains (Tilghman et al., 2007). Extrapolating from the International Labor Organization's estimates that 13 million people worldwide engage in artisanal mining and 80 million others benefit indirectly, gem mining is having an important employment multiplier effect in Madagascar (International_Labour_Office, 1999).[20]

3.2 Large-scale Gemstone Mining

[19] It is important to note that there is a wide inconsistency in earnings and that this figure is an estimated average. In some instances diggers earn very little.

[20] Verifiable estimates of the number of gemstone miners in Madagascar are not available, and due to the transient nature of gem mining populations, an accurate estimate would require a national survey to find out how many people have engaged in mining as opposed to a snapshot of how many are engaged at any given time.

Despite efforts to develop foreign-owned sapphire mines that commenced in the mid-1990s, there are currently no operational mechanized gemstone mines on the main island. Capitalization of medium and large-scale mining companies has been difficult to achieve due to a series of setbacks related to political corruption, false investors, world events, regime change, extortion and the global media (Mikolajczyk, 2008). These types of setbacks may have caught the attention of the President and contributed to the change in direction of the PGRM project to improve conditions for foreign investment in large-scale mining. While small-scale mining generates more employment, large-scale mining is easier to control and harness for macroeconomic contributions to development and can also make a significant employment contribution (see Table 3 for projections for one large-scale sapphire mine planned in the Ilakaka area).

Heavy capital investments will only pay off when there is potential for a very high volume of production[21]. Ironically, Madagascar, which is considered one of the last major hotspots of terrestrial biodiversity on earth, may be one of the last places on earth where large-scale sapphire mining has the geological potential to be profitable (Pardieu & Wise, 2006). If conducted on a limited basis in an environmentally and socially responsible way, it could generate the revenue needed to help the country's transition out

[21] As a general rule, the majority of stones unearthed from colored gemstone deposits are smaller than one gram and thus as individual stones they have little economic value. These commercial stones are sorted by type and color and sold in bulk to cutting houses that fill orders for low-end jewelry manufacturers. Larger stones are more rare, and those that have particular rare qualities can be sold individually for the manufacture of higher end jewelry. In an mechanized mining, commercial stones are generally used to cover the cost of operations, while large stones are used for profit and reinvestment in the mine. Improvements in gemstone treatment technology have allowed mechanized mining to become more profitable by making a greater numbers of stones economically viable.

of poverty that may be one of the keys to effective conservation of the island's rare ecosystems.

One sapphire mining company has already signed an MOU with the President to build needed infrastructure that the government cannot afford to finance directly and developed a plan for establishing electricity on a large scale from renewable sources. One of the conditions of World Bank loans that Madagascar has received for infrastructure development was a covenant that they could not take on additional debt from private loans. The MOU specified that infrastructure would be financed by future tax credits for the mining company and did not violate the World Bank covenant. This deal for successful financing of large-scale development received media attention in Madagascar, and shortly thereafter a group attempted to extort money from the principal by threatening him with false legal claims (Mikolajczyk, 2008). He fought the extortion attempt and was put in jail for 26 days until he was proven innocent. This incident shook the confidence of potential investors in the company, and threatened to make Madagascar less attractive to foreign businessmen.

4. Development and Change in the Southern Sapphire Belt

In the eyes of the world, Ilakaka presents an amazing story that has led to common comparisons with the "wild west" days of the gold rush in California over 150 years ago. With the discovery of sapphire deposits around Ilakaka in 1998, the village grew from an unpopulated, undeveloped expanse of dry grassland to a chaotic and "booming" mega-settlement almost overnight. Duffy has proposed that global and

national forms of governance are not effective in Ilakaka because of the extraversion and political and economic power of international shadow networks (Duffy, 2005, 2007). She states that "rather than feeding into the formal economy, the income generated from the gem sector remains locked in an informal and illegal economy which is populated by gem dealers, criminal organisations, protection racketeers, miners and individuals in the Malagasy elite" (Duffy 2007:13). This assertion contrasts with visible evidence of the development of a formal economy, infrastructure and social institutions all funded by private investment from the gemstone sector. The Government of Madagascar still does not officially recognize Ilakaka as a settlement, and as such, has not invested much in public services in the area other than maintenance of the main road and the provision of a small police force (Cushman, 2008). While there is a local police force and a military presence, lack of equipment and poor salaries for law enforcement have weakened the potential for effective governance (Hogg, 2007). Despite all of this, the city is one of the most developed in the country outside of Antananarivo, as evidenced by the private hospital, pharmacies, availability of electricity, private schools, churches, a mosque, restaurants and other amenities (Cushman, 2008).

Ilakaka's crime rate has attracted global attention. However, crime is a problem in many areas of Madagascar and there has not been any clear data provided to support the assertion that crime is greater in Ilakaka than the national average (Fafchamps & Minten, 2006; Hamilton, 2003). On average, the crime rate in Madagascar is comparatively low on a global scale, with a robbery rate that was equal to only 1.5% that of the robbery rate for the United States and an overall crime index closer to 1% of the

value of the U.S. crime index in 1995 (Winslow & Soliman, 2008). In the context of a relatively low crime country, areas of concentrated crime stand out. Ilakaka is no exception and robbery there is especially common, which makes logical sense given that there is a higher concentration of wealth then in most other parts of the country. Anecdotally, the murder rate in Ilakaka is also currently higher than in other parts of Madagascar, but history shows that this statistic is probably not uniquely linked to gemstones since the same pattern occurred in Antalaha when vanilla prices peaked (Hamilton 2003). A concentration of any valuable commodity in the rural areas of Madagascar has the potential to spur crime.

The patterns of development and change in the first ten years of the sapphire rush in Ilakaka are indeed strikingly similar to those observed in the twenty-year California gold rush. People migrated to California from all over the world to exploit the gold fields, some working in small teams, some working individually, and some working for a sponsor who provided them with equipment. People have migrated to Madagascar from all over the world to set up mining and trading operations as well, with a variety of working arrangements. Public governance was neither present nor effective in either case. In both cases, foreigners and well-to-do observers have been shocked at the social universe of the mining areas, and have assumed that "the miner's world" is "chaotic and lawless" (Ridge, 1999). While "the miner's world" may appear disorderly and hopeless to outsiders, there clearly is some kind of mechanism generated therein that leads to private development and organization on a macro-level scale. One hundred and fifty years after gold was first struck in the undeveloped region that is now California, the state

that it had become represented the world's sixth largest economy (California_Legislature, 2004). Prominent historians have argued that the energy, abundance, optimism, and innovation of modern day California, as well as some of the more negative aspects of California society are legacies of the gold rush (Starr & Orsi, 2000). Madagascar, in obvious need of some social reorganization to meet the challenges of sustainable development, could use some positive new legacies of its own.

5. Colored Gemstone Supply Chains

From a source to final sale perspective, there are some key differences between gold and gemstones. Unlike gold, gemstones do not have a standardized market value and are not in demand solely for investment or foreign exchange reserves. Gemstones require more specialized expertise to assess their value for consumer markets than gold. While every gram of pure gold is chemically and economically identical, there is no such thing as pure natural gemstone and consequently, the determination of a price for gold is systematic while the determination of a price for a colored stone is not. The price of any rough stone always depends on a number of factors—both objective and subjective—beyond the control of the miner, while the price of a quantity of gold depends mainly on the objective factor of its chemical purity. Furthermore, the steps taken to transform a rough gemstone from the ground in Ilakaka to a product for the final consumer are extremely different from the steps taken to transform artisanal gold to a final consumer product.

The potential of a rough gemstone to become marketable for jewelry depends not only on the qualities it possesses naturally, but also on consumer tastes, which are

constantly changing, the skills and equipment in the transformation expanse of the supply chain, and pairing with other stones. The majority of the final consumer price for a colored gemstone derives not from the labor of miners but from the labor of lapidaries, heat treatment specialists, and jewelry designers. In Madagascar, the miners and most native brokers do not have knowledge that would allow them to discern the extremely rare, large stone that has the potential to become expensive from the more common stones that will never sell for much in the consumer market. The knowledge differential between Malagasy and foreign traders for precious stones is especially pronounced since ruby and sapphire were only recently discovered in Madagascar (Walsh, 2004). The foreign traders have gemological training and access to information about consumer markets while, at least for the first several years of the Madagascar ruby and sapphire rushes, the Malagasy traders had no access to training or information. Without some basic knowledge of gemology, Malagasy brokers cannot determine an appropriate and fair price for their rough stones and thus could be manipulated by unscrupulous foreign buyers. Even when foreign buyers are paying an appropriate and fair price based on the quality and potential of a stone, Malagasy brokers may feel like they are being manipulated because they don't understand how to accurately assess a rough stone (Rakotoarinelina *et al.*, 2006; Walsh, 2004).

The uniqueness of each gemstone is part of the allure for consumers to buy them, but paradoxically the same consumers also want sets of gemstones with close to identical qualities. This demand forces foreign buyers to source stones from multiple sources and in patterns that can appear nonsensical to Malagasy brokers. In order to form a row of

almost identical polished gemstones, the foreign buyers must assemble a group of similar size, shape, color, and clarity. For colored gemstones, there is also the added uncertainty of whether or not a stone's color and/or clarity will improve with heat treatment. The financial risks of buying rough gemstones are high because of the inherent uncertainty of how they will look after transformation. In addition, due to a retail world that demands to "pull" components through the supply chain for "just in time" delivery, foreign buyers are often under strict time constraints to deliver orders. Since Malagasy brokers can only deal in cash because the banking industry in Madagascar is not developed, international gem merchants have to travel with a good deal of cash in areas where the risk of theft is high. In general, the foreign gem merchants operating in Ilakaka are "small players operating with small margins" and around $20,000 USD is their common level of capitalization (Cushman, 2008). A lack of safe shipping alternatives means that the foreign buyers must carry their stones on airplanes without any insurance against loss. The risks, uncertainty and pressures for which international gem traders must take responsibility are extremely high. Many of the world's leading jewelry retailers refuse to assume these risks themselves and only purchase finished, polished gemstones[22] (Caillens, 2008; Cushman, 2008).

During the first ten years after precious gemstones were discovered in Madagascar, there were few lapidary workshops or factories on the island and in order to enter the consumer marketplace, rough gemstones had to be exported for transformation

[22] Gemstone stocks in Madagascar are also relatively small compared to the large selection of stock available in Thailand and other major gem trading centers. Buyers for jewelry manufacturing can find what they are looking for much more quickly and reliably in Bangkok.

(Cushman, 2008). Since most of the value of a finished colored gemstone is added in the transformation stages of the supply chain, Madagascar was losing an economic opportunity by exporting all of its gemstones as rough. Many of the stones were smuggled out of the country without the payment of taxes, and most were mined informally without the payment of royalties. Due to a lack of appropriate regulation, corruption of government officials, and a void of information about international gemstone business and markets, the country was only deriving a small portion of the potential economic benefits that its gem bounty could bring (*The_Economist*, 2005) – odd citation – cite as The Economist, 2005). In part, the PGRM was designed to take better advantage of the opportunities provided by gemstone deposits.

6. The Gemological Institute of Madagascar (IGM)

One of the most successful programs of the PGRM has been the school that was set up in Antananarivo to train gemologists and lapidaries. This program in particular is now being considered by other gemstone producing nations in Africa as a realistic model for addressing sustainable development in the gemstone sector. Programmatic development of the Gemological Institute of Madagascar (IGM) was initiated with the idea that an Institute could generate domestic value adding jobs and build capacity for the promotion and marketing of gemstones. Although the initial idea to create some kind of capacity-building institute came from the top-down approach that planned the PGRM, the creation, program development and institutional learning that built the IGM were bottom-up processes. Tom Cushman—the gemological consultant who was contracted by the

World Bank to oversee the program's establishment—believes that without the dynamic group of people working from the bottom-up to structure the IGM, it would not have been nearly as successful as it has (Cushman, 2008). Over a period of almost five years, with Cushman's guidance, the school was taken from an unfocused idea to a strong program with measurable impacts from its gemology courses, its lapidary courses, its gemstone certification lab and its outreach and job transition projects (see program chart in appendix).

6.1 Impacts

By the end of 2007 measurable successes had been achieved by the IGM. All three of the originally planned programs of the organization—a gemology school, a lapidary school, and a gemstone laboratory—had been fully operational for at least a year and were performing the educational and certification services for which they were created (see Table 4 for graduation indicators). One of the first steps taken to set up a credible school was the recruitment and training of a Malagasy staff. The school's four gemology professors were trained abroad at the Gemological Association of Great Britain (Gem-A) in London, the Ecole de Gemmologie in Montreal, and the Gemological Institute of America (GIA) in Carlsbad, California. In 2004, they came back to teach at the IGM on seven year contracts. One professor also directs the IGM gem laboratory where he oversees a technician who graduated from the IGM gemology course (see FGA diploma in the program chart in appendix). An estimated 80-90% of those who graduate with diplomas or certificates in gemology are Malagasy, and more than 90% of those who graduate with diplomas in stone cutting and polishing are Malagasy (Cushman,

2008). Students have also come from at least eleven foreign countries, including Angola, Burkina Faso, Mauritius, Nigeria, Tanzania, South Africa, and Zambia, as well as several western developed countries, for the gemology courses. In 2005, the school's graduating students organized a national Association of Malagasy Gemologists, which has since been growing and networking. This locally driven association is just one embodiment of the pride that graduates take in their school and in being part of the professionalization of Madagascar's gemstone industry. Empowerment is a difficult outcome to measure quantitatively, but the pride and the trend of graduates going into business for themselves as lapidary entrepreneurs shows that the school has economically and socially empowered Malagasy to take important roles in the development of a national gemstone transformation industry.

In addition to training and graduation indicators, the success of the IGM is demonstrated through secondary impacts and trends observed in the development of gemstone transformation and marketing industries in Antananarivo. Before the IGM's establishment, the capital had no formal or organized gemstone markets and there were few gemstone transformation businesses in the country (Cushman, 2008). As discussed earlier, virtually all of the precious and semiprecious were shipped overseas without any value added after mining. Several foreign owned gem-cutting factories have recently been opened in the capital, and at least one foreign owned jewelry factory is in the planning stages. Nonetheless, most IGM graduates are choosing the potentially more profitable, more entrepreneurial route of going into business for themselves or in small joint ventures. The Atelier Publique (Public Workshop), which was opened at the IGM

to meet the professional needs of its graduates, rents equipment and work space that lapidaries can use to cut stones. An unintended, but extremely important side effect of the IGM has been the establishment of two small companies that manufacture and sell affordable gemstone-cutting equipment in Antananarivo (Cushman, 2006, 2008). Without this locally available equipment that is realistically priced for Madagascar's economy, setting up lapidary businesses or additional lapidary training programs would be unattainably expensive for most. Some graduates have opened workshops where they now train others to work for them.

One extremely entrepreneurial graduate opened a business that combines gemstones, jewelry, education and tourism. *Nature's Gems* offers a complimentary tour that introduces visitors to Madagascar's gemstone geology with a short film about tourmaline and ruby mining areas and then brings them into the workshop to hear an overview of the gemstone transformation process while they watch lapidaries at work. The tour finishes in the retail area where visitors are encouraged to ask questions and purchase finished gemstones. The pricing is all based on the system that was developed for the Ministry of Mines One-Stop Export Shop and published in 2003 and customers are provided with hand-written, itemized receipts. In 2006, *Nature's Gems* was already receiving regular business from tourism operators who included it as part of organized tour packages for foreigners.

6.2 Local and Global Networking for New Markets

When in the planning stages, PGRM was approached by a group of Malagasy gemstone brokers who expressed a need for some kind of formalized marketplace.

Collaboration between these gem brokers, the IGM, USAID and its sub-contractors, and international consultants hired for PGRM resulted in the establishment of a bi-weekly gemstone market at the Antananarivo train station and the creation of a Gemstones Market Association, which continues to operate under the direction of the gemstone sellers involved in the market. Around 20-30 gemstone brokers participate in the market every two weeks (Cushman, 2008). One of the problems that the formal market attempts to address is that brokers trying to sell informally to foreigners often face difficulties because buyers question the quality and authenticity of their products and brokers cannot explain and do not see the benefit of taxes. IGM gemologists attend the market with instruments so that they can verify the quality of stones to facilitate fair business deals for both vendors and buyers. Ministry of Mines representatives also attend to provide administrative assistance to foreign buyers around tax and export requirements. By 2006, the market had generated over $158,000 in sales and attracted 15,900 visitors (USAID, 2006). The IGM and the *Business and Market Expansion Program* (BAMEX), which was a project funded by USAID from 2004-2006, conducted trainings with the Gemstones Market Association that benefited more than 50 members of participating brokers associations (USAID, 2006). The leaders of one of the market's founding broker associations, *GARES-MINES*, suggested that while the bi-weekly market has been helpful to some, it is not a sustainable business model for many of their members. Participation in the market does not guarantee a certain number of sales and some members cannot participate because they cannot afford the cost of travel to the capital and the time away from mining areas where they buy their stones (Rakotoarinelina et al., 2006).

For some of the more entrepreneurial and professional Malagasy brokers who have invested in an IGM education, involvement and networking through the Gemstone Market Association, BAMEX and the IGM has been very valuable. A few have received financial support and logistical assistance through the IGM and BAMEX to travel to international gem trade fairs with the IGM director where they were able to connect with potential clients. Twelve to fifteen Malagasy gem dealers were assisted to exhibit and sell at one of the world's largest gem and jewelry fairs in Thailand, and seven were assisted to exhibit and sell at the largest gem fair in the United States in Tucson, Arizona (Cushman, 2008). The IGM no longer provides any financial assistance or travel support for Malagasy dealers who wish to exhibit abroad, but several have established enough business that they now make all of the arrangements and meet with international clients on their own (Cushman, 2008).

Traveling abroad is one way to connect directly with international clients, but Malagasy gem dealers have also begun to make professional gem show connections in Antananarivo through international trade fairs that PGRM has sponsored at the Hilton hotel. The IGM director, an American gem dealer with strong connections and years of experiences in the international gem trade, consulted with the government to direct the marketing and logistics for a series of gemstone trade fairs that attracted international buyers after the legislation to allow foreign individuals to buy and export stones was passed in early 2005. Previously, foreigners had to form a Madagascan company or go into partnership with one in order to export any stones legally. The IGM and the gemstone business networks it facilitated have opened up new, transparent and

professionalized markets that are improving incomes and conditions for Malagasy in the gemstone sector. These new markets are a stark contrast with the closed and secretive world of the gem trade that established itself in the first few years of the ruby and sapphire rush.

6.3 Factors of Success

The way that the IGM has been able to contribute effectively to improvement and expansion of the gemstone business in Madagascar can be attributed to many factors, and a few of these have been essential to the program's success. The environment of confidence created by the newly elected pro-business and anti-corruption president, Marc Ravalomana, has created a policy paradigm in which the IGM could function and contribute to business development. Without this context, the funding and political support may not have been there for the IGM. With the political and legislative stage set at least superficially through PGRM, an opportunity was created and several micro-oriented factors contributed to the efficacy of the new institute. A dedicated and creative team of people, a long and flexible timeline, and the knowledge and guidance of an international gem business insider were the three most important factors of the school's effectiveness according to an informal qualitative evaluation by the IGM's first director.

The small staff of the IGM (sixteen people as of 2007) has worked exceptionally well together and responded creatively to the needs of the populations they aim to educate. Their work ethic and willingness to adopt a learning process approach has been critical to the program's ability to navigate early uncertainty and establish a practical and effective program with buy-in from the community (Cushman, 2008). Concerns that the

gemology diploma course was too expensive and time intensive for most Malagasy prompted the team to partner with international experts to develop a customized curriculum that could serve the immediate needs of Malagasy dealers who wanted to improve their business skills through a shorter, practical and affordable program (see Practical Gemology Certificate in the program chart in appendix). One reason that the IGM team may have been able to maintain optimism, dedication and dynamism in a political culture where these qualities are still rare, was that every staff member that the director hired was under thirty-five years of age and had not developed the habits of "time-card-punching" that are common in the older population who established their career directions under the corrupt Ratsiraka regime (Cushman, 2008).

Instead of agreeing to a broad, panacea style approach to developing the mission of the IGM, the director structured the terms of reference for the school like a business plan for a small to medium enterprise (SME). He had social connections in the local gemstone community that allowed him to call on local expertise and input appropriately, as well as knowledge and connections in the global gemstone trade that allowed him to establish a program with international credibility. He created a long timeline consisting of practical, realistic steps to build the program from the bottom up. Instead of attempting to establish all three branches of the school at the same time, he concentrated on creating a strong foundation for each, one at a time. There are notable differences between the wording and structure of planning documents for the IGM and planning documents for the larger PGRM project, which took a more panacea style approach overall. The IGM was an unusual international development project for several reasons.

It was funded by top-down contributions (from government, international finance institution and development agencies), but it did not directly involve the usual team of foreign-based international development consultants and other top-down management that World Bank projects often entail, and at $1.5 million USD, it was much less expensive than most World Bank projects. Management more closely mirrored the local, bottom-up approach that community initiated development projects usually entail. In this sense, the IGM has represented the best of global *and* local development from the very beginning.

6.4 Program Setbacks and Weaknesses

Despite the IGM's effectiveness at stimulating a gemstone economy with a multiplier effect as recognized by the World Bank, the President of Madagascar, the President of Zambia, and government leaders in several other countries, the program has faced some important challenges that weakened its efficacy to a degree. Political interference from the Ministry of Mines, public perception and ineffective advertising, and planning for sustainable financing when the PGRM project ends continue to pose challenges that could harm the school. In addition, the original plans for the program could have been even stronger. The blueprint of ideas written by international consultants who were hired for the MSRP (PGRM's predecessor) contained some good research and planning, but it also lacked a full understanding of the business opportunities that Madagascar's mineral gem wealth could provide (Cushman, 2008). By keeping the focus on faceting, lapidary arts and gemstone identification, the original blueprint overlooked other gem transformation techniques like heat treatment, tumbling

and jewelry design. The learning process approach taken by the director and IGM team enabled them to tailor some plans to begin to fill these holes, but because jewelry was not part of the original terms of reference, the funding and resources were not there to build in a new branch for jewelry design and manufacture.

The problems of political interference and inadequate advertising are linked. Since the IGM is part of the PGRM and is at some level overseen by the Ministry of Mines, government officials can interfere with hiring, firing, budgeting and resource allocation for IGM. At one point, a government administrator made the decision to fire the IGM's project coordinator who had been an essential part of the IGM's dynamic team. The World Bank then re-hired her as a consultant to the project, which maintained her relationship to IGM but overall, the organization of the project still suffered (Cushman, 2008). Political interference also co-opted the IGM's ability to run an effective advertising campaign because every communications firm that was hired was monopolized by demands from the PGRM overall and the Ministry (Cushman, 2008). The IGM's position as a quasi-government entity also makes private donors wary that contributions they wish to make to support IGM programs could be misdirected (Cushman, 2008).

The lapidary courses at the IGM have struggled to attract participation and have had to operate below cost. With little advertising capability, the lapidary program has had to combat the publicly held perception that lapidary training only qualifies one for a blue-collar job in a foreign-owned cutting factory (Cushman, 2008). The concept of lapidary entrepreneurs who start their own businesses was especially difficult to

communicate to the public when the program first began but now that a growing number of graduates are opening their own workshops, the original perception may be fading. However, the course still does not attract enough students to run it at cost, and this could become a major problem. A few American philanthropists are considering contributions for a scholarship fund to make up the difference between what students can pay and costs to run the courses.

The new costume jewelry course attempts to address an important weakness in IGM's strategy for sustainable development. Because most of the stones that are mined in Madagascar are not precious and most Malagasy cannot afford to invest a lot of capital in a business, the majority of mineral material and opportunity for small business entrepreneurship in Madagascar was not directly addressed by preparing students to become dealers and cutters of individual high-value stones. The materials needed to design and manufacture costume jewelry are inexpensive and widely available in Madagascar, so there is strong potential for education to create a new industry with low barriers to entry. However, heat treatment and banking services industries are not well developed in Madagascar and jewelry manufacturing costs are currently lower in Asia, so promotion of a new industry would require careful planning to address these challenges.

7. Reform of Export Processes and Regulatory Environment

Shortly after the official discovery of precious gemstones in Madagascar the country became plagued by a lack of confidence from international investors. Many valuable rubies and sapphires were smuggled across the island's borders. For several

years, the regulatory environment made it impossible for most foreign gem dealers to export the stones legally without unreasonable costs and risks. In fact, from 1998-2004 there was a temporary ban on the granting of permits for any new ruby and sapphire mining concessions, which meant that most of the mining of precious stones was going on illegally and the resulting production could not be exported legally. Individuals could not export any stones unless they were affiliated with a Malagasy company and had a valid Laissez-Passe book—a register of all stones produced from a permitted concession— to which every stone could be matched. It was possible for interested individuals to illegally purchase a pre-1998 Laissez-Passe, but the cost was high and the availability was low. The government's policies forced miners and gem traders into evasion of the law.

A major goal of the PGRM was to improve governance such that more revenue could be generated from the mining and trading of gems, and reform of the mining code and gemstone export policies have been a central pillar in advancement toward this goal. By 2007 gem smuggling had declined significantly and the value of gemstone exports had increased (*The Economist,* 2007). One reliable estimate gave a figure of 95% of gems by weight are now exported through legal channels (Cushman, 2008). Registered permits for ruby and sapphire concessions have also increased drastically since the ban was lifted in 2004. In early 2005 new mineral export legislation made it legal for individuals to buy gemstones and take them out of Madagascar. A small additional tax of 2% on rough stones encouraged visitors to buy faceted stones to support the growing lapidary industry. The Ministry of Mines had the foresight not to ban the export of rough

stones and not to make the tax on rough so high that it discouraged foreign investment and perpetuated smuggling by dealers who already had strong relationships and contracts with foreign cutting operations.

One of the first steps taken toward export reform under PGRM was the publication of a list of appropriate prices for gemstones according to their size, color and clarity. Since shape was not accounted for in the list, some of the prices in the book for rough stones do not reflect market prices because rough stones with shapes that indicate better potential for transformation are more valuable than counterparts of the same size, color and clarity. Thus, the list is characterized by a degree of subjectivity. The publication of this list was part of the creation of a One-Stop Shop for gemstone exports where representatives from the Mines Department and the Customs Department performed the assessment, tax collection and sealing necessary for a gem merchant to make a legal export. The published price list was not publicly available until 2006 and previously gem merchants had no way to know the appropriate value declarations to make at the One-Stop Shop so they were often denied export approval on the first attempt (Cushman, 2008). A new approach whereby gem exporters can check their stones against the book the day before export and prepare for their administrative visit to the One-Stop Shop has greatly improved the transparency and feasibility of the export process. By making it convenient and doable for gem merchants to legally export their purchases, Madagascar has finally been able to capture the tax revenue it deserves from the existing gemstone trade.

8. Conclusion

Effective policy reform and responsive new programs have allowed ruby and sapphire booms to rejuvenate and globally connect Madagascar's hundred year-old gemstone industry. The case for a "learning-process approach" that can adapt to conditions of imperfect knowledge in implementing and achieving efficacious "fit" for policies that aim for sustainable development in poor, rural communities is well supported by David Korten and others (Fischer, 1995; Korten, 1980; VanDeveer & Dabelko, 2001). The IGM fits Korten's concept of "[learning organizations] with a well developed capacity for responsive and anticipatory adaptation—organizations that: (a) embrace error: (b) plan with people; and (c) link knowledge building with action" (Korten 1980: 498). While environmental challenges and a legacy of corruption under the previous regime still pose problems with gemstone mining, a considerable amount of economic and social progress has been achieved in short period of time. The lessons outlined here from Madagascar's recent experiments with gemstone development provide useful guidelines that can be adapted to other poor nations with mineral wealth. Overly ambitious policy panaceas and programs are not likely to be effective. A balance between global expertise and financing with local commitment to appropriate adaptive management and empowerment is still an unusual, but powerful way to drive social and economic development. After all most of the Millennium Development Goals can be achieved in a capitalist society by empowering individuals to earn more income. Although gemstones are seen as an immediate curse in the eyes of environmental conservationists, in the long run they may prove to be a blessing that makes a realistic

and enforceable commitment to conservation possible by alleviating poverty, creating economic opportunity and generating much needed revenue for the government.

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Tables for Body of the Paper

Table 3. Selected Human and Economic Development Indicators for Madagascar

Total Growth (%) [1]	1980-1985	1985-1990	1990-1995	1995-2000	2002-2005
GDP per capita (PPP-US$)	6.6	18.5	-1.3	7.9	24.7
Human Development Index	-0.9	1.6	1.6	5.9	13.6
Average Annual Population Growth		2.85		2.99	2.78
Poverty Indicators [2]	2001	2002	2003	2005	2006
Primary School Enrollment	--	67%	--	87%	--
Poverty Rate (percent of population living on less than $2 a day)	--	--	85.10%	67.50%	--
Business Indicators [3]	2001	2002	2003	2005	2006
Minerals Trade Performance Index (Ranking) [4]	116	--	--	102	--
Time required to start a business (days)	--	--	67	38	21
Fixed line and mobile phone subscribers (per 1,000 people)	12	13	19	31	--

1. Calculated from United Nations (U.N.) and World Bank indicator data retrieved on 25 February 2008 from the *Globalis* database (http://globalis.gvu.unu.edu) and 2005 data retrieved on 25 February 2008 from the 2007/2008 U.N. Human Development Report (http://hdrstats.undp.org/buildtables/#). Human Development Index (HDI) is a composite that measures average achievement in three basic dimensions of human development including life expectancy and health, knowledge, and standard of living. Average annual population growth rates were reported in 1990 (for the period from 1980-1990), 2000 (for the period from 1990-2000) and 2005 (for the period from 2000-2005).
2. These poverty indicators were retrieved on 16 February 2008 from the U.N. Millennium Development Goal database called MDGMonitor (http://www.mdgmonitor.org/factsheets_00.cfm?c=MDG).
3. Unless otherwise noted, business indicators were retrieved on 25 February 2008 from the World Development Indicators database of the World Bank (http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=135).
4. The Minerals Trade Performance Index was retrieved on 25 February 2008 from the International Trade Centre (ITC) database of International Trade Statistics 2001-2005 (http://www.intracen.org/menus/countries.htm). The Trade Performance Index is a calculation of the level of competitiveness and diversification of a particular export sector using comparisons with other countries.

Table 4. Sri Lankan Gemstone Imports

Year	Value Declared in thousands of $US
2001	151,472
2002	185,499
2003	226,018
2004	229,644
2005	257,431

Data retrieved for Product Group 667 –Pearls and precious or semiprecious stones, unworked or worked-- on 25 February 2008 from the International Trade Centre (ITC) database of International Trade Statistics 2001-2005 (http://www.intracen.org/tradstat/sitc3-3d/ip667.htm).

Table 5. Projected Employment Generation for a Large-Scale Sapphire Mine

	CAPITAL INVESTMENT	JOBS CREATED		
		Construction	Permanent	Additional
Acquisition of 6 Concessions	$70,000,000 *		1,200	19,200
Exercise Option for 18 Concessions	$180,000,000 *		3,600	57,600
Bridge Construction	$600,000	28		
Exploration Equipment	$11,644,160	547		
Mining Equipment	$150,599,877	6,813		
Asset Mgmt. Fees	$12,385,321			
Administration Fees	$24,770,642			
Sub-total	$450,000,000	7,388	4,800	76,800

* $150 million $US would be paid to the Government of Madagascar in royalties to acquire additional concessions and exercise options to mine for precious and semiprecious gemstones. This particular company's projection is based on the fact that the principal acquired the rights for 12 concessions before the commencement of the PGRM.

Source: 2004 Project Funding Request from Jerry G. Mikolajczyk and Sakal Foundation for Indian Ocean Sustainable Development Projects (IOSDP) –Sovereign Nation Project

Table 6. Indicators for Institute of Gemology of Madagascar

Cumulative Graduates and Gemstone Identifications

	2004-2005	2004-2007
Gemology Diplomas & Certificates **	Over 20	288
Gemology for All Course	Data not available	Over 1000
Lapidary Diplomas	89	340
Costume Jewelry Diplomas	Course not established until 2007	9
Gemstone Laboratory Identifications	Lab not established until Nov. 2006	650

** Includes FGA diploma, Practical Gemology Certificates, and other certificates awarded by visiting teachers from the Gemological Institute of America and other affiliated institutions.

Sources: (Tom Cushman, 2008); *The Gemstone Forecaster,* Vol. 23 (3), retrieved 18 February 2008 from http://www.preciousgemstones.com/gffall05.html

Appendix

Table 7. Courses and Programs of the Institute of Gemology of Madagascar

Internal Programs	Description
Fellow of the Gemmological Association (FGA) Diploma **Tuition: 3500 USD** **Time: Six months, Full time**	An internationally recognized and respected gemology degree program, this course trains students according the curriculum and principles of the British Gemological Association (Gem-A). It is offered in both French and English. The IGM is the only licensed Gem-A Satellite School in Africa. The FGA is the most highly esteemed gemology diploma in the world.
Practical Gemology Certificate Tuition: 275 USD Time: 2 weeks, Full time, OR 6 weeks, Night classes	This course was developed specifically for the context of Madagascar through a collaborative curriculum design partnership between IGM and Gem-A. It teaches the use of the same analytical methodology and instruments as the FGA course, but limits knowledge to the thirty stones most likely to be found in Madagascar. It does not cover the theory and scientific background taught in the FGA course.
Gemology for All Tuition: 0.25 USD Time: One day	This is an outreach course that is taught by IGM gemologists in gemstone mining areas all over the country in partnership with other rural outreach programs like the Projet de Renforcement du Secteur Minier Malgache (PRISMM) program of Coopération française that works mainly on small-scale gold mining issues. The one-day curriculum is adapted according to the stones likely to be found in each area and teaches interested community members about the qualities that give stones their relative value.
Lapidary Diploma Tuition: 140 USD Time: Two months, full time	This course trains students to cut and polish gemstones using lapidary equipment that is manufactured locally. Four graduates of the course have been hired back to teach at the IGM and most go on to start their own businesses cutting stones for clients. Graduates often use the Atelier Publique.
Costume Jewelry Tuition: 30 USD? Time: Two weeks, full time?	This is a new course that is taught by a Malagasy expatriate who has become a jewelry designer in Canada. The curriculum emphasizes the use of inexpensive minerals that are widely available in Madagascar, like amethyst chips, amazonite, small pieces of citrine, quartz, labradorite, agate etc. Students are taught to design and manufacture low-value jewelry.
Atelier Publique	This workshop provides equipment and studio space for a rental fee to graduates of the lapidary diploma course.
Gemstone Laboratory	This facility uses microscopes and other scientific equipment to perform identifications for clients of potentially high-value gemstones. It is accredited by the FGA and is the only laboratory of its kind in Africa. The lab is directed by a professor of the FGA diploma course and staffed by a technician who earned his FGA diploma at the IGM.
External Projects	Brief Description
Capital Gem Market	The IGM provides advice and third-party sales facilitation at this bi-monthly gemstone market in Antananarivo.
Gem Marketing	The IGM has provided advice and assistance with logistics, branding and promotion of international gemstone trade fairs in Madagascar.
International Assistance	In the past, the IGM has provided financial assistance to Malagasy gemstone dealers to travel to international trade fairs abroad. Currently the IGM provides logistical advice for required export and import paperwork and networking opportunities for dealers to connect with international clients and colleagues.

Conservation, certification, and community: Sustainable gold digging in the Chocó

Introduction

The power of consumer preferences for products that minimize social or environmental harm throughout their life cycles has enormous potential to change the relationship between business and society. Third-party certification is gaining momentum as a popular and effective market-driven approach to govern capitalist production systems. Some conservation-oriented groups have adopted a certification strategy to provide incentives for responsible forest management (Elliott, 1996). However, developing an effective and realistic certification program is not an easy task, and including small-scale producers is often difficult because of cost and capacity. Nonetheless, potential for certification programs to contribute to global poverty alleviation has been demonstrated through the experience of Fair Trade certification of coffee, and the experience of Forest Stewardship Council certification for timber is showing that producers in developing countries are interested in certification as a legitimate way to valorize environmentally responsible production (Conroy, 2007). The vast majority of certification programs that connect small-scale producers in developing countries to markets that will reward them for social and environmental governance of production have focused on commodity chains that depend on renewable raw materials. Certification of mineral commodities also has the potential to protect ecosystems, alleviate poverty, and reduce injustice. This paper examines the evolution of a unique grassroots certification system for artisanally-mined gold from the Pacific coast of

Colombia. The narrative attempts to reveal key factors of success and key challenges that surfaced out of the process of developing and implementing the *Oro Verde Certification Program* [OVCP]. The lessons from this pioneer program provide useful guidelines for nascent small-scale certification efforts in the global mineral sector.

Sociopolitics, Ecology and Globalization in the Chocó

The department of Chocó, which extends from Colombia's northern border with Panama southward along the coast, has a rich heritage that is now colliding with the modern forces of globalized economics. The department makes up most of the area of the Chocó Biogeographic Region—an ecological hotspot considered one of the most biodiverse terrestrial ecosystems on earth (Myers, 1992). Dominated by the palm family (*Palmaceae*), these forests have the highest diversity of plant species in the world, reported as more than 250 tree species per hectare (Faber-Langendoen & Gentry, 1991). The region supports an estimated 9,000 species of vascular plants, twenty-five percent (2,250) of which are endemic (CEPF, 2002).[23] Although it is extremely rich in species biodiversity, it is socio-economically the poorest political department in Colombia. Populated by descendants of the African slaves who were imported by Spanish colonists in the 17th century to exploit gold deposits, the region has come to symbolize "blackness" and the marginalization of rural, black communities in Colombia. Population estimates

[23] It is also an important region for conservation of birds and other animals. BirdLife International has designated several Important Bird Areas in the Chocó Biogeographic Region (which includes all four of the Pacific coastal departments). Since the late 1980s, international conservation organizations have directed a great deal of attention and resources to biodiversity protection in this region.

concur that the pacific coast has the highest concentration of blacks per capita and hightest rate of poverty in the country (DNP & SNU, 2005). The indigenous communities, including those of Afro-Colombian heritage, have a strong socio-cultural relationship with the land in watershed units and value their interconnectedness and interdependence with the ecology of the rivers (Oslender, 2002).

The era of globalization opened the door for two major political changes in El Chocó: capitalization of mining and local democratic governance. Both of these changes posed significant challenges and opportunities for communities in the region. They are struggling to reformulate their identities and agendas in the new socio-political context of land entitlement and commercialization.

The first change--mining capitalization--was facilitated by policy changes at the national level. In the late 1980's the national government established policies to promote development of infrastructure (roads, electricity and communications), provision of technical assistance and credit, and legalization of mining operations in under-explored regions like the Chocó. Using joint ventures and incentives for small-mining companies, the government attempted to pave the way for mining to contribute more to national employment, GDP and income generation(Hanratty & Meditz, 1988). As suggested by the World Bank[24], in the late 1990s the Colombian Ministry of Mines reformed the national mining code to encourage more foreign investment from large and medium-scale

[24] A briefing by the Industry and Mining Division of the World Bank in September 1995 compares Latin American countries with successful mining code reforms for legal and investment regimes to countries in need of reforms. Colombia is highlighted as a country that is unattractive for private investment in the mining sector. The brief, titled *Characteristics of Successful Mining Legal and Investment Regimes in Latin America and the Caribbean Region*, can be downloaded from http://www.natural-resources.org/minerals/CD/docs/twb/Invest_Regime_LAC.pdf

multinational mining companies and the updated code was adopted in 2001. These legal changes have opened the Chocó up to mechanization and mining at scales that were never practiced there traditionally. Although the region has a long history in gold mining, the communities' traditional, artisanal techniques are not highly destructive to the native ecology like more mechanized techniques tend to be.

The second change—local democratic governance—was also born out of national policy changes, in this case spurred by social unrest, guerilla movements, and a high level of unemployment in the 1980s. The new reformed Constitution of 1991 recognized for the first time the ethnic and cultural diversity of the Colombian people. It included a transitory article (AT 55) that promised collective land rights for rural, riverine black communities living in El Chocó (the Pacific coastal region, which includes four political departments: Chocó, Valle del Cauca, Cauca, and Nariño). After a period of difficult negotiation between the state and organizations representing black communities, this provision was formalized in Law 70 of 1993. This law stipulates the requirements for collective land as community property and specifies that for each collective title, a Community Council must be formed to act as the "internal administrative body."

> In addition to the functions determined by National Government ruling, other functions of the Community Councils are: to watch over the conservation and protection of the rights of collective property, the preservation of cultural identity, the use and conservation of natural resources; to identify a legal representative from the respective community as their legal entity, and to act as friendly conciliators in workable internal conflicts.

The law further specifies that collective land ownership bears proof of "the responsibility to observe norms on the conservation, protection, and rational utilization of the environment's natural and renewable resources" and contains an

entire chapter on "Use of the Land and Protection of the Natural Resources and the Environment." The passage of Law 70 created monumental opportunities and daunting challenges for the rural, black communities of Chocó and the other Colombian Pacific coastal departments. The election of a representative body for each community was a major step toward reliable, democratic governance but also presented a new political space that could be co-opted by businesses or state actors[25].

The story of *Corporacion Oro Verde* [COV] and its OVCP shows how several mining communities in the department of Chocó worked with NGOs to create a sustainable business that protects their land and improves their quality of life. This model defies the dominant discourse of development in the Chocó, wherein the co-optation of collective land rights and large-scale mining and agricultural projects have caused considerable levels of conflict. This paper highlights factors that were essential in the process for promoting social inclusion and preventing co-optation of the communities' rights and responsibilities to decide how to manage their collective property. The research synthesizes the experience of key actors in the *Oro Verde* process, an interface between national government and local Afro-Colombian communities, to show how the model might be successfully adapted in other regions where artisanal miners can claim a stake in protecting the land for future generations.

[25] For examples of cases where the community council formation process was co-opted, see Oslender (2002).

The Theory of Certification Systems

Certification is considered a form of non-state market-driven governance (NSMD), a research field for which there is a growing body of literature. There are many competing corporate social responsibility initiatives, including NMSD approaches as well as initiatives from states and international governance organizations (Wood, 2006). Third-party certification [TPC] is often initiated and organized from the top-down, by professionalized actors in the global North like foundations, international NGOs and large industry associations, and attempts to incorporate grassroots producers from the global South after overarching standards have been set (Bartley, 2007, 2003; Meidinger, 2006; Pattburg, 2006; Wright, 2004; Zhouri, 2004). TPC is not always a fair and effective way to promote development in the global South, especially when it does not incorporate difference and diversity to give all stakeholders a voice (Hatanaka, 2007; Zhouri, 2004). Nonetheless, as shown by the "moral economic" power of Fair Trade certified coffee supply chains to promote grassroots development, TPC can be an effective tool to build community governance capacity and empower producers to take charge of economic structures (Simpson & Rapone, 2000).

Global governance scholars will find this research project useful because it details a case that defies several certification norms. The OVCP was not initiated from the top-down as a mechanism of corporate social responsibility in a globalized business environment, and it was not spurred by an NGO campaign to pressure business into taking on social and environmental governance goals. On the contrary, it grew out of a grassroots partnership that was specific to the time, place and culture of particular

communities in the Chocó. Like TPC programs that grew out of globalized partnerships in the spaces of flows and not places, the OVCP has succeeded in attracting global attention and market access for traditionally marginalized producers. The goal of this paper is to answer the question of how a grassroots certification program can harness mineral wealth to generate governance capacity, improve incomes and employment, create social capital, protect natural capital and transform a regional discourse of development. In order to address this question, the paper also highlights the challenges and barriers faced by the grassroots certification system that was studied and investigates how these have been overcome. Finally, since the incorporation of difference and diversity has been problematic for global certification systems, the research attempted to reveal some lessons from this bottom-up approach to developing a TPC about how to accurately assess and represent the needs of formally uneducated, economically impoverished and culturally rich producers.

Methods

Selection of OVCP as a relevant case study was made after a broader ethnographic investigation of best practices and ethical initiatives in the global mineral economy revealed very few targeted interventions to integrate solutions to economic, environmental and social challenges faced by artisanal miners but a growing interest in planning for integrated artisanal mining programs. The broader investigation involved participation in Communities and Small-Scale Mining [CASM], a global network of stakeholders working to improve conditions for artisanal and small-scale miners as well

as informal interviews with ethical business leaders in the gem trade and jewelry industry and mineral development experts from the CASM network. The OVCP is seen by CASM as a strong example of how TCP can improve the lives of artisanal miners and advance achievement of the Millenium Development Goals in populations that depend on artisanal and small-scale mining for income. What is more, the success of the OVCP contradicts the more common pattern seen in the Chocó since the passage of Law 70 in 1993, which is one of inconsistent and failed policy because enforcement of collective land rights and community empowerment is rare (Washington Office on Latin America, 2006).

An interface perspective was adopted to research the factors that emerged during the process of establishing the OVCP and deduce possible reasons for the program's unusual effectiveness. Two key actors who participated in program development, and in so doing formed relationships with stakeholders at the interface between local mining communities in the Chocó and national public and private agencies, were interviewed. These actors conducted the real ethnographic research and through semi-structured interviews, they were encouraged to reflect on and share their first-hand experiences of "struggling at the interface" (Long, 2001). Two key actors who interacted and formed a relationship at the supplier-customer interface were also interviewed to gather reflections and first-hand experience about how and why the OVCP program achieved global business success. Empirical research through interviewing was supplemented with information collected from OVCP presentations, written reflections, reports for funders

and published interviews of key OVCP actors. A list of formal interviews, presentations and primary documents is included in the appendix of this article.

Results

Fundacion Amigos del Choco - The Beginning of the Oro Verde Story

Youth leadership and activism is often a catalyst of productive change in societies. In the story of how COV developed, educated and idealistic youth leaders from the interior of the country and their relatives decided that they wanted to do something to strengthen environmental protection for the benefit of indigenous communities in the Chocó. In 1997, they created a non-profit organization called Fundacion Amigos del Chocó, or Amichocó for short.

In the beginning a major challenge for Amichocó was to establish trust with the communities with whom they wished to work. Because they were "white" Colombians from the interior of the country who were relatively wealthy compared to the poor Afro-Colombian families of the Chocó, they were not likely to be trusted. One of the organization's founders remembers a period of around two years when trust building was Amichocó's primary activity. She says that it took this long before enough trust had been established that the organization and the communities could move ahead with shared vision and goals.

Working closely with community leaders during these infant years, Amichocó and the local Community Councils came to a consensus that uncontrolled mining in the region was a menace to both the Afro-Colombian social movement and to the protection of unique ecological systems. This consensus was catalyzed with the help of an outside

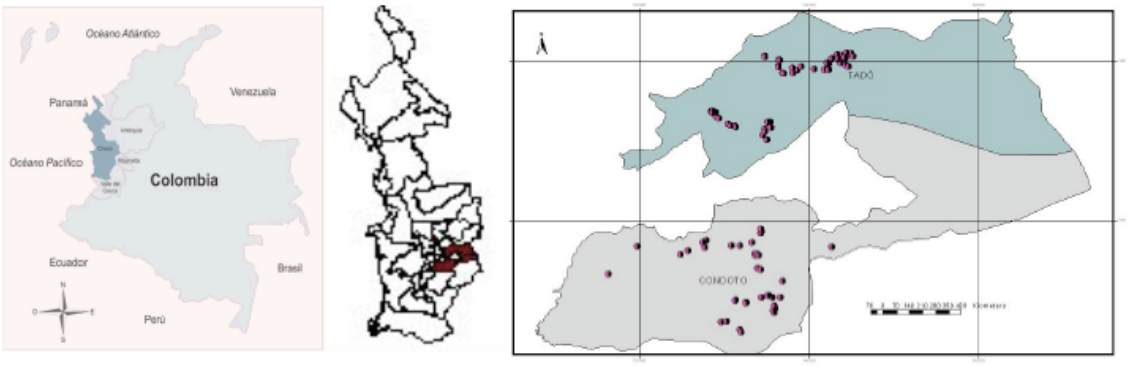
ecological expert who facilitated a series of community workshops and meetings between local stakeholders, including founders of Amichocó. This advisory and consensus building role came about because Amichocó contacted Dr. Ranil Senanayake of Rainforest Rescue International and asked for his help. He traveled to the region to conduct some participatory action research and help guide the early process[26]. This early research found that families wished to mine their land artisanally as they had done for centuries, while also farming and living on the same land with the hope of passing this sustainable lifestyle on to future generations. Agreeing on the threat of uncontrolled mining by outsiders, several parties with a stake in protecting the environmental integrity of land in Chocó were able to move forward as a united group.

With the definition of uncontrolled, mechanized gold mining as a threat to the local economy, social structures and natural environment, a new organization was established to promote artisanally-mined, environmentally-friendly gold produced by family units for subsistence. COV institutionalized an equitable power structure through which two Community Councils and a local NGO could lead and govern the *Oro Verde* program together with Amichocó. The basic aim of the new organization was to develop a realistic and socially inclusive process for promoting subsistence artisanal mining, community development and environmental protection in the municipalities of Condoto and Tadó (See Figure 2 for map). Mining is carried out in these municipalities by Afro-

[26] Dr. Senanayake also consulted with Amichocó about a feasible restoration program for mined areas, and helped with the set up of their Analog Forestry program. Rainforest Rescue International trained a team from IIAP to certify that restoration efforts in *Oro Verde* areas meet International Analog Forestry Network (IAFN) goals.

Colombian families who use hand tools to dig and pan for gold and associated platinum in the traditional way that has been passed down through generations in this place.

Figure 2. Map of the Chocó and the Locations of *Oro Verde* Certified Miners



Source: Lina Villa, Executive Director of Amichocó

Corporación Oro Verde – Creating a Product for Green and Fair Jewelry Markets

Organization and Standards Development

COV is a cooperative organization with a structure that facilitated equitable decision-making, formation of trust between stakeholders, and productive dialogue aimed at solving community problems. There was a need for a forum where the communities could weigh options and make decisions and commitments without the threat of co-optation. The formation of COV created a safe space for a community-driven business to hatch. COV's organizational structure is not hierarchical like that of a traditional for profit corporation but is more democratic like that of an association (See Figure 3). Half of the board is made up of community-appointed legal representatives from the Community Councils that oversee Tadó and Condoto. Representatives from two

NGOs—one local and one national—constitute the other half of the board. Both NGOs aim to support the organizational work of these Community Councils to empower communities in the Chocó to address the challenges of sustainable development and national integration, but one functions at the local level (Fundacion Las Mojarras or FLM) while the other operates at multiple scales (Amichocó). From its inception, COV has also maintained a strong relationship with a reliable, locally knowledgeable third party research institution, the Instituto de Investigaciones Ambientales del Pacifico (IIAP) [Pacific Intsitute of Environmental Research]. Ecology experts from IIAP have provided advice, facilitation of community meetings to develop the COV production standards, and targeted research to address the needs of the COV board throughout the product development process. Through a process of dialogue and workshops at the community level that was then solidified in more formalized meetings at the board level, COV democratically created and adopted the ten criteria to use for certification of their green gold product, seven with a conservation focus and three with a focus on local empowerment with social, economic and legal dimensions (See Figure 4). Once production was underway, IIAP took on the role of third-party certifier to ensure that participating family mining units meet the production criteria adopted by the COV board.

Figure 3. Organizational Structure of *Corporacion Oro Verde*

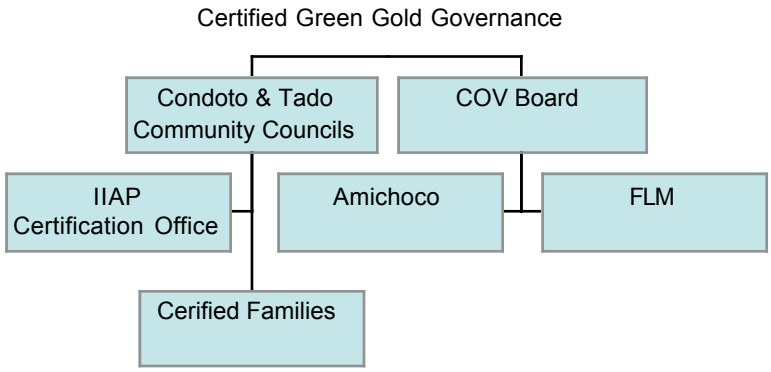

Certified Green Gold Governance
Condoto & Tado Community Councils
COV Board
IIAP Certification Office
Amichoco
FLM
Cerified Families

Figure 4. Criteria met for production of *Oro Verde* Product

Oro Verde Certification Standards

We fulfill the following Certification Criteria:*

1. There should be no massive ecological destruction. This state being defined by changes to an ecosystem that places it beyond a possibility of recovery.*

2. There should be no toxic chemicals used in the extraction process.

3. The mined areas should gain ecological stability within three years.

4. Top soil removed from the site should be replaced during the exploitation process.

5. Tailings and poolings must not exceed the local ecosystem capacity for rehabilitation.

6. The silt load into stream river or lake system will be controlled in quantity and frequency so that the native aquatic ecosystem is not disrupted.

7. The mining operations must be conducted with the agreement of the local community council.

8. The origin of gold and platinum (for royalty purposes) must be declared in favor of the respective municipality.

9. In forested areas mining activities must not exceed 10% of a hectare during rational periods of two years.

10. Local, regional and national regulations must be followed.

***Biodiversity indicators will be established during the process in the intervened ecosystem.**

* Standards in bold have an environmental focus, and were developed by the communities to protect their land to maintain their lifestyle for themselves and future generations.

The Production Chain

Gold production for jewelry requires several physical processes to occur in the commodity chain, through which gold moves from the ground to the jewelry retail outlet for purchase by a consumer. In many gold commodity chains toxic chemicals (mainly mercury and/or cyanide) are used to extract and amalgamate gold from ore where it is

present in relatively low concentrations[27]. In Tadó and Condoto, OVCP certified miners only collect the gold that is naturally concentrated enough to mine without the use of any toxics. The stakeholders of COV established standards to discourage the use of toxics and valorize the clean method that is traditional to the Chocó. For them, the healthy land, sustainable production capacity, and ancestral connection have more value than the extra gold. Nubia Mosquera, a certified OVCP miner summed this up: "The machine comes and after passing two or three times it exploits the land and that money is no good for us because today we have it, but tomorrow we won't be left with anything, and if we have the land, everyday you just go and retrieve your daily grain from it, and the land is still there; and you receive the sustenance for yourself and for your children" (*Oro Verde* Video).

Certified miners bring the gold to local collection offices operated by COV, where they weigh it and record their production. At the COV offices, Community Council employees confirm the weight and pay the miners the market value of the gold plus a 2% premium. From this point, Amichocó handles the chain of custody, transformation, marketing and transportation of purified green gold until it enters the hands of jewelers around the world who buy it.

While under the supervision of Amichocó and COV, the gold undergoes several value-adding steps. Each lot of gold that COV sells to jewelers is accompanied by a numbered certificate, which tracks the gold's specific chain of custody. Amichocó

[27] In many places, even gold that could be collected through careful panning and separation is concentrated through processes that involve mercury because miners do not have access to cleaner mining knowledge and technology or do not trust the non-toxic methods. Toxic amalgamation methods expose humans and ecosystems to serious, long-lasting health problems.

maintains a database of tracking numbers so that anyone with an *Oro Verde* certificate number can contact them to find out who mined to contribute to that gold lot, when and where. The assignment of a certificate number and logistical organization necessary to maintain the number's integrity is the first value-added step performed by Amichocó. The gold is then taken to micro-refineries where it is processed in small batches to maintain the chain of custody and prevent mixing of *Oro Verde* gold with other locally produced gold[28]. In order to establish a feasible chain of custody tracking process, COV had to cultivate relationships and raise funds to instate workable contracts with small local refineries that can process the gold separated without the use of any toxic chemicals. Before these relationships were solidified, most of the gold was refined in France at a small, privately owned refinery located by Amichocó through social networking[29]. Refinement is the second value-added step performed by COV. Transactions with refineries are overseen by a department of Amichocó.

Originally, the COV vision for *Oro Verde* gold was to train members from the communities where the gold was produced to design and manufacture artisanal jewelry to sell through national and international markets. Amichocó raised funds for jewelry training workshops, and created some prototype products to bring to jewelry retailers for feedback and for sale. Overall, this approach was not successful and most jewelers who were interested in the socially responsible mission of COV were not interested in the

[28] Refining removes impurities from the gold and the level of refinement equates to the number of carats in finished jewelry pieces. Refined gold is ready to be made into jewelry.

[29] For some jewelers who demand a very high level of purity and scientific testing quality assurance, *Oro Verde* gold is still refined in France and is then shipped from France directly to the customers.

designs that the amateur jewelers had created. While COV still has the capacity to manufacture custom pieces on request, they currently sell most of their gold to professional jewelers who then manufacture it in their own designs.

After refinement, the large majority of *Oro Verde* gold is sold to professional jewelers and transported to them by Fed-ex. Marketing to green and fair niche jewelers and transportation are the third and fourth value-added steps performed by Biodiversa Foundation, an NGO created within Amichoco to handle commercial transactions for COV. Biodiversa handles the processing of payment from jewelers, the contracts with Fed-ex and the contracts with most refineries. Jewelers order gold through the Amichocó office in Medellin and pay the market price plus a 10% premium for the gold as well as shipping and handling fees, refinement costs, and taxes required by Colombian law.

In 2003 another key relationship with an advisory organization was initiated when CRED Jewelry of the United Kingdom agreed to enter into a business relationship and adopted COV as their primary metal supplier. CRED was founded on a commitment to use the power of business for social transformation in impoverished developing countries. The owner commissioned academic research to determine the feasibility of building a transparent jewelry supply chain that could embody principles of the Fair Trade movement. A five-year search and research process revealed very few promising alternatives and highlighted social, labor and environmental problems in mining and manufacturing (Macfarlane *et al.*, 2003). Through proactive networking, Amichocó's founder learned of CRED's efforts and met with the owner of CRED in London. She then organized and hosted a trip for him to visit Colombia to see the OVCP in action and

meet with COV members as well as IIAP. As a result of the trip, CRED committed to work with COV and enter into a "learning cycle" to improve the OVCP's business processes. CRED completed OVCP's pilot production chain and still sources all of its gold and platinum from COV.

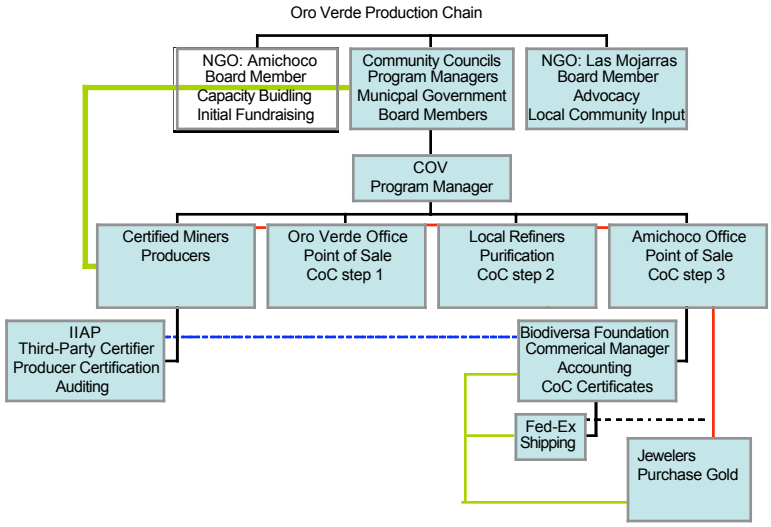
Economics and Commercialization of the Program

In 2006, Biodiversa purchased $180,815,768 COP worth of gold from certified miners and sold $174,454,959 COP worth of gold to jewelers. The difference was made up by surplus income from donor contributions to COV and Amichoco for project implementation. Seven percent of the premium paid by jewelers is used to support certification and community development projects in Tadó and Condoto and two percent is used to pay the mining families for their labor to produce green gold. Up until 2007, the community development portion of the premium was used for establishment of COV infrastructure, training and certification start-up costs. In 2007, a new protocol was adopted by the COV board for planning and budgeting of projects to be supported by the community development revenues and funds began to accumulate for use toward external projects. Since miners also pay royalties to mine in Tado and Condoto, and one of the Oro Verde Certification Criteria requires that these royalties be reserved for the producing municipality, the Community Councils should also be receiving gold mining revenues for municipal management. The royalties could be used to pay a fee to the Biodiversa Foundation for handling the transformation and marketing of the community-produced gold, as well as to cover other public costs related to gold mining, like land restoration and necessary water testing and treatment. Currently, most of the relevant

restoration of mined lands is carried out through the Analogue Forestry Program of COV, which is in the early stages and is funded by international development agencies, environmental conservation organizations, and private foundations.

Over the course of less than eight years, the OVCP developed from an idea to an almost self-sustaining program. It is on track to evolve into an economically profitable business that will be run by the Community Councils with jurisdiction over Tadó and Condoto. In time some of the capacity building and intervention roles (of Amichocó and IIAP) have basically transitioned to roles of contractors working for the Community Councils as they establish the capacity to administer and perpetuate the program themselves. Amichocó, the parent of the Biodiversa Foundation, still maintains its strategic and advisory position as a COV board member, but with regards to the OVCP, Biodiversa now handles all day-to-day commercial operations to keep the program going and will eventually be paid as a sub-contractor by the local municipal governments. IIAP continues to certify *Oro Verde* miners through the local offices it maintains in the region and will eventually also be paid as a contractor of the municipal government for this service and for auditing. In order to ensure that criteria are being met, a percentage of certified miners are audited by IIAP every year. In 2007 COV faced more demand from jewelers for gold then thay could supply. As of 2007 the program has 194 certified productive units (around 1300 miners and 7% of the mining families in the two municipalities), maintains ongoing contracts with 17 jewelers and also fills one-time orders when feasible. Their marketing materials portray *Oro Verde* as "the most loved gold on the planet" and the rising demand to supply and consume it reinforces this image.

Figure 5. Flows of Material, Revenue and Communication for *Oro Verde* Program



Green lines represent flows of money; Red lines represent flows of gold and platinum; Dotted blue lines represent flows of certification reports.

The Association for Responsible Mining--an international NGO, which was founded by COV and several other organizations in 2004—now shares an office in Medellin and board members with Amichocó, and jewelers place orders for *Oro Verde* gold through staff in this office. The Association for Responsible Mining (ARM) is partnering with international Fair Trade labeling and certification organizations to create an international label for Fairtrade certified gold, and associated silver and platinum. COV is one of the pilot test sites for the international standards, and if all goes smoothly, IIAP will be accredited to audit OVCP certified miners so that eventually *Oro Verde* gold will not only come with a COV certificate, but also an internationally-recognized and respected Fair Trade label.

Important Factors for the Success of the Oro Verde Certification Program

The impacts of the OVCP have mainly been measured qualitatively to date and COV is in the process of developing a ten-year assessment plan for which quantitative social, economic and environmental indicators will be collected and compared to data that was collected in Tado and Condoto in 2000 before the program began. Several obvious impacts show that the program has been effective (see Table 1 for a summary of goals and impacts that were discussed during interviews and CASM meetings). Preliminary indicators also reveal that environmental protection and family income benefits have been achieved by OVCP (see Table 2 for selected indicators of conservation and participation). During reflective interviews with members of Amichocó the sense of pride that participating community members feel about the OVCP was strongly emphasized as a demonstration of the project's success because this represented a social transformation in the miners. Before the recognition and status that they have earned through OVCP, the mining family units thought of themselves as less valuable to society and now that their ancestral knowledge has been validated as a valuable sustainable development tool they think of themselves with more confidence.

One of the founders of Amichocó and her successor—Amichocó's acting executive director and COV's current business manager—reflected on the drivers of the OVCP program and the factors that have been most important in contributing to the program's success. They identified several drivers that shaped the way the problem was defined such that OVCP made sense as an intervention. Four major drivers emerged from reflection: (1) giving recognition to tradition; (2) bridging local traditional knowledge with scientific knowledge; (3) finding economic incentives for rainforest

conservation; and (4) inviting broad participation from local level stakeholders. The need to satisfy these four drivers spawned the structure of the process undertaken by COV to build the OVCP. Three major internal factors that were critical to the program's effectiveness emerged from reflection: (1) Trust and relationship building without pressure; (2) Proactive social networking at multiple scales; and (3) Organizational structuring to fit local needs and realities (see Table 3 for detailed wording used by reflectors for each of the major factor categories). A fourth major internal factor was identified when the owner of CRED Jewelry was asked to reflect on why COV has become a successful gold supplier: (4) Communication and transparency. Even though a series of capacity and technical issues have arisen during COV's relationship with CRED, these have all been overcome because of effective communication and responsiveness from Amichocó in its representation of COV. The integrity of the *Oro Verde* product and its verifiability are the core of the OVCP business model, but without the drivers and factors of effectiveness outlined here the program would not have been able to produce such a high-quality, desirable product for green and fair markets.

Some of the challenges that were faced during the learning process to establish OVCP have already been revealed through the reflective narrative on what defined and powered the program's effectiveness. Two major categories of emerged: (1) social challenges; and (2) business process challenges. All of the process' shapers and participants who were interviewed reflected that trust building between stakeholders has been and continues to be a major challenge and much of the strategic planning to adapt the program to other settings has centered on trust and relationship building as critical to

progress. One other major social challenge that surfaced from reflective interviews and discussions was entrenched relationships between miners and intermediaries who do not support the OVCP. An Amichocó founder reflected that if she could change anything about the process used to develop OVCP, it would be that she would have somehow included intermediaries earlier on in the discussions to establish more buy-in from them in the process. In the second category of business process challenges, formalization of transactions was difficult from the community end since accounting is not part of the established culture of rural communities in the Chocó. Significant training and practice were necessary to build capacity for the community level members of COV to orchestrate reliable and transparent accounting of gold production. From the jewelry retail perspective, technical issues with refinement and scientific testing to ensure quality standards were a major business process challenge. By networking and partnering with small refineries outside of Colombia, CRED and COV were able to prevent this challenge from becoming a business deal breaker, but there is still work to be done on building local technical capacity to consistently produce a product that meets global quality standards. A reflective learning approach and an open-ended timeline has allowed COV to respond to these challenges by slowly and arduously refining their OVCP process, and as noted in the interviews, a more traditional for-profit business launch could not accommodate the time and resources required for this democratic model of starting up.

Discussion

The experience of the OVCP challenges dominant policy discourses of both artisanal gold mining and corporate social responsibility. Discourse about artisanal mining in Latin America has characterized it as a problematic activity with some fortunate, but unplanned benefits. One prevalent trend is that the majority of miners do not choose to work in mining but are forced to do so because they have no other way to provide for their families, which belies the underlying assumption that mining is generally a deplorable and desperate activity (Heemskerk, 2002). Another dominant thread is that artisanal and small-scale mining continues to be a dangerous non-point source of mercury pollution in all Latin American countries where gold is produced, including Colombia (Viega, 1997). While both of these patterns may fit the broad picture, the experience of COV shows that there are important exceptions where artisanal gold mining provides the solution to social and environmental problems and can be used to improve governance and economic development.

For the most part, corporate social responsibility theory and discourse presents strategies that managers can use to control and define policies. The OVCP example shows that in some cases, a democratic and open-ended approach is needed to lay the foundation for a socially responsible business initiative to ripen; pre-planned strategies or expectations could paralyze the trust building process and drown the potential for an effective program. This interpretation gets at the tension between Western-style business and development norms and rural culture and processes in impoverished, developing

countries, a tension which has also been raised with regards to the Fair Trade certification system for coffee (Taylor, 2005a; 2005b). Finding ways to integrate effective consultative processes into developing standards for certification of rural producers is a critical and difficult challenge for business managers as they incorporate suppliers into their corporate social responsibility plans.

An Emerging Code for Successful Community Mineral Certification

The factors that emerged from the *Oro Verde* case study as guidelines for the development of a successful grassroots certification program can serve as a foundation for hatching other effective programs in the artisanal mining sector. However, these guidelines arose from the place-specific culture and social structure of communities in the Chocó, and are not a one-size-fits all proposition[30], but rather an estimated code of precedents for efficacy. The four parts of this infant code are listed here and expanded upon in the subsequent text:

- Problem definition that validates and understands the miners' point of view
- Proactive networking and relationship building locally, nationally and globally
- Youth leadership and creativity
- Locally-tailored and collaborative organizational structures

Problem definition is at the center of policy change since a problem that is not defined with care is not likely to be solved. Amichocó prepared the ground for the sowing of a successful program by taking an integrative approach to defining the issues

[30] The Association for Responsible Mining used lessons learned from *Oro Verde* to guide the process of developing proposed international standards for Fair Trade gold. The international standards are now being tested at artisanal and small-scale pilot project sites all over the world.

before program design began. The four major drivers for the program's development constitute the essence of the way the problem was framed and show that in this case, the issues were defined in a way that validates and respects mining families' way of life and without making initial assumptions about the miners or their environmental mindset.

With Amichocó as the convener and activist networker that contacted all the stakeholders, the role of the national NGO has continued to be one of support, facilitation and bridge building. From the beginning, this proactive networking and relationship building was carried by youth leaders with a fresh sense of creativity and commitment to a transformative environmentalism of social justice. Rather than controlling the process and shaping policy development themselves, Amichocó's approach was to provide the tools and administrative support for community leaders to work with science and environmental policy experts to create appropriate solutions. They accomplished this by reaching out to potential partners, both internationally and within Colombia, and cultivating relationships to bring needed capacity-building tools to the ground where the miners were working. Another key networking and relationship maintenance role was that they interfaced and mediated communication between artisanal mining communities in the Chocó and the national government with regards to the project and its relationship to Law 70. Without the professional global networking activities of Amichocó, it is likely that COV would neither have connected to professional outsiders with the knowledge, expertise and neutrality to facilitate workshops and participatory action research for critical trust-building nor to a viable long-term market and knowledgeable international business advisors for their gold product.

The quaternary structure of COV with a fifth outside partner acting to verify and consult was tailored to fit the local realities and needs of responding to globalization in this specific place. This unique structure was identified in verbal and written participant reflections as a primary piece of the model that made OVCP effective. It instilled local pride in part because it utilized and incorporated local organizations. It established itself in an international development and business context by embedding reliance on national organizations as internal and external bridges to public and global sustainable development expectations and deliberations. As an attribute of the National Environmental System (SINA) of the Colombian Ministry of Environment, IIAP lends external credibility to the OVCP with the government and within the specified requirements of Law 70. The unique, collaborative inter-organizational structure of COV complemented the participatory spirit and reflective approach to learning that has become this project's legacy.

Limitations and Future Directions for Research

My role as a researcher in this case study was to listen to the story and reflections told by actors who were involved at the interface over the first eight years of this unique program, and to use fresh eyes to extract key lessons the emerged out of the richness of their first hand experience. These actors had taken the time and effort to establish trust and build relationships that allowed them candid insight into the perspectives of the artisanal mining families and other key community actors in Tadó and Condoto. The limited time and resources available for research could not have allowed me to elicit this

same thickness of description and accuracy of experience directly from community members myself, and doing so would have clouded my fresh eyes in a way that would be likely to bias and confuse the research outcomes. While this method of investigation through reflection and sharing from social actors who have struggled at the interface to build up the program has limitations due to inherent indirectness and subjectivity, it was the best way that I could devise of "entering the everyday lifeworlds of these actors (frontline personnel and locals)" in order to achieve a type of "reflexive ethnography that explore[s] the relationship between actors' everyday and researchers' theoretical understandings of problematic situations" like developing workable sustainable development solutions in the lifeworld of artisanal mining (Long, 2001: 91).

I tried to set up additional reflective interviews with other key participants, but limitations of time and language barriers made this difficult. While actors were willing at first to answer my questions, they generally could not spare much time and in one case failed to get back to me despite repeated email reminders. Written reflections and testimonies from the website of the Association for Responsible Mining (ARM) and participant-observation of *Oro Verde* actors presenting at ARM related events were useful for bolstering and triangulating interview reflections.

There are several directions that could be useful for future research. Interface analysis of a case where a less successful community program for artisanal mining could be compared to the *Oro Verde* case to unveil places where policy formation and implementation breaks down. It would also be useful to conduct surveys with certified miners in Tadó and Condoto to get a direct picture of their views on the strengths and

weaknesses of certification as a governance and economic development strategy. Geographic Information Systems (GIS) combined with community surveys has the potential to show spatial overlap between general family health and income trends with certified mining families to determine correlations. Amichocó is working with consultants to train staff members in GIS to improve monitoring of OVCP and their other programs.

Theoretical Connections and Findings

The argument has been made that without engagement of ASM field-researchers, or small-scale and artisanal miners and the community-level NGOs that represent them, the global international development regime will continue to depend on a poor undersanding of mine-community dynamics and an incomplete analysis of their operations and needs, which has "led to the design and implementation of inappropriate industry technologies and extension" (Hilson, 2007: 5). By making the upstream processes of designing voluntary environmental initiatives for gold and gemstones more participatory in nature, planners might be able to gain a more realistic and pragmatic understanding that will give them the needed basis for creating implementable policies for minerals that are mined at small scales. In order to thicken participation from the grassroots level of mining on the ground in the developing world, the policy process will need to make room for deliberative discussion with field actors, anthropologists, local organizations that have gained the trust of communities affected by and involved in mining, and the miners themselves. This is what Amichocó did to guide the *Oro Verde*

policy process and the program's success shows that this is an effective approach to policy design and implementation.

A reflective and open-ended approach to policy making was identified as a key to the success of Amichocó and COV. Fischer notes, "[b]ecause the major concern in establishing credibility is interpreting the constructed realities that exist in the context being studied, and because these realities exist in the minds of the people in the context, attention must be directed to gaining a comprehensive interpretation of these realities that can be affirmed by the people in the contextual setting" (2003:154). Fischer calls for "thick description" in policy analysis "[b]ecause it can reveal deeper meanings, the policymakers obtain a better understanding of the problems they are trying to solve. And secondly, resonating better with public perspectives than mainstream empiricist approaches, it can facilitate democratic policymaking" (2003: 151). These theoretical assertions are strongly supported by the case of the OVCP.

In many countries, valuable reserves of biodiversity coexist with underground gold and gemstone veins. Infringement of informal mining into protected conservation areas can be extremely difficult to prevent or control (Duffy, 2005). Artisanal mining has a long history in a diversity of geographic regions, and policymakers may be better able to address the challenges of environmental regulation in these areas if miners themselves are given the chance to explain their perspectives on issues of poverty and the environment. The origins of environmental degradation and the ways that they are embedded in systems of social organization are relevant to fostering environmental protection in the context of local places like the Chocó (Lipschutz, 2004; 2001; Gottlieb,

2005). "While the forces of globalization manifest themselves in a variety of ways, it is ultimately specific places and spaces that feel their effects" (Ventriss & Kuentzel, 2005: 533, paraphrasing Lipschutz, 2004). As suggested by Gottlieb, an environmental policy process of "linked natural and human environments" is "an environmentalism of transformation" (2005: 404). The *Oro Verde* case is an expression of transformative environmentalism that responds to the forces of globalization with the strength and specificity of deep localness.

The case for a "learning-process approach" that can adapt to conditions of imperfect knowledge in implementing and achieving efficacious "fit" for policies that aim for sustainable development in poor, rural communities is well supported by Korten and others (1980; VanDeveer & Dabelko, 2001; Fischer 1995). The concept of "[learning organizations] with a well developed capacity for responsive and anticipatory adaptation—organizations that: (a) embrace error; (b) plan with people; and (c) link knowledge building with action" (Korten, 1980: 498) has been realistically and effectively applied in this case study. COV represents a learning organization designed to seek knowledge from rural people as well as from science and policy experts. It serves as a strong verification of Korten's theory:

> Rural people have a great deal to contribute to program design. They have a substantial capacity for learning and change, but they also have good reason to be skeptical of the stranger bearing ideas for improving their lives untested in their setting. The history of rural development bears testament to the wisdom of their caution. One of the numerous weaknesses of centrally designed programs is that planners proceed as if they were writing on a clean slate and possessing all the knowledge relevant to improving the villagers' life. In reality they are making interventions into well-established socio-technical systems within which the poor have, over many years, worked out appropriate methods to meet their basic survival needs—otherwise they would not still be around… Such knowledge, crucial to any effort by outsiders to improve the well-being of the rural poor, is possessed by the people, but easily overlooked by planners who have not had—or do not seek—the opportunity to ask (Korten, 1980: 498).

By building relationships with scientific experts and inviting them to develop certification criteria through participatory action research in the communities, Amichocó facilitated establishment of credible monitoring that fit with local needs and culture. Participatory research processes can also be used effectively to create sustainable development indicators to monitor the effect of programs and policies, and allow for checking and adjustment of policies to better fit with local needs (Fraser *et al.*, 2006). COV is now engaged in a participatory process to select adjust their evaluation indicators for the OVCP. Research in small-scale mining regions has found that "unless environmental issues can be incorporated into the need to alleviate immediate poverty, it may not be possible to make stakeholders environmentally responsible" (Mtegha *et al.*, 2006: 6). The *Oro Verde* case shows that powerful synergy between poverty alleviation and environmental protection is possible, though challenging to achieve, in mining communities.

Tables for the Body of the Paper

Table 8. Goals and Impacts of the Oro Verde Certification Program (OVCP)

Broad Goals & Objectives	• Sustainable use of natural resources • Improvement of quality of life for local miners and local communities • Empowerment of marginalized ethnic groups • Strengthening of local organizations • Capacity building • Local development in general • Environmental protection of unique ecosystems
Definite Impacts to Date	• Pride (social change in the participating miners) • Economically viable model to increase income to families • Collective mining titles for certified Afro-Colombian communities • Environmental protection and restoration in mining areas • Increased accounting and communication capacity for community councils • Technical production training for certified miners • Adaptation to a broader scope of artisanal mining in the world

Table 9. Selected Indicators of Conservation and OVCP Participation in Tadó & Condoto

Indicators of ecological protection and restoration	• 7900 hectares of tropical forest protected by *Oro Verde* • Each certified family protects an average of 41 ha from more destructive mining practices • 20 family units were implementing Analogue forestry restoration techniques as of 2006 • Restoration has been initiated in two areas degraded by large-scale mining
Indicators of social participation	• Around 1300 certified miners (194 productive units) or 7% in 2007; increased from 90 productive units in 2004 • 30 community leaders have been formally trained in Analogue Forestry • A miner's cooperative (in Alto San Juan) organized and registered itself, including 26 certified OVCP miners as of 2006 • 28% of OVCP certified miners were women as of 2006

Table 10. Selected Reflective Descriptions of Major Internal Factors of OVCP Program Success

Trust and relationship building	• "What I think is the most important, is to have a strategy for social inclusion" for traditionally marginalized stakeholders. • "Our biggest asset from the gold experience—all about building trust with different actors [and] providing service." • "I think for both of us [COV and CRED] we're more concerned about the relational continuity than we are about the economics at this [early] stage."
Proactive social networking	• Connecting with "beyond business" actors, or business people "who have focused on development." • "Strategic alliances" and/or "partnerships" with universities, government ministries, international NGOs, refiners, mining cooperative in other countries and others.
Organizational structuring	• "Working through local organizations, like not pretending to do everything with an outside NGO, but building on the capacities of local organizations. I think it was crucial." • "I think also that the quaternary approach was also key, and the role that as an NGO, social organization played was absolutely important."

Communication and transparency	• "Oro Verde's strengths are their product, their transparency and their communication." • "Their communication is fantastic so no problem that we've ever had has ever been to big to resolve."

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Appendix

Interface Actors and Interviews

Catalina Cock Duque – Co-Founder of the Amigos Del Chocó Foundation, Initiator of the *Oro Verde* Program, and Chairperson of the Association for Responsible Mining. 24 October 2007 at Pangea Artisan Market & Café, 2121 Pennsylvania Ave., Washington, DC.

Lina Villa Córdoba –General Coordinator of Corporación Oro Verde and Executive Director of the Amigos Del Chocó Foundation. 24 October 2007 at Pangea Artisan Market & Café, 2121 Pennsylvania Ave., Washington, DC.

Cristina Echavarria – Secretary General of the Association for Responsible Mining. 16 November 2006 at the Annual CASM Meeting in Antsirabe, Madagascar; and 16 January 2008 by skype.

Greg Valerio – Founder and owner of CRED Jewellery, and Vice chair of the Association for Responsible Mining. 26 October 2007 at the Madison Dialogue Ethical Jewelry Summit, World Bank, Washington, DC; and 11 February 2008 by skype.

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THESIS APPENDICES

APPENDICES TABLE OF CONTENTS

APPENDIX A. Report on Artisanal Gemstone Mining in Burma

Artisanal Ruby Mining in Myanmar: Environmental and Social Impacts

Sally Dickinson DeLeon, Summer 2007

Legend has it that the Valley of Rubies was created in ancient times when *Naga* (a serpent) laid three eggs: out of the first hatched the King of *Pagan* (the major region in ancient Burma), out of the second hatched the emperor of China, and the third egg was stolen away by a hunter but he accidentally dropped it in a stream. The third egg cracked and released all of the precious rubies that spread throughout the land of Myanmar's modern day stone tract. Burma has always been strongly associated with high-quality rubies since the earliest European contact. Starting with the ancient kings and dynasties of Burma, and ending with the current military-junta dictators, most of the political leaders of this region have been renowned for the way they have made rubies symbolic of their power. An early Italian explorer wrote of a regional king in Burma who wore so many large red rubies "that seeing the person of the king by a light at night, he shines so much that he appears to be a sun."[i] Fine ruby displays luminescence and its ability to fluoresce and phosphoresce gave a mysterious aura of power to this king and other wearers. Than Shwe, the current military dictator of Myanmar, and his predecessors have regimented tight controls over the country's mines and until recently declared all gemstones to be the property of the State no matter who unearthed them; stealing rubies from the State was punishable by death or lengthy imprisonment. Aung San Suu Kyi, Myanmar's first democratically elected leader who won the Nobel Peace Prize in 1991 for her efforts to lead Myanmar's people to stand up for their freedom, is the notable exception to this formula of rubies, fear and power. She has been kept under house arrest for most of the last 19 years by the power-hungry junta. Just as the Burmese creation legend suggests, the strong ties between rubies, political power, and China may be part of what is allowing the continuation of the human rights violations, environmental degradation, and extreme inequity for which Myanmar has become so notorious; if these ties could somehow be severed, perhaps peace and prosperity could finally take hold. Rubies are not the key to democracy and an end to human-rights violations—the revenue they generate pales in comparison to the junta's earnings from oil and gas, and more of the official gem revenues are from jade than from rubies—but they are a piece of the puzzle. This report is an attempt to examine how rubies are mined in Myanmar and how their flow relates to the social and environmental well-being of communities therein.

Mining History

At the northwest end of the Shan Plateau, in the vicinity of the Irrawaddy River, lies the Mogok stone tract. The mines of Mogok, and sub-mines in the surrounding area have produced many of the finest rubies in the world. In addition to rubies, the land yields sapphires, spinel, peridot, aquamarine and a variety of other semi-precious stones. The L-shaped stone tract is estimated to be 1916 square miles in area.[ii] Ruby was probably first discovered in this region by stone-age humans during the Middle Pleistocene.[iii]

Figure 1: Map showing the most important gem mining localities in Myanmar.

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retrieved 7 October 2007 from: http://www.palagems.com/gem_spectrum1.2.htm

From the early centuries up until about 400 years ago, the region was ruled by a succession of princes in the Shan dynasty. In 1597 the Burmese king forced the Momeik *sawbwa* (prince) to trade Mogok and Kyatpyin for a stoneless area called Tajaungmyo.[iv] The king held direct control over the ruby mines for a few years before the British East India Company made its first contact with Burma and began to act on an interest in developing the gem trade. During the almost 300 years when Mogok was ruled by Burmese kings, forced slave labor was common in the mines and people were punished severely for attempting to hide valuable stones. In the early nineteenth century the British won the first Anglo-Burmese war, and at the end of 1885 the British took Mandalay, ousting the last king of Burma, Thebaw, from power. From 1889-1925, the Burma Ruby Mines Ltd. operated extensive mechanized mining at Mogok, but the company was eventually forced to go into voluntary liquidation because of declining returns and a slumped market in the face of World War I. From 1926-1947, mining was executed mainly by native artisanal methods and continued that way after Burma achieved independence in 1948. In 1962 General Ne Win seized power in a military coup and in 1969 his Ministry of Mines banned private exploration and gem-mining; ruby and jade mining licenses previously issued to prospectors were revoked and all gems were declared military property. Little information is available to the outside world about how mining proceeded after Burma (now called

Myanmar) was roped into the extreme isolation regimented by this long-running military dictatorship. However, in the mid-1990s Myanmar opened up ajar to admit private interests and tourists from the outside world. Gemstone and jade mining were slightly liberalized and expanded. The major ruby mining areas of today, as shown on the map in **figure 1**, include the Mogok Stone Tract, and Mong Hsu in Shan State, while jade and the rarer jadeite are primarily mined in Kachin State around Hpakant. Some smaller ruby mining areas also became official sources in the 1990s at Nawarat (also called Pyinlon) and Namhsa in Shan State, Sagyin (near Mandalay), Thabeitkyn and Kathe along the Irrwaddy River west of Mogok, Namya, which is located in Kachin State a few miles from Hpakant near the Chinese border, and others.

Mining Methods and Society in Mogok

Alluvial deposits, where rubies have been transported from their original parent rock by weathering into streams and rivers along the valley floors of this mountainous region, are the source of most of the gemstones that have been mined in Myanmar. In recent years, new technologies have allowed miners to penetrate primary deposits and as of the end of the millennium, there were about 1000 mines operating in the Mogok Stone Tract, approximately half in *byon* (deep gravel of ancient alluvial deposits) and half in bedrock[v]. Four traditional types of mines operate in Mogok (as of the 1990s) and these are detailed in **table 1**. There are also some open-cast mechanized mines that have replaced the mechanized mining efforts of the British Empire.

Table 1: ***Traditional Mine Methods of Mogok,*** adapted from Hughes (1997): 324-327.

Type	Used for	Technique
Twin-lon or pit	Mining the soft alluvial earth in the valleys	2-3 men work together to sink a small round shaft (3-24 m deep) straight down to the *byon* (gem-bearing gravel) and a small basket on a long-bamboo pole, with a counterweight or a hand-cranked winch, is used to haul up the earth.
Hmyawdwin or open trench	Excavating hillside surface deposits	A stream of pressurized water is directed to the upper end of an open cutting on a hillside and thus sweeps away the lighter material and mud effectively concentrating the heavier gem-bearing material to be scooped up and carried to a suitable site for washing, usually in a stream or river.
Ludwin or cave system	Extracting gem-bearing earth that fills limestone caves	Using a variety of hand-held tools, tunnels are excavated into hillsides to follow veins of *byon* to caverns in the limestone that form when impurities in the rock are dissolved by minerals in the groundwater; these caverns are often filled with deep layers of *byon* which is hauled out to the surface for washing.
Quarrying (tunneling)	Tunneling directly into host rock to extract stones	Dynamite and more modern forms of blasting are used to extract both ruby and sapphire from hard rock deposits.

Flooding by groundwater is a constant challenge especially in the *twin-lon* method. Hand-powered bamboo pumps as well as diesel-powered pumps are often used to remove the previous night's water at the start of a work day, and twin mining ceases during the monsoon season (June-October). Since the *hmyawdwin* method requires an abundant supply of water, it is carried out mainly during the rainy season. The *ludwin* and quarrying methods are not as common as twinlons and hmyawdwins, but some of the richest discoveries have been made in the caverns and crevices revealed in the limestone bedrock through tunneling. Mechanized mines opened in the era of the Burma Ruby Mines Ltd. and some have been operating in a number of locations since then. These generally involve large pits with centrifugal pumps planted in the middle to dry out the surrounding earth so that mines can work on the *byon* adjacent to the hole. Trucks may be used to haul excavated *byon* to a washing plant, where it is processed by machine through a series of screens and washing pans. However, the washing of *byon* is most commonly done in the traditional way since most mining in Mogok and the other important ruby mines are not mechanized. Large rocks are used to build a shallow enclosure, with a slight slope at one end, to contain the *byon.* A stream of water is directed onto the mound of *byon* while it is stirred and the lighter material flows out of an opening in the rocks at the sloped end of the enclosure. The remaining heavy material is removed for washing on circular bamboo trays, also commonly done in shallow enclosures. Poor people with hereditary rights to gem mine tailings, called the *kanase*, are given spoils from the mechanized open-pit mines as well as *byon* left over from the artisanal washing enclosures. The *kanase,* originally just women, wash this gravel in local streams to search for small spinels and other semi-precious stones.

The *kanase* could be viewed as a symbol of the amazing social-system that has organically emerged in Mogok. The size of the population of the Mogok area is unknown, but it includes Burmese and Shan (Buddhist ethnic groups), Nepalese Ghurkas (Hindu), Lisu (Christian and Animist), as well as smaller numbers of Muslims, Sikhs and people of Eurasian origin. Despite differences in ethnicity, religion, language, politics and history, the people of Mogok compete for a stake of the ruby income while cooperating to ensure that everyone has a role to play and a way to participate. In the face of many risks associated with finding, possessing and selling rubies [elaborated on below in the section on Gemstone Mining Regulation], various groups have settled into niches, parts of a whole network that responds to the official channels for ruby production and drives the unofficial channels as well. The peaceful coexistence of all of these groups, and the system of cooperation that they have developed in the face of their common enemy—poverty—is an inspiring story for other ethnically fractured societies.

Ruby Processing

Mogok rubies are considered the finest rubies in the world because of their natural deep color, clarity, fluorescence, and lore. Due to recent extensive mining around Mogok since the 1990s, these stones are becoming increasingly rare. It is estimated that as of the early 2000s, 95% of all the faceted rubies on the world market come from Mong Hsu.[vi] Unlike the Mogok Stone Tract, the geology of Mong Hsu is not such that the rubies are a

clear, deep, rich shade of "pigeon-blood" red, but instead often have a cloudy bluish-purple tinge and core. In general Mong Hsu rubies cannot be faceted without first being treated in high-temperature furnaces. They are treated both to improve the color and clarity and to heal deep fractures that are characteristic due the geological nature of Mong Hsu. The natural fractures usually cause untreated Mong Hsu stones to break during faceting, so these cracks must be sealed together by high-temperature heating with flux-glass in order to improve chances of success during cutting and polishing. Even with heat treatment, buyers' experiences have shown only a 10-30% range of success with cutting good stones from Mong Hsu rough[vii]. While many stones from the Mogok region are cut and polished in the town of Mogok, or in Mandalay or Yangon, Mong Hsu stones are usually sold to Thai gem dealers in rough form. In Bangkok, where heating technology, heating expertise, education and willingness to take risks far exceeds Burmese levels of these resources, Thai "cookers" or "burners" treat the Mong Hsu rough in their furnaces. The treated rough is then offered for sale and may be cut and polished in Thai lapidary shops or taken abroad by dealers for cutting in China, India, the United States or a number of other places.

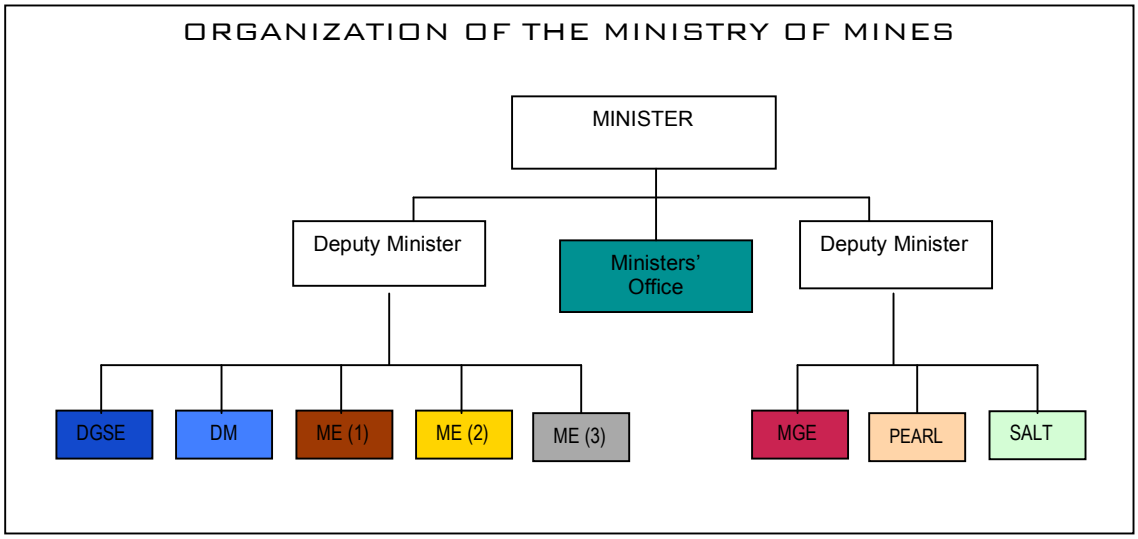
Gemstone Mining Regulation

When Ne Win, the first military ruler of Burma who staged a breakthrough coup in 1962, retired after widespread protests calling for liberalization in 1988, a new military junta took control. Many of Ne Win's old aides were part of the new State Law and Order Restoration Council (SLORC). Headed by Senior General Saw Maung, the SLORC seized power after violently crushing the peaceful civil society protests of August 1988 by shooting as many as 3000 people. The peaceful movement for political change had emerged around Aung San Suu Kyi, the beloved daughter of 1940's freedom fighter Aung San and leader of the popular political opposition party, the National League for Democracy (NLD). SLORC declared martial law, renamed the country from Burma to Myanmar, and placed Suu Kyi under house arrest. In a 1990 parliamentary election, the only one ever held in Myanmar, the NLD won a majority of seats but the SLORC annulled the results and refused to give up control of the legislative process. The State-Owned Economic Enterprises Law (SLORC Law No. 9/89) was issued in 1989 when the junta was in the early stages of introducing some market economy policies after 26 years of nationalized socialism. Chapter 2, section 3 of this law clarifies which economic activities will continue to be carried out only by the State including "… Exploration, trading, extraction and export of pearl, jade, ruby and other mineral precious stones."

In 1992 General Saw Maung resigned unexpectedly for health reasons, and was succeeded by one of his cabinet members, Senior General Than Shwe. Under new leadership, economic policies were relaxed somewhat to permit more foreign investment and infrastructure development. The Myanmar Mines Law of 1994 (SLORC Law No. 8/94) reformed the mining codes and made clear that no mining company can be held liable for prosecution or fines. Ironically, this law also contains some provisions about environmental protection at mine sites, but no clear way to enforce them. In 1995 the policy landscape for gemstone mining was modified when the junta issued the Myanmar

Gems Law (SLORC Law No. 8/95). This law laid the groundwork for private companies and mining cooperatives to enter into joint ventures with the State to mine for precious stones, allowing foreign companies, or native ethnic groups to hold a minority-stake in a particular gem mine. The law also allows landowners to apply for permits to mine rubies provided that they sell them through government-approved channels and pay associated fees and royalties. In keeping with the 1994 National Environment Policy, Law 8/95 Section 12 (a) requires that all applicants for permits from the Ministry of Mines conduct an Environmental Impact Assessment (EIA) prior to receiving official approval to extract gems, and that the Myanmar Gems Enterprise (MGE) investigate whether gemstone mining activities under each particular permit will negatively affect the environment, flora and fauna, highways, religious property, and/or cultural heritage items. The MGE is the official overseer of gemstone mining rights and grants permits to business people who wish to legally mine for gemstones or jade in Mogok, Mong Hsu, Namya, Hpakant and other areas. The MGE is also responsible for permits to process gemstones and to manufacture them into final products. **Figure 2** shows the organizational structure of the Ministry of Mines, including the role of the MGE.

Figure 2: ***Institutional Structure and Human Capital of the Myanmar Ministry of Mines***, adapted from Samuels (2003): 163.



Acronym	Department	Responsibilities	Human Resources	
MO	Ministers' Office	Cabinet of the Minister of Mines	Officers	7
			Staff	34
			Total	41
DGSE	Department of Geological Survey & Mineral Exploration	Geological Surveying and Mapping, Mineral Exploration, Metallurgical Research	Officers	251
			Staff	1219
			Total	1470
DM	Department of Mines	Mineral Policy and Law Formulation, Safety and Environmental Control, Royalty Collection, Planning	Officers	23
			Staff	43
			Total	66
ME (1)	Mining Enterprise #1	Lead, Zinc, Silver, and Copper	Officers	201
			Staff	6405
			Total	6606

ME (2)	Mining Enterprise #2	Gold, Tin, Tungsten	Officers	201
			Staff	4027
			Total	4228
ME (3)	Mining Enterprise #3	Iron & Steel, Coal, and Industrial Minerals	Officers	199
			Staff	3132
			Total	3331
MGE	Myanmar Gems Enterprise	Rubies, Sapphires, Jade, Colored Stones, and Jewelry Manufacturing	Officers	68
			Staff	759
			Total	827
PEARL	Myanmar Pearl Enterprise	Cultured Pearls, and Artificial Breeding of Mother Pearl Oysters	Officers	30
			Staff	331
			Total	361
SALT	Myanmar Salt & Marine Chemical Enterprise	Salts by Production from Brine	Officers	22
			Staff	367
			Total	389

Since it was created in 1988 to replace the old Myanmar Gems Corporation, the MGE has hosted annual gem auctions, which until 2002 were only one of two ways to legally buy rubies and other gemstones from Myanmar. The Union of Myanmar Economic Holdings Limited (UMEHL) began selling rough stones, mainly from Mong Hsu, and jade at its own annual auctions in the mid-90s. Currently, MGE and UMEHL auctions are held several times a year and interested buyers can also purchase gemstones through official channels online, at the Gems Museum and Mart in Yangon, at the Myanmar Joint Venture VES Company store next to the museum, or at licensed hotel shops and outlets in Yangon and Mandalay.

In 1997, the junta announced that it was changing its name to the State Peace and Development Council (SPDC) and some members were replaced. The SPDC maintains local strategic command offices all over the country, including in mining areas. The decisions of the MGE office in Mogok are reportedly controlled by the local SPDC office, and independent local mine owners who apply for permits are often delayed for so long that they have no choice but to sell their land to foreign Chinese and Indian investors to avoid further accumulation of debt.[viii] Land seizures by military personnel are not uncommon when valuable gem-bearing pockets are revealed therein. Due to the risks and economic uncertainties of legal gem entrepreneurship, many independent miners prefer to mine secretly, risking imprisonment and worse, and sell through shadow networks that smuggle rough stones across international borders into Thailand, China, India and elsewhere. Enforcement of environmental regulations is virtually non-existent in legalized mining operations, and certainly non-existent for illicit operations. Citizens have no way to seek recourse for relevant health problems and environmental damage done to land, waterways and wildlife in mining areas.

Environmental Impacts of Ruby Mining

The Valley of Rubies (the Mogok Stone Tract) is surrounded by three to six thousand foot-high mountains, which form a natural amphitheater and were at one time covered with dense tropical forests, which were home to tigers, leopards, bears, reptiles and other predators. Today, the once-admired teak forests are absent and large cats are now locally

extinct, but some remain in other parts of the country. Monkeys, bears, wild-boars, snakes and birds still inhabit the Mogok region.[ix] The Kyauktaung Reserve, the Hintha Reserve, the Ondok Reserve, and the small Chaungyi Reserve all border on the mining areas. Burmese miners at the turn of the last century used to hunt in these forests and return to camp with slain animals to eat; it is not difficult to imagine that those who mine the valley today still depend on the forest for food as well as for materials necessary to sustain shelter, warmth and other human needs. Forest resources are commonly used to construct mine shafts and other structures. Timber, twigs and leaves are used for shoring up the side tunnels of *twin-lon* shafts and for alternative types of shafts in areas where the earth is not compact enough for twinlons. Nonetheless, prior to 1995, the effects of gemstone mining on the Burmese environment had been negligible since the days of the Burma Ruby Mines Ltd. Because most mining was done slowly using traditional methods, and most of the gem deposits were not found close enough to major river, lake or marine ecosystems (with the exception of a few sites along the Irrawaddy River) to cause serious damage from siltation, environmental damage existed on a relatively small scale. With the advent of larger mechanized mines backed by foreign investors who could not easily be held to any liabilities, ruby, sapphire and jade mining became a serious threat to habitat preservation and biodiversity. Dynamite and powerful equipment have allowed the new mines to extract a lot of material in a short period of time, and the resulting environmental damage around Mogok and Mong Hsu is extensive.[x] Although little research has been done, international environmental NGOs are extremely concerned about the state of biodiversity in Myanmar.

The Salween River, which is the second largest river in Asia after the Mekong, flows close to Mong Hsu and some mines are located along its banks. With headwaters in Tibet, a course through the Yunnan Province of China, the eastern side of Myanmar and the western border of Thailand, the Salween is truly an international eco-region. Inside Myanmar it is commonly known by its' Burmese name, Thanlwin. **Figure 3** shows the watershed basins of all the major rivers in Myanmar, including the Salween shown as basin #7. Downstream from the ruby mining area it flows around 800 km before it enters the Andaman Sea at Moulmein. Approximately 140 species of fish inhabit the Salween, one-third of which are endemic to this river[xi]. The river also contains one of the most diverse turtle communities in the world, including the endangered big-headed turtle (*Platysternon megacephalum*) and several threatened and vulnerable species. Erosion and siltation of the river is accelerated by gemstone mining activities and can damage habitats, reduce oxygen availability for aquatic species, and affect water temperatures leading to a loss of biodiversity. Since the ecological structure of the river is much of what allows it to provide food and a clean, continuous supply of water for local people and animals, the effects of changing this structure can be disastrous. These concerns have been echoed in the controversy surrounding the junta's plans to build a series of large dams on the Salween for hydropower generation.

The topic of preservation of endangered species, while on the whole less concerning than large-scale deforestation, destruction of biodiversity, and changes to the physical and

ecological structures of river systems, is part and parcel with wildlife conservation in Myanmar. In general, hunting, over-fishing, logging, oil and gas exploration and gold-mining are the gargantuan threats to the threatened and endangered plants and animals. However, gemstone mining also plays a role, especially when it is carried out with dynamite, powerful machinery and inattention to soil erosion near waterways. The World Conservation Union (IUCN) estimates the remaining wild population of the critically endangered Irrawaddy River dolphin (*Orcaella brevirostris*) at 59 individuals.[xii] IUCN research has shown that a large number of gold mines operate along the Irrawaddy River (watershed basins #2, 3, and 5 in **Figure 3**) in regions of preferred habitat for this dolphin and the toxic mercury, large boat dredges, hydraulic land blasters and noise of these mechanized gold mines pose a major threat to the survival of the species. Small-scale gemstone mining is much less detrimental to the dolphins than the gold mining, but nonetheless, siltation from gravel blasting and washing could harm the health of one of the few-remaining Irrawaddy River dolphins in the world. The same reasoning holds true for critically-endangered birds that depend on the Irrawaddy and Salween River habitats. Birdlife International is particularly concerned about changes to wetland habitats that are extremely important for threatened and endangered birds in the Irrawaddy River plains, downstream of ruby mining areas.[xiii] However, the amount of additional silt added to rivers from gemstone mining activities is probably not enough to alter wetland habitat structures significantly on its own. When combined with silt and soil resulting from agricultural land, logging, large-scale gold mining and hydrological changes caused by dams, silt from gemstone mines alone has a negligible effect on downstream habitats.

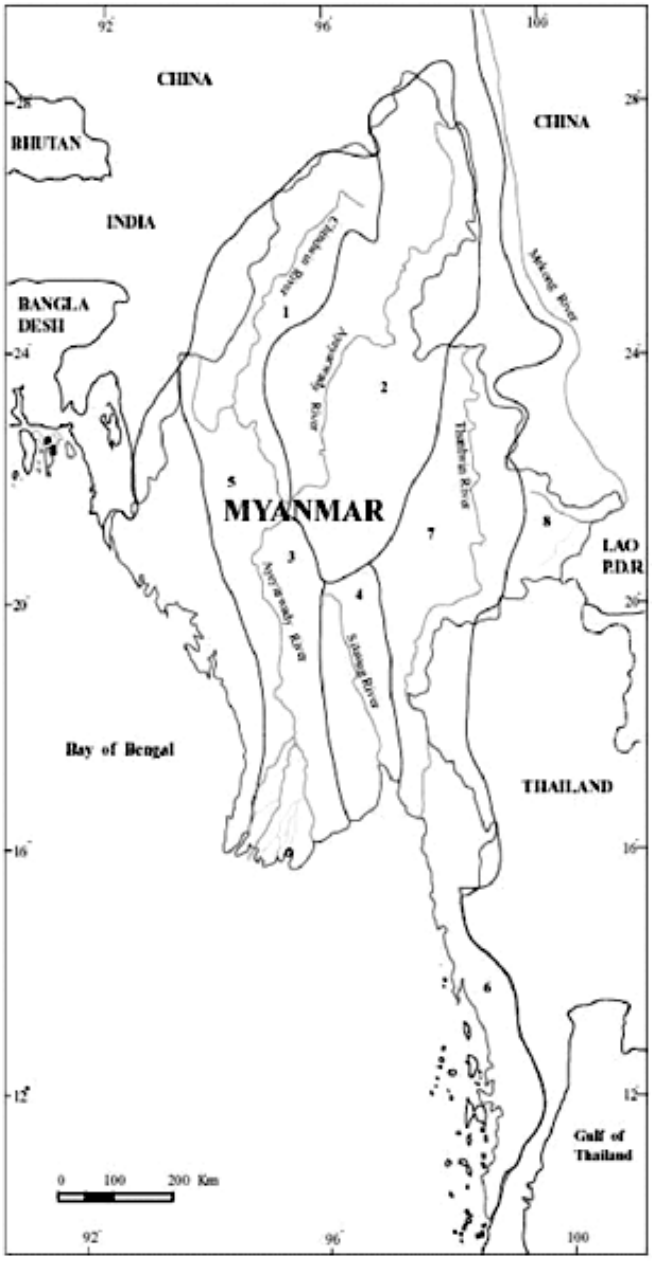


Figure 3: Map of River Basins in Myanmar showing the passage of the Thanlwin (Salween) River and the Irrawaddy River.

© WEPA (Water Environment Partnership in Asia)

retrieved 7 October 2007 from:
http://www.wepadb.net/policies/state/myanmar/myanmar.htm

When shafts (from the *twinlon* method, caverns from the *ludwin* method, and tunnels) are abandoned and left open when mining is finished, they can become hazards for wildlife, livestock and unsuspecting people. Abandoned pits are perhaps the longest-lasting environmental legacy of artisanal and small-scale gemstone mining in Myanmar. Particularly in areas where large mammals roam the ground, they may act as traps. They often become filled with water, and if small enough in diameter may appear as harmless, shallow puddles through which it is safe to walk. Standing water collecting in pits constitutes a breeding-ground for disease-carrying insects leading to stronger vector populations for malaria and Japanese encephalitis. Once again, the scale of these disturbances is minor from artisanal mining in Myanmar, particularly because much of it is done secretly so pits may need to be refilled and minimized in proximity to one another to avoid attracting attention from officials. Concern about abandoned pits from the international conservation organizations has been aimed mainly at the large-scale gold mining going on in and around the newly created Hukawng Valley Tiger Reserve in Kachin State.

Conclusion- Balancing Myanmar's Ruby Costs and Benefits

Rubies are a rich and important part of the culture and story of Myanmar. To argue that they are more of a curse than a blessing would be missing the point that they are inherent in the Burmese way of life, both the wonders and the wickedness. There is no way to measure all the contributions Burma Rubies have made to society. However, without a doubt rubies have brought livelihoods and valued traditions to the people of Mogok. When they are mined in the traditional, artisanal-style ways the harm caused to ecosystems is negligible—after all it has been going on four thousands of years. Ecological damage from artisanal and small-scale mechanized mines could be contained with little technical difficulty and capital, but education and environmental justice pose more daunting challenges. While environmental regulations are vague and out-of-date, it seems unlikely that the majority of miners would comply with stronger regulations due to lack of appropriate institutions for enforcement. Furthermore, many hereditary mining families deeply resent the government for their nationalization policies, ties to Chinese and Indian investors, unfair pricing policies, and general abuse of non-Burman ethnic groups. Because of this deep-seated conflict, smuggling and hiding gem deposits from the junta have evolved into proud creative art forms. For many families involved in the mining and gemstone processing businesses in Myanmar, selling a ruby is their only hope of escaping poverty. Other than illegal teak or heroine trading, there are few alternative livelihoods to gemstones that allow people to earn enough income to survive.

In the puzzle of how to build stronger human rights and environmental governance in Myanmar, rubies are still a conundrum but one thing about them is clear: they are not the logical first step for leveraging a brutal regime. Because rubies are deeply integrated in the history, mythology and social systems of the places from which they are mined and traded, any policy effort to eradicate the ruby economy without fully understanding it could have serious unintended consequences for the social and environmental well-being of communities in these places. Jade, gold, oil and gas, all of which are more economically viable to the SPDC than rubies, are not as easy to smuggle as rubies nor are they as mired in religious faith and hope. Furthermore, rubies and other small precious stones are more amenable to artisanal mining than jade or gold because of their geological nature. If human rights for marginalized peoples is the international priority in Myanmar, then rubies may best be left as an avenue of hope for the poorest miners while work is undertaken to cut off streams of power and revenue from the larger natural resource honeypots.

Endnotes

[i] Ludovico di Varthema of Bologna as quoted from Temple (1928) by R.W. Hughes on page 307 of *Ruby & Sapphire* (1997)

[ii] George (1961) as referenced by Samuels (2003) on page 117 of his chapter on the Mogok Stone Tract

[iii] Hughes (1997)

[iv] George (1915) as referenced in Hughes (1997)

[v] Waltham (1999): 145

[vi] Hughes (2004)

[vii] Samuels (2003): 158
[viii] MacLean (2003)
[ix] Themelis (2000): 85
[x] Gutter (2001)
[xi] WWF (2006)
[xii] IUCN (2007)
[xiii] BirdLife International (2003)

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APPENDIX B. Jewelers of America Statement of Principles

Jewelers of America
Social, Ethical and Environmental Framework

(1) OUR RESPONSIBILITIES

Jewelers of America is the national association for the retail jeweler.
Our prime responsibility is to our members, for whom we exist. Our mission is to assist all members in improving their business skills and profitability. Maintaining a good reputation is an important element of maintaining profitability. We therefore encourage our members to discharge their responsibilities to their stakeholders, including their employees, customers, business partners, communities in which they operate, and to the country in a manner that is consistent with the mission and framework. We also encourage members to work collaboratively to address social, ethical and environmental issues that impact on our industry.

(2) OUR MISSION

Our mission statement reflects these responsibilities.

> "Jewelers of America is the national association for the retail Jeweler. Jewelers of America is both a center of knowledge for the jeweler and **an advocate for professionalism and high ethical, social and environmental standards in the jewelry trade**. The Jewelers of America's mission is to assist all members in improving their business skills and profitability. Jewelers of America will provide access to meaningful educational programs and services, leadership in public and industry affairs, and encourage members with common interests to act in their and the industry's best interests."

The objective of this framework is to assist us in achieving our mission, with particular focus on being an advocate for high social, ethical and environmental standards in the jewelry trade.
The framework assists by outlining a Statement of Principles and we encourage our members to adopt practices in their operations that support the Statement. The framework then lays out the implementing activities that we will employ to facilitate the achievement of these Principles.

(3) OUR STATEMENT OF PRINCIPLES

The principles Jewelers of America expects its members to adhere to are:
(i) Respecting Human Rights
We expect Human Rights to be respected within the sphere of our members' influence. We explicitly support the Universal Declaration of Human Rights (UDHR) and in doing so expect our members to support activities that assist in bringing to life the UDHR throughout their spheres of influence.
(ii) Respecting Labor Rights
We expect Labor Rights to be respected within the sphere of our members' influence. We explicitly support the eight fundamental conventions of the International Labour Organisation (ILO) and in doing so expect our members to support activities that assist in bringing to life these core conventions throughout their spheres of influence. These fundamental conventions cover the protection of the right to freedom of association and collective bargaining, the elimination of forced and compulsory labor, elimination of discrimination in respect of employment and occupation and the abolition of child labor. Furthermore, we expect our members to provide a healthy and safe environment for their employees and their customers.
(iii) Protecting the Environment
We expect the Environment to be protected with the sphere of our members' influence. This includes

undertaking initiatives to promote greater environmental responsibility along the entire Jewelry supply chain and encouraging the development and diffusion of environmentally friendly technologies.

(iv) Promoting Business Integrity

We insist on our members operating on principles of honesty, transparency, integrity and accountability in all aspects of their business. We also expect that our members promote these principles of Business Integrity throughout their spheres of influence. Matters of key concern in the area of business integrity include corruption, bribery, money laundering, fraud, conflicts of interest and incorrect accounting practices. The JA Code of Ethics and Standards for Professional Conduct guide our members conduct on this issue.

(v) Promoting Equitable Economic Development

By operating successful businesses, creating jobs, and building international supply chains, we believe that the jewelry industry has an important role to play in generating economic growth. However to be sustainable it is essential that the benefits of this economic development are spread equitably, this being important in both the developed and developing world. We expect our members to promote this equitable economic development throughout their sphere of influence.

(vi) Supporting Communities

We consider that our prime contribution to society can best be achieved through our members performing their basic business activities profitably and responsibly, thereby supporting the development of strong communities.

Through these principles Jewelers of America also explicitly supports the UN Global Compact.

(vii) Assisting with the Nation's War on Terrorism

We recognize our added responsibility to society can best be achieved through our members' compliance with the provisions of the USA PATRIOT ACT, and pledge to strive to stimulate their awareness, vigilance, and full cooperation in this regard through our annual program of trade education and communications.

(4) LIVING THE PRINCIPLES

We expect our members to strive to achieve these principles throughout their day-to-day business operations. We consider this day-to-day living of the principles vital, not only because it ensures the profitability and value of the jewelry industry, but also because it is the right thing to do.

We expect our membership to bring these principles to life within their 'sphere of influence'. That is, where a member has the ability to directly control or indirectly influence the implementation of the Principles, we expect this control or influence to be exercised.

Members 'spheres of influence' will vary, according to size of the organization and resources available, however we expect all members to strive to:

• Apply the principles to their own operations in the work and market place

• Use their influence to apply the principles through supply chain relationships, and

• Co-operate and support efforts within the industry and society that aim to address the issues embodied in the principles.

(5) JEWELERS OF AMERICA - IMPLEMENTING ACTIVITIES

Many of the social, ethical and environmental challenges that our members face, particularly those within the context of complex supply chains may be difficult for our members to influence individually. We believe in many cases the industry working together will leverage maximum change. With this in mind, Jewelers of America is committed to assisting our members and other stakeholders in achieving improved social, ethical and environmental performance of the jewelry industry.

Key implementing activities to be co-ordinated by Jewelers of America include:

• *Stakeholder engagement and long-term learning:* To maintain an ongoing awareness amongst members of social, ethical and environmental risks that the jewelry industry faces.

• *Policy and advocacy*: To communicate, encourage and facilitate best practice throughout the jewelry industry.
• *Codes of Ethics and Standards of Professional Conduct*: To outline the ethical standards that govern the conduct of our members activities in their own operations.
• *Transparency and accountability along supply chains:* To contribute towards the development of credible systems that improve social, ethical and environmental performance and thus the integrity of the jewelry supply chain.

Links
Jewelers of America explicitly supports:
• Universal Declaration of Human Rights: **http://www.udhr.org/**
• The International Labour Organisation: **http://www.ilo.org/**
• The UN Global Compact: **http://www.unglobalcompact.org**
• The USA PATRIOT ACT (Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism. **http://frwebgate.access.gpo.gov/cgibin/getdoc.cgi?dbname=2001_presidential_documents&docid=pd29oc01_txt-26**

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1 The United Nations Global Compact

At the World Economic Forum, Davos, on 31 January 1999, UN Secretary-General Kofi A. Annan challenged world business leaders to "embrace and enact" the Global Compact, both in their individual corporate practices and by supporting appropriate public policies.

He set out ten principles, which cover the areas of human rights, labor, environment and anti-corruption:

1.1 Human Rights
The Secretary-General asked world business to:
Principle 1: support and respect the protection of international human rights within their sphere of influence;
and
Principle 2: make sure their own corporations are not complicit in human rights abuses.

1.2 Labor
The Secretary-General asked world business to uphold:
Principle 3: freedom of association and the effective recognition of the right to collective bargaining;
Principle 4: the elimination of all forms of forced and compulsory labor;
Principle 5: the effective abolition of child labor; and
Principle 6: the elimination of discrimination in respect of employment and occupation.

1.3 Environment
The Secretary-General asked world business to:
Principle 7: support a precautionary approach to environmental challenges;
Principle 8: undertake initiatives to promote greater environmental responsibility; and
Principle 9: encourage the development and diffusion of environmentally friendly technologies.

1.4 Anti-Corruption
The Secretary-General asked world business to:
Principle 10: businesses should work against all forms of corruption, including extortion and bribery.

2 International Labour Organisation

2.1 History and Mandate

The International Labour Organisation is the UN agency that seeks the promotion of social justice and internationally recognised human and labor rights. It was founded in 1919 and is the only surviving major creation of the Treaty of Versailles, which brought the League of Nations into being, and it became the first specialised agency of the UN in 1946.
The ILO formulates international labor standards in the form of Conventions and Recommendations setting minimum standards of basic labor rights: freedom of association, the right to organise, collective bargaining, abolition of forced labor, equality of opportunity and treatment, and other standards regulating conditions across the entire spectrum of work related issues.

2.2 Fundamental conventions of the ILO

Eight conventions are considered the fundamental conventions of the ILO, excerpts of these are outlined below:

2.2.1 Convention 87 – 'Freedom of Association and protection of the Right to Organise' (1948)

"Workers… shall have the right to establish and… to join organisations of their own choosing"
"Workers… shall have the right to draw up their constitutions and rules"
"Workers… organisations shall have the right to establish and join federations and… shall have the right to affiliate with international organisations.

2.2.2 Convention 98 – 'Right to Organise and Collective Bargaining' (1949)

"Workers shall enjoy adequate protection against acts of anti-union discrimination in respect of their employment"
"Workers and employers associations shall enjoy adequate protection against any acts of interference by each other…"
"… Where necessary to encourage and promote the full development… of voluntary negotiations between employers and workers associations".

2.2.3 Convention 29 – 'Forced Labour' (1930)

"Each member of the ILO which ratifies this Convention undertakes to suppress the use of forced or compulsory labour in all its forms within the shortest possible period"

2.2.4 Convention 105 – 'Abolition of Forced Labour' (1957)

"Each member of the ILO which ratifies this Convention undertakes to surppress and not make use of any form of forced or compulsory labour:
As a means of political coercion or education or as a punishment for holding or expressing a political view
As a method of mobilising and using labour for purposes of economic development

2.2.5 Convention 100 – 'Equal Remuneration' (1951)

"Each member shall… promote and… ensure the application to all workers of the principle of equal remuneration for men and women workers for work of equal value"

2.2.6 Convention 111 – 'Discrimination' (1958)

"…to declare and pursue a national policy designed to promote… equality of opportunity and treatment in respect of employment and occupation, with a view to eliminating any discrimination".

2.2.7 Convention 138 – 'Minimum Age' (1973)

"… undertakes to pursue a national policy designed to ensure the effective abolition of child labour…"
"The minimum age specified in pursuance of paragraph 1 of this Article shall not be less than the age of completion of compulsory schooling, and in any case, shall not be less than 15 years.
"… a member whose economy and educational facilities are insufficiently developed may, after

consultation… initially specify a minimum age of 14 years
Recommendation 146:
"Minimum age should be fixed for all sectors of activity"
"Members should take as their objective the progressive raising to 16 years of the minimum age"
"Where minimum age… is still below 15 years, urgent steps should be taken to raise it to that level."
"Where the minimum age for admission to types of work which are likely to jeopardise the health, safety or morals of young persons is still below 18 years, immediate steps should be taken to raise it to that level.
"…special attention should be given to: provision of fair remuneration, bearing in mind equal pay for equal work strict limitation of the hours spent at work… so as to allow enough time for education granting… of 12 hours night rest and customary weekly rest days granting of an annual holiday with pay of at least 4 weeks, and not shorter than that granted to adults.

2.2.8 Convention 182 – 'Worst Forms of Child Labour' (1999)

"…The elimination of the worst forms of child labour as a matter of urgency"
In this case 'the worst forms' can be defined as: slavery/ prostitution/ illicit activities/ any activities causing harm and a child is defined as: any under 18 years old.

3 Universal Declaration of Human Rights

The Universal Declaration of Human Rights was negotiated under the auspices of the United Nations and was adopted (without dissent) by the UN's General Assembly on December 10, 1948. The UDHR is outlined below:
"This Universal Declaration of Human Rights as a common standard of achievement for all peoples and all nations, to the end that every individual and every organ of society, keeping this Declaration constantly in mind, shall strive by teaching and education to promote respect for these rights and freedoms and by progressive measures, national and international, to secure their universal and effective recognition and observance, both among the peoples of Member States themselves and among the peoples of territories under their jurisdiction.

Article 1

All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.

Article 2

Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.
Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.

Article 3

Everyone has the right to life, liberty and security of person.

Article 4

No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.

Article 5

No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.

Article 6

Everyone has the right to recognition everywhere as a person before the law.

Article 7

All are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination.

Article 8
Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.

Article 9
No one shall be subjected to arbitrary arrest, detention or exile.

Article 10
Everyone is entitled in full equality to a fair and public hearing by an independent and impartial tribunal, in the determination of his rights and obligations and of any criminal charge against him.

Article 11
(1) Everyone charged with a penal offence has the right to be presumed innocent until proved guilty according to law in a public trial at which he has had all the guarantees necessary for his defence.
(2) No one shall be held guilty of any penal offence on account of any act or omission which did not constitute a penal offence, under national or international law, at the time when it was committed. Nor shall a heavier penalty be imposed than the one that was applicable at the time the penal offence was committed.

Article 12
No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.

Article 13
(1) Everyone has the right to freedom of movement and residence within the borders of each State.
(2) Everyone has the right to leave any country, including his own, and to return to his country.

Article 14
(1) Everyone has the right to seek and to enjoy in other countries asylum from persecution.
(2) This right may not be invoked in the case of prosecutions genuinely arising from non-political crimes or from acts contrary to the purposes and principles of the United Nations.

Article 15
(1) Everyone has the right to a nationality.
(2) No one shall be arbitrarily deprived of his nationality nor denied the right to change his nationality.

Article 16
(1) Men and women of full age, without any limitation due to race, nationality or religion, have the right to marry and to found a family. They are entitled to equal rights as to marriage, during marriage and at its dissolution.
(2) Marriage shall be entered into only with the free and full consent of the intending spouses.
(3) The family is the natural and fundamental group unit of society and is entitled to protection by society and the State.

Article 17
(1) Everyone has the right to own property alone as well as in association with others.
(2) No one shall be arbitrarily deprived of his property.

Article 18
Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to

change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.

Article 19
Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.

Article 20
(1) Everyone has the right to freedom of peaceful assembly and association.
(2) No one may be compelled to belong to an association.

Article 21
(1) Everyone has the right to take part in the government of his country, directly or through freely chosen representatives.
(2) Everyone has the right to equal access to public service in his country.
(3) The will of the people shall be the basis of the authority of government; this will shall be expressed in periodic and genuine elections which shall be by universal and equal suffrage and shall be held by secret vote or by equivalent free voting procedures.

Article 22
Everyone, as a member of society, has the right to social security and is entitled to realization, through national effort and international co-operation and in accordance with the organization and resources of each State, of the economic, social and cultural rights indispensable for his dignity and the free development of his personality.

Article 23
(1) Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment.
(2) Everyone, without any discrimination, has the right to equal pay for equal work.
(3) Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.
(4) Everyone has the right to form and to join trade unions for the protection of his interests.

Article 24
Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay.

Article 25
(1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.
(2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.

Article 26
(1) Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.
(2) Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms.
It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and

shall further the activities of the United Nations for the maintenance of peace.
(3) Parents have a prior right to choose the kind of education that shall be given to their children.

Article 27
(1) Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.
(2) Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.

Article 28
Everyone is entitled to a social and international order in which the rights and freedoms set forth in this Declaration can be fully realized.

Article 29
(1) Everyone has duties to the community in which alone the free and full development of his personality is possible.
(2) In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are determined by law solely for the purpose of securing due recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order and the general welfare in a democratic society.
(3) These rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations.

Article 30
Nothing in this Declaration may be interpreted as implying for any State, group or person any right to engage in any activity or to perform any act aimed at the destruction of any of the rights and freedoms set forth herein."

APPENDIX C. Senate Resolution on Burma

110TH CONGRESS

1ST SESSION **S. RES. 339**

Expressing the sense of the Senate on the situation in Burma.

IN THE SENATE OF THE UNITED STATES

OCTOBER 1, 2007

Mr. KERRY (for himself, Mr. MCCONNELL, Mr. BIDEN, Mr. LUGAR, Mrs. BOXER, Mr. DODD, Mr. DURBIN, Mr. COLEMAN, Mr. FEINGOLD, Mr. KENNEDY, Mr. MENENDEZ, Mrs. FEINSTEIN, Mr. REID, Mr. LEVIN, Mr. HAGEL, Mr. MCCAIN, Mr. SCHUMER, Mr. CASEY, Mrs. CLINTON, Mr. OBAMA, Mr. CARDIN, Mr. BINGAMAN, Mr. BROWNBACK, Mr. SUNUNU, Mrs. HUTCHISON, and Mr. WHITEHOUSE) submitted the following resolution; which was considered and agreed to

RESOLUTION

Expressing the sense of the Senate on the situation in Burma.

Whereas hundreds of thousands of Burmese citizens, including thousands of Buddhist monks and students, engaged in peaceful demonstrations against the policies of the ruling State Peace and Development Council (SPDC), demanding that the State Peace and Development Council release all political prisoners, including Nobel Peace Prize laureate Daw Aung San Suu Kyi, and urging that the government agree to a meaningful tripartite dialogue with Suu Kyi, the National League for Democracy (NLD), and the ethnic minorities towards national reconciliation;

Whereas the State Peace and Development Council violently dispersed the peaceful demonstrators, killing at least 10 (and reportedly more than 200) unarmed protesters, including a number of monks and a Japanese journalist, and arrested hundreds of others, and continues to forcibly suppress peaceful protests;

Whereas the National League for Democracy won a majority of seats in the parliamentary elections of 1990, but the State Peace and Development Council refused to uphold

the results or to negotiate a transition to civilian rule and subsequently placed Aung San Suu Kyi under house arrest;

Whereas Aung San Suu Kyi has spent most of the past 18 years under house arrest or in jail, and is currently being held in government custody, cut off from her followers and the international community;

Whereas 59 world leaders, including 3 former presidents of the United States, have called on the State Peace and Development Council to release Aung San Suu Kyi and all other political prisoners;

Whereas the State Peace and Development Council has destroyed more than 3,000 villages, systematically and violently repressed ethnic minorities, displaced approximately 2,000,000 Burmese people, and arrested approximately 1,300 individuals for expressing critical opinions;

Whereas the United States Department of State's 2006 Reports on Human Rights Practices found that Burma's junta routinely restricts its citizens' freedoms of speech, press, assembly, association, religion, movement, and traffics in persons, discriminates against women and ethnic minorities, forcibly recruits child soldiers and child labor, and commits other serious violations of human rights, including extrajudicial killings, custodial deaths, disappearances, rape, torture, abuse of prisoners and detainees, and the imprisonment of citizens arbitrarily for political motives;

Whereas the Government of Burma relies heavily on the unconditional military and economic assistance provided by the People's Republic of China;

Whereas on September 30, 2006, the United Nations Security Council officially included Burma on its agenda for the first time;

Whereas on January 13, 2007, China and Russia vetoed a

United Nations Security Council Resolution calling on Burma to release all political prisoners, allow a more inclusive political process and unhindered humanitarian access, and end human rights abuses, and on September 26, 2007, China blocked a United Nations Security Council Statement from condemning the State Peace and Development Council crackdown against the peaceful demonstrators;

Whereas the prevalence of tuberculosis in Burma, with nearly 97,000 new cases detected annually, is among the highest in the world, malaria is the leading cause of mortality in Burma, with 70 percent of the population living in areas at risk, at least 37,000 died of HIV/AIDS in Burma in 2005, and over 600,000 are currently infected, and the World Health Organization has ranked Burma's health sector as 190th out of 191 nations;

Whereas the failure of the State Peace and Development Council to respect the human rights and meet the most basic humanitarian needs of the Burmese people has not only caused enormous suffering inside Burma, but also driven hundreds of thousands of Burmese citizens to seek refuge in neighboring countries, creating a threat to regional peace and stability; and

Whereas the State Peace and Development Council continues to restrict the access and freedom of movement of international humanitarian organizations to deliver aid throughout Burma: Now, therefore, be it

Resolved, That it is the sense of the Senate—

(1) to strongly condemn the use of violence against peaceful protestors in Burma, and to call on the Government of Burma to refrain from further violence, release the demonstrators it has arrested, immediately cease attacks against ethnic minorities,

release Aung Sang Suu Kyi and all other political prisoners, and begin a meaningful tripartite political dialogue with Suu Kyi, the National League for Democracy, and the ethnic minorities;

(2) to call on the People's Republic of China to remove objections to efforts by the United Nations Security Council to condemn the actions taken by the Government of Burma against the peaceful demonstrators;

(3) to call on the People's Republic of China and all other nations that have provided military assistance to the Government of Burma to suspend such assistance until civilian democratic rule is restored to Burma;

(4) that the Government of Burma should engage in a peaceful dialogue with opposition leaders and ethnic minorities to implement political, economic, and humanitarian reforms that will improve the living conditions of the Burmese people and lead to the restoration of civilian democratic rule;

(5) to recognize and welcome the many constructive statements issued by various nations, and particularly the statement issued by the Association of Southeast Asian Nations on September 27, 2007, which demanded an immediate end to violence in Burma, the release of all political prisoners, and a political solution to the crisis;

(6) that the United States and the United Nations should strongly encourage China, India, and Russia to modify their position on Burma and use their influence to convince the Government of Burma to engage in dialogue with opposition leaders and ethnic minorities towards national reconciliation;

(7) to support the United Nations mission to Burma led by Ibrahim Gambari, and to call on the Government of Burma to allow the mission freedom of movement and access to top government leaders in order to prevent additional violence and to further peaceful dialogue towards national reconciliation; and

(8) that the United States should work with the international community to pressure the Government of Burma to lift all restrictions on humanitarian aid delivery and then allow international humanitarian aid organizations to work to alleviate suffering and improve living conditions for the most vulnerable populations.

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APPENDIX D

Table of Diamond Producing Countries: 2003 Production shown in thousands of carats,
(Adapted from Shor 2005)

Country	Gem Quality	Industrial	Total
Angola	4,770	530	5,300
Australia	14,900	18,200	33,100
Botswana	22,800	7,600	30,400
Canada	11,200	-	11,200
D.R.C.	5,400	21,600	27,000
Liberia	36	24	60
Namibia	1,650	-	1,650
Russia	12,000	12,000	24,000
Sierra Leone	214	296	510
South Africa	5,070	7,600	12,670
Other	2,910	1,632	4,542
Total	80,900	69,500	***150,000***

APPENDIX E

Diamond Parcel packaged with KPCS Chain-of-Custody Certificate in Sierra Leone,
(Photo by Wade Watson)