

**SILENCE IS GOLDEN:  
AN EXPLORATION OF LOCAL OPPOSITION TO A  
CANADIAN GOLD MINE PROJECT IN COSTA RICA**

by

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## **ABSTRACT**

Significant changes in the global gold industry have altered where the operations of mining corporations are located, how they are developed, and the impact they have on local communities. Despite efforts to incorporate sustainable development frameworks into industries' operations, considerable negative health and environmental impacts associated with gold mining continue to affect local communities and their global allies. This paper explores the conflict between economic interests and environmental protection efforts involved in the gold mining sector through examining the Canadian-owned Crucitas gold mine project in Costa Rica. The corporation's plans to develop the project have provoked a nation-wide grassroots movement against foreign-owned mineral extraction operations. The resistance has emerged out of concern that these operations are compromising the communities' health and the ecological value of the region. The paper aims to uncover the complexities that underlie the experiences of local communities and their struggles to resist such operations.

**Keywords:** global gold mining; environmental injustice; opposition; Costa Rica; public health; Crucitas gold mine

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## **INTRODUCTION**

Human health is inextricably linked to the environment. This delicate relationship is influenced by naturally-occurring and man-made disturbances that often leave behind long-lasting or sometimes irreversible consequences. Natural disturbances, while they may pose significant risk to human health, can offer opportunities that challenge the resilience of an ecosystem and revitalize the area. Naturally occurring forest fires are an example of this, whereby the fire may rejuvenate life in the forest but may also threaten the health and lives of individuals in the surrounding region. Similarly, human-imposed changes to the environment, which many consider necessary for economic growth and prosperity for human-kind, may subsequently represent a significant risk to the health and life of the environment.

The introduction of industrial processes has significantly affected the relationship between human activity and the environment. Over the last few decades, these industrial processes have become more global in scope, which has resulted in regional and global consequences that now affect entire ecosystems and the biosphere itself (Forget & Lebel, 2001). With increasing public awareness of the environmental risks associated with industrial practices, governments and industry sectors have been pressured to adopt preventative and rehabilitative action aimed at controlling and correcting environmental damage (Ripley, Redmann, & Crowder, 1996).



One industry sector that has undergone significant public scrutiny for the impact of its operations on the environment has been mining (Eggert, 1994). Mining operations are often surrounded by controversy since they typically involve dispossession of people from their land and ecological degradation (Gordon and Webber, 2008). As a result, national and international environmental policies continue to be developed to address the long-term environmental impacts of mining, and to incorporate sustainable development frameworks that hold companies accountable for the environmental damages imposed today, and their potential impact on future generations. Despite these efforts, evidence suggests that the application of such concepts to mining remains problematic, especially in the gold sector of the global mining industry (Mudd, 2007).

As large gold mining projects continue to be developed, concern about the impact of mining operations on local communities and environments grows. While standards, regulations, and policies do exist at the industry and government level, local communities remain concerned about the protection of their environment, livelihoods, and health. Opposition to gold mine projects has been fierce in many regions around the world as communities struggle to resist the development of mines on their lands. This resistance is emerging from the recognition that the costs and benefits of gold mining operations are unevenly weighted. Juan Martinez-Alier, an ecological economist, claims that “the unequal incidence of environmental harm gives birth to environmental movements of the poor” (Martinez-Alier, 2002). Such forms of global environmental injustice, largely

concentrated among poor communities, have resulted in grassroots movements around the world. In their struggle to oppose environmental injustice, these movements are united by their motivation to restore the natural balance between the environment and humanity.

## **The Crucitas Project**

The Canadia- owned gold mine project known as Crucitas, located in Costa Rica, represents an intersection of competing interests involved in the global gold industry. It has become a site of controversy between local communities, who fear that the project will degrade their environment and threaten their health, and national and international players who view the project as an opportunity for economic growth. Such a debate is striking in a nation like Costa Rica that is internationally recognized for its rich biodiversity, progressive environmental policies, and lucrative eco-tourism industry (Dyer, 2008).

To some, including Kevin Casas Zamora, Costa Rica's Vice President from 2006 to 2007, the Crucitas gold mine project represents how the current government under President Oscar Arias, is undermining the country's environmental protection efforts to pursue economic growth. Further, Mr. Zamora believes that the development of the Crucitas gold mine project exemplifies the environmentally unsustainable trajectory that Arias has chosen for the country. He argues that the project is an example of how the current government is systematically favouring development in ecologically sensitive areas (Dyer, 2008).

Development of the Crucitas mine project has been extensively debated over the past 15 years as the interests of the national government, foreign investors, environmental groups, and local residents continue to be in conflict (Isla, 2002). Throughout the 15 year-long struggle, support by the national government has varied as each four-year presidential administration has introduced its own set of environmental protection efforts and economic development strategies. Changes in Costa Rica's political climate have meant that the grassroots movement opposing the Crucitas gold mine project has had to overcome a multitude of obstacles. The efforts of this movement have been documented by international allies like the World Rainforest Movement who have been working to raise global awareness of the struggles communities face in their fight to oppose environmental degradation brought on by industrial operations. With support from the general public, the movement to oppose the Crucitas project has made considerable advances in disrupting the development plans for the gold mine by temporarily suspending further construction on the mine site. While this has been a major achievement, the project has not been permanently stopped and thus continues to threaten the local environment and communities that rely on the region for their livelihoods.

## **Purpose of Paper**

This paper explores the direct and indirect harmful impacts of the growing global gold industry on public health. I highlight some of the recent changes that are collectively responsible for the global expansion of the mining industry. The Crucitas gold mine project in Costa Rica exemplifies how the international

political economy shapes such development initiatives and the pivotal role grassroots opposition can play in determining the fate of such activities. The Crucitas project reflects how conflicting views about economic growth and environmental conservation interact in the local and global contexts to affect the environment and the health of local communities.

It is important to note that the experiences of local communities affected by gold mining vary since the environmental impacts of gold mining vary among sites around the world (Hilson and Murck, 2001). Therefore, the experiences of those involved in the Crucitas project are not meant to represent the voices of all communities affected by gold mining projects. Rather, the Crucitas experience highlights some of the trends of the global gold mining industry and the grassroots movements that oppose it.

Through this examination I hope to challenge prevailing views on how the global gold industry operates and highlight the health and social inequities it generates. In thinking more critically about globalized inequities brought about by global industries like gold mining, health professionals, policy makers, community developers, and others, may better understand how to affect meaningful changes that redress the causes, rather than treating the symptoms of environmental injustice. I also hope that this inquiry will inspire readers to act as global citizens and consider how we may be directly or indirectly supporting - and benefitting from - industries that rely on systems of environmental injustice, exploitation, and inequity. By recognizing our collective responsibility we may inspire global

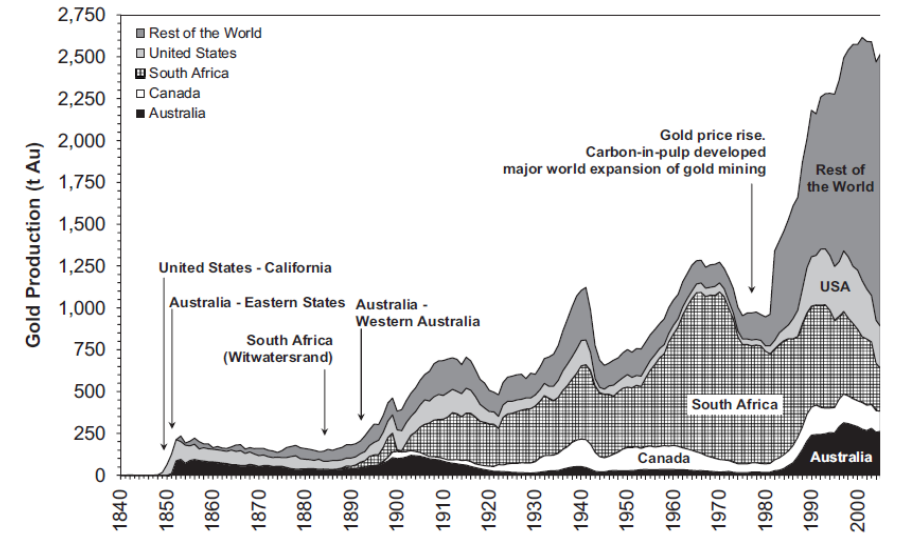
changes that may contribute to restoring a balance not only between peoples globally, but also between human interests and the environment.

This paper begins with a discussion of significant trends in the global gold industry and the associated impacts of the industry on communities around the world. It follows this exploration of the gold industry by examining a specific gold mine project - Crucitas. It reviews Costa Rican environmental policies related to mining development, identifies the ecological significance of the Crucitas region, and provides details of the mine's current status and proposed development. It then discusses the potential environmental and social impacts of the Crucitas project and explores the emergence of local resistance to the project in the region.

## **GLOBAL GOLD MINING INDUSTRY**

In recent years the frontier of extraction has advanced into new territories as old mineral sources have become depleted or too expensive to mine (Martinez-Alier, 2002). The limited availability of high grade mineral sources and the cost associated with extraction has shifted the pace, scope, and location in which gold mining operates. Having virtually depleted all high-grade ore deposits over the past hundred years, modern gold mining operations now rely on deposits that contain as little as 0.015 ounces of gold per ton of rock (Fields, 2001). Despite these declining ore grades, changes in the economy, specifically the rise in the market price of gold during the 1970's, led to a surge in gold production. Advances in technologies have significantly improved the efficiency of gold mining operations (Jastram, 2009). Technological innovations introduced by the gold mining industry have made it possible - and profitable - for gold to be extracted from low grade ore. As a result, many regions that had not previously been desirable sites for gold exploration, have now become attractive to foreign gold mining investors (Jastram, 2009). These trends in the industry have facilitated the expansion of the industry into areas of the globe that earlier were not sufficiently profitable to justify major mining development. Figure 1 illustrates the rise in world gold production in the past 150 years. As shown, although previous gold-producing countries experienced an increase in production in the

past 25 years, the rest of the world experienced a more dramatic increase, indicating the spread of new mining operations in unexcavated regions.



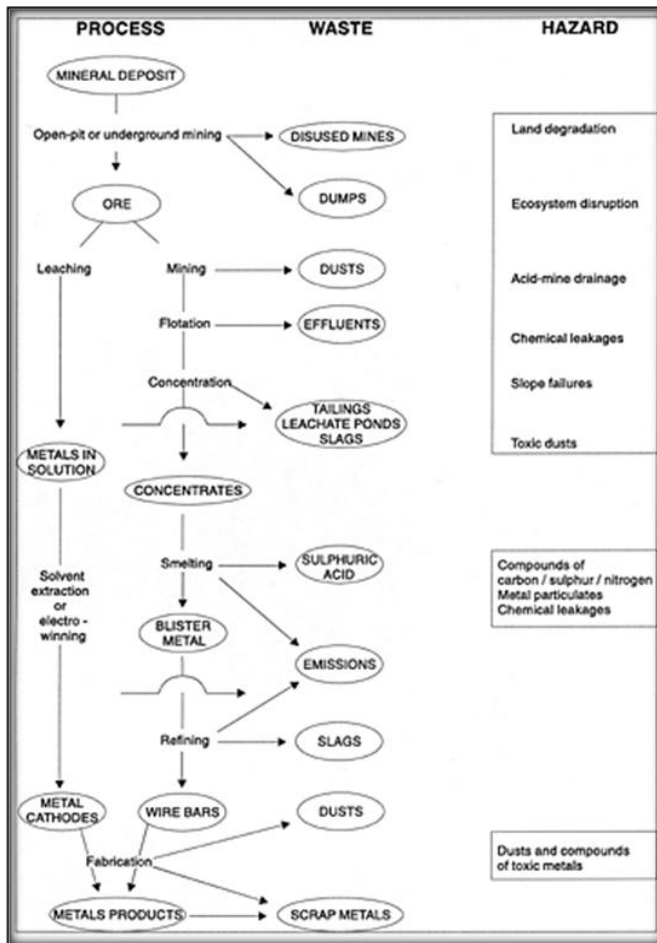
**Figure 1. World Gold Production 1840-2005. Source Mudd, 2007**

The expansion of gold mining to new areas of the globe previously unattractive to development has also resulted in the global spread of environmental and health risks. Gold extraction from low ore grades results in increased production of solid wastes, and open-pit mining techniques that rely heavily on chemicals to extract the gold (Mudd, 2007). While these modern techniques maximize the economic efficiency of gold extraction, they also significantly amplify the environmental and health implications for affected communities.

Operations involved in mineral extraction generate large quantities of waste that not only significantly alter the local landscape but also introduce environmental and health hazards to the local community. During each stage in

the extraction of minerals from ore to the environment, land, water, or air, is to some degree negatively affected (Ripley, Redmann, and Crowder, 1996). Figure 2 shows the various stages involved in the mineral extraction process and the associated wastes and hazards that are produced as a result. Beginning with the removal of ore from the ground, a number of unavoidable environmental problems such as sedimentation, erosion, and habitat destruction are introduced (Hilson and Murck, 2001). Contamination is introduced into local ecosystems through mining processes that result in accelerated acidic runoff, accidental toxic waste releases, leachate that can infiltrate waterways and aquifers, land degradation, and water depletion (Fields, 2001).





**Figure 2. Waste and Hazards Produced in the Mineral Extraction Process.**  
**Source Warhurst, 1994.**

A report produced by Earthworks, an international environmental agency, and Oxfam America, noted that of all the newly mined gold in production globally, two-thirds is now being extracted from immense, open-pit mines (2004). Although the use of such techniques represents a considerable reduction in production costs, compared to digging underground shafts, the environmental impact of these open-pit mines is significantly greater. A study conducted by Mudd (2007) found that a shift towards large-scale open-pit gold mines has raised greenhouse

gas emissions, largely due to increases in fossil fuel use. Due to the scale of modern gold mining operations and depleting ore grade, mining projects now require vast inputs of energy and water, and produce far more waste than traditional mining operations. Mudd estimates that unless measures are established to reduce the inputs required in gold mining operations, these risks are likely to increase (2007). The mineral extraction industry has a well documented history of being environmentally destructive with damaging long-term health risks for local populations (Millen & Holtz, 2000). Its legacy is also tainted by its reputation for poor environmental and social policies (McSorley, 2008).

However, in response to increasing public concern about the environmental and health impacts associated with gold mining, the industry has made attempts to address some of the risks and integrate sustainable frameworks into various sectors of its mining operations. A major achievement in this area has been the adoption of recommendations in the report 'Minerals Mining and Sustainable Development' that was presented by the global mining industry at the Johannesburg Earth Summit in 2002. However, in his study, Mudd notes that while the global mining industry claims it has been moving towards more environmentally sustainable practices, considerable gaps remain in the implementation of these practices that raise concerns about the sustainability of the industry (2007).

Another trend of the gold mining industry is the large role transnational corporations (TNCs) play. To enhance global competitiveness, TNCs take

advantage of the desperation of the governments of poor countries and utilize the promise of foreign investment to establish lucrative deals that are arguably often not in the best interests of the host country (LeQuesne, 1996 cited in Millen & Holtz, 2000). TNCs purchase mining rights from governments that lack the means to extract their own resources, under low-priced, long-term contracts. Through this process, TNCs exploit the vast inequalities within and among countries and utilize their political and economic power to undermine governments' ability to enforce environmental and social policies that protect their own citizens (Millen & Holtz, 2000). As a result, it is most often the poorest members of society who suffer the most environmental, health, and social costs associated with TNC mining operations. The emergence of TNCs as a dominant player in the gold mining industry has made it possible for operations to be established in regions that would otherwise have never become sites for mining.

From a global market perspective, environmental protection adds to costs and thus is viewed as a hindrance to competition. In pursuit of economic growth, competitive interests often gain the upper hand over protective interests, thereby making it more difficult to restrict environmental degradation around the world (Sachs, 1999). What results is a 'race to the bottom' whereby governments weaken environmental standards in order to attract foreign investors (Esty and Gerardin, 1998). Such neoliberal foreign investment policies that privilege investors have created conditions that influence the regulatory system in developing countries. Countries desperate for investment are forced to choose between encouraging investment through lax standards and getting no

investment at all (Sachs, 1999). Many Latin American countries, including Costa Rica, have witnessed the affects of this trend on their economies and their environments. The Crucitas gold mine project is an example of how foreign investment opportunities, supported by the national government, have shaped particular policies and conditions around environmental protection.

### **Canada's Role in the Global Gold Mining Industry**

As mining investment grows globally, and particularly in Latin America, Canadian multinational mining corporations - some of the industry's largest and most powerful players - are often at the centre of the controversy surrounding mining operations (Gordon and Webber, 2008). Gold mining is an important industry to Canada both within the country and abroad. It is home to approximately 60 percent of the world's mining corporations (Leahy, 2006) and has over 10,000 projects worldwide (McSorley, 2008). Of all the regions that Canadian mining corporations operate, Latin America is by far the most important (Rondon, 2009). Within the Latin American mining sector Canadian corporations outnumber all other foreign investors (Rondon, 2009).

Unfortunately, this domination of the mining industry has not translated into serious commitments to ensure Canadian accountability of compliance with environmental and labour. The Federal Government's failure to take the lead on mediating or taking responsibility for the behaviour of its corporations abroad has translated into a legacy of environmental destruction and social conflict in many

communities both within Canada and abroad (Leahy, 2006). While local opposition to Canadian-owned mining operations is increasing around the world, most Canadians are still ignorant to Canada's role in the global mining industry (McSorley, 2008). Speaking specifically to the exploitation of Costa Ricans at the hands of Canadian-owned mining companies, Ana Isla, a Latin American scholar, argues that the average middle-class Canadian citizen is far more implicated in such exploitation than by their citizenship alone. She argues that since mining companies rely on investments made through mutual funds, those citizens who contribute to such funds are contributing to the development of the operations and the resulting affects on the communities and their environments (Isla, 2002).

## THE CRUCITAS MINING PROJECT

The Crucitas region is in the Alajuela Province, Canton San Carlos, in the District of Cutris. It is 95 km north of Ciudad Quesada and 20 km northeast of Coope Vega community (Isla, 2002). The proposed gold mine site is located approximately seven kilometres from the San Juan River, which is the natural northern border between Costa Rica and Nicaragua (World Rainforest Movement, 2008), and is the most extensive watershed in Central America (Walker, 1997).



Figure 3. Map of Costa Rica. Source Infinto Gold Ltd.

The Crucitas gold mine project is currently owned by Canada's Infinito Gold Ltd., formerly Vanessa Ventures Inc., and is locally operated by the Costa Rican subsidiary, Industrias Infinito South America (IISA). The proposed 11-year gold mine is Costa Rica's largest multiple open-pit mine and is estimated to contain between 700,000 to one million ounces of recoverable gold. The initial capital cost to develop the mine is estimated at US\$66.2 million and involves the clearing of up to 500 acres of rainforest (Dyer, 2008). The mine was designed initially to produce up to 120,000 ounces of gold a year but it is likely that it would support the production of as much as 200,000 ounces of gold per year, making the Crucitas mine one of the larger producers in Central America (Bentein, 2008). In 2004, Infinito estimated that the Crucitas project contained approximately US\$ one billion of gold at the world prices of that year (Vanessa Ventures Ltd., 2004).

To understand the controversy surrounding the Crucitas project, it is important to first outline the history of Costa Rica's environmental conservation policy commitments, both nationally and internationally. Within this context, it is then possible to examine the significance of the Crucitas region as it relates to local communities' health and livelihoods, the protection of endangered species, and the preservation of biodiversity. This examination will demonstrate the local, national, and international significance of the Crucitas region and why the project has been met with substantial local resistance. The details of the project's development will then be outlined to provide the reader with an understanding of the series of events that led to the most recent decision made by the Costa Rican Supreme Court to suspend the Crucitas gold mine operation.

## **Costa Rica's History of Environmentalism**

Costa Rica's unique history and political development have distinguished it from other Central American countries. During colonial rule, Costa Rica's lack of mineral resources, small indigenous population, and early cultivation of coffee restricted the development of strong colonial institutions and enabled democratic foundations to form (Anderson, 1994). The elimination of the armed forces in 1949 also added to the tradition of peace and democracy within the country (Engler & Martinez, 2003). While other Central American countries including Nicaragua have focused their efforts on attracting foreign investment, the Costa Rican government did not allow itself to become dominated by foreign interests to the same extent (Anderson, 1994). Instead, the government concentrated on developing the tourism industry which is now the backbone of the economy, providing approximately 64 percent of jobs in the country (Dyer, 2008).

National pride in the rich biodiversity, expansive beaches, and protected parks, coupled with a lack of mineral resources to exploit, had prevented the resource extraction industry from flourishing in Costa Rica (Engler & Martinez, 2003). Costa Rica's history of pro-environmental policies and democracy had set the country on a separate trajectory from that of other Central American countries (Anderson, 1994). This held true until the 1990s when an economic crisis spread across Latin American nations prompting high unemployment and poverty rates. Solutions to these economic troubles were found in neoliberal ideologies that encouraged new ways to attract foreign investors.



The trend in Costa Rica towards favouring economic growth at the expense of the environment became most evident during the four-year presidential term of Miguel Ángel Rodríguez between 1998 and 2002 (Engler & Martínez, 2003). Isaac Rojas, a member of a Costa Rican environmental group, argues that the Environment Ministry of the Rodríguez administration took the country's advances in the area of environment back about 30 years (Engler & Martínez, 2003). Responding to an influx of concessions granted by Rodríguez to foreign oil extraction companies, coalitions of environmental advocates, community groups, unions and indigenous-rights organizations established various campaigns to end the environmentally destructive oil extraction projects (Engler & Martínez, 2003). The movement was successful and in September 2000 the Supreme Court ruled the concessions null and void because residents were not properly consulted (Engler & Martínez, 2003). In response to opposition from investors, the court included an exception in the ruling that permitted offshore projects on the basis that there were no communities living in the area. In the end, development plans for off-shore drilling were rejected by the Environmental Protection Agency of Costa Rica, the agency that approves environmental impact studies (EIS) and establishes monetary guarantees, based on over 50 limitations to the EIS (Engler & Martínez, 2003). The surge of social activism throughout the country shifted the country's focus on resource extraction to a focus on environmental conservation, which would later be reflected in the succeeding president's, Abel Pacheco's, environmental commitments.

Upon his inauguration in May 2002, President Pacheco made promises to create and sustain a new economic vision for Costa Rica, one that valued the protection of natural resources over resource extraction. His commitment to environmental sustainability first came to fruition on June 5, 2002 through the creation of a Presidential ban on open-pit mines. In an official statement, Pacheco declared that Costa Rica would be an environmental leader and not a “petroleum or mining enclave” (Lovgren, 2008). Due to lawsuits that followed the ban, the government clarified that the ban would only apply to future mining projects that had not yet been approved by the Ministry of Environment and Energy (MINAE). As a result, companies that had been granted concessions prior to the ban were permitted to continue with their activities (Engler & Martinez, 2003).

In October 2002, after Vanessa Ventures threatened to sue the Costa Rican government for US\$200 million for delaying approval of the Crucitas project, the Constitutional Chambers ruled that the project was exempt from the ban because it had been approved for development prior to Pacheco’s ban on open-pit mining (Engler & Martinez, 2003). The decision to exempt the Crucitas Project from the ban served to further concern environmental activists who worried that the impermanent nature of the ban could later be revoked by subsequent presidents (Engler & Martinez, 2003). Despite efforts to secure the ban it has not been translated into law.

Following Pacheco’s four year term, Oscar Arias was re-elected president. His interest in promoting economic development through resource extraction

projects were made clear early on. Arias permanently lifted the open-pit mining ban through an executive decree on October 13, 2008 (Schmidt, 2008). From an economics standpoint, this decision signified that the country was ready to diversify its economy and bolster its gross domestic product through mineral development (Vaccaro, 2008). On the other hand, environmentalists have criticized this decision, claiming that it is an example of the government's pursuit of economic growth at the expense of the environment (Schmidt, 2008).

Clear-cutting is also banned in Costa Rica. The only exception to the ban is if the activity is for National Convenience projects. To get approval to develop the Crucitas mine and therefore to clear the land in the area, Arias officially announced that the mine was of "public interest" and of "national interest" (World Rainforest Movement, 2008). Opposition to Arias lifting the open-pit ban and undermining the clear-cutting ban continues, as the controversy over the Crucitas project largely focuses on the violation of a Costa Rican environmental law and international agreements that protect the survival of two endangered species within the region.

### **Significance of Crucitas**

The Crucitas area is home to the mountain almond tree also known as the almendro amarillo or yellow almond (*Dipteryx panamensis*) which was listed as a threatened species by the Costa Rican Supreme Court in September 2008 (Schmidt, 2008). The legislation protecting the trees required that the Ministry of Environment and Energy authorities refrain from initiating, or continuing, any proceedings aimed at the use, exploitation, or extraction of the yellow almond

tree (Mines and Communities, 2007). The significance of this tree is also tied to the vital role it plays in the survival of the endangered great green macaw (*Ara ambigua*). The parrot nests almost exclusively in the yellow almond tree trunks and the parrot's diet heavily relies on the fruits of the tree. Given the global decline of the almond tree and the green macaw, both species are listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), to which Costa Rica is a signatory (Schmidt, 2008). Under these protective measures environmental advocates argue that the decree issued to approve the clearing of the trees in the Crucitas area should not have been granted by the President and the Environment Minister.

Under Costa Rican law, citizens with a complaint against a project are entitled to a hearing in the Supreme Court. In the case of the Crucitas project, Edgardo Araya, a lawyer representing the prominent environmental group, Northern Union for Life, submitted a claim against President Arias, and the Environment Minister, Roberto Dobles (Mines and Communities, 2007). Both were under investigation to determine whether they misused their authority by intentionally breaking national law and an international agreement by issuing the decree to clear the trees in the site. In November of 2009, the Costa Rican court ruled that the decree granted to Infinito by the President and Environment Minister did not violate the Constitution (Infinito, 2009).

Since gold mining operations consume large quantities of water, local communities in Costa Rica and in neighbouring Nicaragua fear that the San Juan River will be permanently affected by the proposed mining activity (Dyer, 2008). It

has been estimated that there are at least 32 communities within the region and surrounding area that are at risk of being affected by the Crucitas mine (World Rainforest Movement, 2008). The ecological and cultural richness of the San Juan River basin is also at risk of being affected by the mining operations. Its ecological importance has been internationally recognized through the creation of the International System of Protected Areas for Peace, a network of protected areas on both sides of the Costa Rican and Nicaraguan border (Walker, 1997). The Crucitas project undermines this effort to protect the region by placing at risk the ecological richness of the area through the threat of depleting water levels, water pollution, and potential disruption of drainage patterns.

Environmental advocates are also concerned about what they consider to be a contradiction between national and international environmental policies that the Arias government has endorsed. The Costa Rican government has taken the lead in international initiatives that support environmental conservation including a recent commitment to become the first country to be carbon neutral by 2012 (Schmidt, 2008). At the United Nations Climate Conference in February 2008, Costa Rica agreed to balance the amount of carbon dioxide released as a result of burning fossil fuels with the amount that it captures or offsets. In their 'carbon neutrality' pledge, Environment Minister Dobles acknowledged that the country has a special responsibility to protect the intense biological diversity found within Costa Rica (Lovgran, 2008). The Arias government also established a national initiative, 'Peace with Nature', which provides land owners with a financial

incentive to plant trees on their property. Created in July 2007, the initiative was developed with the goal of stopping environmental degradation (Dyer, 2008).

Critics argue that these environmental commitments are being overshadowed by the government's ongoing support of corporate extractive industries. Its internal environmental policy promotes the deregulation of environmental protections as a means to encourage foreign investment. Environmentally destructive projects, like Crucitas, are negating any advances made through these environmental initiatives and further fuelling the rate of environmental degradation. Although the country has a reputation for being a leader in environmental protection efforts, many worry that the government's apparent interest in advancing economic growth will result in irreversible environmental damage – damage that is well beyond the capacity of tree planting initiatives to absorb. These contrasting political ideologies have elicited strong reactions from many Costa Ricans who view such a duality in policy as an environmental crime (World Rainforest Movement, 2008).

Ana Isla argues that the Costa Rican government has been experimenting with sustainable development in the form of conservation areas as part of its overall strategy of retiring foreign debt through debt-for-nature swaps (2002). In her study exploring the impact of sustainable development and globalization in transforming land use patterns across Costa Rica, Isla reported that efforts to promote biological corridors within conservation areas has led Costa Rica's Ministry of Environment and Energy to take land ownership away from small and medium-sized farms and place it in the hands of the government (Isla, 2002).

Sections of these supposedly protected lands have instead been designated by the government for mineral exploration by foreign corporations (Isla, 2002). It was estimated that by 2002, over 16,097 hectares of land had been expropriated from local communities and established for the development of mining operations (Isla, 2002).

Furthermore, on September 20, 2007 an area in the northern region of Costa Rica near the Crucitas project was added as a Biosphere Reserve by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The UN World Network of Biosphere Reserves is a collection of ecological areas in 105 countries that was established to fight biodiversity loss and promote sustainable development within local communities that live in the region (UN News Centre, 2007). Located in the Alajuela province of Costa Rica, the Agua y Paz (Water and Peace) Biosphere Reserve encompasses 916,000 hectares of land and is located in the San Juan River Watershed (Nacion, 2007). The environmental group, Northern Front Opposed to Mining, has expressed their concern about the impact of the Crucitas Project on this international ecological landmark. In a statement issued on September 13, 2008, the organization declared that the mining activities being developed in the region are discordant with the ecologically sustainable development efforts that are to be promoted in the region (Mines and Communities, 2008).

Costa Rica's former vice president Kevin Casas Zamora argues that the Arias administration has not lived up to Costa Rica's tradition of innovative environmental policies. He claims that the country is in need of more robust

institutions to enforce laws to promote sustainable development (Dyer, 2008). Initiatives aimed at encouraging sustainable development practices and protecting the country's rich biodiversity are viewed as a matter of great national economic concern. While gold mining may contribute to the diversification of the economy, it threatens the largest single contributor to Costa Rica's national economy, tourism. A mine will destroy the region's capacity to become an ecotourism destination (Schmidt, 2008). Instead of establishing a mine in the Crucitas area, environmentalists argue that a paved road into the region would attract tourists to the area, thereby creating alternative employment opportunities for residents.

## **History of the Crucitas Project**

The Crucitas gold mining project was first established in 1993 by former owner Placer Dome Inc. (later taken over by Barrick Gold Corp.), also a Canadian gold mining company (Walker, 1997). During the initial phase of development, Placer Dome's Crucitas project met determined local resistance, leading the company to withdraw from the project in 1997 (Walker, 1997). Years later, following approval by the Environmental Protection Agency of Costa Rica, the agency that approves environmental impact assessments and establishes the monetary guarantees for extraction operations, an exploitation permit was issued in December 2001 (Vanessa Ventures, 2002). Then in December of 2004 the Supreme Court of Costa Rica ruled that the exploitation permit issued in 2001 be annulled because it violated Article 50 of the Constitution (Vanessa Ventures, 2004). On April 21, 2008 the Ministry of Environment and Energy, issued a



document which re-confirmed the exploitation concession giving the Company the right to develop the Crucitas Project in accordance with the approval of the revised Environmental Impact Study (EIS) received in February of 2008 (Infinito, 2009).

Infinito was finally granted an executive decree on October 13, 2008, permitting tree clearing in the Crucitas area for the first stage of the mine development (Mines and Communities, 2008). Controversy surrounding the decree, authorized by President Oscar Arias and Environment Minister, Robert Dobles, mounted as environmental advocates argued that the decree violated Costa Rican environmental laws and international agreements that protect the cutting of an endangered tree species. On October 21, 2008, four days after tree clearing activities began, Infinito was served with a second court order. This time the order came from Costa Rica's Constitutional Court requiring that all tree-cutting operations be suspended (Infinito, 2008). Prior to the suspension, the land required for one of the two open-pits, the Botijas pit, and for the area required for the tailings dam, had been cleared but clearing in the Fortuna pit area and the tailings impoundment area has not been completed (Infinito, 2009). All construction for the mine was expected to be completed in late 2009 at which point the site would have been ready for gold extraction operations to begin (Bentein, 2008). Until a decision from the Constitutional Court is made, construction activity and tree clearing has been temporarily suspended. Infinito maintains that in the meantime the plant and processing area are being

completed and materials and components ordered for the project are being accepted and stored (Infinito, 2009).

The appeal against President Arias and Environment Minister Dobles, filed by a local environmental group, Northern Union for Life, claimed that the decree violated national environmental law and international agreements. Arias and Dobles were under investigation by the Public Ministry to determine whether they knowingly issued a resolution that was contrary to the law (Mines and Communities, 2007). In November, 2009, the court ruled that it was not contrary to the Constitution for Arias and Dobles to issue a presidential decree on October 17, 2008, declaring the Crucitas project to be in the national interest (Infinito, 2009).

In Infinito's 2008 EIS they highlighted all technical, social, and environmental aspects associated with the mine. In the EIS, Infinito stated that they expected the Crucitas project would employ 250 workers, most of whom would be residents of the local area where it is estimated that 82 percent of the population is below the poverty line (Infinito, 2009). Infinito has promised to pay the small local communities approximately US\$4.6 million over the mine's life. In addition, Infinito has committed to investing heavily in what it calls the "social license" of the project, including the rebuilding of the local school, upgrading roads, providing internet service to schools, clinics, and police stations, and establishing training centres. It plans to contribute US \$700,000 per year in social development funding (Firby, 2008) for the estimated 11 years that the mine is projected to be in operation. The company indicated that once operations are

complete and the mine is closed the Fortuna pit would be converted into a lake with potable water and stocked with fish. Furthermore in the EIS, Infinito agreed to develop a 140 hectare biological corridor involving reforestation of surrounding pasture and plantation lands by planting 50 trees for every one removed from the mine and tailings area (Dyer, 2008).

Despite these promises to advance the economy of the local area, the Crucitas project poses a serious threat to the environment and human health of the local communities. It stands to further endanger the populations of two species at risk of extinction and jeopardize pristine ecosystems that are central to the lives of Costa Ricans and Nicaraguans by contaminating the land, water, and air. Resistance has made central the concerns of grassroots opposition groups, and their voices have created a national and regional movement against the government's support of the gold mining project.

## **THE ENVIRONMENTAL IMPACT AND PUBLIC HEALTH THREAT OF CRUCITAS**

For the surrounding 32 communities in the Crucitas area as well as neighbouring Nicaraguans (World Rainforest Movement, 2008), the gold mine represents a threat to their lands, health, and livelihoods. The impact of the mine is also of national and international concern since the country is said to house about 5 percent of the world's plant and animal species. Costa Rica's rich tropical biosphere makes the environmental stakes especially high for the Crucitas project (Lovgren, 2008). The land clearing, water consumption, environmental contamination, and social impacts related to open-pit gold mining operations have irreversible long-term consequences.

The Crucitas project involves the felling of over 190 hectares of forest, which will devastate the land, destroy habitats for many animals and insects, and further endanger specie populations at risk of extinction. Although Infinito has promised to plant 50 trees for every one fallen, the area will never be returned to its natural state. Quirico Jimenez, a forestry expert, considers the promise to replace the old-growth forest "a joke" because while the trees could provide food for the birds within 20 years, it will take as long as 100 years before those trees will reach a suitable size to support the nests for the green macaws (Dyer, 2008).

## **Effects on Water**

Water depletion is a significant consequence of gold mining operations due to the immense amounts of water used in the extraction process. According to one estimate by the World Rainforest Movement, the Crucitas mine will require as much water per hour as a peasant family uses in 20 years (World Rainforest Movement, 2008). The millions of litres of water that the Crucitas project will utilize every hour will likely threaten aquatic ecosystems in the San Juan river basin (Walker, 1997). In regions where water scarcity is already a concern for local communities, mining operations may exacerbate existing problems. Many of the common practices involved in mining operations can also significantly affect waterways through altering natural drainage patterns, impounding water, and diverting streams (Fields, 2006).

In addition to water depletion, contamination is also a significant consequence of gold mining. Of all the forms of water contamination caused by mining operations, acid mining drainage (AMD) is by far the most widespread and persistent (Akil and Koldas, 2006). AMD forms when sulfide minerals found in gold mix with water, air, and highly specialized bacteria. Although acid rock drainage occurs naturally in small quantities, new mining techniques introduced to the global mining industry in the last three decades have drastically accelerated the process (Fields, 2001). AMD can seep from various stages of the gold extraction process including from fields of tailings, piles of displaced surface matter, and piles of rock being processed for gold removal. AMD is irreversible and if not properly treated it can disrupt ecosystems by contaminating

groundwater and entire watersheds with acidity and potentially toxic metals including arsenic, lead, cadmium, mercury, zinc, iron, copper, aluminum, manganese, and chromium (Fields, 2006). Though these are naturally occurring metals in the earth, when they are freed from rock they are highly toxic and have been associated with cancer, nerve damage, and growth delays in children (Earthworks and Oxfam America, 2004). This toxic leachate can kill virtually all aquatic life for several kilometres and severely degrade downstream environments (Earthworks and Oxfam America, 2004). AMD is difficult to prevent in mining operations and is known to be extremely difficult to manage once the process is set in motion. Although there are new techniques emerging to prevent and manage AMD, Tom Myers, a hydrologist and director of an environmental group, warns that many may not work adequately, or at all (Fields, 2001). In many low-to-middle income countries, a lack of resources and political will further limit the economic viability of this treatment option thereby significantly increasing the environmental and health risks (D. Kirk Nordstrom et al. cited in Earthworks and Oxfam America, 2004).

## **Cyanide Heap Leaching**

Since gold typically occurs at very low concentrations in the earth, a chemical extraction process is considered by the industry as the only economically viable method of extracting the gold from the ore (International Cyanide Management Institute, 2009). Approximately 13 percent of the cyanide produced annually worldwide is used to produce cyanide reagents for gold processing (International Cyanide Management Institute, 2009). Along with its

use in gold extraction, cyanide is used in the production of plastics, adhesives, fire retardants, cosmetics, pharmaceuticals, food processing, and as an anti-caking additive for table and road salts (International Cyanide Management Institute, 2009).

A method known as cyanide heap leaching is typically used in the gold extraction process. It involves piling crushed gold-containing ore into heaps on an impermeable pad liner and spraying it with cyanide through a sprinkler or a drip irrigation system (International Cyanide Management Institute, 2009). As the cyanide trickles through the heap it bonds with the gold and the gold-cyanide solution is collected at the base of the heap where it is channelled to storage facilities for further processing. The solution is then pumped into a mill where the gold is chemically separated from the cyanide. The remaining cyanide is then stored in artificial ponds for reuse. More crushed ore is then added to the heap and the process begins again (Fields, 2001).

Cyanide is the most significant contaminant in gold mining affecting wildlife mortality (Henny et al., 1994 cited in Donate, Nichols, Possingham, Moore, Ricci, & Noller, 2007). It is highly toxic to people and to wildlife at relatively low concentrations (International Cyanide Management Institute, 2009). The human health effects associated with cyanide exposure include: nervous system failure, respiratory arrest, and death (International Cyanide Management Institute, 2009). Guidelines have been established to provide a management system for cyanide to reduce and control the impacts of the risks on the environment and on wildlife. Under the International Cyanide Management Code (ICMC), certified companies

voluntarily abide by the principles and standards of practice on cyanide use and discharge concentrations to manage cyanide responsibly. The objective of the Code is to improve the management of cyanide used in gold mining and assist in the protection of human health and the reduction of environmental impacts (International Cyanide Management Institute, 2009). To date Infinito has not adopted the Code.

Tom Myers, a hydrologist and director of an environmental group claims that it is the incredible efficiency of cyanide which has allowed for heap leaching to be so profitable through the extraction of gold from deposits that otherwise would have stayed in the ground (Fields, 2001). Although cyanide has been associated with negative health and environmental outcomes, it still remains the least damaging compared to other chemical lixivants and therefore continues to be the most widely used in gold extraction.

## **Social Implications**

In response to the effects of mining on local communities in Costa Rica, Ana Isla developed a position paper that identified the social problems that have been created from mining operations. The paper highlights the displacement of peoples from their traditional ways of life and livelihoods for mining projects, the grief and hardship caused by the openings of hollows in the soil where cattle fall into and die, the disruption to culture and to the relationship with nature, and the increasing rates of drug addiction, alcoholism and prostitution (Isla, 2002).



There is also a significant gendered component of environmental impacts associated with mining activity. Water and land contamination from mining can greatly complicate the traditional role of women as providers of food and water to their families. Large-scale mining creates few employment opportunities for women and simultaneously displaces economic activities such as agriculture in which women often play a major role (Earthworks and Oxfam America, 2004). Such changes can have the effect of further concentrating economic power in the hands of men. As a result it may increase women's dependence on their husbands and male relatives. This can also force women to look for employment opportunities outside of the community, and in doing so, social and familial relations may be affected. In drier regions where women must often walk to collect water, mine pollution and water depletion can lengthen that walk, reducing the available time for other responsibilities (Earthworks and Oxfam America, 2004). The effects on food sources and farm land due to contamination may also strain the availability of food and force families and communities to leave their traditional lands and emigrate to other regions.

### **Bellavista Gold Mine Catastrophe**

Local residents fear that the Crucitas gold mine could suffer a similar fate as the Bellavista gold mine. The controversial open-pit gold mine in Costa Rica, which the Crucitas project is modelled after, was forced to close in July 2007 after heavy rains caused major shifts in the earth that led to cracking of the cyanide-leach pad lining. Owned by Canada's Glencairn Gold Corporation, the Bellavista mine, located in Miramar, was built on an unstable hillside in an area

prone to heavy rain and flooding. Disruption to the cyanide-leach pad that is designed to trap and contain cyanide-tainted wastes has created fear that contaminants may pollute the water and soil with cyanide and other toxic contaminants. Glencairn maintains that its studies detected no cyanide beneath the damaged pad. However it refuses publicly to release the details of the study and has not allowed an independent investigation into the incident (Dyer, 2008). Glencairn had reserved US\$250,000 in financial guarantees for Bellavista intended for mine cleanup (Mines and Communities, 2007). However, experts in the field suggest that such unexpected events tend to magnify remediation costs above original estimates and that in the case of Bellavista the mine was under-bonded to begin with (Mines and Communities, 2007). While it remains closed the Bellavista mine serves as constant reminder to the local communities of the potential for unanticipated consequences that result from mining operations.

## **MITIGATING ENVIRONMENTAL AND HEALTH RISKS**

### **Infinito's Efforts and Strategies**

Infinito's Management's Discussion and Analysis (MD&A) reports released quarterly, contain information about the Company's projects around the world. It includes discussions about "assumptions, estimates and other forward looking statements regarding future events" (Infinito, 2009). It provides an analysis of the Company's business and compares its financial results to previous reporting months. In the MD&A report the company states that all mining activities are subject to extensive federal, provincial, and local laws and regulations governing environmental protection and employee health and safety. It highlights that the company is required to obtain governmental permits, bonding under federal or state permits and that failure to comply with the relevant environmental and health and safety laws can result in injunctions, damages, suspension or revocation of permits and imposition of penalties. However, Infinito also discloses that they cannot assure that they have or will be at all times in complete compliance with such laws, and permits, or that the costs of complying with such current and future laws will not materially adversely affect the Company's financial condition (Infinito, 2009). Infinito, like many other corporations in the extractive industry, cannot promise complete compliance with protective regulations due to potentially destructive incidents that arise unexpectedly, as

was the case in Bellavista. This limitation raises concern about the ongoing risks involved in mining operations despite regulations that are put in place.

Infinito's CEO, John Morgan, argues that the company's comprehensive environmental strategy makes it a model for how open pit-mines should be managed and rehabilitated (Firby, 2008). Morgan emphasizes the strategies that have been integrated into the Crucitas project that aim to minimize the environmental footprint of the mine. One feature of this 'environmental strategy' is the installation of state-of-the-art technology to ensure the complete destruction of cyanide used in the mining process. If this process should be disrupted for any reason, all operations will be stopped to prevent the risk of releasing harmful contaminants. With a complete self-containment of the extraction process in place, Infinito is confident that no contaminants will be discharged into the environment (Firby, 2008). In its November 2009 MD&A report Infinito states that it continues to work with consultants and NGO's in Costa Rica to demonstrate to the public its comprehensive environmental and social corporate responsibility programs. It utilizes the local print, television and radio media to inform the public about the Crucitas project and to publicize the environmental and safety efforts employed that aim to ensure the mine will operate in a responsible manner and will re-establish more native forest than there was in existence prior to mining activities being initiated once mining operations are complete (Infinito, 2009).

## **International Health and Safety Regulations**

Many governments have established health and safety regulations related to mining activities that aim to minimize risk. However these laws are often poorly devised and rarely enforced (Earthworks and Oxfam America, 2004). In an attempt to improve health and safety conditions within the mining industry, the International Labour Organization (ILO) developed the “Convention on Safety and Health in Mines” in 1995. It requires employers to “eliminate or minimize” safety and health risks in their mines, and governments to oversee and report publicly on the implementation of such measures, and to suspend mining when violations occur. It also entitles miners’ rights to form unions and to be informed of health and safety risks and precautions (Earthworks and Oxfam America, 2004). To date 24 countries have ratified the ILO Convention and have agreed to abide by its standards. Unfortunately, some of the leading countries in the mining industry have yet to sign the convention, including Australia, Canada, China, Indonesia, and Russia (International Labour Organization, 1995). For Canada, a leader in the global extraction industry, the implications for not signing on to the ILO convention means that its operations abroad are not mandated to abide by the recommended regulations and standards.

# **OPPOSITION TO GOLD MINING**

## **The Costa Rican Context**

As a result of the success generated by opposition to environmental threats, Costa Rica has become a model for resistance in Central America and elsewhere around the world. Following Pacheco's initial ban on open-pit mining, Ecuadorian environmental activists presented their government with a proposed prohibition on expansion of the oil frontier. Similarly, Nicaraguan activists in response to recent concessions granted to several US-based oil companies, called for their government to institute a moratorium on oil concessions (Engler & Martinez, 2003).

Those involved in the movement against mining in Costa Rica view their struggle not only as a struggle for clean water but a struggle for the preservation of livelihoods (Isla, 2002). In response to what they see as the government pursuing environmentally destructive projects that compromise local communities' livelihoods, local women and men have united to stress their concern with the inadequacies of the Ministry of Environmental and Energy in protecting the environment and communities' health. To the environmental group, Friends of the Earth Costa Rica, Coecoceiba, the struggle against the Crucitas project has been an ongoing battle against Canadian mining corporations and the national government for over fifteen years (Dyer, 2008). Over these years, community resistance within the Northern Region has resulted in the rejection of

companies' environmental impact assessments. Resistance has created a powerful social network of communities united in their commitment to resist and overcome the further onslaught of communities and their environment (World Rainforest Movement, 2008).

In response to the approval of the Crucitas Project in December 2001, a protest was organized on March 22, 2002 led by the Northern Front in Opposition to mining (Northern Front). The protesters included students from elementary schools, high schools and universities, teachers, members of unions, ecologists, campesinas/os, officials of the Catholic church, women's groups, Members of Parliament, and municipal governors. The event was used as an opportunity to call on the national government to "say yes to life, say no to mining". Northern Front also released a statement in September 2008 outlining their position on the Crucitas mine and calling on the Costa Rican government to halt the project developments and reinstate the open-pit mining moratorium. The organization is a coalition of environmental, human rights, indigenous, student and religious and women's organizations, as well as communities that have organized themselves to confront the threats of mining projects in Costa Rica (Walker, 1997). The Northern Front was also instrumental in the initial battle with Placer Dome which resulted in the company withdrawing from the Crucitas project in 1997 (Walker, 1997).

Costa Ricans have received considerable support from neighbouring Nicaragua where a variety of youth organizations have carried out demonstrations to bring attention to open-pit metal mining. In October 2008 over

200 youth gathered to create regional solidarity over the rejection of the Crucitas project and called on the Nicaraguan government to not approve mining operations in the San Juan river basin. They also demanded that the Costa Rican government suspend permits for the Crucitas mine (Alfaro, 2008). The event was successful in informing people of the health and environmental consequences generated by metal mining. Following this event a demonstration was organized in San Jose, Costa Rica on October 27 in which protestors held picket signs and chainsaws demanding Environment Minister Dobles resign for his failure to protect the region in the Crucitas project area. The protest was organized through a recently launched website, "Get Out of Crucitas" (Schmidt, 2008).

Though resistance against the Crucitas project has been quite significant, not all Costa Ricans share this position. To some local residents the Crucitas Project serves to bring major benefits to the community through community development and investment initiatives promised by Infinito. In a community where poverty rates are high, the promise of 200 jobs, vocational training, educational support, and infrastructure within the community has enticed some to support the Project (Dyer, 2008).

However, communities who have experienced the effects of mining know that these promises are rarely realized and often any jobs created disappear immediately after the mine closes, leaving only devastation (Isla, 2002). Furthermore, foreign ownership means that profits generated at the facility are largely transferred abroad and rarely trickle down to the national economy, let alone the local economy. This analysis is supported by Gordon and Webber



(2008) in their study exploring Canadian mining operations in Latin America and the resistance they increasingly face. They claim that foreign investments made in mining communities often do not improve the living conditions in the areas where the investment is taking place. In fact, the some of the poorest areas in Latin America are those that have been subjected to mining (Kuyek, cited in North *et al*, 2006). Others warn that more research is needed to assess whether community development programmes implemented by foreign mining companies may actually serve to create mechanisms of dependency that can be used to control communities from abroad (Jenkins, 2004).

## **Canadian Opposition**

Mining activists claim that lack of coverage in the mainstream media means many Canadians remain ignorant of Canada's role in the global mining market (McSorley, 2008). The vast majority of stories about the industry tend to focus on economic benefits to Canadian investors, rather than the impact of the industry on communities around the world. Reporting about such impacts tends to happen only when the issue has reached a horrendous scale and there is an environmental disaster. Canadians have to look outside the mainstream press to find out what Canadian mining companies are doing abroad or at home (McSorley, 2008).

In a recent issue of *The Dominion, State of Mine: An Investigation of Canada's Extractive Industries*, a Canadian journal that features articles about Canadian mining operations working within the country and abroad, the editors argue that a real debate about Canadian mining is urgently needed but has yet to

take place. They suggest that such a debate must examine alternatives to mining and discusses practical implementation strategies for such alternatives within the context of an economic structure that is heavily dependent on resource extraction (The Dominion, 2008).

# **CONCLUSION**

## **Directions for a Sustainable Future**

Costa Rica, with its history of environmental conservation efforts, is uniquely positioned to be a leader in advancing sustainable development as a national political strategy. However, the Crucitas gold mine project is a reminder of the powerful role globalized corporate interests play in shaping environmental politics in ways that encourage national governments to retreat from environmental conservation and protection measures. Instead governments are enticed to promote economically profitable endeavours that largely favour foreign investors. Despite environmental laws and industry regulations put in place to protect the land, air, waters, and populations from being exposed to the harmful effects of mining activities, communities face significant risks when gold mining operations are established.

The struggle against the Crucitas project has led to the mobilization of community members, environmentalists, activists, and concerned citizens. Through their united efforts, the movement has achieved considerable success in affecting the planning and development stages of the project. Over the course of the 15 year long struggle against the Crucitas gold mine project, the project has been abandoned by its original owner, has undergone significant public scrutiny, and has recently been suspended thanks to the tireless efforts of those opposing the mine.

As the political and economic climate of both Costa Rica and the global gold industry has changed throughout the course of the past 15 years so, too, have the strategies of the opposition in order to effectively adapt and respond to the shifting obstacles and opportunities to justice. And while the potential remains for the development of the Crucitas gold mine project to resume, it is likely that the struggle of those opposing the mine will continue as well. It is due to this evolving resistance to environmental injustice that academics see opposition movements as constantly evolving (Pellow, Weinberg, and Schnailberg, 2001). In their exploration of the struggles that emerge from the environmental justice movement the authors conclude that “environmental injustices are a work in progress, they are constantly in process because people are continually resisting them” (Pellow, Weinberg, and Schnailberg, 2001, p. 437). Rather than focusing on the outcomes of the movement in terms of success or losses, it is more valuable, as the authors suggest, that we recognize the power of continuous movement resistance. Furthermore, as more communities and regions become exposed and affected by gold mine projects, it becomes increasingly more essential that we gain a better understanding of the power of the disenfranchised to shape the outcomes of these conflicts (Pellow, Weinberg, and Schnailberg, 2001).

In response to concerns about environmental justice, ecological conservation, and public health, gold mine projects have stimulated social and environmental movements around the world. Ana Isla suggests that local resistance to projects like Crucitas is increasingly becoming “globalized” as

women, Indigenous peoples, and the local poor, who are leading the movement, are gaining international support from individuals, grassroots groups, and NGOs around the world (Isla, 2004). From decades of struggle we now witness the affects of this multi-issue, multi-racial, and multi-regional environmental justice movement where communities have organized and connected their struggles to issues like civil and human rights, racial and social justice, and sustainable development to affect change in their communities (Bullard, 1994, cited in Martinez-Alier, 2002).

The Canadian gold mining industry is the largest in the world and most of its foreign investments are situated in Latin America (Gordon and Webber, 2008). This reality has meant that movements of resistance that have emerged from injustices attributed to mining projects have largely been movements opposing Canadian influence in Latin American communities (Gordon and Webber, 2008). While this paper has only explored the Crucitas gold mine project, there are many examples of more severe injustices and environmental devastation afflicted on Latin American communities by Canadian-owned gold mining operations. Though it was beyond the scope of this paper to assess all of these cases, it is clear that Canadian mining companies are significantly affecting the lives and environments of those communities involved. Perhaps, as academics Gordon and Webber argue, “emancipation from Canadian mining imperialism will only come to pass through the deepening and expansion of such mass movements of liberation” (Gordon and Webber, 2008, p. 83). For Canadians whose mutual funds and taxes may be aiding in the development of mining projects, it becomes

essential to the struggle that they and others, who may be contributing to the existence and perpetuation of such unjust operations, understand their role in creating systems of injustice.

The complex factors that connect global consumers to global environmental degradation must be unveiled to effectively redress environmental injustice and social inequities. To achieve meaningful social change society must understand the global systems and processes that facilitate the reproduction of environmental, social, and health inequities. Furthermore, it is essential that the creation of legitimate spaces is fostered to ensure that the voices of local experiences may be listened to, heard, and valued. In doing so local movements may successfully express their capacity to affect long-lasting changes and resist the harmful impacts of economic development initiatives.

Given the relationship between global environmental injustice and economic growth, it is necessary to untangle how environmental issues are shaped by global contexts and global relations. To address the public health threats associated with environmental issues, we must continue to uncover the key players and mechanisms involved and assess how they contribute to the process. By untangling the many relationships involved we may better understand how power and privilege is used in different contexts and by various players to pursue particular interests and achieve certain outcomes that result in global environmental injustice.

## **CRITICAL REFLECTION**

Environmental injustice associated with gold mining reflects how health outcomes are shaped by the political economy. Exploring the implications of and reactions to the Crucitas gold mine project at the local context in Costa Rica has enriched my understanding of the political life of public health issues. This inquiry has heightened my awareness and interest in uncovering the role individuals play as global citizens in determining particular health outcomes in the distant lives of others around the world. I believe that my role as a public health practitioner is to continuously strive to reveal and understand the multiple layers and players that interact to influence and shape equity. Through this understanding I hope to be able to better affect meaningful changes that contribute to redressing such global inequities. I also recognize that while the magnitude and complexity of global inequities and injustices require coordinated, long-term efforts from many actors, I am hopeful that positive, incremental changes made by individuals every day will contribute to advancing the necessary systemic change.

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