

# CIRDI AND THE UN SUSTAINABLE DEVELOPMENT GOALS

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## SUSTAINABLE DEVELOPMENT GOALS



CIRDI

Canadian International Resources and Development Institute

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Program undertaken with the financial support of the Government of Canada provided through Global Affairs Canada.

Programme réalisé avec l'appui financier du gouvernement du Canada agissant par l'entremise d'Affaires mondiales Canada.



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# CIRDI AND THE UN SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals (SDGs) and the 2030 Agenda for Sustainable Development are at the centre of a global cooperative effort to lift nations and communities out of extreme poverty. The 17 goals, and the accompanying 169 targets, set an ambitious course for sustainable development across the full spectrum of the human and natural environment. With our developing country partners, CIRDI aims to use sustainable natural resource management and governance as a driver to help achieve the SDGs.

Natural resource development, and in particular mining, is a global industry that directly affects over half the world’s population – including those in some of the world’s most impoverished nations. According to the World Bank, “about 3.5 billion people live in countries rich in oil, gas, or minerals,” and, mineral resources play a dominant role in 81 countries, which collectively account for a quarter of world GDP.” Effectively managing these natural resource endowments in ways that will achieve long-term development goals is one of the most critical challenges facing resource-rich countries.

If properly managed, natural resources have the potential to have transformative impact. The 2016 UNDP guidance document – Mapping Mining to the Sustainable Development Goals: A Preliminary Atlas, has identified the sustainable and effective use of natural resources as a vital path to reaching the 2030 targets of the SDGs. CIRDI’s portfolio of targeted development assistance projects aim to support the contribution of natural resources to the SDGs, consistent with the Institute’s mandate to make a positive contribution to poverty alleviation through inclusive and sustainable development of natural resources.

## SUSTAINABLE DEVELOPMENT GOALS



The 17 SDGs comprise a sprawling framework of interrelated and interdependent indicators, with any initiative targeting one SDG also impacting several others. They cover a wide range of settings and environments, and are scalable to both developing, middle income, and developed country settings. CIRDI's work reflects these same synergies, with a diverse suite of projects each impacting several SDGs directly and affecting almost all peripherally, in addition to the cross-cutting themes of Good Governance (SDG16), Environmental Sustainability (SDGs 13, 14 & 15), and Gender Equality (SDG 5).

These cross-cutting themes are entrenched in CIRDI's work, accentuating the institutional commitment to these subjects. We believe good governance is key to the sustainable development and effective use of natural resources. CIRDI collaborates with our partners to build public sector capacity so that resource development is guided by such building blocks of good governance as transparent and effective legislation, robust regulatory frameworks, environmental standards, and strong health and safety regimes.

Environmental sustainability ensures that the development of natural resources does not compromise the ability of present and future generations to interact with and benefit from the natural environment. CIRDI links this core theme with our programming by engaging with partners to incorporate focus areas such as integrated resource management, climate change, biodiversity and ecosystem health, land reclamation and rehabilitation, water management, and forest action.

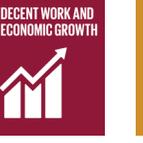
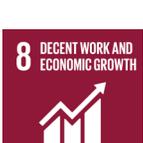
CIRDI is committed to advancing gender equality and the empowerment of women and girls. In all projects, gender considerations are fundamental and are incorporated in all activities. CIRDI promotes gender-inclusive resource governance by integrating gender mainstreaming in policy development and decision-making, improving inclusiveness and agency of women through access to information, skills training and educational opportunities. CIRDI interventions and training programs confront gender-specific challenges inherent to resource development, such as gender specific risk livelihood access and labour force participation, gender-based-violence and discrimination, maternal health, and women empowerment strategies.

This paper reviews CIRDI's suite of active and recently completed projects to assess their impact on the SDGs. The table on page 5 and 6 summarizes twelve of CIRDI's recent projects and the SDGs where they have primary impact. These linkages are expanded upon in the following pages.

The SDGs fit naturally with CIRDI's mandate as they are measurable, global goals that are effective in a variety of different contexts. With the ultimate aim of poverty alleviation, CIRDI works in both low-and middle-income countries, urban and rural settings, and with diverse stakeholders from all backgrounds. CIRDI's values of integrity, transparency and independence enable us to convene substantial and on-going partnerships between governments, the private sector, academia, communities and civil society. By leveraging the transformative power of collaboration and partnership between these diverse actors, CIRDI projects make measurable impact in service of all 17 SDGs.

Local cultures and knowledge is integrated in all CIRDI work. CIRDI designs and delivers programs in close cooperation with in-country partners to ensure they address the priorities and needs of developing country governments and communities on the ground. This includes the integration of human rights, gender equality, and Indigenous perspectives - key components of the SDGs - in the development and delivery of all programming.

CIRDI projects are concentrated in five areas of focus: Improving Public Sector Governance, Strengthening Integrated Resource Management, Transforming Artisanal and Small-scale mining, Engaging Communities and Sharing Benefits, and Building Capacity through CIRDI Training Programs. These specialty areas reflect both the needs of developing country partners and CIRDI's strengths and expertise. They are also, like the SDGs, interrelated and interconnected fields of practice, and synergies between these areas of focus allow overlap and shared learning from project to project.

Active Project	Core Area	SDGs of Focus			
Education and Research for IRWM in Peru	Strengthening Integrated Resource Management				
Transformation of ASM in Ecuador (TransMAPE)	Transforming Artisanal and Small-scale Mining				
Integrated Management and Governance in Extractives (IMAGinE) Mongolia	Improving Public Sector Governance				
The Rise in Conflict Associated with Mining Operations: What Lies Beneath?	Improving Public Sector Governance				
The Relationship between Local Procurement Strategies of Mining Companies and their Regulatory Environments	Engaging Communities and Sharing Benefits				
Supporting the Ministry of Mines (SUMM) - Ethiopia	Improving Public Sector Governance				
Co-Laboratorio Perú	Engaging Communities and Sharing Benefits				
Blazing the Path to Formalization - Ghana	Transforming Artisanal and Small-scale Mining				
Capacity-building for Multi-level Governance of ASM in Indonesia	Transforming Artisanal and Small-scale Mining				

Active Project	Core Area	SDGs of Focus			
Natural Gas Projects and Local Community Development in Tanzania	Engaging Communities and Sharing Benefits				
Program for Strengthening the Governance of the Extractive Sector in West Africa	Improving Public Sector Governance				
CIRDI Training Programs	Building Capacity through CIRDI Training Programs				

## IMPROVING PUBLIC SECTOR GOVERNANCE

### *Integrated Management and Governance in Extractives (IMAGinE) Mongolia*



While Mongolia is richly endowed with mineral resources, a quarter of Mongolians live in poverty. Compounding the lack of equitable distribution of mining-derived wealth is the fact that Mongolia suffers from a lack of (foreign) investment in mining. This can be attributed to lower commodity prices coupled with government policy decisions that have contributed to a destabilized investment climate. Institutional capacity building in natural resource governance has the potential to create a stable investment climate, improve wealth distribution and development outcomes, and contribute to poverty alleviation.

#### **SDG 17 in Action – ICF Workshop on Resource Governance**

In May 2016, 47 international delegates gathered in Ulaanbaatar, Mongolia to discuss the state's role in large resource projects. Facilitated by CIRDI and Mongolia's International Cooperation Fund (ICF), the workshop enabled peer-to-peer learning on natural resource governance for countries in a similar developmental stage.

Mongolian decision-makers from the national government, industry, civil society and academia were joined by six international delegates from Afghanistan, Kyrgyzstan, Laos and Myanmar to discuss different models of state engagement in resource governance. Topics included enterprise ownership models, decision-making structures, legal frameworks, transparency, international standards and social responsibility. Partnership and collaborative initiatives fostered at this event can advance progress on all the SDGs, and will be developed further at additional multi-national, multi-stakeholder events convened by CIRDI as part of the IMAGinE Mongolia project.

The challenges and opportunities facing Mongolia and the sustainable development of its natural resource sector are not unique. Many other developing countries have experienced similar resource booms and busts, and still more will encounter this phenomenon in the years to come. As such, it is crucial that Mongolia learn from past cases, and that the Mongolian experience be shared with other countries. The focus is increased coordination and collaboration between developing countries in the Central and Southeast Asia region, where partnerships between Mongolia and analogous countries will enable shared learning on natural resource governance that will advance all 17 SDGs.

Through strategic outreach and partnerships (SDG 17), the IMAGinE Mongolia project facilitates structured dialogues between governments, civil society and development partners on the role of the mining industry in national sustainable development strategies, to discuss the impacts and opportunities of natural resources development, and to build capacity in areas where they identify governance gaps (SDG 16).

The networks developed through these forums identify and build mechanisms to strengthen coordination of resources and initiatives that focus on natural resources and sustainable development. International peer-to-peer learning also allows countries in similar stages of political, economic and industrial transition to share knowledge in mining sector development (SDG 9) including transitioning from state-ownership, entrenching mineral revenue transparency and attracting foreign direct investment.

## Program for Strengthening the Governance of the Extractive Sector in West Africa



The countries of West Africa have an ancient mining tradition, but the experience in industrial mining is much more recent. Since the 1990s, large-scale mining activity in West Africa has rapidly increased and become an important source of revenue for governments. However, a corresponding contribution to human development has not taken place. West African governments have recognized this and, with the adoption of the African Mining Vision, committed to a comprehensive development approach that integrates mining with development policy.

By working directly with governments from the West African Economic and Monetary Union (known by its French acronym, UEMOA), particularly Senegal and Burkina Faso, the CIRDI program supports the development of a transparent, integrated, and environmentally and socially responsible extractive sector that provides sustainable benefits to the community, country and region. Specifically, the program aims to strengthen the capacity of UEMOA and its member states for improved governance

### SDG 4 in Action – Knowledge Exchange

In May 2017, the CIRDI team at École Polytechnique Montréal (EPM) welcomed four professors from universities in Burkina Faso and Senegal to share their knowledge and experience for the development of the new master's degree in Environment and Mining Waste Management. The degree program will be delivered to students in the two West African countries in fall 2017. The master's program is one of three core activities in this project, all of which are designed to strengthen national and sub-regional institutions in the West African Economic and Monetary Union.

Two professors from each University Ouaga I Pr Joseph Ki-Zerbo, Ouagadougou, Burkina Faso and the University of Cheikh Anta Diop, Dakar, Senegal participated in a three-week knowledge-exchange session with EPM faculty and graduate students. The program included field visits to three mines in the Abitibi region of Quebec representing modern, traditional and underground mining practices.

of the extractive sector to maximize its contribution to sustainable development and poverty reduction.

At the core of this program is the development of a strategy document for the sustainable development of a mining sector in conjunction with the eight member states of UEMOA. By leveraging the multi-lateral partnerships of UEMOA this project supports the development of regional strategies for mining and sustainable development in West Africa to contribute to all SDGs (SDG 17).

For example, these regional strategies address SDG 16 (Peace, Justice and Strong Institutions) by supporting capacity development within UEMOA members

states and their institutions for improved governance of the natural resource sector to maximize its contribution to sustainable development and poverty reduction. This work is highlighted by the creation of a Sectoral Development Policy Letter for the Government of Senegal through consultation with six target groups (mining industry, private sector, women in mining, civil society, artisanal miners, and local authorities and elected officials) to improve the government's knowledge of the issues and actors in the sector.

This program also contributes to SDG 4 (Quality Education) through the development of a Master's Program in Environment and Management of Mining Discharges with the University Ouaga I Pr Joseph Ki-Zerbo (Burkina Faso) and the University of Cheikh Anta Diop (Senegal). This program component includes the development of pedagogical material and the training of Burkinabe and Senegalese professors at École Polytechnique Montréal, the identification of industrial partners for the establishment of industrial internships, and applied research projects on technical challenges facing the West African mining sector.

## Supporting the Ministry of Mines (SUMM) – Ethiopia



Ethiopia is in the early stages of building a mineral sector around its rich endowment of natural resources – including confirmed deposits of gold, gemstones, and industrial minerals. To support this development, CIRDI’s SUMM project is designed to strengthen the capacity and organizational management of Ethiopia’s Ministry of Mines, Petroleum and Natural Gas (MoMPNG) at operational and strategic levels.

The project’s overall objectives are to improve resource governance and support the long-term management of a sustainable mining sector in Ethiopia. By providing capacity building support and training to state institutions – including establishment of a modern cadastre licensing system and world-class geoscience branch – SUMM will strengthen MoMPNG for the benefit of all Ethiopians, in service of SDG 16: Peace, Justice and Strong Institutions.

This institutional capacity building will also support SDG 5: Gender Equality, by entrenching gender mainstreaming in mineral sector policy development and decision-making. The SUMM project establishes a gender equality working group to address priority gender needs and including gender considerations in key activities such as policy reviews, development of new guidelines and strategies, and multi-stakeholder dialogues and forums.

If developed in a sustainable and transparent manner, Ethiopia’s resource wealth has the potential to help lift its people out of poverty. Strong resource governance will facilitate the growth of a sustainable and productive minerals sector stimulating widespread economic growth, including increased employment and new opportunities for the provision of local goods and services. These outcomes contribute to both SDG 8: Decent Work and Economic Growth and SDG 9: Industry, Innovation and Infrastructure.

### *The Rise in Conflict Associated with Mining Operations: What Lies Beneath?*



*Mining can also contribute to peaceful societies by remedying company-community conflict, providing access to information, respecting human rights, supporting representative decision-making and carefully managing their security approaches to ensure they decrease rather than increase the likelihood of conflict.*

*-UN SDG Mining Atlas (2016)*

The purpose of this study is to delve beneath the surface manifestations of conflict related to mining activities around the world to uncover their root systems and pathways. A recent survey conducted by the International Council for Mining and Metals (ICMM) indicated that a sustained increase in incidents of conflict has occurred between mining companies and their stakeholders over the past 10-15 years. This has raised serious questions about the developing field of social responsibility practice and challenged the understanding and assumptions about conflict related to mining activities.

In response to these trends, this study provides a better understanding of conflict and demonstrates ways to predict and prevent conflict by identifying structural and contextual factors, and in doing so provides good governance and peace-building support to companies, governments and communities – in line with SDG 16, and specifically the following targets: Significantly reduce all forms of violence and related death rates everywhere; Promote the rule of law at the national and international levels

and ensure equal access to justice for all; Promote and enforce non-discriminatory laws and policies for sustainable development.

Valuable lessons can be learned not only from analysis of conflict cases that involved organized protest and sometimes violence, and from situations where the potential for conflict existed but was somehow avoided and redirected to achieve constructive outcomes. As in any relationship, conflict can be used and experienced as a natural, evolutionary process, which, if properly managed, can give rise to constructive outcomes and progress for the parties involved.

The findings note that that conflict is rarely the result of a single party; more-often-than not it is the result of the interplay of multiple actors including companies, communities, civil society organizations and government all of whom contribute to conflict situations in different ways.

Building institutional capacity to govern and manage the development of their resources in a sustainable manner is crucial to preventing conflict. This project analyzes the role governments have played in preventing or contributing to conflict through case study situations, providing concrete examples of leading and lagging government practices that influence conflict. By recognizing the complexity of conflict, and breaking down the multifaceted pathways that can lead to it, the Mining & Conflict project promotes good governance and provides all actors will a better understanding of how to anticipate and address conflict situations before they erupt.

#### SDG 16 in Action – Minera San Cristobal Case Study

The San Cristobal silver, zinc, lead mine, located in the southern Altiplano of Bolivia was studied as part of the Mining & Conflict project. It was selected because of evidence that the company and community had been able to restore high quality company-community relations following several episodes of conflict during its nine years of operation. It was anticipated that the field study at San Cristobal would throw light on how and why conflict could be transformed into positive outcomes for all parties.

Major conflict events at San Cristobal involved a combination of cultural factors and stakeholders who played a key role in transforming conflict into opportunities. Mutual respect, community negotiation skills, shared vision and objectives, an organized society, a sound community relations program and a committed community relations team were some of the key elements that contributed to the prevention and transformation of conflict situations and the maintenance of the social license to operate. The analysis of this case study provides a window into successful mitigation of conflict, demonstrating potential pathways for mining companies, communities, governments and other stakeholders.

## STRENGTHENING INTEGRATED RESOURCE MANAGEMENT

### *Education and Research for Integrated Water Resource Management in Peru*



Peru is well known for its rich mineral deposits, but it is also known for being a water-stressed nation. Water demand is already beginning to exceed supply, and melting glaciers due to climate change and increasing water demand due to economic and urban population growth are exacerbating the situation. Mining is just one of many water users in Peru, and historically there has not been synergy between user groups on water consumption. The Government of Peru has identified Integrated Water Resource Management (IWRM) as a governance tool to improve practices in this area, and CIRDI's is supporting these efforts.

This project uses multi-stakeholder consultation to identify key audiences and their technical and social knowledge gaps. The project also builds research capacity for data collection and analysis within local universities, and provides technical training in IWRM. These combined activities aim to drive informed dialogue and the development and ownership of integrated policies for watershed and mining sector management. The project's ultimate outcome is an integrated water resource management plan implemented within Peru's mining governance structure to preserve and improve the availability, accessibility, and quality of water.

These learning and educational opportunities (SDG 4) ensure equal participation of women and men in line with CIRDI's cross-cutting theme of gender equality, and promote investment in education, training, and technical programmes through partnerships with Peruvian universities to develop post-secondary education program in IWRM. This builds on existing programs at UBC such as the Norman B. Keevil Institute of Mining Engineering's Certificate of Mining Studies program.

**SDG 5 in Action: Gender, Mining & Water Resources Conference**

Over 180 participants from government, industry, academia, NGOs, civil society gathered in Lima, Peru on February 16 & 17, 2017 to discuss gender issues in mining with an emphasis on the use of water resources. The conference was jointly organized by the CIRDI and the School of Government and Public Policy at Pontificia Universidad Católica del Perú (PUCP). A multi-stakeholder steering committee oversaw the conference program development.

The conference aimed to raise awareness of the challenges and impacts of mining on the lives of women, especially Indigenous and rural women – and to identify ways increase local capacity, welfare and economic benefits for women, with a focus on the role of women in mining-related water resource management. Conference participants concluded that issues of gender in mining need to be addressed urgently and that any discussion on the topic must include perspectives of men and women. Although the mining sector has made improvements in recent years, more needs to be done, including at the government level, to integrate women's voices, perspectives and involvement.

Gender equality (SDG 5) is central to this project, as women in Peru do not have equitable access to resources or decision-making. Project programming increases the profile of the diverse roles of women in water management, identifies challenges and opportunities for women within this field, and increases women's access to information, data and educational opportunities. Of note is the 2017 Gender, Mining & Water Resources Conference, which raised awareness of the challenges and impacts of mining on the lives of women, especially Indigenous and rural women, with a particular focus on the role of women in mining-related water resource management. This and other activities advance women's equal participation as informed decision-makers in shaping sustainable development in their communities.

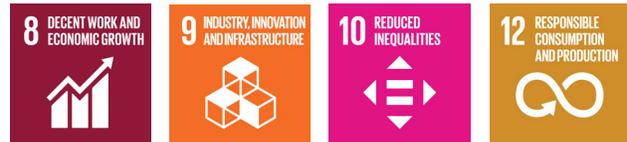
Integrated Water Resource Management can make a strong contribution to SDG 6 (Clean Water and Sanitation). Mining is a significant user of water and can negatively impact water quality. Communities also compete for water, and may have different value systems for water use than industry. Tools such as IWRM can support watershed management by both the private and public sector, foster dialogue on water issues between stakeholders, and improve the access to and sustainability of water resources for all user groups.

In a water-scarce environment like Peru, mining companies often construct infrastructure to bring water in from elsewhere or pump groundwater to meet their needs. Competition for these water resources necessitates the development of partnership agreements with governments and other water users, including partnerships around water infrastructure development – initiatives that advance SDG 9 (Industry, Infrastructure and Innovation).

This project profiles the Cerro Verde mine, a best practice case study, where owner Freeport McMoran has partnered with local leaders and the national water authority to support potable water and sanitation planning and infrastructure. Untreated sewage discharge had previously contaminated the main source of water supply for the Arequipa region. To complement a mine expansion, Cerro Verde has met its additional water requirements by building a new wastewater treatment plant. The mine receives a portion of the treated wastewater for use in its operations. The remaining water is returned to the river helping to improve water quality and agricultural outcomes.

# Engaging Communities and Sharing Benefits

## *The Relationship between Local Procurement Strategies of Mining Companies and their Regulatory Environments*



This project examines the local procurement regulatory framework of South Africa and Namibia and the extent to which the local procurement strategies of the mining companies that operate within those countries align with - and are affected by - this framework. Research also identified common factors that influence mining companies as they create local procurement strategies and policies.

In both jurisdictions, companies have been incentivized to procure locally through government legislation, with input from domestic Chambers of Mines. Local purchasing by mining companies operating in these regions develops linkages between local businesses and the mining supply chain, diversifying local industry and spurring infrastructure development necessary to support the sector, in turn contributing to SDG 9 (Industry, Innovation and Infrastructure). As noted in the project's final report, procurement spending generally makes the single largest in-country expenditure of any mining operation in their company membership and it is usually greater than government taxes, employee wages and salaries, and community investments combined.

### **SDG 9 in Action: Economic Benefits of Local Procurement**

By developing policy relevant research on the effectiveness of local procurement regulations, this project provides host country governments with an enhanced understanding of how to encourage mining companies to procure from more local suppliers. There is vast potential for action on this issue contribute to the SDGs. For example, in 2012 a mid-sized Canadian gold mining company, IAMGOLD, allocated \$671,136 in traditional community investment programs (e.g. Malaria prevention programs) at its Essakane Gold Mine, in Burkina Faso. During that same time, IAMGOLD's purchasing from local and national suppliers accounted for \$212,000,000. The total amount of bilateral aid that Burkina Faso received from the Canadian Government that year was \$40,760,000. This aid spending thus represented only one fifth of the purchasing power of a single mine site. If mining companies operating in Sub-Saharan Africa were to purchase more goods and services from Sub-Saharan African suppliers, the economic and social benefits for the region would be extensive.

*Shared use infrastructure, especially in countries with a large infrastructure financing gap, represents a significant opportunity for mining to expand access to critical services.*

*Given that distinct geological characteristics require specialized mining techniques, mining companies can also contribute to in-country innovation through research and development programmes and through their procurement practices.*

*-UN SDG Mining Atlas*

This project identified how linkages between local businesses and the mining supply chain can be improved to create local jobs and drive economic growth in line with SDG 8 (Decent Work and Economic Growth). Local procurement epitomizes the positive role that the private sector can play in development.

The project team noted that in some environments where there is no local production, or it is not of sufficient quality to be used by the mine, companies can support improvement in local supplier capacity.

Building local capacity makes it easier for companies to procure locally by improving the local skill base, and educating prospective suppliers about opportunities and requirements to supply industry. This can broaden the reach of mining's economic impact and mitigate increases in inequality that can accompany large-scale mining to support SDG 10 (Reduced Inequalities).

This study also contributes to SDG 12 (Responsible Consumption and Production); noting the power of mining companies to encourage the integration environmental and social considerations and requirements into local supply chains through responsible sourcing and procurement policies.

## *Natural Gas Projects and Local Community Development in Tanzania*

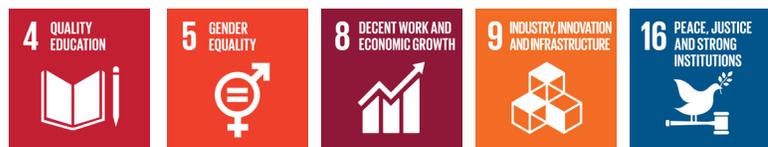


Southern Tanzania holds large reserves of natural gas. In addition to using the gas for domestic consumption, power generation and industrial development, the Tanzanian government has announced that the country will become a leading liquefied natural gas exporting country in East Africa in the next five years. The direct and indirect economic benefit of natural gas development has the potential to have transformative impact for Tanzania, and has been earmarked as a contributor to Tanzania becoming a middle-income country by 2025.

In addition to being an important economic driver, natural gas development can also cause disruption to local communities, who may see their livelihoods and culture impacted by a rapid influx of outsiders and dispossession of land. This project documents the concerns of the communities directly impacted by the natural gas development in a manner that can be understood by policy- and decision-makers. This supports SDG 16 by giving voice to vulnerable populations in impacted areas to inform governance solutions and mitigate conflict.

The Mtwara District is one of Tanzania’s poorest regions and economic development from natural gas, if managed correctly, has the potential to contribute to poverty alleviation in accordance with SDG 1: No Poverty. A community baseline survey of 841 households in communities affected by natural gas development projects provides valuable data on resulting social transformations as expressed the local people and their communities. This data collection also supports SDG 11 (Sustainable Cities and Communities) by informing long term strategies for co-existence, planning, sustainability, and benefit sharing between the emerging natural gas sector, government, and neighbouring communities.

## *Co-Laboratorio Perú*



Mining is deeply entrenched in the Peruvian economy, accounting for 54% of exports in 2015. However, the expected socio-economic development in mineral rich regions, particularly the Andean highlands, remains markedly absent. Mining in these regions is instead characterized by high levels of mining-related conflict and the perpetuation of endemic poverty. This resource governance paradox is common to many resource rich nations, but in Peru is exacerbated by systematic underlying causes including the historic exclusion of various groups (indigenous peoples, women, youth), limited capacity and presence of government at subnational levels, lack of public participation in impact assessment processes and resource development planning, and narrow and uncoordinated initiatives and CSR-approaches among corporate actors.

Co-Laboratorio Peru seeks to strengthen innovation and the collaboration capacity of system stakeholders – universities, civil society, industry, government, women and youth – for more inclusive and resilient solutions in governance, policies, processes and practice. By bringing non-traditional actors into the resource governance fold, the project advances SDG 16 by contributing to peace,

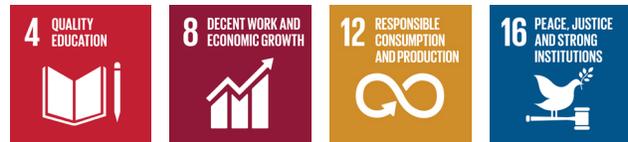
justice and strong institutions.

The project also incorporates SDG 5: Gender Equality by engaging women leaders circles to develop women's strategic leadership capabilities to address social, economic, and environmental challenges in mining related contexts. Peruvian women do not traditionally have equitable agency in resource governance contexts, and have historically not seen a proportionate share of benefits from resource development projects. This includes employment and financial benefits, and this project incorporates the associated SDG 8 (Decent Work and Economic Growth) by designing and testing innovative strategies to support inclusive economic activities and sustainable livelihoods, with a focus on women, youth and indigenous peoples. These goals can be achieved, in part, by reimagining mining as an industry which embraces cross-sector interventions related to sustainable livelihoods, inclusive markets and local enterprise development. By fostering and testing these kind of innovative solutions, Co-Laboratorio Peru supports the creation of more sustainable legacies from the mining industry, characteristic of SDG 9: Industry, Innovation & Infrastructure.

The project team also engages with Peruvian universities on development work, research and partnerships, advancing SDG 4: Quality Education. Programs and learning activities delivered in conjunction with Peruvian universities to engage learners in how to solve complex inclusive growth and collaboration challenges related to resource governance in Peru.

## Transforming Artisanal and Small-scale Mining

### *Transformation of ASM in Ecuador (TransMAPE)*



More than 100,000 miners work in the largely informal artisanal and small-scale mining (ASM) industry in Ecuador. In addition, an estimated 500,000 people (4% of the national population) depend indirectly on the ASM sector for their livelihood. Most small-scale miners are classified as illegal and work in unhealthy, dangerous conditions that involve mercury use, which contributes to social and environmental harm. To meet this challenge, CIRDI is working directly with the Government of Ecuador's Ministry of Mines to develop a long-term education and training program that will bring Canadian technical mining expertise and educational programming to Ecuador's small-scale miners.

A primary goal of the Ecuador TransMAPE project is the collaborative development of a long-term evidence-based training program for southern Ecuador. The aim is building capacity in environmentally sound, safe, and economically efficient mining practices for artisanal and small-scale miners. The training and education of miners – SDG 4: Quality Education – is a key path to improving the ability of ASM to contribute poverty alleviation. Training can be a path to formalization, secure livelihoods, better working conditions, improved yields and wages, and can spur further economic benefit to miners and their dependants.

Significant mining and processing infrastructure currently exists in the project's focus regions. The project aims to incorporate training and educational programs into these existing operations. The goal is for an improvement in practices to be sustained through adoption by established ASM groups, leading to a mainstreaming of best practices and the emergence of sustainable mineral supply chains (SDG 12: Responsible Consumption and Production).

*SDG 8 seeks to create the conditions needed for sustainable and inclusive economic growth and job creation. Public and private sector policies that drive investment require a fresh look with a view to increasing productivity, diversifying markets and opportunities and improving creativity and innovation. Combined with a focus on eliminating child labour and protecting labour rights, SDG 8 seeks to promote economic growth with opportunities and decent work for all.*

*-UNDP SDG Mining Atlas (2016)*

Most small-scale miners are currently classified as illegal, limiting the ability of authorities to regulate working conditions and environmental impacts. While formalization of miners is not one of the objectives of this project, the formalization of the sector an indirect outcome and long-term goal. It has been recognized that for many in the ASM sector in Ecuador, the incentives to formalize do not exist – in many cases it is an economic choice or necessity for miners to stay informal. By improving ASM practices and fostering dialogue between miners and the state, this project creates the opportunity to advance the path to formalization and provide economic security to the sector, contributing to SDG 8: Decent Work and Economic Growth.

**SDG 4 in Action: Sharing Canadian Expertise**

In April of 2017, two engineers from Ecuador’s National Research Institute of Geology, Mining and Metallurgy (INIGEMM) came to Vancouver, BC in a CIRDI-sponsored training program to learn best practice techniques for mercury-free gold recovery in artisanal and small-scale mining.

Working under the guidance of Professor Bern Klein at UBC’s Norman B. Keevil Institute of Mining Engineering, the visitors tested 120 kilograms of rock brought from ASM sites in Ecuador for metallurgical properties and gold recoveries. Through this training, skills and methodologies will be transferred to the INIGEMM lab, improving local capacity to train artisanal and small-scale miners in mercury free processing.

By partnering with state institutions in the delivery of this programming, the TransMAPE project seeks to collaborate to build a sector-wide, regional and national approaches to ASM governance (SDG 16). It also aims to drive sustainable change through a “train-the-trainers” model of intervention. This model improves institutional capacity by leaving a legacy of qualified trainers post-project to continue these efforts, strengthen domestic institutions and increase capacity for ASM monitoring and regulation, and facilitate dialogue between miners and the government to build trust and prioritize action.

*Capacity-building for Multi-level Governance of ASM in Indonesia*



ASM activities in Indonesia operate mostly outside of a formal regulated framework, and consequently there is little done to address significant environmental impacts, including mercury pollution and deforestation. Recent estimates in Indonesia indicate that 500,000 people are directly involved in ASM, with 3 million people dependent on income generated by these activities. Central Kalimantan - Indonesia’s third largest province and focus of this project - has frequently been associated with significant deforestation and pollution risks related to ASM.

Increased concern around the effects of unregulated ASM have coincided with action from the Government of Indonesia to address these challenges. Following a three-year initial phase of the UN-REDD program in 2012, the government passed several decrees to curb deforestation, including from ASM activities. This was followed by the 2013 signing of the Minamata Convention on Mercury, a treaty that calls for new measures to formalize and regulate ASM.

To support these measures, the government needs to increase its understanding of this sector to develop appropriate policies and legislation to implement the treaty. The CIRDI project provides technical assistance to the Indonesian government to improve design and implementation of environmental policies for the ASM sector. By strengthening institutional capacity at the district,

provincial and national levels to work with the ASM sector, this project contributes to SDG 16's targets of developing effective, accountable institutions at all levels. The project will also directly benefit miners by increasing their capacity to engage with government and facilitating access to project data to inform discussion, thereby aiding responsive, inclusive, participatory decision making.

The project strengthens awareness of environmental and social dimensions of gold mining in Central Kalimantan by analyzing existing policy and legislative documents and mapping of the region to define areas of mining activity. The project's focus on addressing levels of deforestation and forest degradation in mining areas and REDD+ compliance support (SDG 13: Climate Action) and SDG 15: Life on Land. Deforestation caused by ASM can result in the loss of valuable carbon sinks, exacerbating climate change. Deforestation of tropical forests accounts for 12% of global carbon dioxide emissions caused by human activity. These initiatives, when combined with support for Minamata implementation and compliance, also support progress toward responsible consumption and production (SDG 12) in the Indonesian gold supply chain.

## *Blazing the Path to Formalization Ghana*



Ghana is home to one of the largest and most dynamic ASM sectors in Sub-Saharan Africa (SSA). This research investigates the Ghanaian ASM sector to deepen the current understanding of how the formal and informal financial relations of poor individuals in SSA affect their livelihoods and well-being. Focusing on those living in communities where ASM flourishes, researchers are using an innovative 'financial diary' methodology to track changes in financial habits and social relations governing rural livelihoods, resource distribution, and well-being at a household level. Financial diary methodology involves researchers interviewing miners at two week intervals on all financial activity, including income, expenses, and transactions.

While the ASM sector provides important informal livelihoods to millions of poor people, many new entrants become trapped in exploitative relationships with buyers and middlemen, and associated cycles of borrowing and indebtedness. The informality of the sector exacerbates the vulnerability and uncertain futures for miners. But for a formalized system to be implemented successfully, a more nuanced understanding for these informal economic systems is required.

Findings from this field research illuminate how miners experience and negotiate poverty, which can in-turn inform policy to support rural wealth creation in ASM communities and create sustained routes out of poverty, supporting the pivotal SDG 1: No Poverty. Research findings also support SDG 8: Decent Work and Economic Growth by generating baseline data on financial landscape of ASM communities, thereby informing strategies for improving economic opportunities for miners and their dependents.

By documenting all financial activity and events in their lives, financial diary mapping will reveal the relationships between miners and ASM supply chains to identify areas of inequality and inform mechanisms to provide access to greater share of wealth for marginalized groups. Through this approach the project seeks to inform policies to combat inequality and break cycles of exploitation in the Ghanaian ASM sector in line with SDG 10: Reduced Inequalities.

Overall, this project supports SDG 16: Peace, Justice and Strong Institutions by informing policy to improve governance and institutional capacity in a range of areas related to ASM. These include sustainable livelihoods, inequality, poverty alleviation, and sector regulation and formalization.

# Building Capacity through CIRDI Training Programs

## *CIRDI Learning and Training Programs*



CIRDI offers learning activities focusing on technical and governance aspects of natural resources development. Training and knowledge sharing is integrated across all CIRDI projects and activities to build capacity for sustainable resource development. In general, CIRDI focuses on in-country learning and on providing opportunities for global knowledge sharing. This includes training courses, seminars, online resources, case studies and peer-to-peer learning. In addition, CIRDI supports opportunities for scholars and fellows from developing countries to study and conduct research in Canada.

These learning and training programs correlate directly with SDG 4: Quality Education, particularly with targets to increase access to technical and vocational skills, eliminate gender disparities in education, provide educational opportunities to minorities and indigenous people, and promote sustainable development. CIRDI also provides advanced educational opportunities to both emerging and established researchers and practitioners from developing countries through the scholars and fellows program, which brings them to the University of British Columbia campus to develop skills and expertise that can benefit both them and their home countries.

SDG 5: Gender Equality is a core tenant of CIRDI's training programs, and efforts are made to ensure a diversity of enrollment in all initiatives. This gender focus is headlined by a training program developed

### **SDG 15 in Action: Best Practices in Mine Closure**

In March and April of 2017, CIRDI's learning team delivered two five-day short courses on mine closure in Ghana and Tanzania. Training was designed for government regulators and professionals, as well as for university faculty and staff, students, community leaders, industry and civil society. Training focused on leading global practices from Canada and other jurisdictions. Many case studies were presented throughout to highlight a range of closure and reclamation options and examples.

An emphasis was placed on planning and technical aspects of mine closure, such as water management, land rehabilitation and reclamation, and post-mine land use. By supporting capacity development in modern mine closure planning, this training works to safeguard life on land for the benefit of present and future generations.

in partnership with APEC, *Extracting Equality: Gender in Artisanal and Small-scale Mining*. This three-module course reviews the traditional roles of women and girls in ASM processing and supply chains, including gender-differentiated divisions of labour, risks and impacts. Subsequently it addressed strategies for the empowerment of women in girls through access to land, financing, information and training, production and benefits, and decision-making.

CIRDI training programs also advance SDG 16: Peace, Justice and Strong Institutions by supporting the development of institutional capacity with governments in client countries. Recent initiatives include a partnership with the Government of Argentina providing recommendations and training based on international best-practices and case studies to support a new national mine closure policy.

Training sessions on technical solutions to mine closure were also delivered to multi-stakeholder audiences in Ghana, Tanzania and Suriname in partnership with local ministries and with the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development in Suriname. Topics included mine closure planning, financial assurance mechanisms, community engagement and consultation. Specific emphasis was also placed on environmental aspects such as water management, land rehabilitation and reclamation, and post-mine land use, in support of SDG 15: Life on Land.